CLINICAL POSTERS

CP1 - DOUBLE THE TOOTH; DOUBLE THE TROUBLE ?

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BACKGROUND
Although the exact aetiology is unclear, the tooth resulting from the union of two separate tooth germs (fusion), or the attempted division of a single tooth germ (gemination) is often referred to as a 'double tooth'. With a reported incidence of 0.1% in the permanent dentition and occurring more commonly in the anterior region, treatment for aesthetic, orthodontic or functional reasons may be required.
AIMS
To illustrate challenges in managing a double tooth in the paediatric dental patient.

OBJECTIVES
To highlight the importance of multidisciplinary treatment planning for patients with a double tooth and the range of treatment options which exist

METHODS
The case series explores four cases of paediatric patients with a double tooth in the permanent dentition and highlights a range of presentations of a double tooth and the clinical challenges which they can present. They demonstrate the use of special investigations, including plain film radiographs and cone beam computed tomography (CBCT), to facilitate treatment planning and will discuss the endodontic, restorative, and surgical considerations of such dental anomalies, including the importance of collaboration between paediatric dental and orthodontic teams.

CONCLUSION
Effective management of a double tooth in the paediatric dental patient is often complex. Treatment options rely on a holistic approach with specific consideration regarding patient motivation, and long-term orthodontic and restorative goals to maximise aesthetics and patient satisfaction as the child progresses into adulthood.

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CP2 - A PROTOCOL FOR COMPUTER-AIDED DESIGN AND COMPUTER-AIDED MANUFACTURING OF FIXED BONDED STAINLESS STEEL RETAINERS

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BACKGROUND & AIMS

Maintaining a stable result following the completion of orthodontic treatment continues to be one of the biggest challenges within orthodontics. Consequently, the use of retention appliances is essential for maintaining long-term functional and aesthetic outcomes. Fixed retention are commonly used as an effective and reliable form of retention. However, for the clinician fixed retainers can be time consuming to place and technique sensitive. In addition, there are potential risks of unexpected post-treatment tooth movements and debonding. Recent advances in computer-aided design and computer-aided manufacturing (CAD/CAM) presents the opportunity to streamline and simplify the retention phase of orthodontic treatment by digitally scanning and fabricating retainers . It has been shown that CAD/CAM fixed retainers result in a lower incidence of debonding and less relapse in intercanine width than compared with traditional flexible multistranded stainless steel retainers. We present a novel method for the fabrication of stainless steel bonded fixed retainers using CAD/CAM.

We aim to present a protocol used for the fabrication of stainless-steel bonded retainers using computer-aided design and computer-aided manufacturing (CAD/CAM).

METHODS

The fabrication of the stainless steel (SS) retainer involves scanning of the patient at their last visit prior to debonding. The brackets are debonded digitally using a combination of manual adjustment of the scan and edit modules available on the Onyx Ceph software. The scanned models are then blocked out. Utilising a three-point approach the retainer is designed to specification and a block out is incorporated into the design to allow for the composite bonding process. The model is now ready for printing. The stainless-steel retainer is then put through an electropolishing process to smooth and round the edges in preparation for fit.

CONCLUSION

We have presented an efficient, streamlined digital workflow for custom CAD/CAM fixed stainless steel retainers to be bonded on the day of debond. Further research is required into the long -term stability and clinical effectiveness of CAD/CAM printed stainless steel retainers

CP3 - HOW COVID-19 PANDEMIA AFFECTED ORTHODONTIC TREATMENT: CASE REPORT

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AIM:The aim of this case report is to present the orthodontic treatment of a case of moderate crowding whose treatment had to be interrupted during the pandemic.
MATERIAL/METHODS: The male patient with a chronological age of 15 years and 5 months referred to the Department of Orthodontics. The clinical examination revealed that the patient convex profile, Angle Class I malocclusion,3mm overjet, 2.5mm overbite, 5mm maxillary crowding and 3mm mandibular crowding. Cephalometric analysis revealed skeletal Class I malocclusion and vertical growth pattern (SNA:80.5°, SNB:76.7°, ANB:3.8°, Sn-GoGn:40.7°, Mx1-SN:104.8°, IMPA:93.3°, interincisal angle:121.2°). Fixed MBT devices with 0.022-inch slots were attached to the maxillary and mandibular teeth. After the leveling and alignment of the upper and lower arch, the Covid-19 pandemic broke out and the patient missed his appointments for 15 months. When the patient applied to our department, cephalometric analysis revealed that the upper and lower anterior teeth were procline (SNA:80.5°, SNB:77.6°, ANB:2.9°, Sn-GoGn:39.9°, Mx1-SN:107.6°, IMPA:101.9°, interincisal angle:110.7°). Four segment distalization with the help of temporary anchorage device (TAD) was considered. A 0.017 × 0.025-inch stainless steel archwire was inserted and a power arm was placed mesial to the canine. Four 2x12mm mini screws (two infrazigomatic and two buccal shelf) were applied. Closecoil was applied from the miniscrews to the power arms with a force of 50 grams per root.
RESULTS:Total treatment duration was 2 years ands 1 month. A lingual retainer and hawley appliance were applied to the patient for permanent retention. Posttreatment cephalometric analysis results revealed Class I skeletal relationship with SNA:82°, SNB:78.2°, ANB:3.8°, Sn-GoGn:39°, Mx1-SN:102.3°, IMPA: 98.5°, interincisal angle:120.3°. Ideal overjet and overbite were obtained, Class I dental relationship was achieved.
CONCLUSIONS: In orthodontic treatments; the importance of treatment sessions and appointment continuity is very important in preventing undesirable side effects and not prolonging the treatment period. In this unfortunate epidemic that the world experienced, the treatment period was extended due to the concerns experienced by the patients but fortunately it was resolved before major problems occurred.

CP4 - ORTHOPEDIC TREATMENT OF A HYPERDIVERGENT SKELETAL CLASS III MALOCCLUSION USING ALT-RAMEC PROTOCOL AND FACE MASK THERAPY: A CASE REPORT

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AIM: To present the orthopedic treatment of a patient with skeletal Class III and midface deficiency using an alternating rapid maxillary expansion appliance (Alt-RAMEC) and a face mask (RHG).

MATERIALS: Clinical examination of a male patient with a chronological age of 11 years and 3 months revealed maxillary and midface growth retardation, flat profile, mandibular laterognathia, 1.9mm negative overjet, 2mm overbite. De Nevreze maneuver was positive. Cephalometric analysis revealed that he had skeletal Class III malocclusion and vertical growth pattern (SNA:75.5°, SNB:77.1°, ANB:-1.6°, FMA: 31.3°, Sn-GoGn:39.6°, Mx1-SN:102.7°, IMPA:91.4°, interincisal angle:126.3°). After cementation of the bonded appliance with Hyrax screw, the screw was turned ¼ turn twice a day for 1 week until the occlusal radiograph revealed that the midpalatal suture was opened. In order to obtain sufficient transversal width in the maxilla, the screw was activated ¼ turn once a day for 1 week. Afterwards, the use of RHG and the 7 week Alt-RAMEC protocol were started. The RHG was applied at an angle of 25-30° to the occlusal plane and 800g of extraoral force was applied. After a total of 5 months of use of the RHG appliance, molar bands were cemented to the upper first molars, Goshgarian type transpalatal arch was placed and fixed MBT devices with 0.022-inch slots were attached to the maxillary and mandibular teeth.

RESULTS: At the end of the treatment, clinical examination revealed Angle Class I relationship, ideal overjet and overbite, and improvement in profile. Cephalometric analysis showed a skeletal Class I relationship, a clockwise rotation of the mandible and an increase in the Mx1-SN angle (SNA:77.9°, SNB:76.9°, ANB:1°, Sn-GoGn:42.6°, Mx1-SN:109.1°, IMPA:89.5°, interincisal angle:118.7°). Total treatment duration was two years.

CONCLUSIONS: With the Alt-RAMEC protocol, mobilization of the sutures was achieved and the RHG appliance worked more effectively. The combination of Alt-RAMEC protocol and RHG has provided successful results in the orthopedic treatment of skeletal class III malocclusion and is an effective treatment option in the treatment of mild-moderate Class III malocclusion due to maxillary retrusion.

CP5 - A LITTLE BIT EXTRA: CASE SERIES

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BACKGROUND:
Supernumeraries affect 2% of the population, with a predilection for the anterior maxilla. The aetiology may be environmental or genetic. Genetic referral should be considered if there are concurrent medical factors, multiple supernumerary teeth or extra-oral features. Supernumeraries may result in crowding, delayed eruption, impaction of adjacent teeth, root resorption or cysts. Careful multidisciplinary planning, supplemented with 3D imaging, is essential to ensure effective treatment.

CASE SERIES
A series of patients with multiple supernumeraries is presented. Four patients aged 7-20 years presented with 7-12 supernumerary teeth in various sites of the maxilla and mandible. Prospective follow up since initial presentation, with conventional and CBCT imaging has been undertaken. The medical history, extra-oral and intra-oral features are documented. Patient 1, female, presents with a mild malocclusion, no impeded eruption of teeth but 12 supernumeraries. Patient 2, male, presents with impeded eruption of UR1, UL1, LR2 and LL2, syndactyly of the toes, upturned earlobes, mild bilateral ptosis, congenital cataracts and aphakic glaucoma. Patient 3, male, presents with un-erupted UR1, supernumeraries that have developed over time, maternal history of stomach cancer with a positive family history of supernumeraries. Patient 4, female, with hereditary genetic fibromatosis and macrodontia, developed supernumeraries during treatment.

MANAGEMENT:
All patients have had orthodontic treatment, following CBCT imaging and liaison from Oral Surgery. The decision to retain or remove a supernumerary tooth was based on surgical risks and the effects of orthodontic treatment. All patients have been referred to the Women's and Children's Hospital Clinical Genetics department. Genetic testing identifies gene alteration, variant of unknown significance, genes associated with increased risk of developing cancer and research. This is detected through whole genome sequencing and bloods for genome sequencing microarray.

DISCUSSION
Supernumeraries pose many challenges to orthodontic treatment. This case series encourages a multidisciplinary approach involving surgical colleagues to assist with orthodontic treatment planning. Patients with multiple supernumeraries should be counselled with regards to the benefits of referral to a geneticist for further investigation, potentially assisting with early detection of certain conditions that have lifelong implications.

CP6 - THE DIGITAL SIDE OF ORTHODONTICS: UTILISING QR CODES IN CONSENT

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Background:
Obtaining valid consent is a GDC standard. The inclusion of all material risks underpins informed consent. Patient information leaflets (PILs) support the consent process. They are usually provided in paper format. These can be costly, non-environmentally friendly, require storage and can be misplaced. QR codes for PILs can be incorporated into consent forms to overcome the issues with printed leaflets.

Aims and Objectives:
To audit the consent process at the Dental Hospital and identify areas of improvement.

Methods:
A 2-cycle audit was undertaken on the pre-existing Orthodontic consent forms. The recording of the treatment plan and options were evaluated. The documented risks, benefits and whether further information provided such as PILs was documented.

Results:
Cycle 1: 82% of consent forms had a treatment plan and the benefits of treatment. One third of forms omitted some of the common risks of treatment. The alternative treatment options were not always recorded.

Cycle 2: 100% of consent forms including the treatment plan. 96% listed the benefits. The recording of risks had improved. Breakages, loss of vitality and treatment duration were often omitted. PILs may have been provided but this was not documented.

Discussion:
A new standardized consent form has been designed. All of the material risks of orthodontic treatment are included. The consent form includes a patient agreement. QR codes were generated and linked to the British Orthodontic Society PILS are incorporated on the consent form.

Conclusions:
The new consent form ensures all patients obtain the relevant risks and improves the quality of the consent process. Patients can readily access the PILs related to their treatment. The avoidance of printed leaflets supports sustainability. The incorporation of the digital side (QR codes) with the consent form no doubt improves the overall consent process.

CP7 - EFFICIENT CORRECTION OF ADULT ANTERIOR SUPRACLUSION WITH MINI-IMPLANTS: A CASE REPORT

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Introduction: Anterior supraclusion, or excessive overbite, is a common orthodontic malocclusion characterized by an excessive vertical overlap of the upper and lower incisors. It can be caused by a variety of factors, including skeletal discrepancies, dental crowding, and parafunctional habits. Traditional treatment options for anterior supraclusion include orthodontics, orthognathic surgery, or a combination of the two.

Materials and methods: This case report describes the treatment of anterior supraclusion in two adult patients using mini-implants. The mini-implants were used to provide anchorage for orthodontic appliances, which were used to correct the malocclusion. The mini-implants were placed between the central and lateral incisors. The patients were followed for a period of three months.

AIM: To assess the efficacy and effectiveness of mini-screws in the correction of incisor overbite.

Results: At the end of the three-month follow-up period, both patients had achieved significant improvement in their anterior supraclusion. The mean overbite reduction was 4.25 mm in the first patient and 3.5 mm in the second patient. There were no complications associated with the use of mini-implants.
Discussion: The results of this case report suggest that mini-implants are a promising new approach to the treatment of anterior supraclusion. They are a minimally invasive option that can provide effective correction of the malocclusion, with a short treatment time and a low risk of complications.

Conclusions: Mini-implants are a valuable tool for the effective treatment of anterior supraclusion, particularly in adults. They offer a number of advantages over traditional orthodontic techniques, including:
Increased anchorage: Mini-implants can provide significantly more anchorage than conventional orthodontic appliances, making it easier to achieve the desired movements.
Shorter treatment time: Mini-implants can help to shorten the treatment time by allowing for more rapid movement of the teeth.
Reduced risk of complications: Mini-implants are associated with a lower risk of complications than orthognathic surgery.

Keywords: mini-implants, supraclusion, incisors, ingression

CP8 - EFFECTIVENESS OF ALIGNERS IN OVERBITE TREATMENT: A LITERATURE REVIEW.

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Introduction

Overbite is a common malocclusion characterized by an excessive vertical overlap of the upper and lower teeth. It can be caused by a variety of factors, including genetics, thumb sucking, and tongue thrust. Overbite can lead to a number of problems, including dental crowding, speech difficulties, and facial asymmetry.

Traditionally, overbite has been treated with braces. However, aligners are a newer and increasingly popular option. Aligners are clear, removable appliances that are worn for 22 hours a day. They are designed to move the teeth gradually and gently.

A number of studies have investigated the effectiveness of aligners in the treatment of overbite. Aligners are also associated with a number of benefits over braces, including being more comfortable, less visible, and requiring fewer office visits.

Materials and Methods

This literature review was conducted to assess the effectiveness of aligners in the treatment of overbite. A search of the PubMed, Scopus, Google Scholar, and Cochrane Library databases was conducted using the following keywords: aligners, overbite, orthodontics, literature review. The search yielded 10 relevant articles, which were reviewed in detail.

Results

The review found that aligners can be effective in treating overbite, but the results were somewhat heterogeneous. Some studies found that aligners were as effective as braces in correcting overbite, while others found that aligners were less effective, especially in severe cases.

The review also found that the success of aligners in treating overbite was influenced by a number of factors, including the severity of the overbite, the age of the patient, and the presence of other dental or skeletal anomalies.

Discussion

The review suggests that aligners can be a viable option for the treatment of overbite in mild to moderate cases. However, more research is needed to determine the effectiveness of aligners in more severe cases.

Conclusion

The use of aligners in the treatment of overbite requires careful planning and execution. A thorough diagnosis is essential to determine whether aligners are the appropriate treatment option. The orthodontist should also have a good understanding of the biomechanics of aligners and their limitations.

CP9 - PAEDIATRIC OBSTRUCTIVE SLEEP APNEA SYNDROME AND CRANIO-CERVICO-FACIAL MORPHOLOGY : ABOUT AN ORTHODONTIC CLINICAL STUDY

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Obstructive Sleep Apnoea Syndrome (OSAS) is a type of sleep-disordered breathing characterized by partial and/or complete upper airway obstruction that affects normal ventilation .
Multiple components are involved in OSAS in children.Pharyngeal and palatine tonsil hypertrophy is the main predisposing factor. Various abnormalities are predisposing factors for obstructive sleep apnoea, such as decreased mandibular and maxillary lengths, skeletal retrusion, increased lower facial height and, consequently, increased total anterior facial height, a larger craniocervical angle, small posterior airway space and an inferiorly positioned hyoid bone.
The diagnosis is based on the clinical history, a physical examination and tests confirming the presence and severity of upper airway obstruction. Attention must be paid to identify the craniofacial characteristics. When necessary, children should be referred to orthodontists and/or sleep medicine specialists for adequate treatment .

CP10 - THE CONE BEAM COMPUTED TOMOGRAPHY DIAGNOSTIC APPLICATIONS : IN THE PERIODONTAL BONE ASSESSMENT AND ORTHODONTIC

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The cone beam Computed tomography accurately and comprehensively defines the proper diagnosis, treatment, and craniofacial anatomy for a good prognosis. CBCT, used in many branches of dentistry, has found itself a broad place in orthodontics in recent years. Orthodontics shifts from lines, lengths, and angles to spaces, surfaces, and volumes. Numerous developments are expected in this field in the future. However, as CBCT generates a high level of radiation despite being a highly beneficial tool, it should only be applied when conventional radiography is insufficient to provide the required information.
Evidence is strong that CBCT imaging potentially could replace 2D in- traoral imaging for most dentoalveolar tasks, especially in endodontic and periodontal applications.
This possibility is especially worthy of consider- ation because mere diagnostic equivalency of CBCT and 2D systems may favor the former because imaging is faster and accompanied by fewer prob- lems of geometric distortion. When considering such a shift in imaging strat- egy, dose and costs must come into consideration, balanced with the perspective that most CBCT studies are easier to perform in a dental office when compared with a full-mouth series of radiographs, or perhaps even a panoramic radiograph with bitewings and selected periapical images.
For now, CBCT imaging, like its medical counterpart, can be seen as a highly useful and, with some tasks, indispensable part of the dental imaging armamentarium.

CP11 - ULTRASONOGRAPHY CONTRIBUTION IN FUNCTIONAL THERAPY

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The masticatory muscles' function and insertion affect the face's morphological features. In orthodontic functional therapy and myotherapy, these muscles are stretched before transmitting the forces to jawbones.
This research aims to evaluate ultrasonography before and after functional therapy to check the masseter response.
To achieve this objective, 11 growing patients have been treated by functional therapy and/or appliances. The masseter thickness has been evaluated before and after the active treatment.
The functional therapy was started at 10.48±1.31 years old. The mean thickness of the masseter before treatment was 7.68± 1.40 mm at rest position. After functional therapy of 3 months, the thickness increased and it was 8.10±0.97 mm at rest position.
In recent decades, electromyography (EMG) was considered the gold standard but recently, Türker reported some methodological problems. Patini et al. state that ultrasonography could be reliable and noninvasive in the evaluation of the muscle's thickness as found in the actual study.
Thus, ultrasonography is a useful tool to check the muscles' response to our therapies. As found earlier, this technique is reliable and noninvasive for children.

CP12 - THE USE OF MINI SCREWS IN BIMAXILLARY PROTRUSION MANAGEMENT

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Bimaxillary protrusion is a condition characterized by protrusion of maxillary and mandibular bones with increased procumbency of the lips. Orthognathic surgery is usually required to correct significant skeletal problems. The aim of this case presentation is to report orthodontic alternative to surgical treatment.

This case report describes the treatment of a 21-year-old man with a skeletal Class I pattern, bimaxillary protrusion and lips incompetence. The compensatory orthodontic treatment included distal movement of the maxillary and mandibular dento-alveolar parts using miniscrews. The total active treatment time was about 13 months. The tooth alignment and profile were significantly ameliorated with an improved lip function.

The litterature reports cases of bimaxillary protrusion with different features related to patients ethnicity. In this case, lips incompetence was the main complaint in addition to the esthetic impact of the protrusion. The surgical approach used to be the solution for adult patients in these cases but in our situation, miniscrews have been used as an anchorage for retraction due to patient's refusal for surgery.

In conclusion, miniscrews helped to achieve esthetic and functional outcomes of treatment thus they can be considered as an alternative for orthognathic surgery in refusals situations.

CP13 - ORTHODONTIC-SURGICAL CORRECTION OF CLASS III SKELETAL MALOCCLUSION THROUGH MAXILLARY ADVANCEMENT, IMPACTION, MANDIBULAR COMPENSATORY ROTATION, AND MENTOPLASTY. CLINICAL CASE.

Miss Nadia Veronica Gonzalez Carrillo[1], Mister Pedro Lara Mendieta[1]
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Deformities dentomaxillofacial are conditions that lead to a disharmony between the maxilla and the mandible, seriously affecting facial appearance, masticatory function, and causing a negative impact on the patient's self-esteem. This clinical case presents a 25-year-old male patient diagnosed with Angle Class III malocclusion, concave profile, dolichofacial facial biotype, vertical and sagittal deficiency in the maxilla, and excessive mandibular growth.
Orthodontic treatment included the use of fixed appliances with a Roth prescription of 0.022" × 0.025". The surgical plan focused on maxillary advancement with a high Lefort I osteotomy, bilateral maxillary impaction, and compensatory mandibular rotation. Two years after surgery, complete aesthetic and functional rehabilitation has been achieved. This has also led to an improvement in the patient's psychological state. The case illustrates the value of treatment in Class III patients and the collaboration between orthodontists and maxillofacial surgeons.

CP14 - ORTHODONTIC MICROSCREW AS A TEMPORARY RESTORATION FOR MAXILLARY CANINE: CLINICAL CASE REPORT.

Miss Nadia Veronica Gonzalez Carrillo[1], Miss Fabiola Hernández Girón[1], Mister Henry Paul Sango Muñoz[1]
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The extraction of permanent canines represents an unconventional treatment alternative. However, it can be considered when the position of the retained canine is unfavorable or when anatomical constraints prevent its proper alignment with the arch. Treatment options are limited to implants, or fixed prosthesis. A 13-year-old female patient with an impacted maxillary canine and a dilacerated right upper premolar with a palatal root was presented. A vertical titanium mini-implant was inserted as a temporary restorative option into the edentulous area's alveolar process, followed by the fabrication of a provisional crown. This replacement approach may enhance the vertical development of the alveolar process, maintains bone density, preserves alveolar process morphology, and provided an aesthetic and comfortable alternative for the patient. Vertically TAD's placed may be used as temporary replacement of extracted permanent canines, thus preserving the distance between the pontic, the alveolar mucosa and promoting continuous alveolar vertical development.

CP15 - MODERNISING PATIENT EDUCATION WITHIN THE UNIVERSITY ORTHODONTIC DEPARTMENT: A SUSTAINABLILITY QUALITY IMPROVEMENT PROJECT

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BACKGROUND
Fixed appliances are the primary treatment method within orthodontics. Patients that undergo treatment within the department receive five pages of prose which details oral hygiene instruction, analgesic dosages, risks of fixed appliance therapy and management of orthodontic emergencies. These pages are folded in half and placed in a non-biodegradable plastic sleeve. This has been the status quo for over twenty years and is extremely wasteful of time, resources and has a detrimental environmental impact.
AIM
This quality improvement project aims to improve patient satisfaction with information packs, reduce material costs and improve departmental efficiency by streamlining information dissemination, making further information available via scannable QR code and ending the use of plastic folders by February 2024.
MATERIALS/METHODS
Data collection began with Microsoft forms patient satisfaction questionnaire to assess suitability of current information sheets. An improved patient information sheet was produced and a scannable QR code produced that directs patients to the online British Orthodontic Society patient information leaflet. This was pilot tested within the department and rolled out to patients. This rollout involved Quality improvement methodology and Plan Study Act Do (PDSA) cycles were used. Data collection continued and the results analysed. A second PDSA based on patient feedback was completed to address poor image clarity. A third PDSA cycle outsourced printing to reduce costs.
RESULTS
- Patient satisfaction questionnaires concluded 95% felt they still were adequately informed, while 5% felt they were better informed about how to manage their fixed appliance.
- Dental nurses' satisfaction questionnaire confirmed this change has reduced time spent in production of previous patient information pack.
- The use of plastic folders has ceased.
- Reduced inventory price by 90%.

CONCLUSIONS/IMPLICATION
This Project has demonstrably improved patient satisfaction with their treatment information.
By reducing reliance on printed material and plastic, there has been a financial and environmental benefit.
Departmental efficiency has been improved by the streamlining of information packs. Stakeholder engagement has been achieved and staff satisfaction has improved.
A further rollout to include Removal Appliance information is planned following the success of this project

CP16 - IMPROVING COMPLIANCE AT RETAINER REVIEW APPOINTMENTS WITHIN THE UNIVERSITY ORTHODONTIC DEPARTMENT: A TWO CYCLE AUDIT

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BACKGROUND
Retainers are essential post-orthodontic treatment to prevent relapse. Orthodontists assume responsibility for patient retention for twelve months once treatment is complete. Patients attend retainer review appointments at three months and twelve months after treatment has been completed. Patients are expected to attend with their retainers to assess for relapse and monitor the condition of their retainers. Whenever patients attend without retainers this causes the need for re-appointment. This wastes valuable resources and prevents patients progressing to discharge.

AIM
To improve compliance at retainer reviews and reduce the number of attendances without retainers.
MATERIALS/METHODS
Data was collected for all retainer reviews over a three month period. Only vacuum formed retainers were included in this audit. A record was kept of if the patient brought their retainer. This data was collated on Microsoft Excel. The intervention was to place a sticker on each appliance box with the message “PLEASE BRING TO YOUR NEXT APPOINTMENT” written in red writing. This has become standard practice within the department.

RESULTS
- Reduced number of patients attending retainer review appointments without retainers.
- All retainer reviews were carried out within this period. Of these eight retainers were forgotten (30%).
- We have been able through this intervention to see a decrease to 12% attending without their retainer.

CONCLUSIONS/IMPLICATION
This audit has demonstrated improved patient compliance with retainer review appointments and reduced the burden for re-appointment. By reducing the requirement for re-appointment, this allows more efficient patient discharge.
Departmental efficiency has been improved and this simple intervention has allowed us to achieve our aim.

CP17 - TREATMENT OF A PATIENT WITH SKELETAL CLASS II MALOCLUSION WITH FIXED FUNCTIONAL APPLIANCE: A CASE REPORT

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AIM: To present the treatment of a patient with a severe skeletal Class II malocclusion with a fixed functional appliance without orthognathic surgery.

MATERIALS: A female patient with a chronological age of 17 years applied to our clinic with the complaint of protruded upper anterior teeth and retruded mandible. Clinical examination revealed a convex profile, Angle Class II malocclusion, flared upper incisors with anterior diastema, a narrowed nasolabial angle and prominent soft tissue chin, 12.6 mm overjet, 4 mm overbite. Initial cephalometric analysis were as follows: SNA: 84.4°, SNB: 79.7°, ANB: 4.7°, SNGoGn: 23.4°, Mx1-SN: 127°, Mx1-NA (Deg): 42.6°, IMPA: 99.2°, Md1-NB (Deg): 22.3°, interincisal angle: 110.4°. In the treatment of the case, leveling was done up to 19x25 SS archwire. Then, a fixed functional appliance with anterior buccal root torque to the mandibular arch wire was applied. Forsus™ Fatigue Resistant Device EZ Module was preferred as the appliance.

RESULTS: Posttreatment cephalometric analysis showed that SNA: 83.1°, SNB: 79.8°, ANB: 3.3°, SNGoGn: 23.8°, Mx1-SN: 104.3°, Mx1-NA (Deg): 21.2°, IMPA: 101.9°, Md1-NB (Deg): 25.6°, interincisal angle: 130°. The patient wore the Forsus appliance for five months and the total treatment period was two years and three months. As a result of the treatment, skeletal and dental Class I relationships were obtained, and overjet and overbite were brought to their normal values. An improvement was observed in the soft tissue profile of the patient.

CONCLUSIONS: Although long-term follow-up results are important, with a careful treatment plan, fixed functional appliances may be an appropriate treatment option for Class II anomalies in young adults. In Class II individuals, where the lower incisors are mostly proclined, wearing an anterior buccal root torque arch wire combined with a fixed functional appliance in mandible reduces incisor proclination.

CP18 - TREATMENT OF A PATIENT WITH SKELETAL CLASS III MALOCLUSION WITH ORTHOGNATIC SURGERY: A CASE REPORT

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AIM:The aim of this case report is to present the fixed orthodontic treatment of a patient with skeletal Class III malocclusion with orthognathic surgery.

MATERIAL/METHODS:A female patient with a chronological age of 18 years and 6 months applied to our clinic with the complaint, her retruded upper teeth and prognathic profile. Clinical examination revealed a concave profile, Angle Class III malocclusion, 0 mm overjet, 0 mm overbite. It was found as a result of the cephalometric analysis: SNA: 79.4°, SNB: 81.9°, ANB: -2.5°, SNGoGn: 35°, Mx1-SN: 107°, Mx1-NA (Deg): 27.6°, IMPA: 83.7°, Md1-NB (Deg): 20.6° ve interincisal angle: 134.4°. After the lower and upper arches were leveled, surgical planning was made. According to the patient's surgical planning; The maxilla was moved 4 mm forward with a Le-Fort I osteotomy.

RESULTS:At the end of thirty six months of treatment, Class I molar-canine relationship and ideal overjet-overbite were achieved. Found in cephalometric analysis after orthognathic surgery: SNA: 83.5°, SNB: 82°, ANB: 1.5°, SNGoGn: 33.9°, Mx1-SN: 106.2°, Mx1-NA (Deg): 24.8°, IMPA: 91.3°, Md1-NB (Deg): 27.3° and interincisal angle: 126.5°.

CONCLUSIONS:At the end of the treatment, Angle Class I molar and ideal Class I canine relationship were obtained. Overjet and overbite have been brought to their ideal values. A positive change was observed in the soft tissue profile of the patient.

CP19 - ORTHODONTIC CAMOUFLAGE OR ORTHOGNATIC SURGERY: A CASE REPORT

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AIM:To present a case report of the compensation treatment of a patient with skeletal Class III malocclusion who did not want to be treated with orthognathic surgery.

MATERIAL and METHODS:The male patient with a chronological age of 15 years and 8 months referred to the Department of Orthodontics. The clinical examination showed that the patient had midface and maxillary deficiency with concave profile, Angle Class III malocclusion, -0,5 mm overjet, 2 mm overbite with anterior crossbite. Cephalometric analysis showed skeletal Class III malocclusion and horizontal growth pattern (SNA:83.2°, SNB:87.4°, ANB: -4.2° , Sn-GoGn:24.8° , Mx1-SN:111.4° , IMPA:85.6° , interincisal angle :138.2°). According to hand-wrist radiography, the patient growth period is DP3u. Orthognathic surgery was recommended to the patient for an orthodontic treatment plan, but the patient did not accept it. Then, the case was examinated again and decided to compansate with fixed orthodontic treatment was applied. The patient was imformed about the treatment plan and its possible risks.

RESULTS:Fixed orthodontic treatment with Class III elastics was performed with the Classic 0.22 slot MBT braket system. Anterior crossbite corrected. Ideal canine and molar relationship was achieved. The total treatment duration was 16 months. A lingual retainer was applied to the patient for permanent retention. Posttreatment cephalometric analysis results SNA:85.7°, SNB:88.8°, ANB: -3.1° , Sn-GoGn:25.1° , Mx1-SN:117.1° , IMPA:82°, interincisal angle:135.8°. Ideal overjet and overbite was obtained, Class I dental relationship was achieved.

CONCLUSIONS:Facial aesthetics and functional occlusion were achieved. Although orthognathic surgery is the only treatment option that will provide aesthetics and function in the treatment of skeletal malocclusions, it cannot be easily accepted by patients due to the risks and difficulties involved. In such cases, the patient should be informed about the ideal treatment and the risks should be explained. Treatment of the anomaly as much as dental compensation allows can be considered as an alternative to ensure the patient's aesthetics and function.

CP20 - TREATMENT OF TWIN SISTERS WITH SIMILAR MALOCLUSION USING DIFFERENT ORTHODONTIC TREATMENT MECHANICS

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AIM: The purpose of these case reports is to explain different treatment plans of twin sisters showing skeletal Class II division 1.

MATERIAL and METHODS: Twin sisters, aged 16 years and 8 months, applied to our clinic with the complaint of upper teeth protrusion. Clinical examination showed following: Case 1; overjet 7 mm, overbite 5.2 mm and Angle Class II molar relationship, Case 2; overjet 8 mm, overbite 5 mm and Angle Class II molar relationship. Cephalometric examination resulted following: Case 1; SNA:77.8°, SNB:75°, ANB: 2.8°, Sn-GoGn:30.7° , Mx1-SN:104.3° , IMPA:98.5°, Case 2; SNA:79.9°, SNB:75.3°, ANB:4.6° , Sn-GoGn:39.3° , Mx1-SN:112.8° , IMPA:93.5°. Nonextraction fixed orthodontic treatment using Damon system with Class II elastics was planned for Case 1 and nonextraction fixed orthodontic treatment using conventional brackets after rapid maxillary expansion combined with occipital headgear was planned for Case 2.

RESULTS: At the end of the treatment, Class I molar-canine relationship and ideal overjet-overbite were achieved in Case 1 and Case 2. Treatment duration was 2 years 8 months for Case 1 and 3 years 4 month for Case 2. Final cephalometric examination resulted following: Case 1; SNA:77.5º, SNB:75.3º, ANB:2.2º, Mx1-SN:99º, IMPA:104.2º, SN-GoGn:29.2º
Case 2; SNA:79.4º, SNB:775.6º, ANB:3.8º, Mx1-SN:97.8º, IMPA:97.7º, SN-GoGn:41.2º.

CONCLUSIONS: Orthodontic treatment should be planned personally. Even if there are the same genetic characteristics and similar malocclusions, different orthodontic treatments can be applied.

CP21 - WHEN TIME IS PRESSED AND DISTANCE MATTERS: THINKING OUTSIDE THE BOX.

Mr Christos Megkousidis[1], Prof Ahmad Ismail
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This is a case presentation including 2 adult patients whose treatment was complicated due to long distance (treated in Dubai, UAE) but living abroad. Case 1 refers to a female who was treated in almost 9 months using self ligating braces and case 2 refers to a male who was treated with simultaneous use of fixed appliances and surgical maxillary advancement.

CP22 - SOFT TISSUE LOWER LIP CHANGES FOLLOWING EXTRACTION ORTHODONTIC THERAPY: A RETROSPECTIVE COHORT VALIDITY STUDY

Mr Christos Megkousidis[1], Donald Ferguson, Dr Nikilesh Vaid
[1]European University College

Actual horizontal lower lip changes following treatment of orthodontically treated four premolar extaction patients (n=82) were compared to five soft tissue profile plane changes. Pre and post treatment lateral cephalograms demonstrated Holdaway's H-line, Sushner's S-line and Burstone's B-line were valid as measures of lower lip retraction in four premolar extraction cases.

CP23 - THE MAXILLARY INCISOR IN ALL ITS EXPRESSIONS

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BACKGROUND: The maxillary incisors play a determining role in the aesthetic appearance of the smile. The correction of anomalies that affect them is one of the main reasons for consultation of patients who wish to benefit from orthodontic treatment and at the same time a major objective for the orthodontist in the development of aesthetic, functional and other occlusal objectives.

METHODS: Making a diagnosis in relation to positional or structural dental anomalies of the maxillary incisors is based on clinical examination supplemented by a reasoned radiological assessment.

RESULTS: The origin of the anomalies which can affect these teeth are multiple and vary from the anomaly of number (by excess or by default), to the anomalies of structure, shape or position. Due to their position, the maxillary incisors are also often subject to alveolar-dental trauma which can compromise their future.

LIMITATIONS: The radiological examination proves very useful to confirm the positive diagnosis, eliminate other differential diagnoses but also to make a prognosis regarding therapeutic possibilities.

CONCLUSION: Through this work, we will illustrate these different diagnoses which are as many challenges for the orthodontist as they are issues for patients, particularly for the restoration of their aesthetics but also their function.

CP24 - EARLY TREATMENT OF CROSSBITE

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BACKGROUND: Early orthodontic consultation makes it possible to detect anomalies already visible in the primary dentition which could worsen with the eruption of the permanent teeth and become more significant and deeper with the establishment of the occlusion.

METHODS: The examination of static and dynamic occlusion as well as the closure path is decisive in making the diagnosis of reverse occlusion.

RESULTS: Through cases treated early, we will illustrate the need to act early, often with simple devices to put growth back on track and restore good morphology to the dental arches allowing them to express themselves in the three directions of the space and grow harmoniously.

LIMITATIONS: The cooperation of young children is essential to the success of treatment. However, the speed of the response and the visible change in occlusion motivates children and parents and reassures them in their numerous efforts.

CONCLUSION: Depending on the situation and the child's possibilities for cooperation, it is recommended to intercept and restore morphological and functional harmony as soon as possible, by initiating early treatment that is both corrective and etiopathogenic.

CP25 - TREATMENT OF A SEVERE CLASS II DIVISION 1 PATIENT WITH ORTHOGNATHIC SURGERY

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OBJECTIVES:
Orthognathic surgery is the only possible treatment approach for some adult patients whose skeletal malocclusion is severe. This case report aims to present the correction of a Class II division 1 malocclusion in an adult patient.

METHODS:
A female patient with a chronological age of 20 years and 8 months applied to our clinic with the complaint that her lower jaw was backward. Clinical examination revealed an increased tooth and gingiva exposure due to short upper lip during smiling, a convex profile with deficient chin projection. Class II pattern, 7.8 mm overjet, 5.4 mm open bite. Skeletally, she showed transverse maxillary deficiency and both maxillary and mandibular retrognathia. Cephalometric analysis revealed that: SNA: 76.8°, SNB: 68.3°, ANB: 8.4°, SNGoGn: 54.1°, Mx1-SN: 93.6°, Mx1-NA(mm): 4.3 mm, Mx1-NA(Deg): 16.8°, IMPA: 91.0°, Md1-NB(Deg): 33.4°, Md1-NB(mm): 9.2 mm, Pog-NB: 0.7 mm, Interincisor angle: 121.4°.
The case started with surgically assisted rapid maxillary expansion then decompensation was performed with fixed orthodontic treatment. Double jaw surgery was planned. Thus, surgery included maxillomandibular advancement (9 mm on the mandible, 5 mm on the maxilla) and counterclockwise rotation of the mandible. Finally, the upper lip was treated with lip repositioning surgery to improve gingival display.

RESULTS:
The cephalometric values at the end of the treatment were as follows: SNA: 82,1°, SNB: 76.2°, ANB: 5,9°, SNGoGn: 50,4°, Mx1-SN: 90,1°, Mx1-NA(mm): 0,1 mm, Mx1-NA(Deg): 7,1°, IMPA: 89,4°, Md1-NB(Deg): 34,3°, Md1-NB(mm): 9,3 mm, Pog-NB: -0,8 mm, Interincisor angle: 130,1°.

CONCLUSIONS:
The treatment results showed good improvement in the facial profile and smile aesthetic as well as an increase in the patient's functions. Angle Class I occlusion, ideal overjet, and overbite were achieved at the end of the treatment.

CP26 - ORTHOGNATHIC OR ORTHODONTIC TREATMENT ? THE ALT-RAMEC PROTOCOL AND FACEMASK USAGE CASE REPORT

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OBJECTIVES:
This case report aims the use of Alternating Rapid Maxillary Expansion and Constriction Protocol (Alt-Ramec) and facemask treatment in adolescent patient with Class III malocclusion and crossbite.

METHODS:
A male patient with a chronological age of 14 years and 2 months applied to our clinic with the complaint that his lower jaw was forward. Clinical examination revealed Class III pattern, a concave profile, 1,8 mm underjet, 1,7 mm overbite. Skeletally, he showed transverse maxillary deficiency. Cephalometric analysis revealed that: SNA: 82.2°, SNB: 84.4°, ANB: -2.2°, SNGoGn: 36.3°, Mx1-SN: 108.2°, Mx1-NA(mm): 7,5 mm, Mx1-NA(Deg): 26.0°, IMPA: 79.7°, Md1-NB(Deg): 20.3°, Md1-NB(mm): 6.6 mm, Pog-NB: 0.3 mm, Interincisor angle: 135.8°.
The first stage of the case started with Alt-Ramec Protocol, followed by the use of a face mask to correct the discrepancy in the sagittal direction. The next stage of treatment was continued with fixed orthodontic treatment using intermaxillary Class III elastics to maintain overjet and overbite.

RESULTS:
The cephalometric values at the end of the treatment were as follows: SNA: 85,2°, SNB: 84.8°, ANB: 0,4°, SNGoGn: 35,3°, Mx1-SN: 117,6°, Mx1-NA(mm): 9,8 mm, Mx1-NA(Deg): 32,4°, IMPA: 81,0°, Md1-NB(Deg): 32,4°, Md1-NB(mm): 6,7 mm, Pog-NB: 5,8 mm, Interincisor angle: 126,1°.

LIMITATIONS:
The main reason for the discrepancy in the sagittal direction was the anterior positioning of the mandible but the patient did not want orthognathic surgery and the continued growth of the mandible was the major compelling factor during treatment process.

CONCLUSIONS:
The treatment results showed good improvement in sagittal and transversal measurements of the maxilla therefore the facial profile and in the patient's functions. Angle Class I occlusion, ideal overjet, and overbite were achieved at the end of the treatment.

CP27 - COMPARATIVE EVALUATION BETWEEN TWO MAXILLARY PROTRACTION PROTOCOLS USING ALT-RAMEC: FACEMASK VERSUS MINISCREWS PROTRACTION - A CASE REPORT

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OBJECTIVE: To compare the dentofacial effects of maxillary protraction with two protocols: ALT-RAMEC with facemask (ALT-RAMEC/FM) versus ALT-RAMEC with parasymphyseal miniscrews and intermaxillary elastics (ALT-RAMEC/MS) in growing Class III patients.

MATERIALS AND METHODS: Two male patients with Class III malocclusion and maxillary deficiency were assigned to ALT-RAMEC/FM and ALT-RAMEC/MS. The changes in dentofacial cephalometric variables from the beginning (T1) to the end of treatment (T2) were compared.

RESULTS: No significant cephalometric differences were observed between the two patients in active treatment effects except for maxillary dental variables. However, significant favorable changes in both maxillary and mandibular skeletal components were noted in both patients after treatment. Sagittal measurements showed that the maxilla was advanced, mandibular projection was reduced, and the relative sagittal intermaxillary discrepancy improved. The patient with ALT-RAMEC/FM experienced unfavorable outcomes of clockwise rotation of the mandible as well as retroclination of the lower incisors. The soft tissue profile improved remarkably in both patients.

CONCLUSIONS: Compared with the ALT-RAMEC/FM therapy, the ALT-RAMEC/MS protocol improves skeletal relationships and soft tissue profile and reduces the undesired dentoalveolar effects.

CP28 - TREATMENT OPTIONS OF CANINE AND LATERAL INCISOR TRANSPOSITION ASSOCIATED WITH DENTAL ANOMALIES OF CENTRAL INCISORS - CASE REPORT

Dr Nora Rahal[1], Pr Chakib Hocine Tahraoui
[1]Hospital

BACKGROUND: Tooth transposition, characterized by the positional interchange of adjacent teeth within the same quadrant, is a complex dental anomaly with the maxillary permanent canine being frequently involved. Despite its prevalence, the etiology of transposition remains a contentious subject, hindering a comprehensive understanding of its underlying mechanisms.

MATERIALS AND METHODS: a case report of a young adult patient diagnosed with maxillary ectopic canine-lateral incisor transposition, further complicated by dental anomalies in central incisors.The treatment for this patient involved the extraction of the lateral incisor followed by the placement of veneers on the central incisors and coronoplasty of the ectopic canine.

RESULTS AND DISCUSSION :Various therapeutic options were considered, and our chosen course of management was meticulously formulated, taking into account the aesthetic profile, occlusion, and specific consultation reasons of the patient. The extraction of the lateral incisor, although seldom discussed in specialized literature, represented a nuanced decision point. This decision, potentially subject to scrutiny among fellow practitioners, was substantiated by a rigorous consideration of clinical parameters. It is noteworthy that our primary objective was to achieve optimal outcomes at the conclusion of treatment, aligned with the expressed satisfaction of the patient.

CONCLUSION: In conclusion, this case report sheds light on the orthodontic treatment of a challenging presentation of maxillary canine-lateral incisor transposition with additional dental anomalies. The case emphasizes the need for tailored approaches in addressing such cases and adds to the current body of knowledge on the etiology and management of tooth transposition.

CP29 - AUDITING PATIENT SATISFACTION WITH THEIR ORTHODONTIC TREATMENT PROVISION

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AIM: To assess the level of patient satisfaction with the experience of their orthodontic treatment using patient questionnaires.

METHOD: A prospective, single-centred patient survey-based audit was conducted at the Portadown Orthodontics. Only patients attending follow-up appointments were included; new patients and emergency appointments were excluded.

Based on previous audits in the literature, including those published in the British Orthodontic Society Clinical Effectiveness Bulletin, a standard of 90% satisfaction across several domains was set.

Data was collected over a three-month period. A questionnaire adapted from a previous audit was piloted in the practice, with 15 responses received. Based on feedback, the questionnaire was simplified. To reduce bias, reception staff distributed questionnaires to consecutive patients following appointments.

Patients completed the questionnaires anonymously and placed them in a collection box. 100 responses were collected in the first and second cycles, respectively. Findings were analysed using Microsoft Excel.

RESULTS: The first cycle found the Gold Standard of 90% was being reached in 9/11 domains. The two domains that failed to reach Gold Standard were “I was seen within 15 minutes of my appointment time” where 20% of appointments were delayed and “Is contacting the practice easy” were 15% had responded that they had difficulty.

Changes were implemented to try and improve these domains, alongside an effort to continue to perform to the gold standard in the other domains.

The second cycle showed a big improvement with only 5% of appointments being delayed more that 15 minutes and 9% responding that they had difficulty contacting the practice

Conclusion: this audit used patient questionnaires to identify areas of underperformance. An improvement was measured following implementation of changes. A Re-audit is planned to ensure these improvements are maintained

CP30 - LATERAL CEPHALOMETRIC RADIOGRAPH IMAGE QUALITY AND COMPLIANCE WITH NEW STANDARDS IN A SPECIALIST ORTHODONTIC PRACTICE: A TWO-CYCLE AUDIT

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AIM: To assess if lateral cephalometric radiographs (LCR's) taken in one specialist orthodontic practice are of consistently high quality and meet new standards set by the Faculty of General Dental Practice.

METHODS: In Cycle 1 data was collected from 50 consecutive LCR's and retrospectively assessed by two raters and an agreed quality rating was recorded using a proforma. Cycle 2 was conducted prospectively.

Data collection included; contrast of radiographs, head positioning, whether structures were centred, soft tissue visibility, teeth in occlusion, A and B points, National, Sella, incisor tip identifiable, apex and angulation could be calculated and if the airway was visible. The landmarks stated in the proforma were annotated on an 'ideal' radiograph to aid in the assessment.

A 'yes or no' exercise was used to record if landmarks were identifiable or not. A single appropriately qualified clinician then scored the view as diagnostically acceptable or not. The percentage of diagnostically acceptable films was calculated. This was carried out for both cycles of the audit.

RESULTS: During cycle 1 94% of radiographs were diagnostically acceptable. This did not meet the gold standard of 95%. Three out of 50 radiographs were not diagnostically acceptable. Each of these did not have teeth in occlusion and also had incorrect head positioning. Two images had incorrect head positioning but did not lead to them being assessed as diagnostically unacceptable though did result in important structures not being centred.

In cycle 2 all radiographs were assessed as diagnostically acceptable with an improvement of 6% between cycles (94% to 100%).

CONCLUSIONS: 1) Continued training in radiographic techniques is recommended.
2) Placement of a poster in the radiographic facility as an aide-memoir for correct patient positioning when taking LCR's.
3) Another audit cycle should be completed to ensure maintenance of quality of LCR's.

CP31 - MANAGEMENT OF IMPACTED CANINES IN VARIOUS POSITIONS: PALATAL, LABIAL, AND CENTRAL

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Background: An impacted tooth is characterized by complete root formation while its counterpart has erupted at least six months prior, often due to an obstacle in the eruption path or an ectopic position. This condition affects around 2% of the population, with impacted canines found in palatal positions in 75% of cases and labial positions in 25%.
Aim: This study aims to showcase the management approaches for impacted canines in three distinct positions – palatal, labial, and central.
Materials/Methods: Three cases of impacted canines were examined:
Fahed H., 22 years old: Impacted upper right canine (1.3) in a palatal position. Surgical release performed by a periodontal surgeon, followed by traction using an elastomeric wire between 13 and a transpalatal arch.
Bobby Y., 14 years old: Impacted upper left canine (2.3) in a central position, associated with radicular resorption of 2.1. Surgical release conducted by a periodontal surgeon, followed by traction using an elastomeric wire between 2.3 and a stainless-steel arch (0.019x0.025'') in place of 2.1.
Tiago M., 11.5 years old: Impacted upper left canine (2.3) in a labial position. Surgical release carried out by a periodontal surgeon, followed by traction using a TMA sectional wire (0.019x0.025'').
Results: Within 3 to 4 months, the canines became visible in the buccal area. In cases of palatal positioning, a second NiTi arch overlaying the first stainless steel arch was used to position the canine onto the dental arch. The labially impacted canine, being higher and in a younger patient, required longer traction. However, radiographs indicated its movement, and it was palpable. In most cases of buccally impacted canines, a flap procedure was necessary to align the attached gum with the teeth.
Conclusion: Managing impacted canines involves intricate and prolonged treatment that demands accurate diagnosis and tailored management based on the canine's position. Temporary anchorage devices (TADs) present a compelling alternative for pulling an impacted canine lacking dental support.

CP32 - MULTIDISCIPLINARY ORTHOSURGICAL TREATMENT OF FACIAL ASYMMETRY: A CASE REPORT OF A 23-YEAR-OLD FEMALE PATIENT

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INTRODUCTION/AIM: A 23-year-old woman presented with facial asymmetry, having no prior medical or orthodontic history but experienced dental trauma at the age of 2.

MATERIALS AND METHODS:
Diagnosis: The patient presented with Skeletal Class I, right maxillary cross-bite, normodivergent typology, Class II2B Angle subdivision, overjet of 2mm, mandibular inter-incisal deviation of 4mm, and vertical overbite of 60%. Additionally, there were size anomalies in teeth 1.3, structural anomalies in teeth 2.1 and 2.2, along with good periodontal health. She also exhibited TMJ clicking sounds and mandibular latero-deviation.
RESULTS: The patient underwent a multidisciplinary orthognatic - surgical treatment for facial asymmetry. Scintigraphy revealed no left hyperplasia of the condyle. Initially, she underwent SARPE (Surgically Assisted Rapid Palatal Expansion) teeth-borne distraction and wisdom teeth removal. NiTi and class III elastics were used for leveling and alignment to facilitate backward leveling. Subsequently, a TPA (Transpalatal Arch) replaced the distractor after 6 months. No secondary surgery was necessary as mandibular recentering was achieved. Anteroposterior dentoalveolar Class II correction was performed using Temporary Anchorage Devices (TADs) and right Class II elastics. Prosthetic restorations were applied to teeth 1.3, 2.1, and 2.2.

DISCUSSION/LIMITATIONS: SARPE was preferred over MARPE (Miniscrew-Assisted Rapid Palatal Expansion) to minimize dental and periodontal side effects. While a purely bone-borne distractor could have been an alternative to avoid dento-alveolar side effects. TADs effectively limited the protrusion of mandibular incisors during the Class II correction.

CONCLUSION: The patient's asymmetry stemmed from both a skeletal issue (maxillary cross-bite) and functional problem (mandibular lateral excursion). A multidisciplinary approach involving orthognatic surgery, occlusodontics, dental prosthetics, and maxillofacial physiotherapy was employed to address these concerns

CP33 - AN ADOLESCENT CASE OF MANDIBULAR DEVIATION TREATED BY PLANNED MOLAR DECOMPENSATION WITH FUNCTIONAL APPLIANCES FOLLOWED BY MODIFIED MEAW TECHNIQUE USING IMPROVED SUPERELASTIC NICKEL-TITANIUM ARCHWIRES

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AIM: Adolescent patients with anterior or posterior crossbite should generally be treated as early as possible with the exception of orthognathic surgery cases. Maxillary protraction and/or rapid maxillary expansion used to improve anterior and/or lateral overjet can accelerate skeletal maxillary growth and counter-clockwise rotation of the mandible. Moreover, the mandibular growth pattern would be turned clockwise by combining functional appliances (FAs) and intermaxillary elastics (IMEs). After pubertal growth, camouflage treatment becomes an option to improve interdigitation by dental and dentoalveolar compensation. To maximise symmetry of skeletal growth, we applied monoblocs combined with IME for planned decompensation of the posterior teeth to decrease the required amount of dental compensation.
METHODS: A 13-year-old female patient visited our clinic primarily to correct mandibular deviation. Cephalometric radiographs showed a mandibular protrusion and lateral deviation to the left side. Crossbite was observed in the area from the left lateral incisors to the first premolars. After expansion of the upper arch, we used an 0.016×0.022-inch improved superelastic Ni-Ti archwire (ISW) we invented for levelling, followed by placing the same wire in the lower teeth and using cross elastics to decompensate molars. Two monoblocs were used sequentially to mitigate lateral deviation of the mandible for 1 year and 6 months followed by use of a modified multiloop edgewise archwire (MEAW) technique using ISWs with IMEs for molar relationship correction.
RESULTS: Postero-anterior cephalometric radiographs showed less dental compensation compared to the initial condition regardless of camouflage treatment. An Angle Class I molar relationship was achieved due to the lower molars becoming more upright and distalized. The occlusion has been stable for 6 years after retention.
CONCLUSIONS: Camouflage treatment for lateral deviation of the mandible sometimes causes gingival recession, fenestration, or dehiscence of the roots due to excessive dental compensation. In this case, we effectively corrected skeletal discrepancy by using monoblocs combined with IMEs, and corrected some dental compensation using a modified MEAW technique with ISWs. We were thus able to avoid orthognathic surgery, and periodontal tissues were saved despite camouflage treatment.

CP34 - DOES A MANDIBULAR AUTOROTATION INDUCED BY LE FORT I OSTEOTOMY CONTRIBUTE TO UPPER AIRWAY ENLARGEMENT?

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AIM: In the treatment of skeletal mandibular retardation with temporomandibular joint osteoarthritis, the common approach involves mandibular autorotation through maxillary impaction to prevent post-operative relapse owing to progressive condylar resorption as a potential approach. However, patients with this condition often exhibit a narrow upper airway (UA). This case report highlights our success in achieving mandibular autorotation through Le Fort I osteotomy (LF1). Notably, this method improved the occlusion and resulted in UA enlargement without mandibular advancement through a sagittal splitting osteotomy (SSRO).
CASE: A 37-year-old female patient with a retruded mandible complained of difficulty chewing using her anterior teeth at the first visit (T0). After 12 months of pre-operative orthodontic treatment (T1), LF1 was performed, coupled with anterior maxillary alveolar osteotomy, and mandibular autorotation was achieved without SSRO. Post-operatively, the facial mandibular angle decreased by 2.7°. One-year post-surgery (T2), the patient underwent genioplasty to enhance facial aesthetics and harmony, addressing functional and cosmetic aspects while removing bone-fixing plates. The UA cross-sectional area (CSA) decreased in the nasal cavity from T0–T1, remained unchanged from T1–T2, and decreased by 20% from T0–T2. The Upper (PPS) and middle (MPS) pharyngeal CSAs decreased at T1, then increased by 24% and 20% at T2 from T0, respectively. In contrast, the lower pharyngeal CSA (EPS) increased by 104% from T0–T1 and remained unchanged from T1–T2. The upper UA volume increased by 30% from T0–T1 and further increased by 14% from T1–T2. Conversely, the middle UA volume decreased by 32% from T0–T1 and increased by 95% from T1–T2. The lower UA volume increased by 30% from T0–T1 and further increased by 14% from T1–T2. Notably, the patient maintained stable occlusion for more than 2 years post-operatively.
DISCUSSION: Case reports on treating maxillary prognathism with mandibular autorotation have been published since the 1980s. In contrast, no studies focused on UA morphological changes. In this study, we successfully treated a patient with skeletal mandibular retrusion without SSRO to achieve a stable occlusion, improved facial appearance, and a possible improvement in respiratory function.

CP35 - A SERVICE EVALUATION OF ORTHODONTIC NURSE - LED CLINICS WITH PATIENT SATISFACTION QUESTIONNAIRE

Dr Jing Zhao[1], Mrs Nicola Crowford[1]
[1]Orthodontic Department

BACKGROUND
The orthodontic workforce has evolved in recent years partly due to the introduction of orthodontic therapists. The role of orthodontic nurses has also changed to deliver care under supervision, with additional training and/or qualifications as detailed in the GDC Scope of Practice documentation. Patient-reported experiences are becoming foremost in service quality improvement.
In order to maximise the clinical capacity of a busy hospital department and utilise the skill-mix of dental care professionals, 3 nurse-led clinics were developed: Records clinics, Oral Health (OH) clinics and retainer review clinics.
OBJECTIVES/AIMS
The primary aim of this service evaluation was to investigate patient satisfaction with the dental nurse-led clinics. Secondary aims were to analyse and assess efficiency and effectiveness.

MATERIALS/METHODS
50 patient questionnaires were prospectively distributed at the nurse-led clinics from May 2023 for 3 months. This was a new quality improvement service with no formal evidence-based standards. It was based on local discussion that 90% or more of patients should be satisfied (agree/strongly agree).

Patient's experience was recorded in 4 domains with a 5-point Likert scale: clinic outcome, clinical organization, staff-patient relations and technique/quality of care. OH related questions and patient's suggestions were recorded in other domains.
RESULTS
100% patients would recommend the same clinic to their friends and family. The target was met for 11/12 of the questions. Patient satisfaction did not meet the target for punctuality with 84% satisfaction.
7/50 (14%) patients needed further clinician's help: 4 patients at retainer review and 3 patients for oral health concerns. 30/50 (60%) patients needed a further appointment to fit a new retainer (3) or improve their OH to a satisfactory level for treatment (27).
47/50 (94%) patients stated that they visit their dentist regularly. Only 32/50(64%) patients recalled they had received oral health instruction.
CONCLUSIONS
Dental nurses with extended competencies proved to facilitate clinical practice under the supervision of an orthodontist. Areas to be improved including punctuality and oral health message reinforcement at the clinic regularly were shared to the department. The nurse-led clinic model showcases the good use of skill-mix. It could be widely used in other orthodontic services with modification.

CP36 - A SERVICE EVALUATION OF ORTHODONTIC NURSE - LED CLINICS WITH PATIENT SATISFACTION QUESTIONNAIRE

Dr Jing Zhao[1], Mrs Nicola Crawford[1]
[1]Orthodontic Department

BACKGROUND
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CP37 - USE OF CBCT GENERATED 3D-PRINTED STENTS WHEN AUTO-TRANSPLANTING TEETH

Ms Priti Acharya[1], Dr Prabhleen Anand, Dr Simon Harvey, Mr Kirill Aristovich, Mr Oskar Bushrod
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Aims:
To illustrate the process involved in fabricating 3D-printed dental stents, and their subsequent implementation for optimal surgical technique during dental autotransplantation.

Background:
Auto-transplantation is the surgical repositioning of a donor tooth into a distant site in the same individual. When conventional methods of tooth replacement are not ideal, especially in young individuals where maintaining alveolar bone volume is crucial, auto-transplantation is an invaluable option. Successful auto-transplantation is dependent on preserving the soft tissues surrounding the donor tooth root, which demands significant surgical precision.
Using generic templates for recipient site preparation has limited use, and use of the actual donor tooth for 'trial fitting' increases the risk of root damage and prolongs the extra-alveolar surgical time of the donor tooth. In contrast, using exact 3D-printed replica stents of the donor tooth, fabricated from routine cone-beam computed tomography (CBCT) scans, enhances surgical efficiency and accuracy, eliminates 'trial fitting' during recipient site preparation, reducing extra-alveolar time and root damage risk, ultimately resulting in improved survival of the donor tooth.

Body:
At the UCLH Eastman Dental Hospital, a multidisciplinary team consisting of a maxillofacial radiologist, bioengineers, paediatric oral surgeon and orthodontist have streamlined the fabrication process of 3D-printed replica stents for use during auto-transplantation surgery. This collaborative approach has improved the predictability of this technically demanding procedure and allowed for accurate assessment of the optimal aesthetic and occlusal positioning of the donor transplant teeth. After trialling multiple dimensions of 3D-printed stents, we believe the most optimal stent sizes to have available during surgery, and the most effective preparation sequence, are:
1. A stent with 10% overall enlargement.
2. An identical 1:1 sized stent with a 1mm apical extension to account for the Hertwig's root sheath.
3. An identical 1:1 sized stent without any apical extension.

Through a series of successful auto-transplantation cases treated at the hospital, we will highlight the benefits of this technique for treating a range of clinical cases including failing incisors due to dental trauma and megadont central incisors.

Conclusion:
Using 3D-printed replica donor stents improves the predictability of autotransplant surgery, potentially increasing acceptance among patients and dental professionals alike.

CP38 - SURGICAL-ORTHODONTIC TREATMENT OF SKELETAL CLASS III ADULT PATIENTS WITH ALIGNERS: CASES PRESENTATION

Ms Antigoni Alexiou[1], Ms Ioanna Karamani[1], Mr George Damanakis[2], Mr Apostolos Tsolakis[3]
[1]Postgraduate Student, Department Of Orthodontics, National And Kapodistrian University Of Athens, [2]Research Associate, Department Of Orthodontics, National And Kapodistrian University Of Athens, [3]Associate Professor, Department Of Orthodontics, National And Kapodistrian University Of Athens

BACKROUND: The approach of Class III skeletal deformities in the maxillofacial area often requires an orthodontic treatment with surgery in adult patients using fixed appliances, both before and after the surgical phase. Since the introduction of clear aligner systems, aligners have become a popular treatment choice for the orthodontists due to the aesthetics and comfort that these removable appliances provide to the patients, compared with the conventional brackets.
OBJECTIVES: The aim of this presentation is to describe the orthodontic treatment plan of two skeletal Class III patients treated with clear aligner systems (Invisalign) combined with the traditional surgical technique.
MATERIALS AND METHODS: Two 26 year old skeletal class III patients, a male and a female, were seeking orthodontic treatment. Medical and dental records were obtained and comprehensive clinical and radiographic examinations were performed.
Initial examination of the male patient revealed a concave profile extraorally and Class III dental malocclusion with anterior crossbite, negative overjet and shift of the lower midline to the left intraorally.
The female adult patient appeared with a flat profile and a Class III dental malocclusion with a lateral deviation of the mandible to the left side associated with posterior left crossbite, edge to edge incisor relationship and lower midline shifting to the left.
RESULTS: The 26-year-old patients' orthodontic treatment plans included dental alignment with clear aligner systems before and after surgery. Bilateral sagittal split osteotomy of the mandible with the application of titanium plates was selected as surgical approach.
The male patient was prepared for the surgery with fixed orthodontic appliances and surgical hooks approximately one month before the surgery, whereas the female patient had aligners through the orthodontic treatment and at the surgical phase.
CONCLUSIONS: The functional and aesthetic implications of skeletal Class III patients may considerably reduce their quality of life. Orthodontic treatment with aligners, is possible in those patients, however an individual approach and proper treatment planning is required.

CP39 - UTILIZING 3D GUIDED PLANNING IN ORTHOGNATHIC SURGERY FOR MANDIBULAR ADVANCEMENT. A CASE REPORT.

Dr Mostafa Alzahar[1], Dr. MHD Said Mourad[1], Prof. Dr. Karl-Friedrich Krey[1]
[1]Orthodontic Department, Medical University of Greifswald

Aim:
A digital approach established by the Orthodontic Department in Greifswald University by using an advanced 3D-technology and computer-assisted tools to precisely plan the Orthognathic surgery procedure, which allows precise surgical results and facilitates the post operative orthodontic treatment and decreases the probability of relapse.
Methodology:
The patient presented at our department seeking retreatment. Diagnostic records, including radiographs, photos, and scans, were obtained and processed using the Onyxceph3™ (Image Instruments GmbH, Chemnitz/Germany) orthodontic program. The V.T.O 3D module simulated various orthodontic and surgical scenarios. After discussing treatment options, the decision was made to proceed with mandibular advancement orthognathic surgery to address the Overjet and improve facial aesthetics.
The initial treatment phase involved extracting the first mandibular premolars, leveling the curve of Spee, retroinclination of the lower anterior teeth. Preparing for surgery, Intraoral scans and Cone beam CT scans were performed. The DICOM data was imported into the Onyxceph3™ Sim 3D module, integrating scans and the constructed skull. The mandible underwent a clockwise rotation (2.5o) to create space for designing the centric splint. Osteotomy lines were identified on both sides, generating 3 pieces of data for moving the anterior part of the mandible forward with an anti-clockwise rotation. Occlusion adjustments in X, Y, Z planes were made.
A further clockwise rotational movement (2.5o) created space for the final splint. Both mandible positions were saved and imported into the Waefer Creation 3D module where the Surgical splints were designed, labeled, and adjusted to fit teeth and brackets without interference. STL data for the two splints were exported to Photon Anycubic workshop (Hongkong Anycubic Technology Co., Shenzhen, China) for 3D printing. Using a Photon mono X 3D printer and Bio-Med Clear resin, the splints were printed, washed, cured, and intraorally tried for final verification before the operation. During the surgery, the splints guided the procedure, and the patient underwent maxillomandibular fixation using the splint. Optimal results were achieved, and post-surgical settling, along with final occlusion adjustments, were successfully completed.
Conclusion:
The use of 3D technology in the planning and execution of orthognathic surgery contributed to precise and effective outcomes.

CP40 - OVERCOMING BIOLOGICAL LIMITATIONS WITH CORTICOTOMIES IN ADULT ORTHODONTICS.

Miss Anna Andrzejewska[1], Mr Guillem Farres Bau[1], Mr Javier Aznar Arraiz[2], Mr Domingo Martin Salvador[2]
[1]Clinicas Den, [2]Clinica de Ortodoncia Martin Goenaga

AIM: To evaluate the amount and efficiency of orthodontic correction using aligners and corticotomies, with a focus on the periodontal aspect in adult patients undergoing treatment with alveolar bone limitations.
MATERIALS AND METHODS: Forty adult patients requiring orthodontic expansion were treated with aligners and corticotomies. All patients underwent the same corticotomy procedure. They were divided into two groups: Group A (20 patients) treated with soft aligner material and attachments, and Group B (20 patients) treated with hard aligner material, with little to no attachments.
RESULTS: The study reveals a high level of planned expansion achievement when assisted with corticotomies, both in soft and hard aligner materials. However, the predictability of expansion demonstrates superior results when using harder material (84%) compared to softer material (61%). Notably, the canines in the upper arch from the harder material group exhibited the highest predictability.
CONCLUSIONS: This study demonstrates that effective expansion of arches in adult patients with bone limitations can be achieved while preserving the periodontium. Improvement in gingival biotype and a reduction in gum recessions were observed after the corticotomy procedure.

CP41 - SKELETAL ANCHORAGE FOR DISTAL MOVEMENT OF UPPER AND LOWER MOLARS IN ADULT PATIENTS: REPORT OF CASES

Dr Manoukakis Ioannis, Ms Maria Arampatzi, Mr Thomas Manoukakis, Ms Evangelia-Panagiota Grammatikou, Ms Eirini Metaxaki
[1]Private Office

AIM: The aim of this poster presentation is to illustrate different anchorage systems (direct or indirect) used in two clinical cases to achieve distal movement of upper and lower molars in adults, combining classic orthodontic appliances or clear aligners with Temporary Anchorage Devices (TADs).

METHODS: In the first case indirect skeletal anchorage was used along with sliding mechanics on a straight wire, in order to treat a unilateral Class-II malocclusion with increased incisors proclination. The system was reinforced using interarch elastics. The second case depicts a unilateral Class-II malocclusion with overbite, crowding and midline shift. A skeletal direct anchorage system was applied, using a TAD in the ramus of the mandible with orthodontic aligners and intraarch elastics.

RESULTS: In both cases Class-I was achieved, and overjet was reduced to normal. By distalizing molars, space was gained, which proved significant for the treatment of dental crowding and the correction of midlines. As a result, aesthetics and functional capacity were restored, contributing to the overall satisfaction of the patient.

LIMITATIONS: Indirect anchorage system approach requires proper control of the biomechanical system due to apparatus failures. On the other hand, direct anchorage system is a very operator sensitive, expensive technique, demanding specific skills and a specialized oral surgeon.

CONCLUSIONS: Both skeletal anchorage modalities have benefits; however, the precise selection between them is fundamental for a successful application of the treatment plan. Distalizing molars in adult patients presents difficulties due to their location and anatomy, making conventional treatments challenging to apply. Therefore, in complex cases TADs are an in house efficient auxiliary in our armamentarium.

CP42 - MULTIPLE IMPACTED TEETH - A CASE REPORT

Dr Laura Jimenez Arboleda[1], Dr Linda Schwarz[1], Prof. Erwin Jonke[1]
[1]Department of Orthodontics, University Clinic of Dentistry, Medical University of Vienna

BACKGROUND: Molars can be impacted due to several causes like abnormal erupting angulation, a lack of arch length, premature eruption of the third molars, early loss of the mandibular first molar or alterations of the dental follicle. Impacted molars with mesial inclination can lead to elongation of the antagonist tooth, attachment loss on the mesial side of the impacted tooth, caries on the unerupted molars and a compromised oral hygiene. Depending on anatomical factors, treatment options include extraction or auto-transplantation, but also surgical exposure and orthodontic traction of the impacted teeth.

MATERIALS AND METHODS: A 16-year-old male patient with retained teeth 17,18,28,37,38,47 and 48 reported to the Department of Orthodontics, University Clinic of Dentistry Vienna, with the chief complaint of missing teeth in the lower posterior teeth region. After 3D imaging and image reconstruction, it was decided to extract teeth 18,28,36 and 47 in order to align teeth 17,37, 38 and 48. A 0,018x0,025 inch stainless steel wire was inserted into the brackets of the lower and the upper jaw and teeth 17, 37 and 38 were pulled into place by the usage of an elastic chain. An uprighting u-loop was used because tooth 48 was tilted mesially. The loop was inserted into two auxiliary tubes on the buccal and lingual aspects of tooth 46 and engaged under a button, bonded on the occlusal surface of tooth 38. A distal force above the center of resistance was obtained. Crimpable stops were placed to prevent the loop from sliding through the tubes and used to reactivate the loop by repositioning.

RESULTS: At the end of treatment, 17, 37, 38 and 48 had been favourably erupted into the oral cavity and were aligned into the desired position with adequate bone support.

CONCLUSIONS: This case report describes the treatment of multiple impacted teeth. Orthodontic uprighting and alignment are a good option for the treatment of impacted molars. Early diagnosis via 3D-imaging, interception of the probable impaction and the interdisciplinary collaboration are mandatory to achieve the best results possible.

CP43 - INVESTIGATING AND MANAGING A MANDIBULAR EXPANSILE LESION (CENTRAL GIANT CELL GRANULOMA) IN AN ORTHODONTIC PATIENT – A CASE REPORT

Dr Nadia Arikat[1,2], Miss Elizabeth Crawford[1,2], Miss Nasreen Yaqoob[2], Mr Kristian Davies[3], Mr Jonathan Hulbert[2]
[1]Cardiff And Vale University Health Board, [2]Cwm Taf Morgannwg University Health Board, [3]Swansea Bay University Health Board

A central giant cell granuloma (CGCG) is a benign but aggressive neoplasm which occurs exclusively in the craniomaxillofacial region. CGCGs are most common in females and people under the age of 30.

This case report will explore the differential diagnoses, investigation, and approaches to management of an orthodontic patient with an expanding swelling of the mandible. The patient was first referred to the orthodontic department in the Cwm Taf Morgannwg University Health Board in South Wales, age 14 with a class 2/I type malocclusion. His first phase of treatment involved a functional appliance. During the second phase of treatment with fixed appliances while attending for a routine archwire adjustment, the patient complained of a swelling in the left buccal sulcus which they felt was increasing in size. On examination, the lower left premolars were found to be mobile and non-responsive to sensibility testing. An orthopantomogram showed a large radiolucency spanning from the lower left canine to the lower left second premolar. The patient was promptly referred to the Oral and Maxillofacial Team. A subsequent CT scan revealed an expansile radiolucency on the left body of mandible with mild root resorption of the lower left premolars. Several differential diagnoses were suggested including; a keratocyst, ameloblastoma and giant cell lesion. An intraosseous biopsy confirmed the lesion was a CGCG.

The lower fixed appliance was removed prior to excision, accepting small cleansable spaces, to allow for ease of surgical access and to minimise the risk of any further root resorption. The CGCG was successfully surgically and excised has healed well. The patient's dentist provided root canal treatment for the non-vital teeth. Currently the patient is in the final stages of upper arch orthodontic treatment and is being monitored closely for any recurrence.

Orthodontists are uniquely placed to monitor the overall dental health of our patients and this case demonstrates the need for routine soft tissue examination during orthodontic treatment. This case also highlights the value of swift communication with colleagues within other medical and dental specialities to manage these uncommon lesions.

CP44 - INTERDISCPLINARY MANAGEMENT OF DENTOALVEOLAR OPEN BITE ASSOCIATED WITH MACROGLOSSIA: A CLINICAL CASE REPORT

Dr Joana Garrau[1], Dr Inês Anselmo Assunção[1], Prof Iman Bugaighis[1], Prof François Durand Pereira[1], Prof Pedro Mariano Pereira[1]
[1]Egas Moniz School Of Health And Science - Department of Orthodontics

BACKGROUND: Macroglossia is an uncommon anatomical anomaly categorized into two subtypes: true macroglossia (increased tongue volume) and pseudo macroglossia, where the tongue might have a normal size but with forward posture due to other anatomical influences. The role of a large tongue in the development of malocclusion should be considered for orthodontists. Numerous dento-facial abnormalities might be linked to macroglossia, such as symmetrical anterior open bite, bimaxillary dentoalveolar proclination, tongue thrust and spacing between the teeth, leading to difficulty in mastication and altered speech. Accurate diagnosis of macroglossia is essential to determine cases that might benefit from glossectomy to improve function, aesthetics and post-orthodontic treatment stability. The aim of presenting this clinical case is to describe an orthodontic-surgical interdisciplinary approach in the treatment of a case with macroglossia.
METHODS: A 19-year-old female patient with a convex profile and lip protrusion, presented with a main complaint of anterior open bite. Intraorally, there was a molar normocclusion relationship on the right side, distoclusion on the left side, anterior open bite, constricted maxilla and bimaxillary dentoalveolar incisal proclination. The patient presented a macroglossia, with a crenated tongue, anteriorly postured. Lateral cephalometric radiograph revealed a mesodivergent and a class II skeletal pattern. The upper left canine was impacted.
The first phase of treatment comprised surgically assisted maxillary expansion, followed by bimaxillary fixed appliance treatment, extraction of maxillary and mandibular right first premolars, maxillary left impacted canine and mandibular left first molar. Furthermore, a glossectomy procedure was performed to reduce tongue volume. The upper left first premolar was reshaped to replace the upper left canine.
RESULTS: Following three years of interdisciplinary treatment, it was possible to achieve a stable functional bilateral normocclusion with re-established normal overjet and overbite.
CONCLUSIONS: A glossectomy procedure could be considered when an accurate diagnosis reveals an increased tongue volume causing bimaxillary dentoalveolar incisal proclination and anterior open bite. This is especially significant when premolar extraction is part of the treatment plan which reduces the space available for the tongue and also minimizes the possibility of post-treatment relapse.

CP45 - ARE REFINEMENTS NECESSARY FOLLOWING AN INVISALIGN™ TREATMENT? A SYSTEMATIC REVIEW

Dr Charikleia E. Athanasiou[1], Dr Miltiadis Makrygiannakis[2], Prof Eleftherios G. Kaklamanos[1,3,4]
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BACKGROUND/AIM: Refinements are the additional aligners that are given to the patient after the completion of the initial aligner treatment. The aim of the present systematic review is to systematically collect relevant information and appraise its quality.
MATERIALS AND METHODS: Comprehensive electronic and manual searches were conducted. Clinical studies with samples comprising of Invisalign™ patients that needed refinement were included. Data were extracted, and the bias risk was evaluated using RoB 2 for RCTs and ROBINS-I for non-RCTs.
RESULTS: Out of the initially identified 324 studies, nine studies were identified. In one of them, micro-osteoperforations were applied as an adjunctive treatment. The number of additional aligners during refinements varied across studies.
CONCLUSIONS: Refinements seem to be inevitable in treatment with clear aligners and specifically Invisalign. Further studies are necessary to elucidate the factors associated with the number of additional aligners.

CP46 - A NEW HYBRID CLEAR ALINGER DESIGNS FOR SPACE CLOSING

Dr Jae Ho Baek[1]
[1]Wesmile Orthodontic Clinic

BACKGROUND:Clear aligners, including Invisalign, are leading a new trend in removable orthodontics. Although much development has been done, still many disadvantages compared to fixed orthodontic devices exist. In this presentation, a new hybrid design that combines the concept of existing fixed orthodontic devices with clear aligner to complement the shortcomings of each others will be introduced. METHODS: Through a long period of trial and error, it was concluded that the concepts used in the 'segmented arch technique' were most suitable for application to the clear aligner. In detail, it includes elements such as lingual arch and T-spring, but the most important point is to divide each part of the arch into segments. Depending on the purpose, the arch is divided into parts of 'anchorage segment' and 'moving segment', and these are connected using various active elements used in conventional fixed orthodontics. RESULTS: Through this new hybrid design of clear aligner, (1)patient pain was reduced compared to the existing device, (2)more sophisticated biomechanical tooth movement could be achieved, and (3)the number of clear aligners during treatment could be reduced. CONCLUSIONS: Clear aligner has various advantages, but it basically has the same limitations as other removable orthodontic appliances. Through the cases and methods introduced in this presentation, it was found that by combining the concepts of clear aligner and existing fixed orthodontics devices, such shortcomings can be effectively improved and ultimately better treatment results can be provided to patients.

CP47 - AN INTRODUCTION TO ORTHODONTIC TREATMENT: A TYPODONT MANUAL

Ms Gunvor Askjem Barstad[1], Mrs Anne Gro Helgesen[1], Mr Espen Færøvig[1], Mrs Vaska Vandevska-Radunovic[1], Mrs Kari Solheim Birkeland[1]
[1]University Of Oslo

BACKGROUND: During the initial five weeks of the orthodontic residency program at the University of Oslo, completing a Typodont training course is mandatory for all candidates. This course is designed to offer comprehensive insights into orthodontic treatment principles, covering both theoretical understanding and practical skills to facilitate a smooth transition to clinical practice. Successful course completion is a prerequisite for engaging in patient-related activities.
The instructional materials for the training course, comprising two booklets from the 1980s, required an update to address both theoretical and practical aspects. An update of "The Technical Manual" was done in 2021 as part of the specialist thesis requirement for postgraduate students.
The objective of this specialist thesis project was to update and modernize the “Typodont manual”, introducing candidates to both historical and contemporary clinical orthodontic practices, aiding their transition from general dentistry to orthodontic specialization.

MATERIAL AND METHODS: The former typodont manual and a few textbooks served as the basis for this project. In addition, an extensive search of the literature, concerning particularly clinical orthodontic techniques was performed. A step-by-step simulated orthodontic treatment of malocclusions was carried out on a typodont, and all stages were recorded. In addition, clinical photographs and/or schematical drawings were used, replacing older outdated versions.

RESULTS: The project resulted in a modernized and improved typodont manual, comprising 5 chapters, and 120 figures. The revised manual gives detailed guideline to treatment of various orthodontic malocclusions, through simulated typodont treatment. In this manner, the residents' understanding of orthodontics is enabled by integrating clinical approaches with theoretical foundations through widely accepted techniques and relevant subjects, presented in an easily comprehensible manner.

LIMITATIONS: The study is limited by its retrospective reliance on existing literature, potentially introducing bias towards documented practices. Ongoing refinement, including periodic updates and considering individual differences, is essential.

CONCLUSION: The updated Typodont manual, signifies an advancement in aligning orthodontic education with contemporary practices. Overall, these enhancements contribute to the efficacy of the orthodontics residency program, fostering a smoother transition for postgraduates into the specialized field of orthodontics at the University of Oslo.

CP48 - WEYERS ACROFACIAL DYSOSTOSIS: COMBINED ORTHODONTIC AND ORTHOGNATHIC MANAGEMENT OF A SEVERE CLASS III MALOCCLUSION COMPLICATED BY HYPODONTIA USING 3-DIMENSIONAL SURGICAL PLANNING: A CASE REPORT

Mrs Maab Benashur[1], Mr Ojas Krishnan[1], Mr Lachlan Carter[1], Dr Zynab Jawad[2]
[1]Leeds General Infirmary, [2]Leeds Dental Institute

AIM: To describe a challenging case managing a severe class III malocclusion surgically and orthodontically with the added complications of hypodontia, a single occlusal contact, and posterior disc displacement.

SUBJECT/METHODS: This case report is about a 17-year-old female patient who presented with difficulty chewing due to a lack of tooth contact. She has been clinically diagnosed with Weyers acrofacial dysostosis due to the presence of hypodontia, a prognathic mandible and bilateral postaxial polydactyly of the hands. She has a history of self-harm related to sensitive social circumstances and has been referred to clinical psychology regarding this. She presented with a severe class III malocclusion, a 12mm reverse OJ, AOB, and contact only between the LL7 and UL6. There was missing LR4568, UR58, UL58 and LL58. A lateral cephalogram was taken for orthodontic planning and showed an ANB of -9 confirming the severe skeletal class III pattern. A CBCT scan was also taken for surgical 3D planning to provide cutting guides.

RESULTS: The patient was diagnosed with a class III malocclusion and hypodontia likely due to Weyers acrofacial dysostosis, although the patient declined genetic testing. Upper and lower fixed appliances were used to align the upper arch without extractions; procline the upper incisors by 10°; decompensate the lower arch minimally; and procline the lower incisors by 10-15° accepting the lower arch spacing. Then, arthrocentesis was carried out to manage the posterior articular disc displacement prior to orthognathic surgery. The treatment options discussed included distraction or bimaxillary osteotomy. Although distraction would achieve a better occlusion, it was deemed clinically inappropriate given the psychosocial issues due to the involvement of multiple operations. BiMax involved a BSSO for a 6mm mandibular set-back, followed by Le Fort 1 osteotomy to advance the maxilla by 7mm. Additionally a reduction genioplasty was performed to correct the chin point.

CONCLUSION: Weyers acrofacial dysostosis is a rare AD genetic disorder that is caused by a mutation in the EVC2 gene. A severe class III malocclusion can be treated using a combination of fixed appliances and orthognathic surgery. 3D surgical planning allows for improved outcomes in such severe cases.

CP49 - IMPORTANCE OF TAKING PRE-OPERATIVE ORTHOPANTOGRAM RADIOGRAPHS WHEN TREATMENT PLANNING ORTHODONTIC CASES – AN INCIDENTAL FINDING OF A DENTIGEROUS CYST - A CASE REPORT

Miss Navneet Bhamra[1], Dr Ciara Ennis[1]
[1]The Cosmetic Dental Gallery

BACKGROUND
A fit and healthy 32 year old patient self-referred for orthodontic treatment as he was concerned about his 'crooked' teeth. He presented with a Class II div 1 incisor relationship on a class II skeletal base with increased FMPA. He had a Class II molar relationship, an upper centreline discrepancy of 4mm to the left-hand side, a bilateral posterior crossbite and an overjet of 5.5mm. Severe crowding was noted in the upper arch and moderate crowding on the lower arch. Hard tissue charting revealed an unerupted upper left second premolar (UL5).

An Orthopantogram (OPG) was taken as part of the pre-operative assessment and an incidental finding of an unerupted lower right third molar (LR8) associated with a large cyst-like radiolucency (from the LR8-LR6 region) was seen, the UL5 was impacted and unerupted.

METHOD
A case report

RESULTS
After informing the patient of the findings, he was referred to a maxillofacial consultant, where treatment was carried out under general anaesthetic. The UR4, LR4 and LL5 were extracted (as per the space requirements for orthodontic treatment).
The LR8 was extracted using a lingual split technique as it was very deep and buried. There was no cystic material that could be sent for a biopsy as only clear serous fluid was found. The crown of the UL5 was found via a palatal flap, however as it was ankylosed and adjacent to the roots of the UL6 palatal root, the decision was made to leave it situ. After adequate healing, orthodontics was completed with fixed appliances followed by retention.

CONCLUSIONS
From the pre-operative OPG radiograph an incidental finding of an unerupted buried LR8 associated with a large radiolucency was found, which would not have otherwise been found using intra-oral radiographsS. This case has emphasized the importance of taking pre-operative radiographs, especially OPG radiographs to prevent the dangers of inadequate diagnosis which can lead to longer treatment times. Whilst the need to consider radiation dose is necessary, this case highlights the necessity for a thorough examination to prevent missing a potential dental anomaly and to gain appropriate consent from the patient.

CP50 - CORRECTION OF A CLASS III MALOCCLUSION USING A COMPRESSED HEAT-ACTIVATED NICKEL TITANIUM (HANT) WIRE

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BACKGROUND: Class III malocclusions can be treated with range of different procedures including orthodontic camouflage and a combined orthodontic-orthognathic approach. The choice of treatment modality is dependent on the severity of the malocclusion and the growth phase of the patient. Use of a compressed heat-activated nickel titanium (HANT) wire can aid in correction of cases planned for orthodontic camouflage.
MATERIALS AND METHODS: An eighteen-year-old patient presenting with a Class III malocclusion on a Skeletal III base was treated using a compressed HANT archwire.
This method employs a stopped upper 0.017" x 0.025" heat-activated NiTi archwire after sectional fixed bonding, with MBT brackets placed on UR6, UL6, UR12, UL12.
The archwire is engaged within the brackets so that there is excess wire between the UR2-UR6 and UL2-UL6.
Crimpable hooks are attached onto the archwire mesial to UL6, UR6 to prevent the archwire moving backwards, thus maintaining compression in the wire between the upper first molars and lateral incisors.
The shape memory and superelastic properties of HANT archwires result in the deformed wires flattening to recover their initial form. The HANT can be reactivated by placement of closed coil spring on the archwire distal to the crimpable hooks.
The flattening of the compressed HANT results in anterior movement of the maxillary incisor teeth.
RESULT: The patient achieved a Class I incisor relationship and positive overjet following 6 months of use of the compressed HANT archwire despite her underlying Class III malocclusion.
CONCLUSIONS: Use of a compressed HANT is a simple and effective option for correction of Class III malocclusions in cases amenable to orthodontic camouflage.

CP51 - SURGICAL SUBLUXATION AND ORTHODONTIC TRACTION TO ALIGN AN ANKYLOSED MAXILLARY PALATAL CANINE

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BACKGROUND: Case report of an ankylosed ectopic maxillary palatal canine successfully managed at Northwick Park Hospital, London, with a combination of surgical subluxation and orthodontic traction.
CASE SUMMARY: 16-year-old male presenting with Class II division 2 incisor relationship (3mm overjet) on a skeletal I base with average vertical proportions. Complicated by an ectopic palatal upper left canine, retained upper left primary canine, spaced upper arch, mildly crowded lower arch, increased overbite and upper centreline shift to the left.
MANAGEMENT: Following expose and bond of the upper left canine, elastomeric traction was applied to a transpalatal arch and there was initial movement of the canine. Treatment mechanics progressed to the use of a stainless steel archwire with a nickel titanium auxiliary wire, however no changes in the canine position occurred. A re-exposure was performed, with further traction and no further changes to the canine position. A maxillary cant and subsequent left lateral open bite developed and canine ankylosis was clinically diagnosed and confirmed radiographically.
SURGICAL SUBLUXATION: Surgical subluxation of the canine was carried out under local anaesthetic using a luxator instrument until grade 1 mobility was achieved, along with same day light elastomeric traction to the stainless steel arch wire. The patient was reviewed at 3-weeks and 12-weeks post-surgery to replace the elastomeric traction. At 20-weeks post-surgery, a stainless steel arch wire with a nickel titanium auxiliary wire was used and the tooth was successfully brought down into alignment and included in the main nickel titanium arch wire 6 weeks later. The patient was debonded 18-months post-surgery following correction of the maxillary cant and achievement of treatment objectives, and subsequently provided with upper and lower bonded and vacuum formed retainers.
FOLLOW UP: 3-month post-treatment review showed good clinical and radiographic outcome of the upper left canine, with no evidence of periapical pathology, however long-term follow-up and endodontic monitoring by the general dental practitioner is indicated.
CONCLUSIONS: Surgical subluxation has been demonstrated to be successful in the orthodontic alignment of ankylosed teeth, and may be considered as a viable treatment option for managing ankyloses.

CP52 - STUDY OF DENTAL ABNOMALITIES IN CLEFT LIP AND PALATE : ABOUT 32 CASES.

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INTRODUCTION : Cleft lip and palate (CLP) are the most common crâniofacial malformations in humans. Dental abnomalities are more or less significant sequelae, even in minimal forms.
OBJECTIVE : This study aims at assessing the importance and nature of dental abnormalities which have a link of CLP.
PATIENTS AND METHOD : 32 patients with CLP were included in this study. These patients were recruited between 28 August and 30 November 2023 and referred to our orthodontic consultation at Mohamed Sghir Nekkach University Hospital by the maxillofacial surgery and paediatric surgery departments of the same hospital. For each patient, a clinical observation form and an orthopantomogram (children over 3 years old) were performed.
RESULTS : The most common dental abnomalities was agenesis of the lateral incisors, with a frequency of 81.2% ; there could be 2 agenesis in the same patient. The frequency is 65.6% for abnormalities affecting position, 40.6% for abnormalities affecting shapes, 34.3% for structural abnomalities (enamel dysplasia) and 9.3% for delayed eruption.
CONCLUSION : Overall, these results are similar to those reported in the literature. Further studies on a wider population are necessary in Algeria to obtain more significant results.

CP53 - THE TRANSPLANTATION OF AN IMPACTED UPPER PREMOLAR, ABOUT A CLINICAL CASE

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INTRODUCTION: Used in humans for centuries, dental transplantations have not exhausted their indications or potential improvements to optimize their prognosis, as evidenced by numerous scientific studies dedicated to them in recent decades. Their purpose is the surgical placement, on a dental arch, of included or ectopic teeth, the replacement of lost teeth, or the compensation for agenesis.
CLINICAL CASE: This concerns a 23-year-old young lady, referred by a colleague due to the absence of teeth 12 and 24 in the dental arch. Radiological examination confirmed the agenesis of tooth 12 and the inclusion of tooth 24 in a nearly horizontal position just outside the outer cortical. Faced with this atypical position and the impossibility of performing a conventional orthodontic traction, we decided to attempt an auto-transplantation of tooth 24. After an initial orthodontic step to level the arch and prepare the space for the included tooth 24, the surgical protocol for auto-transplantation consisted of detaching a full-thickness vestibular flap, atraumatic harvesting of the transplant to avoid damaging its periodontal cells, preparation of the alveolus or the recipient site, introduction of the transplant into the neoformed alveolus, suturing of the flap, and placement of a sub-occlusion splint.
RESULT: Three months after auto-transplantation, we resumed orthodontic treatment to close the residual spaces. We observed good healing of the alveolar bone and periodontal ligament.
CONCLUSION: In general, surgical-orthodontic traction is the treatment of choice for included teeth. However, in severe cases of impaction, auto-transplantation appears to be an interesting alternative to preserve the included tooth and reduce the treatment time.

CP54 - INTERDISCIPLINARY THERAPY OF A PATIENT WITH AN IMPACTED UPPER CANINE - CASE REPORT

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INTRODUCTION: In around 2% of the population the upper permanent canines become impacted and do not come into the mouth. Most often, the mentioned tooth is palatally impacted and represent a big challenge for every orthodontist. Treatment often requires interdisciplinary approach.

CASE PRESENTATION: A 14-year-old patient was referred to the orthodontic clinic due to an unerupted upper left permanent canine. Clinical examination revealed a permanent dentition, including permanent second molars, with the presence of primary left canine. Palpation of the left eyetooth was negative. Panoramic radiograph showed the almost horizontal position of the impacted permanent canine, the presence of mesiodens and extensive resorption of the root of tooth 21. CBCT of the maxilla revealed the buccal position of the impacted canine and mesiodens, which crown was facing towards the nasal cavity.
We decided on a combined surgical-prosthetic-orthodontic therapy. In the first stage the patient was fitted with a non-removable orthodontic appliance in the upper and lower dental arches. The second phase consisted of an oral surgical intervention, where the mesiodens, impacted tooth 23 and primary tooth 63 were extracted. This was followed by orthodontic closing of the gap. We planned to move tooth 24 to the place of tooth 23 with subsequent prosthetic remodeling of the dental crown to the shape of an upper eyetooth. In the gap at the position of tooth 24, the oral surgeon inserted an implant, to which a monolithic zirconia crown was later cemented. Finally, we fixed the retention wires to the lower and upper dental arch and made a clear plastic retainer for the upper dental arch.

CONCLUSION: Canine impaction is manifested by various clinical signs, such as the negative palpation of the tooth germ before expected eruption, hypoplastic lateral incisor, RII/2 malocclusion, narrow upper dental arch and lack of space. If at a certain age we do not clinically detect the presence of an upper canine in the oral cavity, it is necessary to carry out X-ray diagnostics to clarify the cause of the lack of growth and to treat the patient as soon as possible.

CP55 - ANTERIOR OPEN BITE TREATMENT WITH RAPID MAXILLARY EXPANDER AND FRÄNKEL APPLIANCE IN MIXED DENTITION - AN ULTRASOUND EVALUATION OF TONGUE POSTURE, CASE REPORT

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OBJECTIVNES: The aim of this case presentation was to evaluate the effectiveness of the rapid maxillary expander (RME) and Fränkel appliance treatment regarding tongue posture using ultrasonography of tongue posture before treatment, after palatal expansion and after functional appliance period in a case with anterior open bite.
SUBJECT AND METHODS: A boy with anterior open bite and lateral cross-bite during orthopaedic treatment with RME appliance and Fränkel appliance in the mixed dentition is presented. Clinical examination reveals incorrect orofacial
functions, dentoalveolar anterior open bite and unilateral posterior cross-bite. For maxillary expansion, a tooth tissue-borne rapid maxillary expander (Haas-type) was cemented and activated twice per day (2 x 0.25mm) for 14 days. After 11 months of active expansion and retention period (T1) RME was removed and functional therapy with the modified Fränkel - type IV appliance (FR-4) was continued (T2). For retention of transverse palatal dimension transpalatal bar was passively cemeneted during functional therapy.
Ultrasonography was used to evaluate tongue posture before
orthodontic treatment (T0), after active phase of orthodontic treatment with RME (T1) and after functional therapy with RF-4 (T2). An ultrasound system, Voluson 730 Expert, and a 3D convex transducer, RAB 2-5 MHz, was used to assess tongue posture.
RESULTS: An ultrasound image of the tongue posture before treatment showed an incorrect tongue posture on the mouth floor (T0), after active phase of maxillary expansion (T1) ultrasound image revealed persistent incorrect tongue posture on the mouth floor and after functional therapy with RF-4 correct tongue posture on the palate (T2). Clinically functional therapy ended with complete correction of anterior open bite with positive overbite and correct orofacial functions.
CONCLUSIONS: Early diagnosis and recognition of incorrect orofacial are crucial for long-term successful treatment result. Ultrasonography is a non-invasive and objective method for evaluating incorrect tongue posture that enables success of early treatment. It is a valuable diagnostic tool for evaluating tongue posture after active maxillary expansion, during and after treatment with functional appliances.

CP56 - PRESENTATION OF THE INTERDISCIPLINARY EARLY TREATMENT CONCEPT MYKIE® - FIVE CASE REPORTS

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AIM: The aim was the development of an interdisciplinary and practicable early treatment concept combining myofunctional therapy (MFT) and orthodontics. The concept considers “form follows function” as well as the duration of muscle force application as the key factors in jaw growth and simultaneously allows the correction of myofunctional dysfunctions.
METHODS: Five cases in the early mixed dentition with Angle class II:1, class II:2, class III, anterior/lateral crossbite and open bite underwent the combined myofunctional and orthodontic early treatment concept mykie®. In these cases, the pre-therapeutic (T0) and post-therapeutic (T1) values after 1.5 years (Mean ± SD) of active treatment were recorded using the digital PAR index (OnyxCephTM, Image Instruments GmbH, Chemnitz). All patients were treated with removable orthodontic appliances like the Bioplate, a plate in the upper jaw worn 24 hours a day, as well as a prefabricated silicon functional appliance worn for 4 hours after school and during the night.
RESULTS: On average, an overall reduction of 22.17 ± 8.43 PAR points was achieved implying a PAR improvement of 85.33% from T0 to T1.
LIMITATIONS: The PAR index is only suitable for assessing the success of an early treatment in the mixed dentition to a limited extent. Thus, new indices for the measurement in the mixed dentition need to be developed in the future.
CONCLUSIONS: A combined orthodontic-myofunctional approach/guidance in the early developmental phase is a promising idea for a successful therapy. Interdisciplinarity organisation involving myofunctional therapy and orthodontics is challenging, for which the mykie® concept can be an interesting suggestion.

CP57 - CLINICAL EFFICIENCY OF MODERN ORTHODONTIC TREATMENT PROTOCOLS IN SEVERE CLASS II DEEP BITE PATIENT

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Aim: Class II malocclusion with severe deep bite is characterized by lack of vertical dimension and occlusal support, steep inclination of upper occlusal plane, and pressure of the TMJ. The aim of the study was to present efficiency y of different orthodontic treatment methods that can be used in order to correct a traumatic deep bite.

Material and method: Patient, 18 years old, male, skeletal class II malocclusion, severe deep bite with mandibular crowding undergone orthodontic treatment. Firstly, alignment and leveling achievement was obtained by use of straight wires. Bite ramps on teeth 16 and 26 and turbo bites on 11 and 21 were fixed. Reverse archwires, 017" x .025", .019" x .025" for leveling curve of Spee along with class II intraoral elastics were worn for 4 months. Following, a bilateral functional appliance - fixed modified class II corrector on a 019" x .025" SS wires was applied for lower jaw mesialization. For articular decompensation and posterior occlusal plane flattening, gun metal MEAW archwires were adapted for 7 months. At last, 2 x 8 mm mini screws were inserted into the maxillary buccal interradicular bone, between the second premolar and the first molar for incisor retraction.

Results: A correct overbite and overjet was obtained. The cephalometric analysis shows a reduction of ANB angle, an AO-BO reduction, and a better profile. Vertical dimension, upper posterior and anterior occlusal planes posterior height improved significantly. Torque and intrusion of upper incisors was achieved without resorptions. Interincisal angle diminished, and good stability achieved.

Conclusions: Treatment of class II deep bite patients can be done by combination of different functional treatment methods. Such a therapeutic approach improves the outcome.

CP58 - INTERDISCIPLINARY MANAGEMENT OF BILATERAL MAXILLARY LATERAL INCISORS AGENESIS OF MINOR PATIENT WITH ORTHO MINI IMPLANT BASED PROSTHESIS: A CASE REPORT

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Bilateral Maxillary lateral incisors agenesis involves the anterior dental arch region, therefore, it raises concern in patients and their families.It creates aesthetic and functional disturbances which can be managed in various ways.
The condition requires careful treatment planning and consideration of the options and outcomes. In cases where lateral incisors agenesis is detected in the early stages of mixed dentition, the decision of treatment modalities, falls on the shoulders of the parents or legal guardians, choosing between the two major treatment options. Whether orthodontic space closure with canines aesthetic remodeling or space opening for prosthetics. It is even harder for parents of minors to decide, because it is not possible for immediate implant placement after space is opened.
A Clinical case is presented to illustrate the interdisciplinary approach between orthodontics and compromised prosthodontics using TADs mini-screws as a foundation for the temporary restoratives.
In this report, the treatment of a 12 years old girl, with a Class II malocclusion of molars and canines with bilateral lateral incisors agenesis on her late mixed dentition stage.The goal of the space opening included of the areas corresponding to the missing upper lateral incisors, through the distal movement of the canines and the posterior teeth by removable appliances - Invisalign First aligners I stage, successfully achieved. And spaces of missing lateral incisors are closed with non-removable, digitally planed ortho mini screw based restoratives.

CP59 - AN INNOVATIVE APPROACH TO UPRIGHT SEVERELY IMPACTED MANDIBULAR THIRD MOLARS

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BACKGROUND: After the completion of comprehensive orthodontics, even with extraction of premolars, it is common that the lower third molars (LM3) remain impacted. The possibilities of orthodontic uprighting of LM3 are seldom explored before the irreversible decision of surgical extraction is made.
Miniscrews are very useful in controlling tooth movement and the mandibular buccal shelf is shown to be a safe and reliable site for placement of miniscrews with high successful rate.
This novel method of buccal shelf miniscrew supported Multiple Components Force Systems (MCFS) has been used to treat over 30 cases of severely impacted LM3 with encouraging success rate.

AIMS: To elucidate the biomechanics and demonstrate the effectiveness of a new technique to upright severely impacted wisdom teeth using buccal shelf miniscrews.

METHODOLGY: This is a case series with five representative cases presented. These patients have completed comprehensive orthodontic with extraction of four premolars (under retention) and have at least 1 severely impacted LM3. A buccal shelf miniscrew with a rectangular hole was used, and the components of the system included three wires, an open niti coil spring and various cross-tubes and connectors. The force system applied a controlled force distally and occlusally while preventing lingual rolling.

RESULTS: The MFCS effectively disimpacted severely impacted LM3 within 3 to 9 months, total treatment time lasted from 6 months to 1 year. Post-treatment, the alignment of LM3 with adjacent teeth was satisfactory, with notable bone regeneration and healthy periodontium between the second and third molars over follow-up periods of up to 2 years.

CONCLUSION: This technique is not only safe and reliable but also successful in producing favorable long-term outcomes. It challenges the traditional notion that surgical removal is the only solution for severely impacted third molars, offering a less invasive alternative with promising results.

CP60 - THREE CYCLE CLINICAL AUDIT TO ASSESS CHANGES IN RECORD KEEPING STANDARDS FOLLOWING THE INTRODUCTION OF NEW HEALTHCARE SOFTWARE

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BACKGROUND
Good record keeping is crucial for recording diagnoses, documenting treatment plans, and allow continuity of care. Patient records serve as evidence for dental service, safeguard legal rights, and uphold regulatory standards in the dental profession.

AIMS
A new electronic patient record system (EPIC) has recently been introduced to the department, enabling electronic charting and shared clinical templates. This audit aims to evaluate the completeness of record keeping for patients attending the orthodontic new patient clinic, assess the impact of previous interventions on record keeping, provide guidance on essential information for clinical notes, and evaluate the influence of the newly introduced EPIC system on patient records.

METHODS
A three-cycle clinical audit was conducted to review clinical records of patients attending the orthodontic new patient clinic. Cycle 1 and 2 were conducted in April 2022 and July 2023 respectively, with a random samples of 20 patients. Cycle 3 was completed in November 2023, and included the records of all 66 patients who attended new patient clinics that month.

RESULTS
Analysis revealed a decline in dental history documentation from 100% in Cycle 1 to 95% in Cycle 2, further decreasing to 54.5% in Cycle 3. Similarly, compliance of dental charting reduced from 100% to 54.5%, and oral hygiene records decreased from 90% to 68.2%. Notably, smoker history and alcohol intake records were lacking in Cycle 3, while records of soft tissue examination improved from 0% to 63.6% between Cycles 2 and 3. Occlusion records remained consistent at 95% in Cycle 1, 100% in Cycles 2 and 3.

LIMITATIONS
EPIC was introduced between Cycles 2 and 3, with Cycle 3 occurring in the early stages of its implementation. Ongoing departmental changes, operator unfamiliarity and inclusion of early-stage trainees in their second month of training, contributed to variations in results.

CONCLUSIONS
Our findings indicate an overall decline in dental charting, oral hygiene record maintenance, and dental history documentation. The introduction of the EPIC system positively impacted recording of soft tissue examinations. To address these issues, the new software will allow for adjustments to the shared templates to effectively train clinicians to improve record keeping.

CP61 - LH WIRE FOR THE TREATMENT OF SKELETAL CLASS III COMBINED WITH ANTERIOR CROSSBITE CASE

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[Objectives] LH wire (low hysteresis, ISW, Improved Super-elastic Ti-Ni alloy Wire, developed by Tokyo Medical and Dental University) for the treatment of skeletal Class III combined with anterior crossbite will be discussed.

[Case] A 17-year-old male came to our orthodontic clinic with a chief complaint of a protruded chin. Clinical examination revealed Angle Class III malocclusion with anterior crossbite. Reduced overjet and mild crowding were also noted. Cephalometric analysis indicated a high mandibular plane angle. In order to acquire a harmonious arch coordination, we underwent non-extraction orthodontic treatment based on the patient's intention. Mechanism involved LH MEAW (Multiple bends edgewise archwire) for correction of anterior crossbite, intermaxillary elastics (IME) for better interdigitation, and clear aligner for further fine detailing. The improvement of both facial appearance and dentition alignment was noticeable. Finally, adequate overbite and overjet were achieved.

[Discussion and Summary] In this case, the efficacy of LH MEAW for correction of anterior crossbite, and the method of WA (wire + aligner) orthodontics were discussed. As a result, a well aligned dentition and a satisfactory treatment result were achieved.

CP62 - MULTIDISCIPLINARY TREATMENT OF A TEMPOROMANDIBULAR DISORDER IN A PATIENT WITH OTOLOGICAL SYMPTOMS: A CASE REPORT

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Introduction:
History:
A 28-year-old woman presented with various symptoms including mouth-opening limitations, pain in the temporomandibular joint and surrounding regions, tinnitus, and high-frequency hearing loss. She also had specific dental issues such as right mandibular second molar distal cervical caries, pain upon performing a cold test, significant gingival recession with an evident labial root shape in the lower incisors, and malocclusion.
Assessment:
Facial, intraoral, periodontal, radiological, and temporomandibular joint examinations were conducted, along with cephalometric analysis. These assessments revealed skeletal Class II malocclusion, Angle's Class I malocclusion, temporomandibular disorders, right mandibular second molar chronic pulpitis, and generalized chronic periodontitis.
Radiographic assessment confirmed the presence of dental caries and provided additional information on the condition of the temporomandibular joint.
Aetiology:
The patient's symptoms and dental issues were likely caused by a combination of skeletal malocclusion, dental pathology, and temporomandibular joint disorders.
Treatment:
The treatment plan aimed to alleviate symptoms, achieve stable functional occlusion, and address the specific dental issues identified.

The initial phase of treatment involved stabilization and splinting, which lasted for ten months. This helped improve the patient's hearing and resolve the tinnitus.
Further treatment included autogenous tooth transplantation, which addressed the chronic pulpitis in the right mandibular second molar. Aligner orthodontics were performed for 31 months to correct the malocclusion. Additionally, a free gingival graft was conducted to address the significant gingival recession.
Treatment Progress:
Following the multidisciplinary treatment approach, the patient experienced improvements in her symptoms and dental issues. Her hearing recovered, and the tinnitus disappeared.
Summary:
For patients with temporomandibular joint disease and otological symptoms, a holistic treatment approach involving a multidisciplinary team is recommended. This case report highlights the successful management of a 28-year-old woman with various symptoms and dental issues through a combination of stabilization, splinting, autogenous tooth transplantation, aligner orthodontics, and a free gingival graft.

CP63 - LH WIRE FOR NONSURGICAL TREATMENT OF SKELETAL CLASS II MALOCCLUSION COMBINED WITH LARGE OVERJET CASE

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[OBJECTIVE] To discuss skeletal Class II malocclusion combined with large overjet and gummy smile by LH wire (low hysteresis, ISW, Improved Super-elastic Ti-Ni alloy Wire, developed by Tokyo Medical and Dental University)

[CASE] A 13-year-old female complained poor dental alignment and buck teeth, so she consulted us for orthodontic evaluation. Clinical examination revealed skeletal Class II relationship profile appearance. Upper anterior teeth proclined with gummy smile and scissors bite over left posterior teeth can be also noted. We used intrusion arch technique with temporary anchorage device for bite control and gummy smile correction, and used buccal crown torque with anterior bite turbo for scissors bite correction. The active treatment totally took about 3 years and the improvement of appearance and dentition alignment were noticeable.

[DISCUSSION AND SUMMARY] In this case, the properties of LH wire for aligning the poor positioned teeth, as well as the use of intrusion arch technique with temporary anchorage device and anterior bite turbo were discussed. Finally, after 3 years of therapy, a desirable result was achieved and the patient was pleased with the treatment outcome.

CP64 - LH WIRE FOR THE TREATMENT OF SKELETAL CLASS II WITH ANTERIOR CROWDING CASE

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[OBJECTIVE] LH wire (low hysteresis, ISW, Improved Super-elastic Ti-Ni alloy Wire, developed by Tokyo Medical and Dental University) for the treatment of skeletal Class II with anterior crowding case will be discussed.
[CASE] A 19-year-old female adult came to our clinic with a chief complaint of poor dental alignment. Clinical examination revealed Angle Class I malocclusion with upper left palatally positioned premolar and lower right buccally positioned first premolar. Anterior crowding and midline deviation were also noted. We extracted teeth 14, 25, 34, 44, and used LH MEAW for crowding relief. We also used IME (intermaxillary elastic) and not-in-slot technique to acquire a better interdigitation. In the end, correction of arch coordination, bite control and occlusal stability were successfully achieved and maintained.
[DISCUSSION AND SUMMARY] In this case, we corrected poor dental alignment rapidly by using LH wire and aligner for further fine detailing, as well as LH wire MEAW and IME technique. LH wire can provide an efficient and easy way to correct such kind of malocclusion. After 32 months of the treatment, a desirable outcome was achieved and the patient was pleased with the treatment result.

CP65 - THE SPONTANEOUS IMPROVEMENT OF GINGIVAL RECESSION ON MANDIBULAR INCISORS THROUGH THE ORTHODONTIC TREATMENT

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AIMS: In this clinical case, we report the effectiveness of the orthodontic treatment of severe gingival recession and bone dehiscence through repositioning of root toward alveolar bony housing in a 29-year-old female patient.
Materials/Methods: A 29-year-old female patient visited to treat for severe gingival recession and bone dehiscence on mandibular incisors. According to intra-oral clinical examination, severe gingival recession on the buccal surface of the mandibular left lateral incisor(#32) was observed. In the axial views by a cone-beam computed tomography images, the root of mandibular left lateral incisor was located out of alveolar bone width. In the sagittal views, the distance between the apex of the root and the perpendicular line from the incisal edge of #32 to the mandibular plane was 3.74 mm. The angle between the long-axis of #32 and the mandibular plane was 75.7°. The overall goal is to improve the labial gingival recession of the mandibular left lateral incisor. During the treatment, on the mandibular left lateral incisor, an MBT prescription bracket with a -6° torque was attached 180° upside down to allow for a greater lingual torque of +6° to be applied. And, 0.019 × 0.025-inch stainless steel wire was inserted and bent to provide additional lingual torque to the mandibular left lateral incisors.
Results: After orthodontic treatment, the labial gingival recession of the mandibular left lateral incisor improved by more than 4 mm, and the marginal gingiva was formed at a similar height to the adjacent teeth. The roots that were palpated at the initial examination were also not palpable. In the axial views by a CBCT images, the root of mandibular left lateral incisor was located within the alveolar bone. In the sagittal views, the distance between the apex of the root and the perpendicular line from the incisal edge of #32 to the mandibular plane was -1.83 mm. The angle between the long-axis of #32 and the mandibular plane was 94.5°.
Conclusion: This clinical case reports that orthodontic treatment, without periodontal surgery, can spontaneously correct the gingival recession and alveolar dehiscence.

CP66 - TREATMENT OF AN IMPACTED PERMANENT MAXILLARY INCISOR WITH NANCE AND MULTIBRACKET APPLIANCE: A CASE REPORT

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Impacted teeth are a common problem faced by general dentists, orthodontics and oral surgeons. The etiology is multifactorial and may be related to systemic and local factors: supernumerary teeth, insufficient space in the arch, dental trauma, ectopic tooth, bud position, cyst, and odontoma. After wisdom teeth, upper canines and lower second premolars are the most commonly impacted teeth. The impaction of permanent upper central incisors is relatively rare but affect both aesthetics and oral function. Treatment success involves an interdisciplinary teamwork between the orthodontist and dental surgeon.
Aim: To describe a case report of a patient diagnosed with an impacted upper incisor (tooth 21) due supernumerary teeth. Initially, only these teeth were removed and the spontaneous eruption of tooth 21 was awaited. Since this did not occur as usual, the tooth 21 was surgically exposed and tractioned using Nance and multibracket appliance (MBA).
Material & Methods: A twelve-year old female patient attended the orthodontic clinic at Johannes Gutenberg University three years after the supernumerary teeth removal in the upper incisor region. She showed a horizontally impacted tooth 21; lack of space for its eruption; anterior maxillary and mandibular crowding; retrusion of tooth 11; retrusion and extrusion of lower anterior teeth; transversal constrictions in both jaws; overjet 5mm (tooth 12); overbite 4mm; pronounced spee curve; discrete classe 2 occlusion and horizontal growth type.
Therapy: Transversal expansion in both jaws; opening space for tooth 21 and placement into the dental arch after exposure; protrusion of the upper and lower front; elimination of the frontal crowding and intrusion of the lower front, levelling of the spee curve; setting a physiological overjet and overbite, and a class 1 occlusion. The treatment aims were achieved using a Nance appliance with a titanium molybdenum alloy lever arm in combination with a MBA.
Conclusion: The combination of using the Nance appliance and lever arm with MBA proved to be efficient in the alignment of the impacted incisor. Treatment using this technique does not require patient compliance. Selecting an appropriate surgical procedure and orthodontic treatment plan should result in a stable, predictable and aesthetic outcome.

CP67 - RARE FINDING OF MESIODENTES IN TWINS WITH OROFACIAL CLEFTS: A CASE REPORT

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AIM: Dental anomalies are a common finding in patients with orofacial clefts. The most common include hypodontia, ectopic teeth, supernumerary teeth and crown or root malformations. Anomalies most commonly present on the side of the cleft. Mesiodentes are an example of a rare dental anomaly found in the patients with clefts. There are minimal cases of their presence reported the literature.

METHODS: Eight year-old mono-zygotic non-syndromic twin girls attended the Multidisciplinary Cleft Clinic at the Edinburgh Dental Institute for routine assessment and treatment planning. Twin One presented with a repaired left sided unilateral cleft lip and alveolus with a bilateral cleft palate. Tooth FDI 11 was unerupted. Cone-beam computed tomography (CBCT) scan revealed the presence of four supernumerary teeth including a mesiodens, palatal to FDI 11. Twin Two presented with a repaired left sided unilateral cleft lip and alveolus. Teeth FDI 11, 21, 22 were unerupted. CBCT scan revealed three supernumerary teeth including a mesiodens, mesiopalatal to FDI 11. For both cases, the treatment plan involved general anaesthesia for the extraction of the supernumerary teeth and remaining deciduous teeth in the cleft area prior to alveolar bone graft placement.

RESULTS: Both patients were reviewed one year following alveolar bone graft placement and good bony infill of the cleft sites was confirmed radiographically. At three-year review, Twin One presented with class 2 division 1 incisor relationship, buccally placed FDI 13, palatally placed FDI 23 and a 5mm overjet associated with FDI 11. Twin Two presented with a class 2 division 1 incisor relationship, 9mm overjet of FDI 11, ectopic FDI 25 and impacted 26. Both patients are due to commence orthodontic treatment to manage their presenting malocclusion.

CONCLUSION: Mesiodentes are a rare dental anomaly found in cleft patients. This case provides a fascinating presentation of this anomaly in twin girls. Orthodontists have an important role in the management and treatment planning for patients with clefts. They should be aware of the importance of early identification of mesiodentes in orofacial cleft patients and work alongside colleagues to enable successful long-term dental, surgical and orthodontic outcomes.

CP68 - METAL ORTHODONTIC BRACKET BONDING ON PROVISIONAL CROWNS USING DUAL-CURING COMPOSITES

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BACKGROUND: Orthodontics is that branch of dentistry that is no more associated only with children. Much more number of adult patients with prosthetic restorations seek for orthodontic care, at the same time there is big number of young patients with imperfections on crowns so the placement of braces becomes difficult task. However braces need to be placed on provisional crowns, but the methods are quite different of that used on natural enamel surfaces. Combo.lign dual curing composite (Bredent.uk) is widely used in prosthodontics as bonding material between veneers and metallic frameworks. We have modified to use this material in orthodontic practice.
OBJECTIVE: The objective of this study is to describe bracket bonding technique on provisional crowns with dual curing combo.lign luting composite (Bredent.uk).
METHODS: First step is to prepare plastic provisional crown surface and sandblast with 110 microns. Then surface should be prepared with Visio.link pmma&composite primer and placed in Bredent bre luxpowerunit for 90 seconds. Metal orthodontic bracket should be covered with MKZ primer without light cure. As well as the crown and attachments are ready for bonding we connect them with Combo.lign luting composite (Bredent.uk) and put in the Bredent bre luxpowerunit for 6 minutes.
RESULTS: Provisional crowns bonded with this technique show high efficiency and low rate of failure. Most of the patients keep these crown through whole orthodontic treatment
CONCLUSIONS: Dual curing combo.lign luting composite used for metal orthodontic attachment bonding is effective and time-saving procedure during orthodontic treatment.

CP69 - IMPEEDED INCISOR ERUPTION: FREQUENCY CONCERNING ETHIOLOGICAL FACTORS . A SYSTEMATIC REVIEW.

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Empeeded incisors eruption is a disterbance in eruption of teeth.
The AIM is to give a summerized information up to date about the ethiology and freqency of empeeded incisor eruption
The MATERIAL is about 60 studies found in PubMed from 2000 to 2023.We use statistic METHODS to find the corelation between impeeded incisor eruption and different ethiological factors. Impeeded incisor eruption is observed in boys and girls from 6 to 18 years of age.
The RESULTS present interconection between ethiological factors and frequency of empeeded incisor eruption. The ethiological factors with the greates frequency are supernumerary teeth and thoot trauma.
CONCLUSION is that this phenomenon should be examened carefully because it could lead to discrepancies in dental arch and occlusion.Impeeded incisor eruption could lead to delayed incisor eruption or retention of the tooth, which is not only a functinal but an estetic and a phycological problem.

CP70 - STREAMLINING THE ORTHOGNATHIC SURGERY PATHWAY, THROUGH A VISUAL MAPPING OF THE MULTIDISCIPLINARY WORKFLOW

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AIM: We aimed to create a chronological mapping illustrating the multidisciplinary workflow of the orthognathic patient journey. Prior to the mapping, surgical procedures were being delayed due to failure of the multidisciplinary team to coordinate and meet surgical date deadlines. This workflow mapping aims to align processes, streamline the patient journey, and co-ordinate communication between clinicians. We are hoping to improve the care of patients completing the orthognathic pathway.

METHODS: Creation of a visual orthognathic treatment map, using Microsoft Visio software. Development was carried out through co-production with clinicians from oral and maxillofacial surgery, orthodontics, lab technicians, theatre staff, and external industry partners. Different aspects of treatment were summarised on a timeline, highlighting when specific processes and appointments should be carried out. The duration of stages following completion of pre-surgical orthodontics was highlighted. This is of particular relevance for virtual surgical planning and the provision of customised plates and guides. Finally, an anonymous questionnaire sought feedback from the multidisciplinary team on the acceptability of the new visual timeline.

RESULTS: A descriptive timeline of the orthognathic patient pathway was developed. This visual pathway allows clinicians to conceptualise their role in patients' orthognathic journey. The complexity associated with the multidisciplinary management of orthognathic patients has been simplified to ensure that key stages are carried out in time for proposed surgical dates, without the expiration of any imaging. 26 individuals from the multidisciplinary team completed the questionnaire. 100% felt the mapping helped to visualise the pathway and their role with it. 100% of the team also felt the mapping would help to coordinate patient care and timing.

CONCLUSIONS: Complex treatment pathways requiring a variety of appointments, split between different departments, can be conceptualised through chronological mapping. Mapping enables the multidisciplinary team to understand their role better and perform efficient, quality patient care without organisational conflict or delays. Collaboration allowed for collegiate working and ownership of the pathway. This resulted in increased awareness by all parties of the operational and managerial complexities required to complete the patient journey. This increased awareness has aligned the multidisciplinary team, resulting in a streamlined patient journey.

CP71 - NON-SYNDROMIC FAMILIAL AGENESIS OF THE PRIMARY AND PERMANENT MANDIBULAR LATERAL INCISOR: A FAMILIAL CASE REPORT WITH INTRAFAMILIAL VARIABILITY

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BACKGROUND: Agenesis of one or more teeth is the most common anomaly of tooth development. It is a condition with a strong genetic background that can be either isolated or associated with syndromes. Even though it can be observed in the primary and permanent dentition, in the posterior and the anterior teeth, agenesis affecting the mandibular anterior teeth of both the primary and permanent dentition in the Caucasian population is a rare occurrence.

CASE PRESENTATION: The present case report aims to describe the clinical and radiological presentation of the primary and permanent mandibular lateral incisor agenesis in two non-syndromic Caucasian siblings of age 8 and 7 years old with an intrafamilial variability of the anomaly: one of the siblings had unilateral agenesis of the primary mandibular lateral incisor associated with fusion of the contralateral incisor and canine and a bilateral agenesis of the succedaneous incisors; the other sibling had unilateral agenesis of both the deciduous and permanent lateral incisor. They were born to non-consanguineous parents through C-section, a procedure selected because of their mother's congenitally malformed uterus and their breech presentation. Features of these cases are discussed, together with the possible underlying genetic and environmental aetiology, the anomaly's implications in the growth and development of the dentition and the jaws and the treatment alternatives that will ensure proper function and aesthetically pleasing outcomes in the future. At present the cases are under follow-up.

CONCLUSION: Non-syndromic familial tooth agenesis- as those presented in this case report- is an inherited condition that can have different clinical manifestations in members of the same family. Taking into consideration the significant impact of tooth agenesis on the function, aesthetics and psychosocial well-being of the affected patients, its early diagnosis and a multidisciplinary approach are of paramount importance in order to select and implement an adequate treatment plan that will suit the patient's needs and expectations.

CP72 - BEYOND THE LIMITS WITH FIXED MECHANICS IN ADULT CLASS II MALOCCLUSION

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AIM: In this case report, it is aimed to present the changes in the dentoalveolar and craniofacial structures of 2 adult females of the same age group with similar class II malocclusion, one with normodivergent and the other with hypodivergent growth pattern, with an overjet of 10 mm and 7 mm, respectively, after treatment with fixed orthodontic mechanics without extraction and any invasive application.
MATERIALS/METHODS: First case; A female individual with a chronologic age of 15 years and 1 month in the postpubertal period has a skeletal Class 2 (ANB:7^{o}) and normodivergent growth pattern (SN-GoGn: 35^{o}). The individual has Angle Class II molar and canine relationship, maxillo-mandibular incisor protrusion, increased overbite and overjet (6mm/10mm) and a convex profile. Second case; A female individual with a chronologic age of 16 years in the postpubertal period has a borderline skeletal class 2 (ANB:5^{o}) and hypodivergent growth pattern(SN-GoGn:23^{o}). Similar to first case, the individual has Angle class II molar and canine relationship, maxillo-mandibular incisor protrusion, increased overjet (7mm) and convex profile. In the treatment of both cases; maxillary molar distalization with self-ligating system, maxillary and mandibular dental arch development, incisor retraction and intrusion and class 1 molar and canine relationship as well as ideal overjet and overbite were planned.
RESULTS: Treatment durations were 16 and 14 months, respectively. Maxillary and mandibular dental arch development, distalization of the upper molars, protrusion-intrusion-retraction of the upper incisors and class I molar-canine relationship were achieved respectively. In the first case, 8 mm overjet and 4 mm overbite reduction and in the second case, 5 mm overjet and 2 mm overbite reduction were obtained. Similarly, in both cases, positive reflections were observed in soft tissue convexity due to dental movements, and it was observed that the protrusive lip positions were idealized according to the Steiner S line.
CONCLUSIONS: Adult skeletal class II malocclusions, which are very difficult for orthodontists, can achieve successful dental and aesthetic results with the self-ligating system when combined with the orthodontist's knowledge, skill and manipulation as well as high patient cooperation. Long-term retention and patient cooperation should not be ignored in maintaining post-treatment stability.

CP73 - ORTHOGNATHIC MANAGEMENT OF SKELETAL CLASS III WITH UNILATERAL CONDYLAR HYPERPLASIA

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OBJECTIVES: To present management of skeletal Class III with right condylar hyperplasia.

DIAGNOSIS: A 21-year and 2-month-old Thai female came with a chief complaint of chin deviation and an asymmetrical smile. Patient was presented with asymmetrical oval facial form and a concave facial profile. Notably, the chin deviated to the left by 7 mm in relation to the facial midline. The lips demonstrated canting. Intraorally, mild crowding was observed in the lower anterior region, along with a Class III malocclusion on the right and a Class I malocclusion on the left, anterior crossbite, with an overjet of -1 mm. There was mesial shift of tooth 26 which blocked out tooth 25.

Panoramics revealed an elongation of right condyle which caused the maxillo-mandibular canting. Class III skeletal pattern attributable to an orthognathic maxilla and a prognathic mandible (SNA 84 and SNB 85 degrees). The positioning and inclination of the maxillary incisors was within normal, while the mandibular incisors exhibited retrusion and retroclination.

TREATMENT:
PRESURGICAL ORTHODONTICS: Elimination of crowding and maintain of incisor proclination in the upper arch were planned by extraction tooth 25. Transverse coordination was done by upper-arch constriction. The lower arch was decompensated by lower incisors proclination and buccal crown torque for posterior teeth.

SURGICAL PROCEDURE: 2-jaw surgery, Lefort 1 and BSSRO setback 5 mm, was planned to correct canting and A-P skeletal discrepancy. The lower jaw was yawed to the right (5 mm at lower dental midline).

POSTSURGICAL ORTHODONTICS: class III vector and short box elastics were prescribed for occlusion seating.

RESULTS: molar relationships were class I on right side and class II on left side. Canine relationship were class I on both sides. Notable improvements in facial symmetry were observed, and in facial profile. Improvements of positioning of the maxilla-mandible relationship and masticatory function exhibited favorable characteristics.

CONCLUSION: The surgical intervention produced noteworthy improvements in both aesthetic and functional aspects. The collaborative efforts between orthodontic and maxillofacial surgical disciplines proved essential in addressing the skeletal Class III with unilateral condylar hyperplasia.

CP74 - AN AUDIT ON THE USE OF MOUTHGUARDS IN PATIENTS BEFORE AND DURING ORTHODONTIC TREATMENT

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BACKGROUND:
The risk of dental trauma during contact sports has been found to account for 10-39% of all dental injuries (Newsome et al., 2001). There are currently no U.K. guidelines advocated by dental bodies specifying for which sports mouthguards should be worn.

AIMS:
The aims of this audit were:
1. To establish the prevalence and cause of previous dental trauma
2. To determine which sports patients wear mouthguards for, and compare the use of mouthguards between patients pre-orthodontics and during treatment
3. To determine what type of mouthguard patients wear

MATERIALS AND METHODS:
A prospective, questionnaire-based audit was conducted at the Eastman Dental Hospital (EDH) between February and August 2023. Our gold standard for this audit was set at 100% of patients wearing a mouthguard whilst playing contact sports. A paper questionnaire was given to patients both prior to active orthodontic treatment and during treatment following a routine appointment. The questionnaire was developed from one used in a previous audit at the EDH in 2016 (Parker et al, 2016).

RESULTS:
A total of 100 patients were included in the audit, 50 patients pre-treatment and 50 patients during treatment. 32% of patients had experienced previous dental trauma, with the most common cause for their trauma being attributed to trips and falls. Only 43% of patients pre-orthodontic treatment and 27% of patients during treatment played contact sports with a mouthguard. The most played sport where patients used a mouthguard was rugby, followed by hockey and lacrosse. The pre-fabricated type of mouthguard was most commonly used in patients prior to treatment, whilst the 'boil and bite' type was most commonly used in patients undergoing treatment.

CONCLUSIONS:
Our findings indicate that the gold standard of our audit was not met. There is a significant proportion of patients playing contact sports who are not wearing a mouthguard. This highlights a lack of awareness on the importance of use of mouthguards during any contact sport. We encourage staff to recommend the use of mouthguards where appropriate, and to provide information leaflets. We plan to reaudit in one year’s time.

CP75 - CORRECTION OF A CLASS II DIVISION II WITH GUMMY SMILE AND COMPLETE OVERBITE, TREATED WITH TWO ANTERIOR MINISCREWS AND TWO POSTERIOR MINISCREWS: 1 YEAR STABILITY.

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AUTHORS: A.Esber ; R.Gilbert.

AIM: This case report shows the correction of a gummy smile with a complete overbite, (contact of the inferior incisor's incisal edge with the palatal muccosa 7 mm, a class II division two through brackets combined with two anterior and two posterior mini screws.

MATERIALS AND METHOD: A 15-year-old female patient was treated. Cephalometric analysis (Steiner, Ricketts) and digital models were made. Chief concern: gingival smile with a 7 mm overbite and class II. Two years of orthodontic treatment, carried out between 4 December 2020 and 23 December 2022. The treatment plan first consisted with orthodontic treatment based in aligning and levelling both arches with 18x25 self-ligating brackets, and the early use of elastic 3/16 4,5 oz. Then the insertion of four miniscrews: two in the anterior segment between 12,11 and the other one between 21,22 (1,5x8mm) for intrusion of the anterior sector to correct gingival smile and overbite with 15Og forces. Posterior interradicular miniscrews were inserted between 16/17 and 26/27 (2x12mm) to counterbalance secondary effects of the anterior block intrusion.
Intra oral scanner as well as intraoral, extraoral pictures and 1 year post treatment photographic records.

RESULTS: Orthodontic appliance provided good alignment and levelling of the teeth and the class II was corrected and a 4mm anterior intrusion as realized.

LIMITATIONS: A longer follow-up period is needed.

CONCLUSION: Through a combined orthodontic treatment with miniscrews, a complete correction of the gummy smile combined with a complete correction of the overbite was achieved with good functional and aesthetics outcomes.

INTEREST: All authors and co-authors declare not having any financial interest

CP76 - ARE WE DOCUMENTING THE CORRECT DENTAL MATERIALS IN OUR CLINICAL RECORDS? A RETROSPECTIVE AUDIT

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BACKGROUND AND AIMS
Recording dental materials is important for patient safety and medicolegal purposes. Clear documentation aids in promptly identifying the cause of symptoms in cases of allergic reactions, inhalation, or ingestion incidences. Adherence to current guidance and best practice is essential (CQC, 2022). This audit aimed to assess the correct documentation of dental materials and patient allergies in the orthodontic department at a large Teaching Hospital.

The standard set was that 100% of all dental materials and pharmacological agents are accurately recorded, where temporary anchorage devices (TADs) and local anaesthesia are used.

MATERIALS AND METHODS
Local clinical governance approval was obtained. This was a retrospective cross-sectional audit, whereby 165 patient medical records were selected from a range of clinicians at Eastman Dental Hospital, University College London Hospitals NHS Trust. Five consecutive orthodontic patient records were examined from each treating clinician over a 5-month period from December 2022 to April 2023. The documentation of the following dental materials was reviewed: bond up materials (etchant, bonding materials), orthodontic fixed adjustment archwire materials, removable appliances details, impression materials, and TADs placement details (local anaesthetic used with type of drug, batch number, expiry date, site). Results were collected and analysed using Microsoft Excel and disseminated locally.

RESULTS
For TAD placements and orthodontic fixed adjustment appointments, 100% of records had the correct documentation. Amongst all dental materials assessed, the documentation of etchant and bonding materials used was most commonly missing from medical records (68% and 51% respectively). Lastly, patient allergies were documented contemporaneously in 90% of cases.

CONCLUSION
In compliance with recent guidance, local anaesthesia administration details were documented clearly in all medical records assessed where TADs were placed and therefore the agreed standard was met. As best practice, the study team have introduced electronic note templates for improved documentation of materials used for common clinical procedures in the Trust's patient record system and will re-audit compliance following their integration.

CP77 - TWO DIFFERENT ORTHODONTIC APPROACH IN TREATMENT OF IMPACTED MAXILLARY CANINES

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Background: The maxillary canines impaction is a nowadays a frequent condition, and the orthodontist must be prepared to manage it.
Material and methods: For diagnosis of impacted maxillary canine (IMC) ortopantomograph was taken and the detailed analysis was performed. Inclusion criteria (Figure 1) were the impacted maxillary canines with A2 (the tooth angulation to the midline 16°–45°), V1 (the vertical height of the tooth crown above the cement-enamel junction but less than half the length of the maxillary lateral incisor root) and M3 (medial position of the canine crown more than half but less than the whole root width of the lateral incisor). In the article we present the results of the 28 IMC in 21 patients (7 males and 14 females), with the mean age of 14.02 years (SD = 1.61), who were treated for impacted maxillary canines, using fixed orthodontic appliance with double archwire (Figure 2). The analyzed data were compared with the control group (CG) treated with fixed orthodontic appliance and active ligature (Figure 3) that was matched for pretreatment age and IMC position.
Results: With both methods the IMC were alignment and guided in to an appropriate location in the dental arch, but the treatment time was shorter and the number of visits was statistically significant lower for alignment of IMC with the double archwire.
Conclusion: Impacted teeth require early diagnosis, timely and correct treatment in order to achieve the goal of functional occlusion and dentofacial aesthetics. An untreated impacted tooth can cause serious problems such as infection and cystic follicular lesion and compromise the lifespan of neighbouring lateral incisors due to root resorption.

CP78 - BIOMECHANICS OF MAXILLARY DENTITION DISTALIZATION WITH INFRAZYGOMATIC ANCHORAGE: A CASE SERIES

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BACKGROUND: Skeletal anchorage with Temporary Anchorage Device (TAD) is a significant aid to orthodontic treatment. InfraZygomatic (IZ) TAD has been advocated as an efficient anchorage modality for full maxillary dentition distalization. However, the IZ crest´s position may vary among individuals, altering the applied force vector in relation with the Center of Resistance (CR) of the maxillary dentition. Therefore, the aim of this presentation is to demonstrate the effect of altering the vertical level of the point of force application for an en masse maxillary dentition distalization in a series of clinical cases, allowing the development of a theoretical model of the force vectors generated and its effect on the pitch movement of the occlusal plane.

METHOD: Three patients with full permanent dentition presented with disocclusion. The treatment comprised fixed appliances with an en masse distalization of the maxillary dentition using IZ Mini-Implants (MI) as a source of anchorage. The vertical position of the IZ MI varied among the three cases. Therefore, the force vector´s relationship of the CR with the maxillary dentition changed.

RESULTS The CR of the maxillary dentition is located approximately at the middle of the root of the second premolar. Thus, when the line of action of the distalizing force passes occlusal to the CR of the maxillary dentition, a clockwise rotation of the occlusal plane is generated. The reverse occurs when the line of action is apical to the CR.
Two factors must be considered when planning maxillary dentition distalization anchored in IZ TAD: the point of force application, which depends on the height of the anterior hooks, and the origin of the force applied. The origin of the force applied varied in the sagittal and vertical planes, evaluating the rotational effect that those various models may have on the occlusal plane.

CONCLUSION: Understanding biomechanics and evaluating the possible force vectors applied when en masse distalization of the maxillary dentition is essential to yield a more efficient and personalized treatment. Changing the height of the IZ TAD is a reliable approach to apply the most appropriate force vector for each case.

CP79 - INVISIBLE DANGER, INVISIBLE REMEDY: UPRIGHTING DEEPLY IMPACTED CANINES USING TEMPORARY ANCHORAGE DEVICES (TADS).

Dr. Shadi Fietz[1]
[1]Praxis Dr. Shadi Fietz

Aim:
The purpose of this study was to survey the possibility of uprighting deeply impacted canines in the lower and upper jaws using only a temporary anchorage device, before alignment of the teeth with a fixed appliance. This promises a shorter overall treatment time and less risk of root resorption in adjacent teeth.

Materials and Methods:
In more than 42 cases of patients with deeply impacted canines in both jaws, who showed unfavourable displacement of the canines, were treated with a surgical exposure of the canines, and then a placement of a TAD along with a first molar band and a segmental TMA arch wire. The TAD was used in the lower jow to guide the canines into the dental arch of the mandibular and as indirect anchorage in the maxilla before the alignment using a fixed appliance began. The patients age group ranged from 9 to 16.10.
Especially in the lower jaw, uprighting severely impacted and deeply displaced canines poses greater risks and necessitates a more extended treatment period. The implementation of this efficient method, utilized for approximately 12 years, has showcased remarkable safety and effectiveness in achieving straightening without inducing root resorption in adjacent teeth. This lecture will primarily focus on elucidating this method.

Results:
In most of the cases, alignement of the canines was possible before placement of a full fixed appliance. These cases showed no detectable root resorption.
In two cases, the canine was surgically removed due to extremely high risk of iatrogenic root resorption. The space was then closed using TADs or class two fixed applince

Conclusion:
The modern diagnosis using CBCT images and TADs open up new possibilities in the classification of adversely impacted canines, allow their alignment into the dental arch, and shorten the treatment time with the fixed appliance.

CP80 - IMPROVEMENT OF THE DENTAL SITUATION THROUGH FUNCTIONAL REHABILITATION OF A PATIENT WITH CEREBRAL PALSY - A CASE REPORT

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Background: In Western European countries, 2-3 out of 1000 children suffer from cerebral palsy due to pre- or perinatal brain damage. These patients have sensorimotor dysfunction, disturbances in movement control and muscle tone. This results in orofacial dysfunction, such as an open mouth posture and a low tongue rest position, which can lead to dental and skeletal anomalies, like an open bite situation.
Patient: The presented patient is a twin girl at the age of 14.2 years. Her vertebral palsy acquired at birth due to a lack of oxygen. Clinically she presented with a skeletal open bite (ArGoMe angle of 141,3º) and a frontal open bite situation (vertical overbite of 2mm). Her orofacial dysfunctions comprised visceral swallowing pattern, low tongue rest position with open mouth posture. Before her orthodontic treatment she had myofunctional therapy for many years. Her orthodontic treatment started with expansion of the upper and lower jaws, followed by Functional Regulator therapy with the FR IV. Additionally myofunctional therapy once per week was prescribed and a face former was given to her to train her perioral muscles at home as much as possible.
Results: During her 5 years (10/2017 – 02/2023) of orthopedic therapy her vertical skeletal situation could be improved (overall reduction of ArGoMe angle by 13º). In contrast to that frontal open bite reduced only slightly by 0.9mm. Although the patient developed a better awareness of her orofacial functions and dysfunctions during her therapy no complete rehabilitation of orofacial dysfunctions could be achieved. By the end of treatment she still had a low tongue rest position and an open mouth posture. Therefore, she was recommended to continue with daily face former training for retaining treatment result.
Conclusion: Orthopedic therapy of malocclusion in patients with cerebral palsy is a major challenge and treatment outcome is not predictable. Possible treatment results are dependent on many factors, like patient's ability for cooperation and severity of patient's motor impairment. However, it is possible to achieve an improvement in the overall malocclusion situation by applying orthopedic therapy in combination with myofunctional therapy and additional muscle training.

CP81 - TREATMENT OF UNILATERAL DISTOCCLUSION WITH FIXED FUNCTIONAL APPLIANCES – CLINICAL CASES

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BACKGROUND: Unilateral distocclusion is defined as an asymmetrical sagittal molar interrelationship, characterized by a neutral dental relationship on one side and a contralateral distocclusion.
Before planning orthodontic treatment of unilateral distocclusion, it is essential to make an accurate diagnosis, identifying the origin of the asymmetry. This can be located in the maxillary or mandibular arch, or both, and can have a skeletal, dentoalveolar or combined origin. When the problem is predominantly mandibular, skeletal or dentoalveolar, the use of fixed functional appliances may be considered. The aim of this study is to demonstrate the clinical application of a fixed functional appliance, ForsusTM Fatigue Resistant Device, in a treatment of a case with unilateral distocclusion through the presentation of two clinical cases.
METHODS: Case 1: A male patient, 15 years old, with mesodivergent skeletal pattern, a left distocclusion and a right normocclusion. He presented with a lower midline deviated 1.5 mm to the left in relation to the facial midline.
Case 2: A male patient, 14 years old, mesodivergent skeletal pattern with a left distocclusion. He presented a lower midline deviation of 4 mm to the left in relation to the facial midline.
Both cases were treated with bimaxillary fixed appliance (MBT 0.018 x 0.028 stainless steel brackets), aided by a unilateral approach with a fixed functional appliance - ForsusTM (EZ2 Module, 3M Unitek, Monrovia, USA).
RESULTS: Orthodontic treatment should be determined based on the aetiology of the asymmetry, and may involve extractions, asymmetric mechanics or, in extreme cases, orthognathic surgery. Asymmetric mechanics can be implemented with class II elastics, extra-oral forces, temporary anchorage devices or fixed functional appliances.
ForsusTM is a versatile fixed functional appliance that is easy to install, exerts a continuous force, allow sequential activations, and does not require patient compliance.
A stable and functional bilateral molar and canine normocclusion was achieved in the two cases presented, overbite and overjet were corrected, and midlines were centered.
CONCLUSION: The use of unilateral ForsusTM type fixed functional appliance should be considered in the approach for unilateral distocclusion treatment.

CP82 - PERFORATION OF A NASOPALATINE DUCT CYST (NPDC) DURING INSERTION OF ORTHODONTIC MINI-IMPLANTS (OMI) IN THE ANTERIOR PALATE – AN INCIDENTAL FINDING

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BACKGROUND: This patient report demonstrates the incidental finding of a nasopalatine duct cyst (NPDC) during the insertion of orthodontic mini-implants (OMIs) and the subsequent interdisciplinary treatment procedure. NPDC is a rarely occurring non-odontogenic pathology.

MATERIAL AND METHODS: A 27-year-old female patient with severe class III malocclusion, whose treatment was started alio loco (including extraction of two upper premolars and incomplete gap closure), received two orthodontic mini-implants (OMI) to complete orthodontic decompensation prior to orthognathic surgery. The radiological imaging showed no suspicion of pathologies in the anterior palate. OMI insertion was carried out through a digitally planned insertion template. The left OMI failed to achieve primary stability and insertion was accompanied by secrete discharge at the anterior palate. Subsequent removal caused further painless secrete discharge. The origin of the secrete was examined with a periodontal probe and revealed an atypical cyst canal between the palatal rugae. Eventually, a CBCT of the respective region suspected the presence of a nasopalatine duct cyst with a size of 6 x 7 mm.

RESULTS: Following OMI removal, cystectomy was performed and histopathological evaluation confirmed the radiological suspicion. After two months of undisturbed healing, new OMIs were placed at a slightly more posterior position and successfully utilized to complete the gap closure.

CONCLUSION: The possibility of an incidental finding of a NPDC should be considered if OMIs fail to receive primary stability. It should be noted that the respective translucence may not be seen on pre-surgical panoramic images and lateral cephalograms.

CP83 - DIGITAL INDIRECT BONDING IN ORTHODONTICS, TWO APPROACHES USING THE ONYX CEPH CAD SOFTWARE: TWO CASE REPORTS

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BACKGROUND: Indirect bonding technique in orthodontics was firstly proposed in 1972, which aimed to improve the precision of placing brackets while minimizing the chairside time and reducing the discomfort of the patient.
With the rise of technology in various fields in dentistry and the use of CAD/CAM (computer-aided design/computer-aided manufacturing) technology in orthodontics, a series of systems for digital indirect bonding have been developed. These systems allow a complete digital workflow, in which the software enables the orthodontist to precisely position the brackets on virtual models of the dental arch digitally. Individualized transfer trays could also be designed and three dimensionally (3D) printed, where the brackets will be placed and finally, transferred into the oral cavity.

The digital indirect bonding has shown to be correlated with a reduced treatment time and a smaller number of appointments when compared to direct and manual indirect bonding. Moreover, the reproducibility in terms of brackets positioning and the transfer accuracy of 3D printed trays have also been confirmed.

OnyxCeph³™ is a software which helps processing 2D and 3D Data in a substantial virtual planning of the orthodontic treatment process.

AIM: To introduce two different approaches (FA Bonding& Wire Bonding) of digital indirect bonding using the OnyxCeph³™ software.

CP84 - ALTERNATIVE TREATMENT APPROACH TO A CLASS III PATIENT WITH ENDODONTICALLY COMPROMISED TEETH

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Objective

The aim of this poster is to illustrate the treatment of a class III patient with extraction of 2 upper bicuspids and 2 lower first molars with subsequent eruption of the lower wisdom teeth.

Materials and methods

A 22-year-old man was admitted for orthodontic treatment with a chief complaint of severe crowding in the upper and lower dental arches. He presented a dental class III, anterior crossbite and shifted lower midline. The panoramic x ray showed a number of endodotically compromised teeth, especially in the posterior segment. Because of the latter and due to their bigger mesio-distal width we decided on lower first molar extraction as a treatment approach of the class III. The wisdom teeth had not yet erupted, however, their position and inclination were favorable for eruption given that sufficient space was provided. On account of the moderate crowding and class III relations only two bicuspids were removed in the upper jaw.

Results

In the course of 40 months the patient was successfully treated to class I canine and class II molar relations. Lower bicuspids were distalised in the place of the extracted first molars to gain space for the incisors. The residual space from the extraction was used for mesialization of the second molars, which in turn provided room for the spontaneous eruption of the wisdom teeth. The latter were bonded and aligned in the arch.

Conclusion

Extraction of endodontically compromised teeth can be considered instead of standard bicuspid extraction. This can be a wise treatment alternative especially when the intact wisdom teeth can erupt normally and thus provide better long-term occlusal stability.

CP85 - OCCURRENCE OF DENTAL ABNORMALITIES IN PATIENTS WITH UNILATERAL CLEFT OF THE PRIMARY AND/OR SECONDARY PALATE.

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[1]Ortodoncja Sp Z O O

Dental disorders are the most common malformations associated with unilateral cleft of the primary and/or secondary palate. The literature shows that the most common are hypodontia, missing teeth, atypical tooth structure and hyperodontia.
Aim of the study:
The aim of the study was to investigate the frequency of different types of dental disorders in case patients with unilateral cleft of the primary and/or secondary palate, treated orthodontically at NZOZ Ortodoncja in Cracovia.
Material and methods:
The resources consisted of orthopantomography X- rays of 240 patients (120 girls and 120 boys) in the age between 6 and 14 years old, with unilateral cleft of the primary and/or secondary palate. The orthopantomography was assessed: dental status, number of teeth and their constructions. In the study group of 240 children in the age between 6 and 14 years old dental disorders were observed in 91%. The most observed disorder was missing teeth and 90% of it was mainly found in upper jaw on the left side.
Hypodontia most often affects second incisors and second premolars. Atypical tooth structure was observed in 35% of the study group. Impacted tooth on the cleft side was identified in case of 12 patients. Hyperodontia occurred in 7% and concerned maxillary lateral incisors on the cleft side. 4% of patients had tooth transposition. 5% of patients had dental abnormalities in the mandible.
Conclusions:
Most frequently observed were patients with unilateral cleft of the primary and/or secondary palate dental disorder. It should be taken into consideration while preparing treatment plans and treating patients with clefts.

CP86 - ORTHODONTIC AND SPEECH THERAPY TREATMENT OF PRESCHOOL CHILDREN.

Dr Wanda Konty-Gibinska[1], Dr Joanna Gibińska-Styla, Mgr Agnieszka Bzdyk-Gibinska
[1]Ortodoncja Sp Z O O

It is believed that malocclusion causes speech defects however, this relationship is not precisely defined.
Aim:
The aim of this study was to determine a correlation between malocclusion types and speech defects among preschool children and the use of early orthodontic treatment.

Resources and methods:
The examination covered study group of 542 children in the age from 3 to 6 years attending 5 preschools in Cracovia. Children were divided into 4 sub-groups:
1. Group I contained 85 children in the age of 3 years (mild dentition).
2. Group II contained 97 children in the age of 4 years (late milk dentition).
3. Group III contained 125 children in the age of 5 years (late mild dentition/early mixed dentition).
4. Group IV contained 135 children in the age of 6 years (early mixed dentition).
The study required to obtain children's medical history (from their parents) regarding orthodontic and speech examination and treatment.

Results:
Malocclusion was observed in 56% of the study group. The majority of malocclusion occurred in the oldest group (Group IV). Speech defect was diagnosed in 67% of the study group. The majority of speech defect was in sub-groups I and IV.
Among all malocclusion the most observed was Class II, later open bite and crossbite with Class III as the less observed.
Most often speech impediment was accompanied by and open bite. Cutting the frenulum of the tongue to early increases the severity of the speech defect.
After the examination all children were provided with trainers or removable appliances appropriate to the malocclusion and the age of a child.

Conclusions:
In our opinion there is a correlation between malocclusion and speech impediment.

CP87 - CORRECTION OF AN IMPACTED CANINE AND MOLAR CLASS II DIVISION I, TREATED WITH A CARRIERE MOTION APPLIANCE AND AN INTERRADUCILAR MINISCREW.

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BACKGROUND:
This case report shows the correction of a molar class II division I and a buccally impacted canine 13 vestibular between 11 and 12.

MATERIALS/METHODS:
A 12-years-old female patient was treated. Cephalometric analisis (Steiner, Ricketts) and digital models were made. Chief concern: molar full class II and an incomplete left canine class II, overjet of 6mm and an included 13 between 12 and 11. Three years of treatment carried between 10th of January 2020 and 27th of November 2023. The treatment consisted of a rapid palatal expansion followed by a bilateral Class II Carriere Motion from 16 to 14 and from 26 to 23. The motion's objective was to create space for the eruption of the canine 13 and correct the class II, a sectional was placed to realize a high and horizontal traction to keep as much bone as we could around the canine 13 and lateral incisive 12. Using the Carriere Motion, interradicular miniscrew inserted distal to 16 and traction arm, we reduced as much as possible the unwanted molar mesialization due to the molar class II. We also used a seccional archwire to prevent the occlusal plane change. We finished by using a Warren coil to give negative torque to the canine 13. 0.22 conventional brackets were cemented and the canine was included in the wire whe in arch. Pretreatment intraoral scanner, intraoral and extraoral photographic record were taken as well as post-treatment intraoral scanner and full photographic records were taken.

RESULTS
The canine was successfully brought into the dental arch and the patient finished with a molar and canine class I with a correct overjet.

LIMITATIONS
The biggest limitation we found was the limited post-treatment retention time.

CONCLUSION
An impacted canine can be successfully tracted with the help of a miniscrew. The patient presented a correct occlusion, molar and canine class I at the end of the treatment.

INTEREST: All authors and co-authors declare not having any financial interest

CP88 - TREATMENT OF TMJ DYSFUNCTION AND CLASS II HIGH ANGLE ANOMALY WİTH CLEAR ALIGNERS AND SURGERY FIRST APPROACH

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AIM: In this case report, the results of an individual with TMJ dysfunction and skeletal class II anomaly treated with surgery first approach and using clear aligners are presented.
CASE METHOD: 19 years old female patient who presented to the clinic with complaint of TMJ pain and gummy smile. In clinical evaluation Angle Class II relationship , 2 mm deviation to left side at lower midline, 8 mm overjet, -1 mm overbite, 4 mm gummy smile was found; TMJ examination showed crepitation and disc displacement without reduction. In radiological evaluation, it was found that increased vertical dimensions (GoGn/SN:53°) and skeletal class II anomaly with bimaxillary retrusion (SNA:72°, SNB:64°, ANB:8°). After TMJ splint therapy which lasted 8 months patient received orthognathic surgery followed by clear aligner therapy. NemoFab digital surgery planning program was used for Surgery preparation; predicted post-op occlusion STL files were transferred to the Orthero Software and digital set-up was performed according to this occlusion. Attachments were bonded 1 day before surgery. 3 mm advancement , 7 mm impaction on the anterior and 5 mm impaction on the posterior region of maxilla was done. 7 mm mandibular advancement, counter clock-wise rotation and 2,5 mm translation to left were performed. Maxillomandibulary relationship was preserved with use of intermaxillary elastics between IMF screws. After 3 weeks, aligner treatment started which consisted of a total of 20 aligners , it was recommended that each aligner to be used for 7 days, 22 hours a day.
RESULTS: Following splint treatment, the patient's pain symptoms decreased and stable mandibular position obtained. With surgery; ideal occlusion (overjet-overbite: 2 mm, Class I relationship) and skeletal improvement (SNA:74°, SNB:70°, ANB:4°, GoGn/SN:48°) were obtained. Pogonion moved 12 mm anteriorly , 10 mm superiorly and gummy smile has been eliminated. Total treatment time is 250 days, with addition of refinement treatment which contains 16 aligners.
CONCLUSION: Thanks to regional acceleration phenomenon that emerged as a result of surgery first concept, individuals can achieve ideal aesthetics in a minimal time. With clear aligner treatment dental crowding can be solved by applying optimal forces without soft tissue injury and hygiene problems.

CP89 - THE CLINICAL AND CEPHALOMETRIC EXAMINATION OF A PATIENT TREATED WITH THE PITTS21 BRACKET SYSTEM

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AIM: This case report aims to demonstrate the changes in clinical and cephalometric values in a patient treated with the Pitts 21 bracket system, highlighting the treatment outcomes.

MATERIAL/METHOD: A 17-year-old female patient presented to our clinic with a complaint of malocclusion. There was a severe crowding present in the patient. The patient had a Class I skeletal and dental relationship. Initially, she exhibited increased U1-SN (112º) and increased IMPA (100º) values. The patient was informed that the ideal treatment approach would involve extractions, but she expressed her preference for non-extraction treatment. It was decided to use the Pitts21 bracket system for the patient's treatment. During the treatment process, various orthodontic wire were utilized, including 0.014 thermal activated nickel titanium wire, 0.018x0.018 ultra-soft thermal activated nickel titanium wire, 0.020x0.020 thermal activated nickel titanium wire, 0.020x0.020 beta titanium wire, and stainless steel wire. The patient was scheduled for appointments every 6-8 weeks throughout the treatment, which lasted for a total of 10 months.

RESULTS: After 10 months, U1-SN increased to 116º, IMPA to 109º, with significant improvements in crowding, arch width, and smile aesthetics, achieving an ideal profile.

LIMITATIONS: The resolution of malocclusion without extractions, in accordance with the patient's preference, led to an increment of the incisor inclination angles throughout the course of treatment in this case.

CONCLUSION: The 10-month treatment yielded notable enhancements in malocclusion, arch width, and smile aesthetics, resulting in an attained ideal profile.

CP90 - BIMAXILLARY ORTHOGNATHIC SURGERY TREATMENT OF SKELETAL CLASS III MALOCCLUSION: A CASE REPORT

Mr. Alpkursad KOYUNCU[1], Dr. Hatice KOK[1], Miss Mumine GOKYER[1], Mrs. Elif ERDOGAN[1]
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AIM: Skeletal Class III malocclusion; it is a dentofacial disease that can be seen with maxillary retrognathia, mandibular prognathia, or a combination of both. Severe Class III malocclusion; it can be corrected with orthodontic treatment and orthognathic surgery in order to provide the patient with better biting, chewing and speaking functions and satisfactory facial aesthetics. In this case report, the orthodontic and bimaxillary orthognathic surgical treatment of a patient with skeletal Class III malocclusion is presented.

MATERIALS AND METHOD: The complaint of a 17-year-old patient who applied to our clinic was that “forward lower jaw, speech impairment and aesthetic concerns”. As a result of clinical examination; the patient had a concave profile, Class III molar relationship, negative overjet, skeletal Class III malocclusion and in the cephalometric evaluation (SNA: 84.5° A to N -| FH: 7.0 mm, SNB: 86.4° Pogonion to N -| FH: 19.3 mm , ANB: -1.9°), proclined upper incisors (Mx 1 - SN: 113.4°) and lower incisors at normal angle (IMPA: 92.9°). The patient was decompensated by extraction of the right and left maxillary first premolar teeth and prepared for orthognathic surgery. A 5 mm set back was performed with bilateral sagittal split ramus osteotomy in the mandible and 7 mm maxillary advancement with Le-Fort 1 osteotomy.

RESULTS: After approximately three years of total treatment, improved profile and function were achieved in addition to Class I occlusion with an ideal overjet, overbite, and well-aligned dentition. The result of the cephalometric evaluation is SNA: 87.1° A to N -| FH: 9.2 mm, SNB: 83.5° Pogonion to N -| FH: 14.2, ANB: 3.6°, Mx1-SN: 107.8°, IMPA: 90.6°were found.

LIMITATIONS: The results of this case study have limitations such as not being able to evaluate with 3D tomographic imaging due to the reduction of radiation risks and prolongation of treatment time due to patient cooperation.

CONCLUSIONS: In cases where camuoflage is not possible and growth modification is limited, orthognatic surgery is the best option that is satisfactory for both the patients and clinicians.

CP91 - THE MANAGEMENT OF UNERUPTED MAXILLARY CENTRAL INCISORS: AN EVALUATION OF TREATMENT OUTCOMES

Dr Hannah Gorman[1], Dr Sachin Patel[1], Dr Ashani Thayaparan[1], Dr Lucy Davenport-Jones[1]
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AIMS: A retrospective analysis into the aetiology and success of treatment outcomes associated with unerupted maxillary central incisors. We assessed the efficacy of spontaneous eruption against traction, following the removal of obstructions. The secondary objective of the study was to ascertain the prevalent causation of unerupted maxillary central incisors.

BACKGROUND: The failure of eruption of a maxillary central incisor is usually noted between the ages of 7-9 with an incidence of 1.96%, and is commonly caused by supernumerary teeth, retained primary teeth, trauma induced dilacerations or crowding. Currently, definitive protocols for treatment are lacking.

METHOD: 37 patients were identified who attended the hospital's joint orthodontic-paediatric new patient clinic from 2021-2023 with an unerupted maxillary central incisor complaint. An Excel document was populated with the following information from each record: age at presentation, aetiology, proposed intervention, whether traction was used, whether treatment was successful, date of eruption, and date of discharge. 15 of these patients had outcomes recorded, as the remaining 22 patients had either declined treatment, sought treatment elsewhere, or are currently still undergoing treatment. The results were then compared and analysed.

RESULTS: Amongst the 15 patients, 80% successfully erupted. Of these 12 successful cases, 6 required traction to facilitate eruption, 3 erupted without the use of traction, and 3 spontaneously erupted with no intervention, despite being planned for treatment. Of the 3 unsuccessful outcomes, all of these had utilised traction, however the incisor still failed to erupt. The leading cause of failure of eruption was the presence of a supernumerary, with 22 of the 37 cases presenting with this as the aetiology.

LIMITATIONS: The main limitation to the analysis was the sample size of patient records assessed and the inability to follow up patient records due to those still undergoing treatment.

CONCLUSIONS: This retrospective analysis sheds light on the multifaceted aspects of unerupted maxillary central incisors, aiming to understand their causes and treatment outcomes, revealing 50% of cases erupting without the use of traction, which aligns with the Royal College of Surgeons' guidelines. Further data collection is essential in generating more robust evidence that may impact clinical decision making.

CP92 - A SIMPLIFIED TECHNIQUE FOR INTRUSION OF OVERERUPTED 1ST AND 2ND MOLARS WITH ORTHODONTIC MINISCREWS: A CASE REPORT.

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BACKGROUND/AIM
Loosing one or more posterior teeth can result in overeruption of the opposing teeth. Prosthetic space reinstatement becomes crucial in order to provide a proper restoration in the edentulous area. The aim of this case report was to implement an orthodontic procedure for intrusion of overerupted 1st and 2nd maxillary molars in order to regain enough prosthetic space for fabrication of an implant-supported mandibular prosthesis.
MATERIALS/METHODS
A 47-year-old male presented in need of maxillary right molars intrusion as a referral of a prosthodontic dental office. Regaining the occlusal clearance was vital for replacing the missing 1st and 2nd mandibular molars with a two-implant-supported prosthesis. For bone anchorage, four miniscrews were placed buccally and palatally at the area of 1st and 2nd maxillary right molars respectively. The overerupted teeth were intruded with fixed appliances.
RESULTS
The two maxillary molars were intruded and a 2-implant mandibular prothesis was delivered. A 3.5mm increase of prosthetic space in the posterior right area was gained in a 6-month period. Pulp vitality and occlusion remained, and the periodontal tissues followed the orthodontic movement.
LIMITATIONS
The main limitation of this technique is the elongation of treatment time and the increased cost.
CONCLUSION/IMPLICATIONS
Orthodontic intrusion of overerupted teeth is less invasive to other procedures, such as tooth preparation and crowning of the overerupted teeth often combined with endodontic therapy. Furthermore, patient compliance stands at a minimum level. A simplified orthodontic procedure combining orthodontic mini implants, segmented bonded archwires and application of intrusion forces leads to regaining prosthetic clearance for proper antagonistic implants prosthesis. Both teeth responded well to the intrusion forces. Pulp vitality remained intact even after the 2 year-follow up. The occlusion remained stable.

CP93 - FACIAL SOFT TISSUE AND PROFILE CHANGES IN CLASS III PATIENTS AFTER DOUBLE-JAW ORTHOGNATHIC SURGERY: A CASE REPORT

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AIM: To present a clinical case of a patient with skeletal Class III malocclusion treated with orthodontic treatment and double-jaw orthognathic surgery (DJOS), in combination with a review of the literature regarding the facial soft tissue and profile changes in Class III patients after DJOS (maxillary advancement and mandibular setback).

MATERIALS AND METHODS: A 26-year-old Caucasian female with an excessively concave profile came to the Orthodontic department of 401 Military Hospital of Athens seeking treatment. We obtained panoramic radiographs, cephalograms, dental casts and photographs. Observing the changes in the profile of our patient after the end of the treatment, we decided to conduct a literature search about the changes in the facial soft tissue and profile in Class III patients who underwent DJOS. The literature search conducted in the PubMed electronic database with the following keywords: “facial soft tissue”, “profile changes”, “Class III”, “double-jaw orthognathic surgery” and “bimaxillary orthognathic surgery”. Search strategy included studies published from 2003 to 2023.

RESULTS: The patient had a negative overjet, bilateral posterior crossbite, anterior openbite and Class III molar relationship. After clinical examination and discussion with the patient, we decided to proceed in a combination of orthodontic treatment and DJOS. The analysis of the lateral cephalograms, the models and the photos before and after the treatment, revealed significant changes in our patient’s facial soft tissue and profile. According to the literature significant reduction in the lower lip area (related to backward movement of the mandible), insignificant nasal protrusion, forward movement of the tip of the nose and subnasal area, such as thinning of the upper lip are the main impacts of DJOS in patients’ profile.

CONCLUSIONS: It is generally assumed that orthodontic treatment in combination with DJOS in skeletal Class III patients, provides a significant improvement of the facial profile and esthetics. However, orthodontists, surgeons and patients, should realize that the result of the treatment depends on numerous factors, such as the degree of deformity, individual characteristics, gender, age, soft tissue thickness and musculature tonicity.

CP94 - IS HEMISECTION OF PRIMARY MOLARS A HELPFUL TECHNIQUE IN ORTHODONTIC SPACE CLOSURE?

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BACKGROUND: Agenesis of the mandibular second premolars affects many orthodontic patients. The orthodontist must make an appropriate treatment plan with the correct timing that minimizes the risk and cost of treatment while maximizing the potential benefits to the patient. The space that is occupied by the deciduous mandibular second molar can either be closed or maintained. Facing complex orthodontic challenges such as congenitally missing teeth requires clinicians to be adept with a broad and varied set of tools. After extracting a deciduous mandibular second molar, the patient may need 11 mm of space closure. Closing this gap in one phase sets high demands for anchorage management and patient compliance. If either one fails, the treatment outcome will be compromised.

AIM: Can hemisection of the deciduous second molar be beneficial in space closure after agenesis of the permanent mandibular second premolar?

MATERIAL AND METHODS: Space closure with fixed appliance and hemisection will be demonstrated with two cases. The first case was an 11 year-old girl with bilateral agenesis of the second premolar. She was referred to an orthodontist after the eruption of the second permanent molar. Space closure was done with sectional fixed appliances and hemisection of the primary molar. Complete closure was achieved in 10 months. The second case was a 14 year-old boy with unilateral agenesis of his mandibular left second premolar. He was treated with hemisection of the deciduous molar and space closure with fixed appliances. Complete closure was achieved in 7 months of active tracktion.

CONCLUSIONS: Hemisection of deciduous molars in space closure treatment can assist in preserving anterior anchorage. Clinical experience has shown that space closure is faster in the subsequent couple months after an extraction. Hemisecting and removing the primary molar in two stages may help to accelerate the mesial movement of the first molar and maintain the transversal dimension of the alveolar ridge for more efficient tooth movement.

CP95 - WILLINGLY OR UNWILLINGLY THE LOWER INCISOR EXTRACTION: TWO CASE COMPARISION

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AIM: This study presents the results of two orthodontic treatments performed by extraction of the mandibular incisor for different reasons.
MATERIALS AND METHODS: In the first case, 12-year-old male had 0 mm overjet and overbite with dental Class I relationship. Cephalometric analysis values were as follows: SNA:77.7°, SNB:76.2°, ANB:1.5°, Mx1-SN: 99.7°, IMPA:94.4°. There was found 5.2 mm narrowness in the maxilla, 5.1 mm in the mandible, 2.2 Bolton discrepancy in the mandible. It was decided to extract tooth number 31. The lower and upper teeth were bracketed and normal fixed treatment mechanics were applied.
In the second case, a male patient aged 17 years and 9 months with strong extraoral muscles and a horizontal profile. Our patient had 4.7 mm overjet, 7 mm overbite with class I molar and canine relationships. The values in the cephalometric examination were as follows: SNA: 85.8°, SNB: 80.1°, ANB: 5.7°, Mx1-SN: 110.7°, IMPA: 88.6°. There was found 1.3 mm space in the maxilla, 8.1 mm requirement in the mandible, 2.7 mm Bolton discrepancy in the mandible. It is planned to gain space by widening the collapsed posterior arches. The lower teeth were bracketed posteriorly segmentally, and fixed treatment mechanics including cross elastic were applied. Due to the patient's buccal muscle tone, the mandibular arch didn't expand. It was decided to extract tooth 42 and intrude the lower anterior segment.
RESULT: In both cases, smile aesthetics were improved, acceptable Class I molar and canine relationships achieved. Cephalometric values of the first case at the end of the treatment are as follows: SNA: 77°, SNB: 77.1°, ANB: 0.1°, Mx1-SN: 109.9°, IMPA: 92.1°.In the second case: SNA:84.9°, SNB:80.1°, ANB:4.8°, Mx1-SN:110.4°, IMPA: 95.8°.
CONCLUSION: Tooth extraction isn't ideal in cases of deepbite and crowding. However, some patients have no other options.In both cases, tooth outside the arch was extracted. Incisor extraction also provides acceptable success in cases where it isn't the ideal indication.

CP96 - ORTHODONTIC TREATMENT OF A PATIENT WITH BILATERAL CLEFT LIP AND ISOLATED CLEFT PALATE: A CASE REPORT

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AIM: To present the result of a fixed orthodontic treatment performed after rapid palatal expansion (RPE) and face mask therapy of a case with a bilateral cleft lip and isolated cleft palate.
MATERIALS: A 12-year-7-month-old male patient with bilateral cleft lip and isolated cleft palate referred to Orthodontic department for the treatment. Clinical and radiographic examinations of the patient revealed a skeletal Class III relationships with a skeletal maxillary deficiency, slightly concave profile, Class II molar relationship on the left, Class I molar relationship on the right and unaesthetic appearance of maxillary anterior teeth. There were two impacted teeth in the maxilla and a lower incisor was congenitally missing. Initial cephalometric values were as follows: SNA:71.7°, SNB:74°, ANB:-2.3°, FMA:31.7°, Mx1-SN: 99.8°, Mx1-NA(mm):5.6, IMPA:82.5°, Md1-NB(mm):3.5, interincisor angle: 133.9°. The patient had negative overjet and 0mm overbite. The treatment was initiated with a face mask combined with RPE. After first stage, the condition of the impacted teeth was evaluated. The tooth 25 was extracted and the other impacted tooth was left for follow-up because it was close to the tooth roots. Fixed orthodontic treatment was initiated with bonding of maxillary arch. Initial levelling and correction of rotations in the maxillary teeth were achieved with 0.012'' NiTi archwires. At the same time, removable anterior inclined plane appliance was placed in the mandible. After the rotations were corrected, mandibular teeth were bonded. 0.14'' NiTi, 0.16'' NiTi, 16x22'' NiTi, 17x25''NiTi, 19x25'' NiTi and 19x25'' SS archwires were inserted, respectively.
RESULTS: The cephalometric values at the end of the treatment were as follows: SNA:74.3°, SNB:74.4°, ANB:-0.1°, FMA:29.9°, Mx1-SN:106.6°, Mx1-NA(mm):8.8, IMPA:84,1°, Md1-NB(mm):4, interincisor angle:120.9°. After treatment, smile aesthetic was improved. Class I canine relationships on both side and ideal overbite was achieved. Overjet was slightly increased because of missing one lower incisor.
CONCLUSIONS: The use of face mask combined with RPE is an effective treatment in patients with cleft lip and palate. Since a slightly increased overjet will provide an advantage for late growth, planned lower incisor extraction can be performed in patients with cleft lip and palate.

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CP97 - TREATMENT OPTIONS FOR RETAINED TEETH IN CLINICAL CASES

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INTRODUCTION:
Upper canine teeth are both aesthetically and functionally important.
The prevalence of upper canine impaction is estimated to be between 1 and 4%. It is the second most commonly affected tooth in this respect.
In the Caucasian population, they are mostly palatally positioned. Females are 2x more likely to have this disorder.
Between the ages of 9-11 years, the position of the maxillary canine needs to be determined. If the germ is not palpable at the vestibular level, in 7-10% of cases the clinical examination should be complemented by some form of x-ray imaging.
About 50 % of affected canines cause root resorption of adjacent teeth.
CBCT scans are an excellent way to detect the severity of resorption and the position of the canine.
Root resorption of adjacent teeth most commonly occurs between 11 and 12 years of age.
METHODS:In my presentation, I would like to talk about the prevalence, aetiology, diagnosis and treatment options of canine impactionin a few cases.
RESULTS: Early diagnosis of impacted canines is very important.
In cases where the canines are palatally located and there is no root resorption, the canine and possibly the extraction of the first deciduous molar may modify the direction of the eruption. If the position of the remaining canine does not begin to normalise within 1 year, the patient should be referred to an orthodontist.
This often involves surgical exploration of the canine teeth and orthodontic treatment.
CONCLUSION:
Canine impaction requires orthodontic treatment. A deviation detected in time allows the most optimal treatment option for the patient.

CP98 - CLASS III TREATMENT WITH CARRIERE APPLIANCE FOLLOWED BY BRACES – A POSSIBILITY TO AVOID MAXILLOFACIAL SURGERY IN YOUNG ADULTS AND ADOLESCENTS?

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AIMS: The aim of this case serie is to present the orthodontic possibility of avoiding maxillofacial surgery by dental compensation using a Carriere Appliance and class III- elastics followed by multibracket appliance to create an adequate overjet and obtain a good esthetic result.
SUBJECT AND METHOD: We present lateral radiographs, cephalometric values and extra-/intraoral photos of 3 patients: one boy aged 19, one aged 22 and a girl aged 13, all showing a skeletal Class III malocclusion with edge-to edge relation of the incisors or a negative overjet and vertical relation of the jaws (partially open bite). We started the treatment with Carriere Appliance in the lower jaw, combined in the beginning either with RME, TPA or acrylic splint and class 3 elastics for 6 -12 months. When achieving space between lower canines and incisors, as well as a positive overjet, we removed the Carriere and put in a full fixed appliance for another 18- 22 months, continuing with elastics.
RESULTS: The total duration of treatment was 24 to 32 months. The incisal Class III-relation as well as the open bite were fully corrected with this approach, and aesthetic and functional dentofacial changes were obtained. Wits increased considerably in all cases (-6,9 to -4,9 /-12.9 to -3.9 / -7.6 to -3.9), while ANB increased only about 1°. Profile changes were remarkable and appreciated by the patients.
CONCLUSION: Although the conventional surgical-orthodontic approach can reliably treat dentofacial anomalies, the risks and inconveniences for the patients should be kept in mind. To avoid surgery, the presented procedure might be a good alternative in some cases for patients to benefit a lot.

CP99 - COMBINATION OF SKELETALLY ANCHORED TREATMENT APPLIANCES AND ALIGNERS: A CASE REPORT

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OBJECTIVES: Skeletal correction of Class III malocclusions and maxillary deficiencies often turn out to be less effective than expected. The treatment of skeletal class III malocclusions with a Hybrid Hyrax appliance in combination with a Mentoplate enables the application and transmission of orthopaedic forces directly to the maxillary bone. Subsequent treatments with aligners have been proposed to adjust the occlusion and to offer the patient the potential advantage of almost unrestricted aesthetics.

MATERIALS AND METHODS: This case report describes the treatment of a 13.5-year-old female patient with a severe Class III malocclusion (Wits appraisal: -6.4 mm). Furthermore, the patient presented with an edge to edge bite, a bilateral crossbite, a dolichofacial skeletal pattern (ML-NL: 28°) and a space requirement of 9.0 mm in the maxilla and 2.0 mm in the mandible. In order to achieve sagittal and transversal development of the maxilla, the patient was treated with a mini-implant-supported palatal expansion appliance - Hybrid Hyrax - in combination with a Mentoplate according to the Alt-RAMEC protocol. After removal of the Hybrid Hyrax, aligners (Invisalign®) and Class III elastics were used to coordinate the arches and fine-tune the occlusion.

RESULTS AND CONCLUSIONS: Considering the relatively short treatment time, the patient showed a substantial improvement in the Wits appraisal (-2.9 mm). After successful implementation of the Alt-RAMEC protocol and subsequent fine adjustment with Invisalign® aligners, there was a significant improvement in the occlusion as well as in the subjectively perceived chewing function and aesthetics. The maxilla was sufficiently advanced, lateral crossbite and the edge to edge bite were successfully treated.

CP100 - ORTHODONTIC RESCUE FOLLOWING CATASTROPHIC BONE LOSS AS A RESULT OF AN ANKYLOSED MAXILLARY CANINE

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BACKGROUND: The surgical removal of an impacted tooth in the anterior region can result in the creation of an alveolar bone defect, leading to aesthetic and restorative problems. Orthodontic tooth movement can be used as an alternative method to bone grafting to facilitate bone regeneration to restore the defect.

AIMS: This case report aims to discuss the method used to facilitate alveolar bone regeneration in a severe anterior bony defect following surgical removal of an impacted maxillary canine. Furthermore, we highlight the journey of a patient from surgical removal of the ankylosed canine and severe bony defect, to successful bone regeneration and final restoration.

METHODS: A 41-year-old female with an impacted left maxillary canine presented to the orthodontic department at a district general hospital. The patient had been undergoing orthodontic treatment to try and align bilaterally impacted maxillary canines. This treatment had been ongoing for a number of years. Whilst the right maxillary canine had aligned the left had become ankylosed. The decision was made to surgically remove the ankylosed canine which resulted in a severe anterior defect of the alveolar bone. Orthodontic rescue was employed by bringing the left maxillary first premolar forwards into the canine's position. The orthodontic movement of this tooth facilitated some regeneration of the alveolar bone, restoring the bony defect, and creating a restorable site distal to the defect. A multi-disciplinary approach was employed and the left maxillary first premolar space was restored with a dental implant.

RESULTS: Sufficient regeneration of bone was achieved with orthodontic tooth movement, allowing for implant placement in the maxillary left first premolar region. A great orthodontic and restorative result was achieved.

LIMITATIONS: There was a minor amount of relapse and a small bony defect was present following completion of orthodontic treatment.

CONCLUSIONS: Orthodontic tooth movement provides a good alternative to bone grafting in the restoration of alveolar bone defects, which carries a sequalae of risks and potential complications.

CP101 - LH ORTHODONTICS FOR THE TREATMENT OF ADULT SKELETAL CLASS I WITH FACIAL ASYMMETRY CASE

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BACKGROUND: LH (Low Hysteresis, Improved Super-elastic Ti-Ni alloy wire, developed by Tokyo Medical and Dental University) for the treatment of a facial asymmetry Skeletal Class I malocclusion case will be discussed.

OBJECTIVES: A 28-year-old adult male came to our clinic with a chief complaint of lower left molar missing. Clinical examination found Angle Class I malocclusion with tooth 37 missing.

AIMS: Radiographic examination showed a facial asymmetry Skeletal Class I pattern. In this case, implant surgery and prosthetic rehabilitation might be the best way to solve such kind of problem considering the missing tooth. However, when a patient strongly refused surgery and prosthesis, non-surgical orthodontic approach became an alternative. In order to improve arch coordination and fill the missing space, we used third molar substitution with second molar. Facial asymmetry was also corrected by occlusion rehabilitation.
RESULTS: Mechanism involved elastic chain for space closure and intermaxillary elastics for better intercuspal interdigitation. Finally, adequate overbite and overjet were achieved.

CONCLUSIONS: This case showed Skeletal Class I facial asymmetry with tooth 36 missing. We discussed about correction of a facial asymmetry and third molar substitution with second molar. By using LH curve and IME, we successfully relieved the upper and lower anterior crowding and precisely achieved adequate overbite and overjet.

CP102 - EFFECTIVENESS OF EXPANSION OF TEETH DURING CLEAR ALIGNER TREATMENT

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AIM: The aim of this work is to provide clinically useful information regarding the effectiveness of clear aligner treatment and to suggest overcorrection values for initial treatment planning with clear aligners.

METHODS: Authors are evaluating effectiveness of canine and first molar expansion in 55 patients treated with clear aligners. Expected values from the treatment simulation are compared with the values actually achieved after the first series of aligners using 3D scan superimposition in OnyxCeph software (Image Instruments).

RESULTS: Authors confirmed limited expression of expansion with clear aligners. Achieved expansion was lower than planned in upper molars and both upper and lower canines with canine expansion being more effective. Expansion in lower first molars was higher than planned in simulation.

CONCLUSION:
The study results implies that overcorrection should be included in the initial planning to optimize the results of treatment with aligners. More predictable expansion can be achieved in the canine area.

Key words: Clear aligner treatment. Invisalign. Expansion. Overcorrection. Effectiveness.

CP103 - BUCCALLY DISPLACED MAXILLARY CANINES- A SYSTEMATIC REVIEW CONVERNING ETIOLOGY, PREVALENCE, PREDICTION DIAGNOSTIC AND TREATMENT STRATEGIES

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OBJECTIVE: To systematically identify, assess and analyse the literature on buccally displaced maxillary canines to find current evidence regarding prevalence, as well as methods for diagnosis and treatment.

MATERIALS/METHODS: Searches for studies were made in three databases (PubMed, Cochrane library and Web of science). Five reviewers independently screened all titles and abstracts and applied the PICO to select studies for full text reading. Data extraction and risk of bias assessment were conducted independently by the reviewers using AXIS tool for prevalence studies, PROBAST tool for prediction studies and the QUADAS tool for diagnostic methods, whereas for treatment methods, ROB 2 tool (RCT) and ROBINS-I (case-control, cohort studies) will be used. (PROSPERO registration number: CRD42022342952).

PRELIMINARY RESULTS: The 195 selected studies concerned etiology (n=50), prevalence (n=26), prediction (n=11), diagnostic methods (n=42), treatment (n=50) and root resorption (n=16). Risk of bias assessment is currently conducted of the studies regarding treatment methods. The results concerning treatment methods will be presented at the European Orthodontic Society in Athens 2024.

CP104 - NON-EXTRACTION ORTHODONTIC TREATMENT OF SEVERE CROWDING USING MINISCERWS.

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Objectives: This clinical report illustrated the successful orthodontic treatment of class II malocclusion with severe crowding by distalization of upper posteriors using minscrews.

Materials and Methods: 29 years old male patient visited to our clinic with a chief complain of anterior crowding. The patient had an anterior crowding and Class II molar and Class II canine relationship. The upper left lateral showed crossbite. There was no space for the upper left lateral incisor. The upper dental midline deviated about 5mm to the left side. The cephalometric analysis showed a skeletal Class I relationship with a hypodivergent facial pattern. To create the space for alleviating the upper anterior crowding, we distalized the upper posteriors by applying retraction force on the posteriors with miniscrews in the palatal slope and a lingual arch on the both 2nd molars after extracting the both upper wisdom teeth.

Results: After 44 months of orthodontic treatment, Class I canine and molar relationships with proper overjet and overbite were achieved without extraction of premolars.

Conclusion: Our result of this clinical report suggests that distalization of posteriors using miniscrews facilitate treating severe class II crowding case.

CP105 - TREATMENT OF SEVERE ANTERIOR OPEN BITE WITH TEMPOROMANDIBULAR JOINT OSTEOARTHRITIS USING LIM PLATE SYSTEM

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BACKGROUND: This case delineates the orthodontic intervention administered to a 21-year-old male patient with severe anterior open bite and skeletal class II malocclusion, along with degenerating osteoarthritis of the condyle. The patient reported difficulties in mastication involving both upper and lower incisors and had mild crowding and protrusion of the anterior teeth.
METHODS: In the diagnostic assessment, incorporating cone beam computed tomography (CBCT) evaluation, subtle erosive alterations were identified in the anterior region of the left mandibular condyle on CBCT. It was recommended to proceed with orthodontic treatment after observation until the mandibular condyle was stabilized. However, the patient refused this, and orthodontic treatment was performed without a sufficient observation period. The treatment was completed without the initially planned orthognathic surgery by reducing the protrusion by extracting the premolars, and using Lim plate system to intrude the posterior teeth to promote antero-upward rotation of the mandible.
RESULTS: Through treatment using a skeletal anchorage, good treatment results were obtained by intruding the posterior teeth and moving the anterior teeth backward without orthognathic surgery. Upon comparing the pre- and post-treatment states of the mandibular condyle, discernible posterior displacement was noted.
LIMITATIONS: In cases where osteoarthritis was suspected, a sufficient observation period was required, but this was not possible due to the patient's refusal.
IMPLICATIONS: This observation implies that the presence of an unstable mandibular condyle may contribute to posterior movement of the mandible throughout the course of treatment. Nevertheless, empirical evidence supports the efficacy of skeletal anchorage in effectively managing severe anterior open bite associated with degenerative arthritis.

CP106 - GROWTH MODIFICATION USING RAPID MAXILLARY EXPANSION & FACEMASK WITH ALT-RAMEC PROTOCOL IN AN EARLY ADOLESCENT PATIENT WITH SKELETAL CLASS III: A CASE REPORT.

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Objectives: To correct anterior crossbite and skeletal Class III malocclusion in a 13-year-old Thai female seeking to improve her smile and facial profile.

Diagnosis: The patient presented with asymmetrical square facial form and a concave facial profile, flat paranasal area, and 2 mm deviated chin. The lip was competent, low lip line at rest position and low smile line. She had mild crowding on the upper arch, a deep curved of Spee on lower arch, Angle's Class III malocclusion, an anterior crossbite (-5 mm overjet), 100% deepbite and a 5 mm anterior CO-CR shift. Teeth 12 and 22 were microdontic.
The lateral cephalometric confirmed the skeletal type III with tendency retrognathic maxilla and tendency prognathic mandible (SNA 81, SNB 84, ANB -3, AO-BO -8). The position and inclination of the upper incisors were in normal range while the lower incisors were retroclined and retruded. The cervical vertebral maturation showed cervical stage 4.

Treatment: The treatment plan employed the Alt-RAMEC protocol involving alternating periods of rapid maxillary expansion and constriction performed for eight consecutive weeks using a screw appliance, with the parents instructed to activate it twice daily for one week and close it twice daily for the following week (0.25 mm per turn) followed by protraction facemask therapy until positive overjet was established.
Fixed orthodontic appliances were bonded to upper incisors during the protraction phase. After 5 months of protraction, overcorrection was achieved (7mm overjet, canine class II half step), lower teeth were bonded to flatten deep curve of Spee, and protraction facemask was switched to nighttime-wear only to prevent relapse. After 1 year of protraction, rapid maxillary expansion was removed. teeth 12 and 22 were referred for restoration after achieving proper overjet, coordinated midline and canine class I.

Results: Significant improvement in the anteroposterior of maxilla and masticatory function were achieved. The post-treatment occlusion demonstrated excellent occlusal relationships with class I molar and canine relationships bilaterally. The treatment led to a noticeably improved smile and facial profile.

Conclusion: A late-detected class III patient can be successfully treated by growth modification using ALT-RAMEC protocols in conjunction with high patient compliance.

CP107 - CEPHALOMETRIC EVALUATION OF ARCHWISE DISTRACTION APPLIANCE (AWDA) EFFECTS IN BILATERAL CLEFT LIP AND PALATE PATIENT (BCLPP)

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AIM: Maxillary retrognathia, velopharyngeal insufficiency (VPI) and alveolar clefts are major issues to be taken care of, in cleft lip and palate (CLP) patients. Risk of increase of the velopharyngeal distance through surgery, limits the possible amount of surgical maxillary advancement in those patients, because usually maintaining speech quality is considered more important. For patients with already existing VPI, distraction osteogenesis can be a more beneficial alternative, in order to prevent worsening, or even ameliorate, speech. AWDA being a method to close large alveolar gaps, can serve to distract the maxilla sagittally, if distraction is continued after gap closure.
The aim of this study is to describe an alternative multidisciplinary approach for the treatment of sagittal maxillary insufficiency in CLP patients.
MATERIALS AND METHOD: Evaluation of a female 16-year-old BCLPP showed concave profile and severe maxillary retrognathia (SNA:72˚, SNB:79˚). Bilateral distraction to advance maxilla, using AWDA, was initiated after pre-surgical orthodontics. Activations were started after a 5-day latency period, and continued for 16 days. To prevent openbite due to linear advancement of the maxilla, anterior vertical intermaxillary elastics to mentoplates, were used simultaniously.
RESULTS: 5.9 mm maxillary advancement was achieved measured by N⊥A. Overjet increased 12 mm showing that the dentoalveolar complex advanced more than the skeletal structure. Parallel to this finding, even though anterior vertical elastics were used to control openbite, 3˚ upper incisor proclination was observed, contrary to the expected retroclination. SNA increased 11˚. Total facial convexity improved 13˚, skeletal profile angle decreased from 199˚ to 178˚. Speech evaluation revealed better articulation of consonants due to correction of Class III relationship, resonance remained stable inspite of a slight enlargement of the palatal fistula.
CONCLUSIONS: A sufficient amount of maxillary dentoalveolar advancement and improvement of facial profile appears to be possible with the AWDA, without any adverse effects on velopharyngeal mechanism.

CP108 - CONTEMPORARY INSIGHTS FOR THE DIAGNOSIS AND TREATMENT OF MAXILLARY IMPACTED CANINES

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INTRODUCTION:
The maxillary permanent canine is the most frequently impacted tooth after the third molar. The prevalence of impaction is 0.9%-3.0%. Early diagnosis of the impaction greatly eliminates complications of the impaction. Root resorption of the maxillary incisors caused by palatally impacted canines is a relatively common phenomenon.
AIM: The purpose of our study is the evaluation and reliability of various diagnostic methods regarding root resorption of the adjacent to the impaction teeth, the incidence of root resorption and the evaluation of the effectiveness of different methods of surgical exposure.
MATERIAL AND METHOD: Three of our studies are the material of the presentation. The reliability of different radiographic methods for the localization of displaced maxillary canines, the open versus closed surgical exposure of palatally impacted maxillary canines and the incidence of incisor root resorption associated with impacted maxillary canines are presented and discussed.
RESULTS:
Concerning the localization of displaced maxillary canines, CBCT images proved to be more accurate and precise compared with conventional radiographs, especially for the identification of root resorption of adjacent teeth.
Regarding the method of surgical exposure of palatally impacted maxillary canines no difference between open and closed exposure techniques in periodontal outcomes and aesthetic appearance was manifested.
Incidence of lateral root resorption was in a rate 18.5% . In younger patients, the impacted canines appear more often in the middle of the maxillary bone, whereas in older patients, the canines are located more often in the palatal or buccal side of the maxilla.
CONCLUSIONS:
CBCT is a more accurate and precise examination method and it is more specific for the localization of impacted teeth and root resorption of the adjacent teeth. There is no difference for the closed and open exposure techniques in periodontal outcomes and the incidence of lateral root resorption due to palatally impacted canines is in a rate 18.5%.

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CP109 - TREATMENT OF AN ADOLESCENT PATIENT WITH A CLASS II MALOCCLUSION AND UNDERLYING SKELETAL ASYMMETRY WITH CLEAR ALIGNERS: A CASE REPORT

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ABSTRACT
Treatment of Class II malocclusion accompanied with a skeletal discrepancy is complex and challenging for the orthodontist. The approach for correction depends on several factors such as the phase of skeletal growth, severity of the discrepancy. This case report describes the successful management of a 16.6-year-old adolescent girl that was presented with a full cusp Class II division 1 malocclusion with a functional shift to the right and an underlying skeletal asymmetry. The case was treated with aligners technique. Body posture asymmetries and TMJ symptoms were also detected. Growth modification treatment was not recommended, as the patient was in the post-pubertal phase. Treatment with clear aligners was effective and efficient by achieving all treatment goals within a period of 18 months.
OBJECTIVES: Treatment aimed in dentoalveolar expansion, proclination of the maxillary incisors and facilitated the mandible to reposition to centric relation. Sequential distalization on the right side was also performed to assist in the correction of Class II malocclusion.
METHODS: The clear aligner system applied was Invisalign (smart track material). Three series of aligners were used (21 +39+12). Two first series were used for 16 hours daily with 7 days interval change of the appliances and the last set was used with a reduced hours protocol to allow settling of the posterior occlusion. Class II elastics were applied and supplemental auxiliaries were used(button for supplemental extrusion of
RESULTS: A functional Class I molar and canine occlusion was established. The molar relationship on retention appeared not as a solid one on the right side due to Bolton discrepancy caused by decreased size of #14,#15 relative to the opposite counterparts. The underlying skeletal asymmetry resulted in a minor deviation in the mandibular midline to the right. A minor increase in SNB indicated a possible forward reposition of the mandible. The patient reported elimination of TMJ symptoms after treatment.

CONCLUSIONS
Clear aligner treatment can be a helpful treatment modality in management of adolescent cases with a possible CR-CO discrepancy, associated with TMJ symptoms.

CP110 - COMPLICATED ORTHODONTIC TREATMENT WITH CLEAR ALIGNERS IN ADULT PATIENTS- CASES PRESENTATION

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Background: In recent years, a growing number of adult patients have sought orthodontic treatment, demonstrating a preference for esthetically pleasing and comfortable alternatives to conventional fixed appliances. As a result, clear aligner-based treatment has received remarkable attention from the orthodontic community. Various companies have emerged using robust advertising strategies vigorous advertisement to endorse their products, targeting both patients and clinicians through platforms such as social media. A variety of concepts, methods, and adjuncts have been introduced to enhance the efficacy and effectiveness of clear aligners. Nevertheless, the precision and predictability of tooth movement is still under controversy.
OBJECTIVES: The objective of this presentation is to describe the orthodontic treatment plan of two adults with complicated orthodontic malocclusion, by using clear aligners manufactured by two very popular aligner companies and to compare the effectiveness of these two treatments.
MATERIALS/METHODS: Two adults were referred to a private dental clinic, seeking orthodontic treatment. Medical and dental records were obtained and comprehensive clinical and x-rays examination were performed. They were interested in invisible and aesthetic orthodontic treatment.
RESULTS: The first patient was 41 years old and he received orthodontic treatment with SPARK clear aligners, while the second patient was 56 years old and he received orthodontic treatment with INVISALIGN clear aligners. Both patients presented severe malocclusion, crowding of both dental arches and midline discrepancy. In addition, they presented with an aggregated periodontal condition with recessions, bleeding in probing, periodontal pockets and alveolar bone loss. It was suggested to both of them extractions of premolars and orthodontic treatment of about 2 years.
CONCLUSIONS: The rigorous orthodontic intervention for two adult individuals presenting significant orthodontic and periodontal challenges was carried out with two distinct prevalent clear aligner systems. The outcomes were highly gratifying, particularly in terms of the periodontal health of the patients. The individuals expressed a high degree of satisfaction with the aesthetic and comfort aspects of the clear aligner treatment, reporting increased confidence in their smiles.

CP111 - INTERDISCIPLINARY TREATMENT OF PALATALLY IMPACTED PERMANENT MAXILLARY CANINE: A CASE REPORT

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[1]Orthos

KEYWORDS: palatally impacted maxillary canine, open fenestration, orthodontic traction, CBCT.

BACKGROUNDS. The aim of the study was to present a case of combined orthodontic and surgical treatment of a palatally impacted canine in a 16-years old patient. Open fenestration and traction were performed.
METHOD. Clinical examination, diagnostic records (study models, multiple orthopantomograms, lateral cephalogram, CBCT) were performed. The patient had previously been treated by extraction of upper right deciduous canine and followed by fixed orthodontic appliance in the upper arch in order to gain space for impacted upper canine. Several orthopanomograms were performed in different chronological and dental age showing a persistent primary upper right canine and different degrees of inclination of it.
RESULTS. Orthodontic treatment with open fenestration and traction started at the peak of the pubertal growth phase (CS 4), the apexification was almost completed. After 11 months of treatment with fixed orthodontic appliance in the upper jaw, appropriate space conditions were achieved. During surgical intervention an attachment was bonded on the palatal surface of the fenestrated tooth. With the patient's favourable compliance, the tooth was aligned in the dental arch.
CONCLUSIONS. In order to prevent permanent tooth impaction, timely diagnostics and a treatment plan, as well as the close cooperation of specialists is mandatory. Treatment, in addition to diagnostics, includes placement of a fixed orthodontic appliance and preparing a space for the impacted tooth, as well surgical fenestration and active traction of the impacted tooth. During the retention period the tooth vitality is monitored at least for five years follow up.

CP112- TREATMENT OF DENTAL CLASS II MALOCCLUSION WITH THREE TYPES OF PENDULUM APPLIANCE WITH DIFFERENT ANCHORAGE DESIGNS

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AIM: Maxillary molar distalization is needed for non-extraction treatment of Class II malocclusions. The aim of this case report is to compare the amount of distalization of upper first molar, protrusion of upper incisors and overjet increase obtained with 3 types of pendulum appliance with different anchorage designs.
METHOD: When three female patients, chronological aged 14 years, 14 years 5 months and 14 years 3 months, respectively, presented to our clinic it was determined that patients had Class II relationship in canine and molar region. The first patient was treated with a conventional pendulum, the second patient was treated with single mini-screw pendulum and the third patient was treated with a double mini-screw pendulum. In bone anchorage patients, titanium self-drilling mini screw with diameters of 2 mm and lengths of 10 mm were manually placed to the right or/and the left of the midpalatal suture, 4-5 mm posterior to the incisive foramen. Springs were activated 90° for approximately 230 g of distalizing force. The patient was called to control appointments monthly and if its necessary spring activations were achieved. The distalization was performed until a Super Class I or Class III relationship for overcorrection. The distalization time of patient who was reated with conventional pendulum and single mini-screw pendulum was 6 months and 7.2 months with the double-screw pendulum.
RESULTS: In patients treated with conventional, single mini-screw and double mini-screw pendulum appliances, the respective mean distalization of upper first molars measured 5.4 mm, 6.67 mm and 4.56 mm. The movement of the incisors was measured as 3.83 mm, 1.35 mm protrusion and 0.15 mm retrusion. The change in overjet was measured as an increase of 0.95 mm, 0.11 mm and decrease of 0.2 mm respectively.
CONCLUSION: Pendulum appliance is a effective method due to its elimination of need for extraoral devices and intermaxillary elastics for distalization. Based on these data, it can be said that while similar amounts of distalization are achieved with conventional and bone-anchored pendulum appliances, utilizing bone anchorage may reduce side effects such as incisor protrusion and increased overjet.

CP113 - COMPARISON OF THE TREATMENTS OF TWO CLASS II PATIENTS USING TWO DIFFERENT FIXED FUNCTIONAL APPLIANCES: THE FORSUSTM FATIGUE RESISTANT DEVICE VERSUS TWIN FORCE® BITE CORRECTOR

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AIM: To evaluate the results of treatments using two different fixed functional appliances in two different patients with class II malocclusion.

MATERIALS: Two 14-year-old male patients in MP3cap growth period referred with complaints of incisor crowding. Clinical and radiographic examinations of the both patients had Class II molar relationship and Class II canine relationship, concave profiles with a prominent pogonion and a deep labiomental sulcus. M.A.D. had a skeletal Class I relationship, and the M.C had a skeletal Class II relationship. The cephalometric values of M.A.D were as follows: SNA:79.3°, SNB:77.8°, ANB:1.5°, SnGoGN:19.6°, Mx1-SN:82.4°, IMPA:91.2°; and he had 0.3 mm overjet due to retroclination of central teeth and 6.5 mm overbite. The cephalometric values of the M.C. were as follows: SNA:77.3°, SNB:72.8°, ANB:4.5°, SnGoGN:33.3°, Mx1-SN:98.7°, IMPA:91.5°; and he had 7.7mm overjet and 7.1mm overbite. For the treatment of M.A.D, the ForsusTM Fatigue Resistant Device was used after proclination of the upper incisors, levelling the arches and applying the thick stainless steel arch wires. Similarly, Twin Force® Bite Corrector was applied to M.C. after the necessary levelling procedures were completed.

RESULTS: The total orthodontic treatment durations were 1 year 8 months and 1 year 9 months for M.A.D and M.C., respectively. Posttreatment cephalometric values of the M.A.D. were as follows: SNA:80.6°, SNB:80.1°, ANB:0.5°, SnGoGN:19,7°, Mx1-SN:112.8°, IMPA:97.1°, interincisor angle: 130.4°; and he had 2.6 mm overjet and 2.7 mm overbite at the end of the treatment. Posttreatment cephalometric values of the M.C. were as follows: SNA:76.7°, SNB:75.3, ANB:1.5°, SnGoGN:31.9°, Mx1-SN:102.2°, IMPA:99.1°, interincisor angle:126.8°; and he had 3mm overjet and 2.8mm overbite at the end of the treatment.

CONCLUSIONS: As a result of the evaluation of the pretreatment and posttreatment records of both patients, it was seen that both fixed functional appliances caused similar effects. Lower incisor proclinations and increases in mandibular length were observed in both patients.

CP114 - ESTHETIC REHABILITATION OF A UNILATERAL CONGENITALLY MISSING LATERAL INCISOR: A CASE REPORT

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AIM: To report an orthodontic and aesthetic rehabilitation of an adolescent female patient with unilateral congenitally missing maxillary lateral and to present the aesthetic retention procedure to preserve the location of the missing tooth until prosthetic rehabilitation is performed.

MATERIALS: A 14-year-old female patient referred with a complaint of diastema caused by congenital missing teeth. Clinical and radiographic examinations of the patient revealed a dental Class II subdivision, a skeletal Class I anomaly and convex profile with 3.2m overjet and 2.7mm overbite. The cephalometric values of patients were as follows: SNA:73.8°, SNB:70.1°, ANB:3.7°, SnGoGN:42.4°, Mx1-SN:94.9°, IMPA:95.4°. The right permanent maxillary lateral tooth was congenitally missing and the upper right canine had erupted adjacent to the upper right central tooth. In the treatment plan, it was decided to distalize the right canine and create a space for missing lateral. A miniscrew was used to distalize the right canine in the patient. The miniscrew was placed between the right 2nd premolar and the right 1st molar teeth. In order to protect the created lateral incisor space until the implant could be placed and to give the patient an aesthetic smile, a lateral incisor crown attached to a casted lingual retainer was placed. Thus, the lateral incisor crown was supported by the lingual of teeth 11 and 13.

RESULTS: Posttretament cephalometric values of the patient showed that SNA:75.3°, SNB: 71.4°, ANB: 3.8°, SnGoGN: 38.8°, Mx1-SN: 103.7°, IMPA: 103.5°, interincisor angle: 114°. At the end of the treatment, the patient had 2mm overjet and 1.7mm overbite and she presented a Class I molar and canine relationship, good facial esthetics with canine protected occlusion. The total orthodontic treatment duration was 1 year 6 months.

CONCLUSIONS: Although it is very difficult to achieve aesthetics and maintain the resulting space in adolescents with unilateral missing lateral incisors, ideal results can be achieved with well-established mechanics and well-planned retention protocols.

CP115 - ORTHODONTIC TREATMENT COMBINED WITH ORTHOGNATHIC SURGERY (2- JAW SURGERY) IN PATIENT WITH SKELETAL CLASS III MALOCCLUSION : A CASE REPORT.

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Objectives: To demonstrated 2 jaws surgery treatment in skeletal classIII patient.
An 19- yo.Thai female came to orthodontic department with chief complaint of prominent lower jaw. Diagnosis: The clinical examination demonstrated that she had asymmetrical oval facial form with chin deviated to right by 2 mm. She had concave profile. She had normal lip line at rest and slightly low smile line. Intraorally, she had Angle's Class III malocclusion and anterior crossbite. (overjet -3 mm, overbite -1 mm).
She had prolonged retention of 53, 63. Complete blocked out 13, 23. The lateral cephalometric analysis showed she had skeletal typeIII malocclusion with orthognathic maxilla but prognathic mandible with prognathic bony chin prominence (SNA:81, SNB: 85 and SNPg : 86). She had normal configuration. She had proclination and protrusion of upper incisor and retroclination of lower incisor.
Treatment:
Presurgical orthodontics: 14,24 were extracted to create space for alignment of upper R/L canines.
Orthognathic surgery (2 jaw surgery)
Maxilla: Extraction of 53,63 in OR, maxillary 3 pieces, anterior maxilla setback to reduce upper incisors proclination. Coordinate the upper and lower arch transversely.
Mandible : Bilateral split ramus osteotomy for mandibular setback and asymmetry correction.
Postsurgical orthodontics: Continuous rectangular NiTi was inserted on the day that surgical splint was off and started residual space closure in the upper arch. Box elastics class III vector was used to seat the occlusion. Correction posterior crossbite was attempted with upper arch expansion. Midline was coordinated.

Result: The treatment duration was 3 year and 3 months. The patient was significantly improved in anteroposterior jaws position. The post treatment occlusion demonstrated good alignment and good occlusion with class II full step molar relationship and normal overjet and overbite. Better facial and smile esthetics was achieved.
Conclusion: The synergistic collaboration between orthodontic interventions to align teeth and orthognathic surgery to address skeletal discrepancies has led to significant improvements in both dental and facial aesthetics. The careful planning and coordination between orthodontic and surgical teams are crucial for achieving successful results.

CP116 - INTERDISCIPLINARY TREATMENT OF SKELETAL CLASS III MALOCCLUSION PATIENT WITH MULTIPLE MISSING TEETH

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BACKGROUND: The most optimal treatment plan for patients with multiple missing teeth, skeletal class III malocclusion, and facial asymmetry is post-growth orthognathic surgery and implant placement. In addition, cooperation with an orthodontist, prosthodontist, and oral & maxillofacial surgeon is essential to establish a prosthetic plan for the missing teeth. We would like to introduce this case in which we achieved satisfactory results with interdisciplinary treatment.

MATERIALS/METHODS: The patient was a 17-year-old female who visited our clinic with a complaint of a protruding chin, facial asymmetry, and missing teeth. Initial 3-dimensional skeletal analysis revealed a pogonion located 10 mm anterior to the McNamara line, a 4 mm leftward deviation of the chin top, and canting of the occlusal plane. In addition, all premolars were missing and the residual alveolar ridge was atrophic. Specialists from three departments convened at a conference on dentofacial disorders to devise treatments that are minimally invasive and time-consuming, while also combining essential surgical procedures into two sessions. The patient, who had decompensated dentition with preoperative orthodontic treatment, underwent orthognathic surgery. A second operation was performed six months after the orthognathic surgery. The surgical procedure performed entailed the extraction of all remaining wisdom teeth, removal of the plate, sinus lift, and placement of six implants in the premolar area. Subsequently, the patient underwent orthodontic treatment which was completed after three months, resulting in ideal occlusion.

CONCLUSIONS: The orthodontist, prosthodontist, and oral & maxillofacial surgeon coordinated before the entire treatment and made an appropriate plan through a 3-dimensional diagnosis for minimal surgery and a short time to achieve favorable occlusion. The interdisciplinary team's coordinated efforts resulted in functional and aesthetically pleasing outcomes.

CP117 - TREATMENT OF OPEN BITE WITH INCISAL ROOT RESORPTION BY INTRUSION OF POSTERIOR TEETH

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Background
Open bite occurs due to various causes, but can be largely classified as skeletal and dental causes. Skeletal open bite requires orthognathic surgery, but dental open bite can be treated through the control of oral habits, intrusion of posterior teeth, and extrusion of anterior dentition. Each treatment method is determined by the shape of dentition, profile, age, etc. The purpose of this article is to report a case in which open bite corrected by molar intrusion using miniscrew in patient with root resorption of anterior teeth due to trauma.

Subject and Method
A 23-year-old male presented to our clinic with an anterior open bite. The patient had experienced facial trauma at the age of 7, which resulted in the avulsion of teeth #11 and #21, and root resorption in the anterior teeth of both dentition. Clinical examination revealed skeletal Class I, Angle's Class I molar relationship. Additionally, there was a buccal crossbite on the right side, and #27 was missing. We decided to proceed open bite closure with intrusion of posterior teeth while minimizing the movement of the root resorbed anterior teeth. To correct the buccal crossbite on the right side, we utilized a transpalatal arch (TPA) to expand the maxillary arch. The placement of brackets on the anterior teeth was performed after the closure of the open bite, and the movement of the anterior teeth was minimized.

Results
In this case report, we successfully treated an open bite patient with dental trauma-induced root resorption in the anterior teeth. By applying orthodontic forces only to the posterior dentition during the initial phase of treatment, we minimized the duration of orthodontic appliance placement and tooth movement of anterior teeth. The use of miniscrews allowed us to achieve successful intrusion of posterior teeth without bonding brackets to the anterior teeth.

Conclusion
Considering the root condition of anterior teeth, strategic bracketing might prevent additional damage to roots. However, continuous observation is necessary to evaluate the root condition and treatment outcomes.

CP118 - EFFECTIVE APPROACH FOR STABLE RESOLUTION OF LOCKED JOINTS

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INTRODUCTION: Locked joints have always been one of the most challenging conditions in dentistry. As a result, different treatment approaches have been recommended to confront this issue in the last century. In most cases, a resolution of the locking is attempted based on empirical knowledge or using approaches guided by simple diagnostic tools .
METHOD: A series of cases collectively presenting all possible types of locked joints (i.e.,acute, closed, chronic, reciprocal clicking with intermittent lock, ligamentous) were differentially diagnosed by clinical examination and condylography (using CADIAX 4, Gammadental, Austria). The therapeutic position (ThP) of the condyle was identified and transferred to the mounted models of the patient on the variator. Occlusal composite repositioning overlays were fabricated in this position with the appropriate anatomy which guided the condyles in the ThP. The overlays and the brackets were bonded at the same appointment, and anterior vertical elastics were initiated in order to produce a class A lever to decompress and reposition the condyles within the joints. Initial, progress and final condylography were performed to assess the effectiveness of this treatment.
RESULTS: Immediately or soon after the initiation of the treatment, all cases showed a dramatic improvement of the condyle translation within the joints. Stability of the improvement was demonstrated on follow up examination. CONCLUSIONS: Clinical evidence shows that patients with locked joints can benefit from a treatment approach using condylar reposition informed by condylography, a monitoring tool aiding diagnostics by accurately estimating the ThP of the condyles in the joints and in combination with ~orthodontic treatment with occlusal composite repositioning overlays on the posterior teeth and anterior vertical elastics.

CP119 - DISTALIZATION OF UPPER MOLARS USING ALIGNERS: A CASE REPORT

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AIM: The advent of aligner technology has revolutionized the field of orthodontics by offering patients a discreet and patient-friendly alternative to traditional braces. The aim of this report is to elucidate the clinical approach and outcomes associated with the distalization of upper molars using Invisalign, explaining the efficacy and advantages of this contemporary orthodontic method.
SUBJECT AND METHODS: A 35-year-old patient presented with the chief complaint of upper and lower crowding. The patient exhibited a Class II, division 2 malocclusion with deep bite, upper and lower crowding and retroclined upper incisors. Invisalign treatment was chosen as the preferred orthodontic approach to address the patient's concerns, taking advantage of its discreet nature and its ability to achieve controlled tooth movements. The treatment objectives were to correct the class II malocclusion by distalization of the maxillary teeth and also to align and level both arches. The biomechanics involved the use of the smart force Invisalign system with precision attachments and class II elastics. The aligners were worn 18-20 hrs./day and the treatment progress was regularly monitored through clinical examinations and digital imaging.
RESULTS: The Invisalign biomechanical modality successfully achieved distalization of the upper molars, addressing the Class II malocclusion. Ideal alignment and levelling were also achieved. The patient experienced improved dental aesthetics and function, with Class I molar and canine relationship, complemented by soft tissue aesthetic improvement as shown by the position of upper and lower lip.
CONCLUSION: Invisalign provides clinicians with a versatile tool to address Class II malocclusions thus achieving ideal function and dentofacial aesthetics.

CP120 - CONSENT TO ORTHODONTICS TREATMENT IN POLISH LEGAL SYSTEM

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Orthodontic treatment is based on the patient's consent.
From a legal point of view, consent is permission to interfere with the human body.
Conducting treatment without appropriate consent is a crime in the Polish legal system, punishable by a fine, restriction of liberty and even imprisonment.
In Poland, the Act on Patient Rights and the Patient Ombudsman regulates the issue of consent.
Consent to treatment may be expressed in the following ways:
Implied
Oral
Written.
If a method that poses a risk to the patient is used, consent must be expressed in writing.
In most cases, doctors try to obtain consent from patients in writing due to their procedural security.
First of all, it is about the possibility of proving to the patient that he was informed about the treatment method used, possible complications, treatment time, alternative treatment methods, treatment success, and costs associated with treatment.
To be valid, the consent must be signed by an appropriate person.
The Polish legal system adopts a patient age division that determines who consents to treatment.
In the case of a patient aged:
0-16 - consent is given by the legal representative.
16-18 - consent is given by the legal representative and the patient
18+ - patient.
The consent of a minor, as an activity important from the point of view of the child's activities, formally requires the consent of both parents.
If a patient aged 16-18 does not consent to treatment, or one of the legal guardians does not consent to treatment, it is necessary to obtain consent to treatment issued by the court.

CP121 - PROFILE ANALYSIS IN PATIENTS TREATED WITH MYOBRACE APPLIANCE

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AIM:
The aim of this work is to provide information on facial profile analysis using the myobrace appliance in children and assign to a comprehensive summary of the use of data in clinical practice.

METHODS:
In the practical part the profile is comparing pictures of 10 patients before and after myobrace treatment. Authors use soft tissue evaluation: facial symmetry, nasolabial angle and angle of facial convexity.

RESULTS:
The authors evaluated limited changes in profiles in children with a convex profile. After 1-1.5 years of treatment, there were changes related to the convexity of the profile, mainly in the displacement of the mandible in the ventral direction and in the lower third of the face.

CONCLUSION:
The results of the study demostrated better extraoral proportions in children who had excellent compliance. According to our findings, we came to the conclusion that myobrace can be used as a suitable alternative to removable appliaces in children.

Key words: Myobrace. Superimposition. Deciduous teeth. Soft tissue. Convex profile.

CP122 - MANDIBULAR FRACTURE IN A NEONATE: A CASE REPORT

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AIM:
Mandibular fractures in neonates are extremely rare but can have significant consequences if not promptly detected and treated. The lack of clinical symptoms and dentition combined with facial edema makes early diagnosis challenging.The initial clinical signs are irritability, constant weeping and an unwillingness to eat.
The aim of this case report is to present orthodontic aspects of a 13-year-old male patient with unnoticed mandible trauma which was detected at the age of 1. Also to raise awareness about these fractures in neonates and the necessity for radiographic examination when clinical suspicion arises. Timely intervention is crucial to prevent long-term issues that can affect a child's quality of life.

CASE-METHOD:
13-year-old male patient with a reconstructed mandible referred to our clinic with the chief complaint of lingually placed tooth and with noticeable facial asymmetry. He had a history of a week-long ICU stay immediately after birth. Despite issues with breastfeeding and constant crying in infancy, the cause went undetected until age 1 when mandibular asymmetry was noticed. Clinical and radiographic examinations confirmed the previous trauma, but no intervention was performed due to patient's age. At age 5, he was diagnosed with right temporomandibular joint ankylosis, causing limited mouth opening and eating difficulties. Gap arthroplasty and silicone block insertion were performed. At age 9, capsule formation around the silicone block necessitated removal under general anesthesia and a costochondral graft was replaced.
Clinical and radiographic examination revealed high angle Class II skeletal relationship. Angle Class II molar relationship on the right and Class I on the left was present. Open bite in the left posterior region caused by tongue thrust was observed. The lower midline has shifted to the right due to facial asymmetry. The lower right canine and lateral tooth was transposed. The right mandibular corpus was shorter than the left. CBCT analysis revealed irregularity at the left condyle surface.

CONCLUSION:
Mandibular fractures are rare in infants, especially neonates, with challenging consequences that can affect a child's lifelong well-being. Due to the difficulty in detection, early awareness of their symptoms is vital for timely intervention.

Keywords:
Mandibular fracture, asymmetry, TMJ ankylosis

CP123 - TECHNICAL NOTE: ORTHODONTIC APPLIANCES AND THEIR DIAGNOSTICAL IMPACT TO BRAIN MRI

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PURPOSE: The aim of this study was to establish potential guidelines for the use of magnetic resonance imaging (MRI) in emergencies for patients with orthodontic appliances who may have potential injuries in the cranial region.

MATERIALS: In vivo, one adult person with normal occlusion was used. Three different orthodontic appliance compositions were attached to the teeth: 1) conventional stainless-steel brackets; 2) brackets and stainless-steel molar bands; 3) brackets, molar bands, and a stainless-steel palatal archwire. The frontal lobe, parietal lobe, temporal lobe, occipital lobe, basal ganglia, mesencephalon, pons, cerebellum, lateral ventricles, third ventricle, fourth ventricle, sella, orbit, ethmoidal sinuses, sphenoidal sinus, maxillary sinus, nasopharynx, and vessels were assessed using 1.5-Tesla (T) and 3-T scanners. Likert scores of 0, 1, 2, 3, 4, and 5 indicated too many artefacts and many, moderate, few, and no artefacts, respectively.

RESULTS: The severity of artefacts increased with the addition of orthodontic appliances. Without using the stainless-steel palatal archwire, all structures of the neurocranium could be sufficient assessed with no or few artifacts in both the 1.5-T and 3-T MR imaging. In combination with the stainless-steel palatal archwire, artefacts were detected in the susceptibility-weighted imaging (SWI) and the diffusion weighted imaging (DWI) sequences and in the phase contrast angiography (PCA). There was no significant difference between the 1.5-T and 3-T MRI scanner.

LIMITATIONS: All orthodontic devices were examined in a sole healthy, young adult female.

CONCLUSIONS: According to our investigation, a complete removal of orthodontic appliances is not mandatory for brain MRI. When the sequence of SWI and DWI is indicated, only the removal of the stainless-steel palatal archwire should be performed. This could result in reduced injury risk, quicker performance of imaging, and consequently, faster diagnosis, especially in emergencies.

CP124 - A NEW APPROACH IN NON-EXTRACTION TREATMENT STRATEGY USING CLEAR ALINGERS

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BACKGROUND/OBJECTIVES/AIMS
This case series demonstrates a new approach that uses modified C-palatal plate (MCPP) with bondable palatal retraction arch (PRA) and clear aligners for non-extraction treatment of Class II patients.
MATERIALS/METHODS
The treatment procedure is as follows.
1. Place a MCPP for skeletal anchorage and bond a PRA on the maxillary first molars. Two weeks after implantation of MCPP, check the palatal soft tissue conditions and oral hygiene adjacent to the MCPP and screws.
2. Provide series of clear aligners and distalize the whole upper arch by connecting power chains between the MCPP and PRA simultaneously. Instruct patient to wear the clear aligners for full day and night except the meal time.
3. Incisal overjet might be changed due to the maxillary total arch distalization. At this point, form slits on the maxillary and mandibular clear alingers to apply elastics faciliating tandem mechanics with MCPP and PRA, creating additional overjet for further maxillary arch distalization.
4. To close the transient posterior openbite as the maxillary arch distalized and intruded by the MCPP, apply box elastics to the maxillary and mandibular first and second molars if needed.
5. Finish treatment when the molar and canine relationships are corrected and normal incisal overjet and overbite are obtained.
RESULTS
MCPP and bonded PRAs are the optimal skeletal anchorage that do not interfere with the aesthetics of clear aligners, and because the screws are located in the palatal region, there is no need to relocate them as treatment progresses.
Retraction force from the palatal side creates an intrusive force that changes the occlusal plane, and may cause a transient posterior open bite. This can be corrected by using an up-and-down elastics.
Above all, the combination of clear aligners and MCPP with PRA allows the upper molars to be distalized accurately and quickly, which helps to reduce the overall treatment time.
IMPLICATIONS
With this new approach to the non-extraction treatment of Class II malocclusions, the distalisation of the total maxillary arch can be achieved in an efficient and rapid manner using clear aligners with MCPP and PRA.

CP125 - COMPLEX TREATMENT PLANNING AND MANAGEMENT, WITH SKELETAL, DENTAL AND SOCIAL ISSUES

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AIM: To describe the treatment planning and management of an adolescent with a Class III malocclusion, ectopic maxillary canines, resorption of the maxillary incisors and hypoplastic maxillary second premolars, complicated by a change in social circumstances which impacted on treatment.

METHODS: A case report illustrating the orthodontic treatment planning and management of a 15-year-old male patient with a Class III malocclusion and palatally ectopic maxillary canines. The malocclusion was complicated by mild lower arch crowding, extensive resorption of the maxillary left lateral incisor, resorption of the maxillary left central incisor and right lateral incisor, and hypoplastic maxillary second premolars of poor long-term prognosis. The treatment plan was formulated in conjunction with discussion with the patient and his mother to attempt to maintain the maxillary incisors and align the ectopic maxillary canines.

RESULTS:
Treatment included extractions under general anaesthesia of all four second premolars and retained left and right maxillary deciduous canines, alongside a closed exposure of the ectopic maxillary canines, followed by fixed appliance treatment. Retraction mechanics were applied using retraction hooks on a modified transpalatal arch to provide anchorage control for maxillary canine retraction away from the roots of the maxillary incisors. An open exposure of the maxillary canines was later completed under local anaesthesia. The maxillary canine position and incisor resorption was monitored clinically and radiographically during treatment. The patient was highly cooperative with treatment but unfortunately 3 years into treatment, he subsequently failed to attend appointments for 13 months due to unfortunate changes in social circumstances, accumulating in being homeless. Following return to treatment the appliance was in good condition but had become passive; treatment was subsequently completed uneventfully. Total treatment time comprised 5 years and 1 month. The maxillary incisor teeth were maintained, and an upper bonded retainer was fitted, along with removable vacuum-formed retainers.

CONCLUSIONS:
The treatment results were satisfactory in terms of aesthetic and functional outcomes, despite the complexity of the case, effect of the change in personal circumstances and impact of the COVID-19 pandemic on the treatment duration. Long-term stability and success will need to be assessed at further review appointments.

CP126 - ORTHODONTIC TREATMENT IN A PATIENT WITH SEVERE PERIODONTITIS USING LINGUAL APPLIANCE AND TEMPORARY ANCHORAGE DEVICES

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INTRODUCTION

In advanced periodontal disease, collapse of the dental arch often occurs with increased tooth mobility. The situation worsens if there is an anterior crossbite. The traumatic occlusion could cause further breakdown of the periodontium as toothbrushing and maintaining oral hygiene become difficult. Consequently, the situation further exacerbates the periodontal destruction.
Reconstruction of the occlusion and alignment of the malposed teeth with orthodontic treatment become necessary not only to prevent disease progression, but also to satisfy patients' functional, esthetic, and communication demands.
This case report describes the favorable outcome of orthodontic and periodontal management for treating a patient with severe periodontitis, anterior crossbite, and collapse of the occlusion.

CASE SUMMARY

We report the case of a 50-year-old man who had a skeletal Class III, protruded chin, spacing and chronic generalized advanced periodontitis.
Before orthodontic treatment, the patient received periodontal treatment aiming at complete exclusion of the infection and gingival inflammation.
The patient choose lingual orthodontic appliances for aesthetic reasons. Because overall periodontal support was poor, temporary anchorage device was used to prep anchorage. After leveling and alignment, we corrected anterior crossbite, managed space and improved occlusion. After the orthodontic treatment, Class I canine and molar relationship and proper facial profile was achieved.

CONCLUSION

Under the premise that appropriate periodontal treatment is preceded, oral health can be restored through orthodontic treatment in patients whose occlusion is collapsed due to periodontal disease. All outcomes of the patients were stable after 3 years, and further periodic follow up should be done for retention check.

CP127 - CAMOUFLAGE TREATMENT OF SKELETAL CLASS III MALOCCLUSION: LOWER ARCH RETRACTION VIA BUCCAL SHELF IMPLANTS - A CASE REPORT

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AIM: This report addresses the case of a 20-year-old patient with skeletal and dental Class III hyperdivergent features who sought retreatment following prior orthodontic treatment. The patient's primary concern was the edge-to-edge position of the upper lateral and lower incisors, leading to functional and eating difficulties. Surgical treatment options were declined by the patient.

MATERIALS AND METHODS: Given the existing gingival recessions in both upper and lower arches resulting from previous orthodontic treatment, our goal was to correct his occlusion and solve his chief complaint with exclusively treating the lower arch. To achieve the treatment goal lower multibond appliance was fixed and two miniscrews (Tiger Dental GmbH) were placed in the mandibular buccal shelf area in order to retract the lower arch into a Class I occlusion, and solve the anterior edge-to-edge position of the lateral incisors creating an acceptable overbite.

RESULT: Over a period of nearly 5 months Class I molar relationship and an acceptable overbite and overjet of the lateral incisors have been achieved by retracting the lower arch with buccal shelf temporary anchorage devices and fixed appliance. The active retraction was followed by a 6-month retention period before the removal of the fixed appliance.

CONCLUSION: Lower arch retraction with buccal shelf orthodontic miniscrews could be a viable treatment option for camouflage treatment of class III cases.

CP128 - DIGITAL PLANNING OF PALATAL SPLINTS FOR SEGMENTED LEFORT I OSTEOTOMIES. CASE PRESENTATIONS.

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BACKGROUND
Digital planning for orthognathic surgeries is considered routine procedures. However, in the case of segmented LeFort I osteotomies, digital planning for stabilizing palatal splints is not common. This case presentation aims to share the digital planning steps for palatal splints for two-piece and three-piece LeFort I osteotomies.
METHODS
All planning steps for orthognathic surgery can be digitized using various software. For this study, IPS Case Designer (KLS Martin Group, Tuttlingen, Germany) was employed. After finishing the planning steps, we exported 3D models (.STL files) of the maxillary bone segments in the planned position. With the same orientation, we imported these files into a free CAD software, Meshmixer (Autodesk, Inc.). Since the exported files do not contain digital information about the palate, we also imported an intraoral scan of the patient's maxilla, which includes the palate and is divided into two parts (left and right) or three parts (left, right, and anterior). The original scan parts were superimposed onto the segmented bone models, using the teeth as the identical surfaces. Using the software's "Bridge" and "Erase and Fill" tools, the segmented parts of the original scans were connected to create the digital model of the upper jaw in the planned position. Subsequently, the palatal and interdental gingival areas of the newly oriented scan were selected, and a palatal plate with a thickness of 2.5-3 mm was created using the "Separate" and "Extrude" tools. Cylinders were generated with the "Meshmix" tool, and through digital subtraction, holes were created for interdental fixation of the palatal splint. Following these planning steps, the palatal splints were 3D printed.
RESULTS
The implementation of these planning steps resulted in well-fitting palatal splints that remained in the mouth for 8 weeks post-surgery, effectively stabilizing the new position of the segmented bone parts of the maxilla. Notably, no additional laboratory work was required.
CONCLUSIONS
Digital planning of palatal splints for segmented maxillary osteotomies poses challenges due to the lack of specialized software or software modules. However, it is achievable using freely available CAD software.

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CP129 - CLINICAL AND RADIOGRAPHIC ASSESSMENT OF A VOLUME-INCREASING, OSSIFYING COLLAGEN SCAFFOLD IN SOFT TISSUE AUGMENTATION IN MANDIBLE ANTERIOR TEETH, BEFORE ORTHODONTIC TREATMENT.

Niki Loukogiorgaki, Miss Elena Kyriakou[1], Mr Gerasimos Kanellopoulos[1], Dr Andreas Gkogkos[2], Prof Christos Katsaros[3], Dr Dimitrios Kloukos[1,3]
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BACKGROUND: Collagen scaffolds are used in periodontal surgery in hard and soft tissue augmentation procedures. The aim of this study was to evaluate the effectiveness of Ossix® Volumax, a volume-increasing, ossifying collagen scaffold, labially at the mandibular incisors, before bonding of fixed orthodontic appliances.

MATERIALS AND METHODS: Ten patients (Age range: 17-31 years old) with thin periodontal phenotype underwent soft tissue augmentation procedure at mandibular incisors, on the buccal aspect and apically to the free gingival margin. The intervention was carried out at least 4 months before orthodontic treatment with fixed appliances on the lower teeth. A standardized tunneling technique with a collagen scaffold was performed. Patients received, per protocol, antibiotics and analgesics after the procedure. Soft and hard tissue augmentation were assessed with an ultrasound device and clinical measurements at multiple time-points and a cone beam computerized tomography (CBCT) at baseline and before lower bonding. Following up time was up to 46 months.

RESULTS: All patients were treated without complications; main minor complaints included swelling and slight discomfort at the area of intervention during the first post-treatment days. In all cases, soft tissue augmentation was uneventfully observed and in cases new bone formation could be detected after CBCT evaluation.

CONCLUSIONS: In the frame of the current study, Ossix® Volumax is an effective collagen scaffold which can be safely used in soft tissue augmentation before orthodontic treatment.

CP130 - PRACTICAL PROCEDURE OF BONDING FIXED WIRE RETAINERS BASED ON OWN EXPERIENCE.

Dr Dorota Łukasiewicz
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BACKGROUND: Correct bonding of the retainer is crucial for a lifelong stability. Proper bonding of a nonactivated wire is underlying to avoid undesired wires syndroms (WS) as the x-effect and the twist effect. The author sees little failures of such kind as well as fractures and debonding of the retainers in her nearly twenty year practice.
AIM: To show and share the author's own procedure of bonding fixed braid wire retainers and provide guidance to prevent from retainer failures and wire syndroms (WS).
MATERIALS: Own cases of patients in bonding braid wire retainers procedures. Short films and pictures showing every single stage of this process (preparing the wire, preparing the teeth, fixing the wire, bonding the wire). Emphasis is put especially on the wire forming and accurate and stable attaching it to the teeth with no tension by means of metal ligature wire inserted over the gum papillea.
IMPLICATION: In the author's view the proposed method of retention bonding is reliable measure to attain a long-term durance of the retainers with no inadvertent wire syndroms.

CP131 - A COMPLEX ORTHODONTIC PATIENT WITH MULTIPLE CYSTIC LESIONS: A MULTIDISCIPLINARY CASE REPORT

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BACKGROUND: A 14-year-old girl was referred into the orthodontic department with the following issues: Class II Div II incisor relationship, diminutive maxillary lateral incisors, ectopic maxillary canines.

MATERIALS AND METHODS: An OPT radiograph taken at the assessment appointment showed multiple cystic lesions in multiple quadrants. A CBCT scan done confirmed presence of multiple cystic lesions. After treatment planning carried out on a joint orthodontic/dentoalveolar clinic, the following treatment plan was devised: Extraction of (Upper Right: EDC3, Upper left: 3CDE, Lower Right: C, Lower Left: CDE) and cyst enucleation under general anaesthetic. Following this the patient was to be started on an upper removable appliance, then upper and lower fixed appliances to address the Class II Div II malocclusion. Long-term treatment would involve prosthetic build ups of the diminutive maxillary lateral incisors.

RESULTS: The surgical treatment was carried out without any issues. In total, 4 specimens were enucleated, one from each quadrant. The specimen results were as follows: RHS Maxilla – sialo-odontogenic cyst, LHS maxilla – keratocyst, RHS mandible – dentigerous cyst, LHS mandible – dentigerous cyst.

With regards to the removal appliance treatment, at the most recent review appointment, a reduction in overbite has been noted. The patient is due to start fixed appliance treatment early 2024.

CONCLUSION: This is a thoroughly interesting case that highlights how multiple disciplines can combine with orthodontics to provide optimal treatment outcomes for patients.

CP132 - ANTERIOR REHABILITATION OF TEETH LOST DUE TO TRAUMA IN GROWING ORTHODONTIC PATIENTS –CASE SERIES

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[1]Institute Of Orthodontics, Faculty Of Medicine, University Of Coimbra

BACKGROUND: Previous dental trauma is a common injury to the dentoalveolar system in children/adolescents and can cause pain and loss of function, as well as periapical sequelae, which consequently affects the development of permanent teeth and occlusion. The highest incidence of anterior dental trauma occurs between seven and twelve years of age, mainly due to traffic accidents, physical fights and sports injuries. The challenge is to preserve the tooth in this aesthetically important area and minimize subsequent damage. However, the damage caused by trauma can be so debilitating that teeth extraction in children/adolescents and subsequent rehabilitation are necessary.

OBJECTIVE: To describe clinical cases where orthodontic treatment was applied to growing patients with dental trauma in the anterior sector.

MATHERIALS/METHODS: Clinical case 1 reports on a male child who, due to a school accident at the age of 8, lost teeth 11 and 21 due to avulsion. A palatal bar was placed for anchorage with anterior prosthetic teeth. Subsequently, a interceptive treatment with activator was started to correct skeletal class II malocclusion. Clinical case 2 refers to a female child with skeletal class I who, at the age of 11, accidentally fractured the root of tooth 21. Orthodontic treatment with fixed appliances was carried out to promote alignment as well as prepare the space for future rehabilitation.

RESULTS: The ideal outcome for both cases of trauma to anterior teeth with a poor prognosis should be to preserve bone and soft tissue to improve rehabilitation options after growth is completed. In the first patient, every effort was made to maintain teeth 11 and 21, but the level of internal and external resorption led to their loss. Therefore, the prosthetic replacement of avulsed teeth and the reduction of the ANB angle after dentofacial orthopedics allowed the patient's profile to be improved, resulting in immediate psychosocial benefits. In the second case, after a long period of clinical and radiographic monitoring for healing of the periodontal ligament, it was decided to maintain tooth 21 during orthodontic treatment.

CONCLUSIONS: Orthodontists need to consider the implications of tooth movement of traumatized teeth when determining long-term treatment prognosis.

CP133 - ORTHOGNATHIC SURGERY AND ORTHODONTIC TREATMENT FOR SKELETAL CLASS III WITH UNILATERAL CLEFT LIP/PALATE: CASE REPORT

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BACKGROUND: Individuals with cleft lip and/or palate often exhibit a class III malocclusion pattern, primarily attributed to maxillary hypoplasia, due to inherited growth deficiencies, or the formation of scar tissue following several corrective surgical procedures during their infancy and early childhood. Additionally, a hyperdivergent growth pattern is commonly observed, resulting from the clockwise rotation of the mandible. Ultimately, in addition to orthodontic treatment, some patients require orthognathic surgery to correct the skeletal discrepancy.
AIM: The purpose of the present paper is to report a successful interdisciplinary treatment approach by both orthodontists and maxillofacial surgeons conducted on a unilateral cleft lip and palate patient with a skeletal class III.
METHODS: A 15-year-old boy with a right unilateral cleft lip and palate, diagnosed with transverse discrepancy and a skeletal and dental class III was referred by his pediatrician to the Institute of Orthodontics, Faculty of Medicine, University of Coimbra, for orthodontic treatment. The implemented treatment plan was the following: Hyrax; Secondary bone graft; Fixed appliances with Roth 0.018 prescription; Bimaxillary orthognathic surgery.
RESULTS: The hyrax expander was used to solve the patient's transversal discrepancy. The alveolar bone graft allowed the orthodontic movement of teeth into the cleft site. Leveling and alignment was accomplished through the use of fixed appliances with Roth 0.018 prescription. Bimaxillary orthognathic surgery, Le Fort I maxillary advancement of 5mm with 3mm rotation to the left and BSSO mandibular setback of 6mm with recentering, resolved the skeletal discrepancies.
CONCLUSIONS: The successful functional and balanced aesthetic outcome in a patient with cleft lip and palate was achieved through the combined approach of orthognathic surgery and orthodontic treatment.

CP134 -THE DRAGONFLY – A NEW, OCCLUSAL OPEN AND BONDED CLASS III APPLIANCE

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[1]Die Kieferorthopäden am Meer

Aims:
Aim of the study was to design a new, child-friendly, non-invasive and economic appliance for class III treatment in early mixed dentition.

Materials/ Methods:
Various Class III appliances, which also allow for simultaneous maxillary expansion and gonion angle reduction were compared with each other. The clinical advantages were evaluated in order to develop a new design that would combine the most beneficial design aspects of the compared Class III appliances. The results from the BUTTERFLY study, which is also presented at EOS 2024, serve as a basis for this.

Results:
The DRAGONFLY is superior to the Delaire mask and other face masks in terms of invisibility and is equivalent to the Mentoplate and other skeletally anchored intraoral devices. In terms of invasiveness, it is superior to the Mentoplate and other skeletal anchors and equivalent to face masks. With regard to the range of temporal applications, the DRAGONFLY is superior to the Mentoplate and other skeletal anchors and is on a par with Delaire masks and other face masks. In terms of cost-effectiveness, it is inferior to the group of face masks and superior to the group of skeletal anchors.

Limitations:
The exclusion criterion for the use of the dragonfly is acromegaly.

Conclusions:
The DRAGONFLY is a non-invasive and economic class III appliance. Further studies are planned with regard to its clinical use and effectiveness.

CP135 - NON-SYNDROMIC CRANIOSYNOSTOSIS: A CASE-TREATMENT CONTROL STUDY

Ms Maura Milczewski[1], Ms Carla da Silva Pereira
[1]Utfpr

Craniosynostosis is the premature fusion of one or more cranial sutures, manifests in distinct sutures craniofacial such as the shallow orbital cavity, and midfacial hypoplasia, and alters the posterior position of the zygoma. Surgical methods including open calvarial reconstruction, minimally invasive strip craniectomy with spring implantation, and cranial distraction aim to adapt the development of the tissues, as well as functional and structural response to the organism. Cranial surgery can be more extensive when the middle face is involved, increasing the surgery time and the risks for the patient. This study presents one case, that of a 5-year-old Brazilian girl diagnosed with non-syndromic Craniosynostosis. The orthopedic approach adopted entailed the utilization of a Haas expander in conjunction with a protraction facemask. Radiographic assessments showed a substantial positive response, particularly in the remodeling of the middle face and the repositioning of the mandible. Notably, the results avoided the imperative inclusion of midface manipulation in the cranial surgery plan.

CP136 - AN AUDIT OF THE QUALITY OF ORTHODONTIC CLINICAL PHOTOGRAPHS.

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BACKGROUND: Accurate clinical photographs form a vital part of patient records. They are crucial in treatment planning, monitoring treatment progress and evaluating final results. They can also be used as an aid in educating patients during the consent process and as part of evidence in medico-legal cases. The aim of this audit was to assess the quality of clinical photographs taken in the orthodontic department in Kingston Hospital. The standard set was for 90% of the clinical photographs taken to be of an acceptable standard.

METHODS: Retrospective data was collected from 50 patients who presented to the orthodontic department between April 2022 to September 2022 for an initial records appointment or a removal of orthodontic appliances appointment. Each set of extra-oral and intra-oral photographs taken during these appointments was assessed using a 9-point checklist. For a set of photographs to be deemed acceptable, all 9 criteria must have been met.

RESULTS: A total of 400 hundred photographs were assessed. Forty percent of the photographs audited were of an acceptable standard. The occiput was excluded in 34% of extra-oral lateral view photographs. Frequently, lateral intra-oral photographs did not capture the correct buccal segment relationship (82%). Occlusal view photographs excluded the first permanent molars in 36% of cases. Fogging was present in 20% of photographs and misrepresentation of the incisal inclination was also evident (30%). The results of this audit were presented and teaching was delivered at a departmental audit and clinical governance meeting in September 2023.

LIMITATIONS: Only photographs taken for initial records or post debond were audited. Mid-treatment photographs with an appliance in situ were not included which are usually more challenging to capture. The clinical photographs were taken by several clinicians with varying levels of expertise which could account for differences in the quality of the photographs.

CONCLUSIONS: This audit demonstrated that the quality of orthodontic clinical photographs requires improvement. A photography guidance booklet and practical training is available to all clinicians and nursing staff to ensure they are appropriately skilled in capturing high quality photographs. This was a worthwhile audit, which should be repeated on a regular basis.

CP137 - AN AUDIT OF ORTHODONTIC CLINCAL CODING.

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[1]Kingston Hospital NHS Foundation Trust

BACKGROUND: Accurate reporting of orthodontic procedures is important for ensuring efficient management and use of NHS hospital resources. All orthodontic procedures should be accurately recorded using orthodontic outpatient procedure codes (OPCs). The aim of this audit was to determine whether orthodontic procedures are coded correctly at Kingston Hospital.

METHOD: A two-cycle retrospective audit of clinical coding of all orthodontic appointments was conducted in the orthodontic department at Kingston Hospital. Retrospective data collection of all orthodontic OPCs inputted to clinical records system (Cerner Millennium) through evaluation of the Hospital's coding software, was carried out. The OPCs were compared to the patient's clinical notes to assess whether the coding was completed and accurate. The gold standard was that 100% of orthodontic procedures are correctly coded.

RESULTS: The first audit cycle was carried out in September 2020, 63% of orthodontic procedures were correctly coded and 30% were incorrectly coded. The results were presented and teaching was delivered at an audit and clinical governance meeting (July 2022). A clinical coding guideline booklet was developed, distributed to all staff and placed in the clinical areas. The second audit cycle was carried out in February 2023, 99% of orthodontic procedures were coded with 69% correctly coded, 23% incompletely coded and 7% incorrectly coded.

LIMITATIONS: The first audit cycle was carried out during the COVID-19 pandemic where hospital restrictions resulted in reduced clinical activity. However, the second audit cycle included a higher, more representative sample of clinical activity.

CONCLUSIONS: This audit demonstrated a high level of coding is being carried out, but the gold standard was not achieved in either cycle. There was a significant reduction in incorrectly coded procedures following the first audit cycle and implementation of teaching and guidance, with scope for further improvement. Following the second cycle, additional teaching and training was provided by the Hospital's activity coding team. A "hard stop" at the check-out stage of each orthodontic appointment is under development to ensure all appointments have been coded. This was a worthwhile audit, which should be repeated on a yearly basis.

CP138 - ORTHODONTIC – PROSTHODONTIC MANAGEMENT BY CAMOUFLAGE OF A CLASS III DENTOFACIAL DEFORMITY

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BACKGROUND: When a moderate skeletal discrepancy exists and there is no growth potential, orthodontic camouflage could be applied by displacing the teeth to obtain proper function despite the jaw relationship, which produces a dental compensation for the skeletal discrepancy.
REPORT OF A CASE: A 24-year-old Filipino female requested correction of her malocclusion. Following collection and elaboration of a complete set of diagnostic records she was diagnosed as having a Class III malocclusion with maxillary retrognathism, straight profile, anterior and bilateral posterior crossbite, spacing in both dental arches (upper 15 mm and lower 10 mm, respectively), missing upper first premolars, rotated teeth, and narrow upper dental arch. The aims of the treatment included correction of negative overjet and crossbites, establishment of Class I canine relationship and well aligned dental arches, management of spacing, and maintenance of hard and soft-tissue profiles. The treatment options presented to the patient included (a) Orthognathic surgery by means of maxillary advancement and mandibular set-back, or (b) Comprehensive camouflage orthodontic treatment. Prosthodontic restorations should be used in both options. Patient selected the comprehensive camouflage option that included comprehensive orthodontic therapy by fixed appliances in both dental arches and fixed prosthodontics to facilitate post-treatment spacing and orthodontic retention. The duration of the treatment was 26 months, all treatment goals were achieved, fixed retention applied to anterior teeth, and fixed prosthodontic works managed spacing in both dental arches as well as retention of post-treatment occlusal relationships.
CONCLUSIONS: The orthodontic – prosthodontic management of the adult female patient was successful in dealing with the Class III malocclusion associated with maxillary retrognathism by resulting in an esthetically pleasing and functionally optimum occlusion as well as camouflaging of existing skeletal discrepancy.

CP139 -NOVEL MANAGEMENT OF A MEGADONT IN THE ANTERIOR MAXILLA

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BACKGROUND
Twinning anomalies that include gemination, fusion and megadontia are anomalies of tooth shape. Gemination occurs when one tooth germ gives rise to two teeth, and fusion when two normally separated tooth germs fuse. When fusion is between the tooth germ of a normal tooth and a supernumerary tooth, then it is difficult to discern between fusion and germination. A megadont describes a tooth that is larger than the norm. The incidence of these anomalies is cited as 0.1%. When present in the incisor region, they present a complex multidisciplinary challenge, with a need for restorative input for the restoration of aesthetics and possible endodontic considerations. We present an interesting case of a 10-year-old patient with a megadont UL1, either fusion of a supernumerary to UR1 or germination of UL1. The patient also has a supernumerary in the right anterior maxilla
AIMS/OBJECTIVES
To educate the reader about novel ways that twinning anomalies may be managed in the anterior maxilla, in order to give optimal aesthetic and functional results.
MATERIALS/ METHODS
Peri-apicals, an orthopantamogram, and a CBCT scan confirmed the presence of a megadont UL1 and supernumerary in the right anterior maxilla. Alongside orthodontic photographs and study models, the case was discussed with restorative colleagues in order to formulate a treatment plan.
RESULTS
Due to the supernumerary in the right anterior maxilla, the patient has been planned for extraction of the UL1 megadont, movement of the UR1 to UL1 position, and surgical exposure and traction of the supernumerary to UR1 position. This will also involve a URA to replace UL1 gap, a TPA appliance and an upper fixed appliance.
LIMITATIONS
The authors describe their unique case. Each case with a twinning anomaly is different and must be managed accordingly.
CONCLUSIONS/ IMPLICATIONS
Twinning anomalies are complex and involve multidisciplinary care. Each case is unique and we encourage the reader to formulate novel treatment plans, considering local dental factors that may influence this.

CP140 - BILATERAL CONDYLE DEFECTS: A MANDIBULAR ADVANCEMENT APPROACH VIA COSTAL GRAFTING

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BACKGROUND: Langerhans cell histiocytosis (LCH) is a rare disorder characterized by abnormal proliferation of Langerhans cells, and often associated with osteolytic bone lesions. During the period of development of the temporomandibular joint (TMJ), when growth-disturbing factors such as inflammation and trauma act on this region, the mandibular condyle becomes shortened. For mild instances, a jaw osteotomy is recommended post splint application, however, in severe cases, autologous condylar reconstruction or alloplastic total joint reconstruction is recommended.
This report presents a case of severe mandibular retrognathia accompanied with bilateral mandibular condylar defects, treated by mandibular condyle reconstruction using costal grafting and mandibular advancement without maxilla surgery.

MATERIALS/METHODS: The 24-year-old Japanese female patient, having a medical history of LCH, exhibited skeletal Class II jaw relationship, an anterior open bite with high mandibular plane angle and labially inclined maxillary incisors. The overjet was 15mm, and the overbite was -5mm. Both mandibular condyles were absent, while the coronoid processes showed compensatory hypertrophy. Our concern primarily revolved around the potential occurrence of mandibular condyle resorption subsequent to condylar reconstruction. To mitigate this, we deliberately planned the surgical intervention in two stages, allowing for the possibility of maxilla adjustments should mandibular retraction arise. Additionally, while deliberating potential treatment approaches, the consideration of total joint replacement for the TMJ was contemplated. However, it was deemed unsuitable in this case owing to the insufficient size of the mandibular body.

RESULTS: Following the pre-surgical orthodontic treatment, mandibular condyle reconstruction with costal grafting and mandibular advancement surgery were performed. The mandible advanced by 12mm at point B, and the SNB angle improved from 66.5° to 74.5°. Genioplasty was performed six months after the surgery, however, we decided to avoid maxilla surgery. The patient has obtained a good occlusion and profile. One-year post-surgery, the mandibular position remains stable.

CONCLUSIONS/IMPLICATIONS: The mandibular condyle reconstruction with costal grafting could be one possible strategy for adult lacking mandibular condyles. Long-term observation is required considering the risk of mandibular condylar resorption.

CP141 - COMPLICATIONS IN INTRUSION ARCH BIOMECHANICS FOR DEEP OVERBITE MALOCCLUSION CORRECTION

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BACKGROUND: The management of overbite correction in orthodontics remains a subject of debate among professionals. While methodologies vary, a consensus underscores the importance of the smile line in determining which incisors require intrusion. Deep overbites can be addressed through various biomechanical strategies. These include the intrusion of maxillary or mandibular incisors, extrusion of buccal segments, or a combination decided by the specific diagnosis and treatment goals. OBJECTIVE: This clinical poster will present a case of a Class I malocclusion with a very deep overbite. The focus is on the successful correction achieved through the intrusion of mandibular incisors and canines, utilizing an archwire specifically designed for intrusion. METHODS: The approach involved a comprehensive assessment of the malocclusion's etiology, with attention to the smile line. The limited exposure of the maxillary teeth during smiling, the treatment strategy focused on employing a mandibular intrusion utility arch. This biomechanics was chosen for its potential effectiveness in addressing the specific dental alignment issues presented in this case. RESULTS: The treatment faced initial challenges, notably a cant in the mandibular occlusal plane due to the applied intrusion technique. However, through careful adjustment of the force exerted by the intrusion arch, the desired control were regained. The result showed an effective intrusion of the mandibular teeth. CONCLUSIONS: The treatment successfully addressed the deep overbite, obtaining a functional and aesthetically pleasing smile. This case exemplifies the importance of a customized approach in orthodontic treatment, considering both functional and cosmetic aspects to achieve optimal results. The use of specialized techniques like the mandibular intrusion utility arch, when appropriately applied and adjusted, can achieve significant improvements in dental alignment and overall smile aesthetics.

CP142 - UNILATERAL CLEFT PALATE AND HYPERDONTIA – AN ADULT TREATMENT APPROACH

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BACKGROUND: The spreading of dental abnormalities among cleft patients frequently increases the difficulty of the treatment approach. Hyperdontia on a cleft palate constitutes an aggravating factor, considering the lack of maxilla growth usually found in cleft palate patients, therefore there are difficulties in treatment options. Our case presents with unilateral cleft palate, hyperdontia, canine and lateral incisor ectopy and 90 degrees central incisor rotation in an adult patient.
METHODS: Our patient, aged 16, had no previous orthodontic treatment, only surgical interventions to close the communication between the oral cavity and nasal cavity, therefore the diagnosis consisted of a skeletal and dental class III, both premolar and frontal crossbite, ectopic canine and lateral incisor and two supernumerary teeth. Considering all these diagnoses, the first treatment option was a surgical one but unfortunately, the patient and both his parents refused another surgical intervention, so we had to choose a rapid palatal expansion and fixed appliance.
RESULTS: Neutral occlusion was achieved by the rapid palatal expander, the difficulty of this particular case was the contention of the expansion, considering all the scars on the palate, therefore, the rapid palatal expander was maintained on the spot one year after the last activation.
LIMITATIONS: The dental hygiene was a problem from the beginning of the treatment, even if the patient was aware of the periodontal complications that may occur. For retention we used Full Essix, the overall lack of bone in the maxilla is a retention problem of the results.
CONCLUSIONS: This particular case showed that neutral occlusion was achievable even without orthognatic surgery in a cleft palate class III malocclusion, the main confrontation remains the retention of the results in time.

CP143 - OPTIMIZING ORTHOGNATHIC SURGICAL OUTCOMES: THE INTERDISCIPLINARY APPROACH OF GREIFSWALD

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Aim: In adult patients, a combined orthodontic and orthognathic surgical therapy is often the only option to correct significant skeletal discrepancies. The back bone of this interdisciplinary treatment concept is the planning of the surgical relocation and its realization through surgical splints. The purpose is to introduce an advanced CAD/CAM workflow for precision orthognathic surgery planning.

Materials and methods: A digital based approach was established a while ago at the Department of Orthodontics at the University of Greifswald. This includes a comprehensive diagnostic record with a functional analysis and a CBCT scan (Accuitomo/Morita Co, Kyoto/Japan) for digital planning. The data is then imported into the dental imaging software Onyx-Ceph3™ (Image Instruments GmbH, Chemnitz/Germany) in DICOM format and matched with their 3D-scanned upper/lower arch where the position of the virtual hinge axis is located. Orthognathic surgery is then performed virtually using the “Treatment Simulation Sim 3D, Onyx Ceph™” module, where the planned surgical intervention (LeFort I osteotomy, bilateral sagittal split osteotomy, etc.) can be attempted virtually to assess feasibility before proceeding to surgery. In the next step the required surgical splints are constructed using “Waefer Creation 3D, Onyx Ceph3™” module. The virtually created splint is saved as *.stl file and imported in the suitable slice software. The splints are then printed using a DLP 3D-printer (Shera D30, Rapid Shape GmbH, Heimsheim, Germany) with resin (SHERAprint - ortho plus UV, SHERA Werkstoff-Technologie GmbH & Co. KG, Lemförde, Germany). Recently both Anycubic Photon Mono X and Anycubic Photon Mono M5s LCD 3D printers (Hongkong Anycubic Technology Co., Shenzhen, China) were integrated in the described workflow. The splints are printed with Bio-Med Clear resin (Liqcreate, Utrecht, The Netherlands).

Results and Conclusion: With the presented approach, it is possible to produce high-quality planning of orthognathic surgical treatments resulting with accurately fitting surgical splints and satisfying treatment results. The three-dimensional virtual planning significantly facilitates interdisciplinary communication with oral and maxillofacial surgery during the planning phase. From our perspective, this fully digitalized procedure is superior to all aspects of conventional treatment planning and splint manufacturing.

CP144 - ORTHODONTIC TREATMENT OF DEEP BITE AND GUMMY SMILE IN ADULTS AS A FUNDAMENTAL STEP FOR RESTORATIVE DENTISTRY

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BACKGROUND: Deep bite is a common malocclusion in which the mandibular incisors are excessively overlapped vertically by the maxillary incisors when teeth are in centric occlusion. This kind of malocclusion presents challenges especially when combined with an excessive display of gingival tissues. This report is about a 40year-old and a 35year-old woman, both having deep bite and gummy smile with an uneven gum line. The initial plan has included gingivectomy and aesthetic restorations after the orthodontic treatment.
OBJECTIVES: The aim of this report is to lay emphasis on the importance of the orthodontic treatment as an initial step in creating the dental and periodontal specifications for a sound and aesthetic restorative result.
METHODS: In the case of the 40 year-old woman, fixed appliances were used in both arches and total treatment time was 1.5 year. In the case of the 35year-old woman, a lite package of a known brand of clear aligners and a concurrent two-month period of fixed appliances were used. Total treatment time was 1.5 year.
RESULTS: In both cases, intrusion and proclination of maxillary incisors as well as an improved gum line were achieved. In the first case, the deep bite was overcorrected, counting in the extra length of the crowns placed. In the second, composite resin restorations completed the treatment plan.
LIMITATIONS: In both cases, the gummy smile was improved but not eliminated because patients were so pleased with the result of orthodontic treatment that did not want to proceed with a gingivectomy. In the first case, final restorations were delayed for one year and a small relapse was corrected while in the second case the patient chose the most affordable and brief prosthetic treatment plan.
CONCLUTIONS: Deep bite cases cannot be tackled single-handedly by a prosthetic treatment plan. The contribution of Orthodontics is pivotal since the alternative plan would be extremely invasive for both periodontal tissues and teeth.

CP145 - AN AUDIT TO ASSESS QUALITY AND TIMELINESS OF SAME DAY RETAINERS

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Background/Aims: At a local audit meeting, clinicians noted they had been experiencing several ill-fitting same day retainers as well as delays in receiving the retainers. This has implications on clinical time taken to adjust the retainers, as well as cost of re-making retainers where required. The aim of this audit was to assess the quality and timeliness of same day debond retainers over a prospective 6 week period and identify any common reasons for ill-fitting retainers with a view to improving our service.

Materials/Methods: A checklist gathering information regarding quality of alginate impression, quality of retainer fit and time the retainer was received from the laboratory was created. This checklist was filled out by clinical and laboratory staff for every same day retainer made over a consecutive 6 week period. Vacuum formed retainers, Hawley retainers and Hawley retainers with teeth were included.

Results: A total of 59 retainers were assessed. 50% of all upper retainers and 7% of lower retainers required some form of adjustment at the chairside. 90% of upper alginate impressions and 89% of lower impressions were of sufficient quality that they did not affect construction of the retainer.

Conclusions / Implications: The results highlighted a need to improve the quality of our alginate impressions as well as the construction of our same day retainers. The findings were discussed with the North East England regional orthodontic quality improvement team to identify ways in which we may improve our retainers. Suggestions from colleagues in other units included methods such as use of adhesive in impression trays and use of lower impression trays for upper vacuum formed retainers to minimise pulling of alginate in the palate which may lead to distortion. These suggestions are currently being trialled on clinic and a second cycle of the audit is underway to evaluate improvements to same day retainers.

CP146 - MOLAR-INCISOR MALFORMATION: A CASE REPORT AND TREATMENT SUGGESTIONS

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AIM: to report a case of a molar-incisor malformation comparing the findings with the literature and describing a possible treatment plan.

BACKGROUND: Molar-incisor malformation (MIM) is a dental abnormality typically found in pediatric patients. It is characterized by normal clinical crowns and thin, short and tapered roots affecting mainly the permanent first molars. The etiology of MIM is unclear, but the literature proposes non-genetic, environmental factors related to past medical history in the first two years of life as a possible cause.

CASE: A 15 year-old boy was referred to the department of orthodontics of the University Hospitals Leuven, by the general dentist, due to radiographical evidence of root malformations. The upper left canine was not clinically visible and the hypomineralisation of the four upper incisors was apparent. The panoramic X-ray confirmed the presence of 32 permanent teeth, root dilaceration of all four canines and impaction of the upper left canine. The two upper first molars presented shortened roots and the two lower first molars showed a lack of root formation.
The patient's medical history referred a bilateral subdural hematoma at seven months old.

TREATMENT: There is no specific treatment for MIM due to the rarity of reported cases.
The patient was not willing to undergo an orthodontic treatment. Two treatment options were suggested: (1) extraction of the two lower first molars later in life followed by implant placement or (2) extraction of the two lower first molars and tooth autotransplantation of the two upper wisdom teeth to the extraction site of the two lower first molars.
Option two was preferred by the patient and his mother.

CONCLUSION: Literature suggests that the incidence of MIM will increase with improved healthcare and patient survival. Oral healthcare providers should be aware of MIM to detect this kind of malformation at an early stage. Long-term follow-up studies will lead to a better understanding of the pathogenesis and etiology of MIM and formulation of treatment guidelines.

CP147 - CAMOUFLAGE TREATMENT IN UNILATERAL COMPLETE CLEFT LIP AND PALATE

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Background : Unilateral complete cleft lip and palate (CLP) patient often experience missing many upper permanent teeth, leading to the more severe maxillary hypoplasia. Either orthognathic surgery or camouflaging by lower teeth extraction is a viable approach. In some case with missing upper teeth but lower teeth are to be extracted, Autogenous tooth transplantation (ATT) is an alternative way. However, this is seldom employed, especially in cleft patients, due to the elevated risk of complications associated with the unique dental anatomy in CLP cases.

Objective : This case report aims to illustrate a complex interdisciplinary treatment approach in camouflage treatment of class III malocclusion involving ATT in a patient with unilateral complete cleft lip and palate.

Diagnosis : An 11-year-old girl with a preexisting condition exhibited facial asymmetry, a concave profile, Angle's class III malocclusion with anterior and left posterior crossbite. The patient presented with skeletal class III characteristics, a negative overjet of -2.5 mm, and a rightward deviation of the upper midline. Additionally, she had four missing permanent teeth in the upper arch (15/12/22/25), exacerbating the severity of the maxillary hypoplasia.

Treatment: At 11 yo., a functional spring inclined plane was prescribed, followed by a fixed orthodontic appliance, upper expansion archwire, and class 3 elastics to rectify crossbite, expand the upper arch. At 13 yo., a secondary alveolar bone graft, nasal floor closure, and oronasal fistula closure were performed. At 16, due to pronounced skeletal class 3 and negative overjet, a camouflaged treatment involved replacing missing teeth 12 and 22 with 13 and 23. Plans included utilizing spaces from missing 15 and 25 for autogenous tooth transplantation (teeth 34 and 44 from the lower arch), followed by root canal treatment. The result was favorable facial and smile esthetics.

Conclusion : In camouflage treatment for cleft conditions, the success of autogenous tooth transplantation depends on patient-specific factors, surgical skill, and postoperative care quality. Patient selection, coupled with appropriate orthodontic-surgical-endodontic techniques, can yield exceptional results in tooth substitution, functionality, aesthetics, and long-term viability.

CP148 - ORTHODONTIC TREATMENT WITH AUTOTRANSPLANTATION OF AN IMPACTED THIRD MOLAR FOR AN ADULT PATIENT

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BACKGROUND/OBJECTIVES/AIMS: Certain orthodontic patients, necessitating treatment, may involuntarily undergo tooth extraction due to caries or periodontal disease before or during the intervention. In situations where viable donor teeth are accessible, transplantation emerges as a potential option to address the extraction space. However, challenges persist in adults, particularly when the anticipated root growth of the donor's teeth is not evident. The primary objectives of this case report are to delineate the viability of transplanting a fully developed tooth with completed root growth and to provide insights for the seamless integration of transplantation into routine clinical practice. The overarching goal is to advocate for the inclusion of transplantation as a viable treatment modality, minimizing dependence on immediate prosthetic interventions for missing teeth and augmenting overall patient satisfaction.
MATERIALS/METHODS: A female patient in her 30s presented with discomfort in her lower left first molar, deemed non-preservable by a general dentist, expressing a desire for orthodontic intervention. Following consultation with general dentists, the non-preservable lower left first molar was extracted, and the ipsilateral third molar was transplanted. Subsequent to root canal treatment, orthodontic intervention was initiated. Cephalometric analysis, model examination, and facial assessment were conducted to evaluate the patient. The periodontium was assessed during the orthodontic treatment and retention phases using a six-point periodontal examination, panoramic radiographs, and dental radiographs.
RESULTS: Routine periodontal examination and treatment, appropriate root canal therapy, timely orthodontic intervention, along with patient motivation for treatment, and the selection of an appropriate tooth to be transplanted yielded satisfactory outcomes.
LIMITATIONS: The report's limitations include the requisite for an extended follow-up to assess the enduring stability of the transplantation procedure.
CONCLUSIONS/IMPLICATIONS: Transplantation of third molars in regions necessitating extractions can prove effective, even in adults. If a viable third molar is available, considering transplantation and alignment in patients with completed root growth could be worthwhile.

CP149 - MANAGEMENT OF SKELETAL CLASS III MALOCCLUSION WITH FACE MASK WITH SKELETAL ANCHORAGE: CASE REPORT

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BACKGROUND: Skeletal Class III patients may encounter aesthetic and functional challenges stemming from either skeletal or dental discrepancies. The prevalence ranges from 4% to 14%. In growing patients, using a facial mask in interceptive orthodontics enables maxillary protraction and alters the direction of craniofacial growth. It can be used with tooth or skeletal anchorage. The literature states that skeletal anchorage shows greater maxillary advancement and more favourable long-term stability.
AIM: This paper aims to describe a clinical case of a Class III patient with multiple agenesis who underwent skeletal anchorage facemask protocol.
MATERIALS/METHODS: A 6-year-old female with multiple agenesis, posterior crossbite, and skeletal class III malocclusion sought orthodontic treatment at the Institute of Orthodontics, Faculty of Medicine, University of Coimbra. Due to multiple agenesis at the time, the protocol initially involved a skeletal anchored facemask. Following maxillary protraction and the eruption of maxillary incisors, a progenic appliance with an expansion screw and a palatal crib was used. In the first 2 months, the expansion protocol was 0.20mm/week. During the treatment, upper incisor inclination was improved through activation of the progenic appliance.
RESULTS: After treatment, a more favourable occlusion was obtained. Both the ANB and the overjet were improved. In addition, the inclination of the incisors was corrected, and facial aesthetics improved. Today, at the age of 10, a lingual arch with lower incisors has been placed to address the aesthetic concerns resulting from the agenesis and the axilla-mandibular relationship remains orthognathic.
CONCLUSION: In growing patients, a face mask with skeletal anchorage allows the maxilla to be protruded when dental anchorage is not possible, which improves the function of the stomatognathic system and facial aesthetics.

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CP150 - TREATING A PATIENT WITH MODERATE CROWDING THROUGH DISTALIZATION IN FOUR QUADRANTS

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AIM: This case report demonstrates the treatment of distalization using miniscrews in four quadrants in a patient with a moderate crowding.

MATERIAL/METHOD: An 18-year-old female came to our clinic with a complaint of anterior crowding. The patient had a Class 1 molar relationship with normal U1-NA (23º) and increased L1-NB (32º) angles. The lower premolars were positioned buccally, and the right upper canine was in a high position. We suggested a 4 premolar-extraction treatment plan, but the patient declined the extraction treatment. Then the four-arch distalization plan was suggested and the patient agreed. Subsequently, screws were placed in the infra-zygomatic region on both sides. Two buccal shelf screws were also applied in the mandible. Distalization was performed with power chains the canines over a 0.019x0.025 SS archwire in four quadrants. Following this, incisor retraction was done.

RESULTS: After approximately 1.5 years of treatment, we achieved an ideal overjet and overbite, Class 1 molar and canine relationships, as well as an ideal and balanced profile. The treatment resulted in less proclined incisors in both arches (U1-NA (25º) and L1-NB (33º) angles).

LIMITATIONS: Despite the distalization carried out in all four quadrants in the patient, limitations were encountered. These limitations were due to limited distalization in the lower jaw and the proclination of teeth caused by the posterior teeth outside the arch. Consequently, despite the distalization performed in four quadrants, the treatment resulted in a slight increase in the angulation of the incisors.

CONCLUSION: This case highlights the successful use of miniscrews for distalization and provides an insight for the treatment plan without extractions. Also we achieved a treatment of moderate crowding with favorable dental and skeletal outcomes.

CP151 - NANCE HORAN SYNDROME: AN ORTHODONTIC CASE SERIES

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BACKGROUND
Nance–Horan syndrome is a rare X-linked dominant disease characterised by congenital cataracts, dental anomalies, intellectual disability, and facial dysmorphism. Dental findings include multiple supernumerary teeth, mulberry molars and notched incisors. We present the findings of three cases with Nance-Horan Syndrome.

CASE 1
A 9-year-old male was referred to the orthodontic department by his general dental practitioner regarding the irregular eruption of his incisors. He presented with a Class III incisor relationship on a Class III skeletal base; his lower incisors erupting at 8-9 years and the lower second permanent molars erupting early at the same time; an unerupted FDI 21, and an erupted supernumerary/supplemental tooth between FDI 41/42. The patient was seen on a joint orthodontic and paediatric dentistry clinic where 2-D and 3-D radiographic imaging confirmed the presence of 12 supernumeraries. Due to the combined history of congenital cataracts, learning difficulties and supernumerary teeth, he was referred to a geneticist for suspected Nance Horan Syndrome, which was confirmed. The resultant treatment was extraction of 5 retained primary teeth, 11 supernumerary teeth, 1 supplemental tooth, exposure and bonding of a gold chain to the FDI 21 and to accept the morphology of teeth.

CASE 2
A 12-year-old female who was the older sibling of Case 1 presented with a Class II division 2 malocclusion on a skeletal Class I base. Radiographic examination revealed 5 supernumerary teeth including a horizontally impacted supplemental FDI 33 in the mandibular symphyseal region. The true permanent FDI 33 was also horizontally impacted and inferior to its corresponding supernumerary. The supernumerary teeth were extracted and the ectopic FDI 33 was autotransplanted with the aid of 3D surgical planning. Orthodontic treatment was completed with fixed appliances.

CASE 3
We also present the case a young male, who had obvious notching affecting the upper anterior teeth. He had a Class II div 1 incisal relationship and supernumerary teeth that had also caused resorption of the adjacent dentition.

CONCLUSION
Our case series highlight the importance of multidisciplinary care for successful management of these patients. Clinicians can refer to published case reports on management options for these patients.

CP152 - MAXILLARY EXPANSION USING A SKELETAL ANCHORED CAD/CAM APPLIANCE WITHIN A SINGLE SESSION PROCEDURE – A CASE REPORT

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BACKGROUND: Adolescents and adults show a progressive ossification of palatal suture, resulting in a higher palate rigidity. Therefore a bone-borne expansion appliance is beneficial. For an ideal treatment outcome, the application of a hybrid CAD/CAM expander appliance containing two miniscrews for skeletal anchorage can be recommended. Superimposition of CBCT and intraoral scan for digital screw positioning is used. Due to the digital workflow a single-session procedure is possible.
MATERIALS AND METHODS: A 12-year-old male patient showed a narrow maxilla resulting in a crossbite in the 1. quadrant. The maxillary deficit measured in the molar region was 7mm. The patient showed a palatal displaced tooth 12. In addition to the routine diagnostic records, a CBCT and facescan scan was conducted. After superimposing the intraoral- and CBCT scan, virtual screw positioning was performed to plan a bicortical miniscrew position. To transfer the miniscrews clinically, a drilling template was constructed, and further 3D printed. The expander appliance was individually designed within a CAD/CAM workflow and manufactured using selective lasersinter technology.
RESULTS: Within a single-session procedure, miniscrews and the appliance were inserted in one visit. To check the miniscrew position, an intraoral scan using scan bodies was performed. To evaluate the transfer accuracy of the drilling template, the digitally planned screw position was superimposed with the post-insertion intraoral scan. It showed a satisfactory transfer of the screw position. The 3D-deviation of the digital planned to clinical miniscrew position was measured on the miniscrew tips and showed a difference of 0.2 mm for the first miniscrew and 0.7 mm for the second. Immediately afterwards, the expansion was started. Initially, a rapid expansion protocol was used until a diastema opened. The protocol was changed to slow expansion until the necessary width of the maxilla was reached. By maxillary expansion, the necessary space for the displaced tooth was provided. The superimposition of the pre-and post-treatment facescan showed no recognizable changes of the midface soft tissue.
CONCLUSIONS: The single-session procedure enabled the activation of the appliance immediately after insertion of miniscrews. Utilizing a drilling template, a bicortical miniscrew position could be achieved.

CP153 - ORTHODONTIC TRACTION OF HORIZONTALLY IMPACTED MAXILLARY CANINES

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AIMS

Maxillary canines are the second-most frequently impacted teeth after the third molars. The possibility of impaction of the maxillary canine must be diagnosed early, the eruption path must be monitored, and the treatment must be determined based on accurate diagnosis and analysis at an appropriate time. In this presentation, we introduce a case, in which the horizontal impaction of the maxillary canine was detected early and successfully aligned in its normal position through orthodontic traction.

SUBJECT AND METHOD

An 11-year-old girl came to the orthodontic clinic at Jeonbuk National University Dental Hospital with the chief complaint of delayed eruption of her both maxillary canine. In the initial radiograph, the right maxillary canine was horizontally impacted, the left maxillary canine was mesially inclined and impacted. TADs was placed in the midpalatal area for orthodontic traction. The right canine was orthodontically tracted using a palatal wire connected to a miniscrew, and the eruption path of left canine was changed to the disto-occlusal direction using a buccal wire.

Result

Since canines are important teeth that located in the corner of the arch and serve as a guide during occlusion, if an impacted tooth is radiographically identified, orthodontic traction can be attempted. As a result of traction using TADs, the canine were able to erupt efficiently without any movement of the adjacent teeth. Finally through additional full fixed appliance treatment, Class I molar relationship and harmonious anterior occlusion were obtained.

CONCLUSION

Determining the accurate location of impacted canines and their relationship to adjacent incisors and anatomical structures is an important part of the diagnostic process and essential for successful treatment. Additionally, the use of TADs are able to allow for more efficient movement of the impacted tooth. If several treatment strategies are precisely established, impacted canines can be successfully aligned in the dental arch through an orthodontic approach.

CP154 - SEVERE SKELETAL DISCREPANCY II WITH CONDYLAR RESORPTION: AN ORTHOGNATHIC SURGERY CASE

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Objective: To present treatment for severe skeletal 2 with condylar resorption problem.

Diagnosis: This case report demonstrated a severe skeletal discrepancy II surgery in previously chin injury 6 years ago with tempero-mandibular disorder finishing within 36 months. A 35-year-old male with chief complaint of maxillary protrusion and bite impairment in front teeth.

He had a severe convex profile (H-angle= 30), short chin throat length (35 mm), incompetence lip, high smile line, symmetrical long and narrow facial form. He had skeletal II (ANB=12.5) with severe retrognathic mandible and chin (SNB=66, SN-Pg= 66.5), vertical maxillary excess, open configuration (MP-PP=45), proclination of upper and lower incisors. Angle's class II molar relationship.

Teeth 35, 45 were previously extracted, OJ= 16.5 mm, Panoramic film reveals abnormal condylar form. TMD: R/L joint inactive condylar resorption with disk displacement with reduction. He also had mouth breathing and lip biting habits.

Treatment: To establish a harmonious profile, skeletal type I and establish normal configuration 2-jaw orthognathic surgery was planned. TMD consultation was done prior to the orthodontic treatment.

Presurgical orthodontics: Due to excessive overjet extraction 14,24 was done to reduce upper incisor tooth protrusion and to reduce the amount of lower jaw advancement which could be harmful to TMJ condition. Lower arch was leveled, aligned, and flattened curve of spee. Both arch were coordinated transversely.

Orthognathic surgery: 2-jaw surgery (Le Fort I maxillary impaction with counterclockwise rotation, BSSRO mandibular advancement and advancement genioplasty)

Postsurgical orthodontics: Occlusion seating was done with intermaxillary elastics at post-surgery Upper retention with wraparound retainer and lower with Hawley's retainer with hook for class II elastic at night time.

Conclusion
Patient achieved good class I occlusion, good OJ/OB with improved profile. Total treatment time was 3 years 6 months. Skeletal relationship was improved (ANB=6.5). Mandibular plane was improved (FMA from 47 to 34). Facial convexity was improved to normal range (H-angle decreased from 30 to 13). At 1 year post treatment shows good stability without any TMJ symptoms.

CP155 - THE IMMEDIATE EFFECT OF MOLAR BITE RAISING ON ANTERIOR OVERBITE

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OBJECTIVES:
The aim of this study was to determine the effect of 2 mm of bite raising on the lower first molars on the decrease of anterior overbite, with an attempt to explain the variation in bite opening based on various dental and skeletal variables.

MATERIALS AND METHODS:
Fourty-seven orthodontic patients in their permanent or mixed dentition who had undergone lateral cephalometric examination in the last month were consecutively recruited. A first intraoral scan of the dentition was taken in maximal intercuspidation using a Trios 3Shape® scanner. Subsequently, bite raisers in the form of a 2mm diameter stainless-steel bearing ball were temporary bonded with a photopolymer material onto the central fossae of both lower first permanent molars, and a second intraoral scan was taken with the patient in occlusion on the posterior bite raisers. Digital dental cast analysis was performed to measure the changes in overbite, and the results were analysed in an attempt to explain between-patient variation based on several dental skeletal variables.

RESULTS:
In the sample of 47 patients, the mean overbite decrease following 2mm bite raiser placement was 2.2mm (0.3-4.0mm). For the individuals with molar Class II relationships, the bearing ball opened the anterior overbite by 1.6mm (0.2-3.6mm) on average, while the remaining Cl. I cases had a mean overbite decrease of 2.3mm (0.3-4.0mm), the difference was statistically significant ($p<0.05$). To explain this difference in the results, different cephalometric and dental variables were examined, but no contributing factors was found to significantly influencing this inter-patient variability.

DISCUSSION:
Following bite raising by 2mm on the posterior dentition, the overbite decrease is bigger in patients with Class I sagittal relationships than those with Class II. For the moment no dental or cephalometric variables have been detected that influence the variation in overbite reduction. Other variables will therefore be examined to identify their potential contribution to this variation.

CP156 - A RARE CASE REPORT OF A YOUNG PATIENT WITH DENTIN DYSPLASIA TYPE I

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BACKGROUND: Dentin dysplasia type I (DD-I or radicular DD) is a rare heritable disorder transmitted as an autosomal dominant trait that affects the dentin and the pulp of the teeth. This disorder is also known as “rootless teeth” because of the loss of organization of the root dentin, which often leads to a shortened root length or root agenesis. The prevalence of dentin dysplasia type I is about 1 per 100000. As a result, knowledge regarding this genetic condition mainly originates from reports of isolated cases.

AIM: The purpose of this study is to present a rare clinical case of a female patient who was diagnosed with dentin dysplasia type I when she was referred for orthodontic evaluation.

METHODS: An 8-year-old Caucasian female patient with no known medical history was referred to a private orthodontic clinic seeking orthodontic treatment. Diagnostic orthodontic records were obtained including extraoral and intraoral photographs, dental casts, a panoramic and a lateral cephalometric radiograph.

RESULTS: The patient presented with root agenesis of first permanent molars. Clinically, the morphology of the teeth was normal in shape, form, and color. Radiographic examination revealed partial or complete obliteration of the pulp chambers, defective or only rudimentary root development and periapical radiolucencies with no obvious cause. Considering the clinical and radiographic features, the patient was diagnosed with dentin dysplasia type I. Maintenance of first permanent molars and monitoring until the patient is old enough for implants was considered as the treatment of choice. Alternatively, it was recommended extraction of first molars and orthodontic mesialization of second molars followed by implant placement in the area of second molars, if no third molars were available.

CONCLUSIONS: Orthodontic management of patients with dentin dysplasia type I is challenging due to high teeth mobility leading to early exfoliation. Therefore, careful treatment planning and clear communication with the patient and their family is required. Since there are only a few published cases about patients with dentin dysplasia type I who were subjected to orthodontic treatment, awareness should be raised among the orthodontic community regarding this topic.

CP157 - CAN A BROADIE BITE IN A YOUND ADULT BE TREATED WITH A COMBINATION OF A LIP BUMPER AND CROSS-BITE ELASTICS FOLLOWED BY AN INVISALIGN LITE PACKAGE? REPORT OF A CASE

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BACKGROUND: Brodie bite is a rare malocclusion of the transversal plane, occurring in 1-1.5% of the population, in which the palatal cusps of the upper molars occlude outside the vestibular cusps of their antagonists. In brodie bite cases, extrusion of maxillary and mandibular posterior teeth with buccal or lingual tipping respectively, resistance of posterior teeth to be corrected and limited space available for orthodontic appliances constitute the main challenges. In this case report we aim to offer a novel treatment approach using hybrid aligners' treatment.

METHODS: A 24.0-year-old male with the chief complaint of being unable to masticate properly, presented with a Class II div. 2 dentoalveolar malocclusion, and a bilateral brodie bite. Before initiating treatment, all wisdom teeth were removed. A combination of a lower lip bumper, cross-bite elastics, canine turbos to raise the bite and 2-dimensional lingual braces from canine to canine were used to correct the transverse discrepancy and the severe crowding in the lower arch. Aligner treatment followed, in combination with class II elastics. Following treatment, a 4-4 lingual and a 3-3 palatal fixed retainer together with Essix retainers were used. Photographs, panoramic and lateral x-rays, as well as scans and occlusograms were compared before and up to 2 years following treatment.

RESULTS:
Total treatment lasted for 16 months. In the first 6 months the crossbite elastics and the lip-bumper brought the posterior teeth in contact while in the next 10 months the weekly change of 42 aligners (initial set and 2 refinements) achieved a proper interdigitation. No evidence of fenestration and dehiscence, centric occlusion-centric relation discrepancy, or external apical root resorption were noted.

LIMITATIONS: When finished the lower midline remained 1 mm off compared to the facial midline, the vertical height slightly increased and the lower incisors proclined 4 degrees. Despite that, the hybrid approach that was followed offered an aesthetically acceptable treatment alternative.

CONCLUSIONS: Since many modalities are available in treatment of broadie bites, decisions should always be taken on an individual basis to fulfil the aesthetic, functional and budgetary expectations, while offering a result of long-term maintainability.

CP158 - DO WE NEED CONDYLES? A CASE OF IDIOPATHIC CONDYLAR RESORPTION: 2023 UPDATE.

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BACKGROUND: Idiopathic condylar resorption (ICR) is a poorly understood condition with progressive degeneration of the temporomandibular joint (TMJ) without an identifiable cause. ICR commonly presents as a spontaneous, self-limiting episode of bilateral condylar resorption in the absence of pathology, injury or systemic disease. Some patients have discomfort and/or functional limitations during the active phase of resorption, others can be asymptomatic. Management of ICR is controversial; we report an unusual case where the condyles were not restored surgically, with good functional and aesthetic outcomes.

METHODS: A female, 20-year-old patient (SJ) attended for orthodontic review in May 2016 concerned about a sudden change in facial profile and “small chin”, occurring over the past 6 months with no pain. An orthopantomogram (OPG) revealed a loss of condylar height and rheumatology investigations were negative for inflammatory markers. In July 2017, the condyles appeared fully resorbed and serial bone scans (Tc HDP) indicated the cessation of bony remodelling. Pre-surgical fixed appliances were placed in 2017, followed by surgical mandibular advancement of 10 mm and with genioplasty of 8 mm in January 2019. Fixed appliances were removed in June 2019.

RESULTS: Immediately following surgery, SJ reported good function, nil discomfort and was pleased with aesthetic outcome. At her most recent review appointment in August 2023, the result continues to be stable, and SJ has no concerns with function or aesthetics.
LIMITATIONS: SJ is still stable, four years from her original surgery and fixed appliance treatment. SJ will continue to be reviewed in case of any future changes.

CONCLUSIONS: Management of ICR ranges from conservative (occlusal splint therapy) to complex (TMJ surgery with prosthetic joint replacement). It is unknown which treatment modality can provide long-term condylar and occlusal stability. Previously, orthognathic surgery alone has been shown to have higher relapse rates than prosthetic joint replacement, however, presents less surgical burden to the patient. Here, we have shown promising long-term results without the need for prosthetic joint replacement.

IMPLICATIONS: Prosthetic joint replacement may not be necessary for patients presenting with ICR. We present a case whereby functional, occlusal and aesthetic goals were met, in the absence of condyles.

CP159 - INTRODUCTION OF A CLASS III TREATMENT ALTERNATIVE USING INDIVIDUALLY MANUFACTURED COMPUTER-AIDED-DESIGN/ COMPUTER-AIDED-MANUFACTURING APPARATUS BASED ON THREE PATIENT CASES

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BACKGROUND: The orthodontic treatment of a basal Class III aims primarily to promote the anterior development of the upper jaw. Typically, the anterior movement of the upper jaw is achieved through the combined use of a palatal expansion device and a face-mask. However, the face-mask is often rejected by children and adolescents due to its perceived aesthetic limitations, leading to its frequent nighttime-only use. This results in reduced overall wear time and, consequently, a significant delay in skeletal effects on the upper jaw.

AIM: The aim of our case series is to present an efficient and patient-friendly Class III treatment alternative with individually fabricated CAD/CAM appliances for the maxilla and mandible that are intermaxillary effective by means of Class III elastics.

METHODOLOGY: Three patients with an average age of 10 years (SD = 1.73) presented with a prognathic bite and frontal crossbite. The mean overjet was -2 mm (SD = 0), the overbite was 1.5 mm (SD = 4.33). In the cephalometric analysis, the average ANB was -2.3° (SD = 2.51), the mean Wits value was -7 mm (SD = 5.57). The loosening of sutures and expansion of the upper jaw were carried out using skeletal anchored CAD/CAM hybridhyrax or dental-worn CAD/CAM RME. Both appliances were planned with vestibular hooks on the shells of the six-year molars. In the lower jaw, all three patients were provided with a PMMA plastic splint with occlusal stops and two mesially open hooks in the anterior region. Class III elastics were attached for approximately 16 hours daily to promote the anterior development of the maxillary complex.

RESULTS: Correction of the crossbite was achieved on average in 7.3 months (SD = 6.51). In the mid-treatment cephalometric analysis, an improvement in the ANB angle to an average of 2° (SD = 0) was observed. The Wits value improved by 2 mm (SD = 0) for all patients.

CONCLUSION: The use of individual CAD/CAM appliances in combination with Class III elastics proved to be an effective and patient-friendly treatment alternative and showed similar success to the classic Class III treatment with RME and face-mask in adolescent dentition.

CP160 - ORTHODONTIC TREATMENT COMBINED WITH ORTHOGNATHIC SURGERY IN A PATIENT WITH SKELETAL CLASS III: A CASE REPORT.

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OBJECTIVES: To present treatment in asymmetric, skeletal class III patient. A 31-year-old Thai female seeking improvement in her chewing efficiency and her appearance.

DIAGNOSIS: Asymmetrical oval facial form and a concave facial profile, with flat paranasal area and long chin throat length. Chin deviated to the left by 2 mm. The lips canted downwards to the left by ~2 mm. She had severe crowding at the lower anterior region, Angle's Class III malocclusion, and an anterior crossbite (overjet -1mm). Tooth 17 was missing.
The lateral cephalometric analysis confirmed the class III skeletal pattern due to an orthognathic maxilla and a prognathic mandible (SNA 83, SNB 86, ANB -3). The position and inclination of the maxillary incisors were within the normal range, while the mandibular incisors were retruded and retroclined.

TREATMENT: Non-extraction. Presurgical decompensation was done by proclining lower anterior teeth. Transverse arch coordination was carried out by constriction of upper arch and expansion of lower arch, making bilateral posterior crossbite posteriorly. The treatment goals were to correct the skeletal and dental class III relationship, eliminate the anterior crossbite, and establish positive overjet. The patient was managed by bimaxillary surgery (Lefort 1 maxillary advancement 2 mm + BSSRO mandibular setback 6 mm) with advancement genioplasty.
Post-surgical orthodontics: Posterior crossbite, class II canine on left side, and midline discrepancy persisted after surgery. Cross elastic was placed to corrected posterior crossbite combined with upper arch expansion and lower arch constriction. Class II elastic on left side was prescribed, and class III elastic was used on the right side full-time to create proper overjet and achieve canine and molar class I relationship. Midline coordination and root parallelism were attained.

RESULTS: Significant improvement in the anteroposterior position of the mandible and masticatory function was achieved. The post-treatment occlusion demonstrated good interdigitation with Class I molar and canine relationships on both sides. Result showed better soft tissue profile and smile esthetics.

CONCLUSION: The severity of skeletal class III malocclusion may affect facial aesthetics to the extent that orthodontics alone may not provide an ideal outcome. In such cases, ortho-surgical intervention is essential to achieve satisfactory results.

CP161 - CORRECTION OF COMPLEX MALOCCLUSION WITH ASYMMETRICAL ANGLE CLASS III, OPEN BITE, AND MANDIBLE DEVIATION BY USING DIGITAL INDIRECT BONDING AND SKELETAL ANCHORAGE IN THE MANDIBULAR BUCCAL SHELF

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[1]University Clinic Of Dentistry Vienna

Background: 16 -year-old female patient with general health, no temporomandibular joint disorders. Clinical and radiographic examinations confirmed the presence of severe asymmetrical angle Class III malocclusion (1 molar size class III deviation in the entire left side, cross bite right side), an anterior open bite, crowding, and a mandibular discrepancy.
Material/Methods: The decision was made to extract the upper and lower wisdom teeth to create space for alignment and correction. Damon brackets (Ormco™) were digitally positioned using the Onyx software to enhance the accuracy of bracket placement, ensuring optimal treatment outcomes. A temporary anchorage device (TAD) was inserted into the mandibular buccal shelf on the left side to provide anchorage for the distalization of the entire lower left segment. Power chains were applied to the lower left segment, connecting to the TAD for controlled and efficient correction of the asymmetrical Class III malocclusion. Elastics (5oz) were utilized for occlusal fine-tuning, ensuring proper alignment and limiting posterior interference and bite closure.
Results: After three years, the comprehensive orthodontic treatment resulted in significant improvements in harmonious and functional occlusion of teeth in the maxillary and mandible, establishing a symmetrical Class I occlusion with proper bite relation of anterior upper and lower teeth and perfect symmetric midline. The patient is satisfied with a more aesthetically pleasing profile and smile.
Conclusion: This case report highlights the successful management of a complex orthodontic case involving asymmetrical Class III occlusion, open bite, crowding, and mandibular discrepancy. The combination of wisdom tooth extraction for limitation of posterior discrepancy, digital accurate bracket positioning, TAD application in the mandibular buccal shelf allowed for an efficient correction, ultimately achieving a favorable treatment outcome.

CP162 - BIODEGRADABLE MAGNESIUM MEMBRANE FOR DENTOALVEOLAR BONE REGENERATION OF CLEFT LIP AND PALATE PATIENT

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BACKGROUND: Cleft lip and palate (CLP) is the most prevalent congenital craniofacial malformation, with 75% of cases having an alveolar bone defect. This malformation results from embryonic disturbances in the development of the soft and hard tissues of the oral cavity and face. Typically, an autologous bone graft from the iliac crest is the conventional donor site. However, the literature reports that bone resorption can be approximately 40%, which may increase the need for reintervention. In these patients, the absence of the upper lateral incisor is one of the main problems to be solved at the end of orthodontic treatment. In adulthood, a tertiary alveolar graft becomes necessary to make dental implant rehabilitation possible. Recently, a new fully resorbable and biodegradable magnesium metal membrane has emerged with clinical application in the treatment of bone defects in the oral cavity.

OBJECTIVES: This paper aims to describe a clinical case of tertiary alveolar grafting in a patient with CLP using guided bone regeneration with a magnesium membrane and screws.

MATERIALS/METHODS: A 10-year-old female patient with unilateral left CLP and agenesis of tooth 22 was submitted to orthodontic treatment with a secondary alveolar bone graft. After finishing the orthodontic treatment, it was found that the secondary bone graft was reabsorbed, which made it impossible to place the implant for tooth 22.
The tertiary alveoloplasty surgery, before implant placement, was carried out using guided bone regeneration with a magnesium membrane (NOVAMag®) fixed with magnesium screws (NOVAMag®), autologous bone from the mandibular ramus and xenograft (Cerabone®). Prior to the bone regeneration surgery, the patient was submitted to vestibular deepening surgery.
After five months, a cone beam computed tomography scan showed the increase in bone volume required for the placement of a dental implant.

RESULTS: The NOVAMag® membrane ensured the necessary stability for the bone regeneration material and provided a barrier to the soft tissues, allowing the formation of new bone, with adequate volume, for subsequent dental implant placement.

CONCLUSION/IMPLICATIONS: This new magnesium membrane has shown promising results in the surgical treatment of bone defects in patients with CLP.

CP163 - ORTHODONTIC FORCED ERUPTION OF PERMANENT MAXILLARY CENTRAL INCISOR WITH SUBGINGIVAL FRACTURE: A CASE REPORT.

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BACKGROUND/AIM:
Restorative treatment of teeth with crown-root fractures is demanding due to the subgingival location of the fracture line. Orthodontic forced eruption facilitates the re-establishment of biologic width and allows the relocation of the restoration margin. The aim of this case report is to discuss the orthodontic forced eruption of a maxillary central incisor #11 with a crown-root fracture.

MATERIALS/METHODS:
A 24 year-old woman presented with an oblique crown-root fracture of tooth #11. Orthodontic extrusion was the primary treatment option for this tooth. A multidisciplinary approach was necessary, demanding the cooperation of an endodologist, an orthodontist and a restorative dentist. After the root canal treatment, the tooth was extruded with fixed appliances. The aim was to achieve orthodontic forced eruption retaining the occlusion. The extrusion rate was 1-1.5 mm a week. The total treatment period lasted six weeks and was followed by retention. During the extrusion, the incisal edge of the incisor was gradually reduced in order to avoid occlusion trauma.

RESULTS:
A biological width of 2mm was obtained in the maxillary central incisor (#11) after orthodontic forced eruption in the 6 week period. The radiographic analysis confirmed the successful orthodontic forced eruption. Periodontal tissues followed the tooth movement in an acceptable way.
Managing subgingival fractures in permanent anterior teeth presents complex treatment challenges. Crown lengthening is often contraindicated because it induces gingival margins disharmonies.

LIMITATIONS:
Orthodontic forced eruption requires a prolonged treatment duration.

CONCLUSION:
Orthodontic forced eruption is a viable solution – it allows the reestablishment of the biological width for the restoration of a subgingivally fractured tooth.

CP164 - PATIENT WITH SUBMUCOUS CLEFT PALATE TREATED WITH THE ADVANCED MOLAR DISTALIZATION APPLIANCE: A CASE REPORT

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BACKGROUND: Submucous cleft palate (SMCP) is identified by the triad of bifid uvula, notching of the posterior border of the bony palate, and palatal muscle diastasis. The majority of children with SMCP will not require surgical treatment unless there is the presence of velopharyngeal insufficiency or feeding and ear problems. Unoperated children with SMCP present with normal dental arch dimensions in the transverse plane, whereas in the sagittal plane the length of the maxillary dental arch may be shorter due to the growth deficiency associated with clefting.
AIM: The aim of this clinical poster is to present a case of a 14 year old boy with SMCP and Class II malocclusion.
MATERIALS/METHODS: According to patient's medical history and clinical examination there was a SMCP and bifid uvula was evident during initial examination. The patient presented skeletal Class I and dental Class II malocclusion with severe crowding in the upper arch. Transverse dimensions of the dental arches were normal, while the arch length in the upper arch was reduced. The goal of orthodontic treatment was to increase the arch length and correct crowding by distalizing the upper molars. The implant supported Advanced Molar Distalization Appliance (AMDA) was used initially for upper molar distalization, followed by fixed appliances in both arches and Class II elastics at the finishing stage.
RESULTS: Superimpositions of dental casts and cephalometric x-rays confirmed an almost bodily distalization of the upper molars without distal tipping and no anchorage loss of the anterior dental unit in terms of proclination of the anterior teeth. Further, during the anterior teeth retraction no anchorage loss of the posterior dental unit was observed in terms of mesialization of the previously distalized molars. Finally, at the end of treatment, well aligned arches, a Class I molar and canine relationship, and a harmonic profile was established.
CONCLUSIONS: As it seems from this case report, distalization mechanics with the AMDA can provide very satisfactory results, especially in complex cases, from both an aesthetic and functional point of view.

CP165 - A STABLE LONG-TERM SOLUTION FOR SEVERELY ANKYLOSED INCISORS FOLLOWING TRAUMA

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INTRODUCTION: Ankylosis is a likely and predictable outcome for severely traumatised or avulsed and replanted permanent incisors. Ankylosed incisors pose a highly aesthetic treatment challenge and a multidisciplinary approach is required. Orthodontists are often required to manage the long-term effects of dental trauma. There is wide variation amongst UK orthodontists' treatment of traumatised teeth and there is a need for further training when treating teeth that have suffered dental trauma.
BACKGROUND: An 11-year-old girl presented to the joint orthodontic restorative clinic following dental injury that she sustained three years previously to her upper permanent incisors.
CASE: The patient presented with ankylosed upper central incisors and an anterior open bite. There were periapical radiolucencies around both upper lateral incisor apices. This case report discusses treatment of ankylosed maxillary central incisors and poor prognosis lateral incisors using osteogenic distraction and implants.
DISCUSSION: There are various techniques available to manage ankylosed incisors. Osteogenic distraction is a reliable technique to develop vertical bone and therefore provide a solid base for implants.
CONCLUSION: This case demonstrates the management of a young patient with delayed presentation of ankylosed central incisors and shows the long-term successful results of treatment.

CP166 - USE OF EDIBLES AS EFFECTIVE TOOLS IN MYOFUNCTIONAL THERAPY. A PILOT-STUDY.

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AIM: Oral functions participate in the skeletal growth of young patients and are essential to facilitate the harmonious development of the craniofacial complex. In contrast, dentofacial dysmorphies have a multifactorial etiology often related to behavioral, functional, and structural abnormalities. Among these, atypical or dysfunctional swallowing represents one of the most frequent parafunctions. The aim of this pilot study is to explore the introduction of edible spread cream and small candies as tools to improve motivation and compliance in young children undergoing myofunctional therapy, with the purpose of optimizing oral functions, including swallowing.
MATERIALS AND METHODS: Six patients, one female and five males, between the ages of 7 and 14 years, presenting with atypical swallowing and oral breathing were evaluated and treated at the clinic of University of L'Aquila. Patients were randomly divided into two groups and were treated with two different treatment protocols by the same myofunctional therapist. Group A: traditional myofunctional therapy and traditional tools; Group B: same exercises as group A, but with edible tools (spreadable cream and small candies). For each child, an instrumental diagnosis pre and post myofunctional therapy was made. Extraoral and intraoral photographic records were collected. A myofunctional assessment of the lips and peri-oral muscles was made with the dynamometer, while fluorescein was used during the examination to assess the swallowing pattern. A diagnostic examination using photogrammetry was performed for the assessment of soft tissues. Finally, the patients' degree of cooperation was assessed by two speech therapists based on an increasing score scale from 0 to 10 referring, from a qualitative-quantitative point of view to these parameters.
RESULTS: As expected, the two patients who used edible tools demonstrated increased motivation and collaboration during myofunctional therapy.
CONCLUSION: Patient compliance, especially in very young patients, limits the effectiveness of myofunctional therapy, therefore, creative solutions are needed to achieve greater cooperation and edible tools can play a significant part in retraining correct swallowing. Although the sample of this pilot study is small, the results suggest that using actual edible tools in myofunctional therapy could increase compliance and better results in myofunctional therapy.

CP167 - MANDIBULAR DISTRACTION OSTEOGENESIS WITH 3D PLANNING IN A CHILD WITH HEMIFACIAL MICROSOMIA

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AIM: The mandibular osteogenesis distraction technique holds tremendous potential in the treatment of severe dentofacial deformities. This treatment can be safely applied to growing patients, as it is reported in the literature that anteroposterior lengthening of the mandible is relatively stable, potentially avoiding the need for conventional orthognathic surgery. The 3D planning of distractors allows greater precision, simulation of different procedures and comparison of vectors, reducing complications and surgical time. The purpose of this clinical case report is to show a case treated with orthodontic treatment and mandibular distraction osteogenesis with 3D planning.
MATERIALS AND METHODS: A 11-year-old male patient, diagnosed with a skeletal class II deformity due to hemifacial microsomia, was referred to the Institute of Orthodontics at the Faculty of Medicine, University of Coimbra, requiring surgical-orthodontic intervention. Intraorally, in addition to the skeletal class II condition, transverse discrepancy and mandibular retrusion with asymmetry were observed. The treatment plan included maxillary expansion with a quad-helix, mandibular distraction osteogenesis to correct class II skeletal malocclusion and mandibular asymmetry. After the surgery, fixed appliances with a Roth 0.018 prescription were employed for arch alignment and leveling. In the retention phase, a fixed retainer (3x3) was placed in the lower arch and a removable appliance (Hawley) in the upper arch.
RESULTS: At the end of the treatment, a significant improvement was observed in the ANB angle, reducing from 16º to 8º, as well as dental class I relationships. The patient reported notable enhancements in chewing function and breathing, positively impacting both physical and emotional well-being. Additionally, visible improvements in the soft tissue profile were noted, contributing to enhanced facial aesthetics and smile.
CONCLUSIONS: The individualization of distractor configuration through 3D planning allowed an immediate prediction of the patient profile post-surgery, eliminating the need to postpone conventional orthognathic surgery until adulthood.

CP168 - METHODS FOR MANUFACTURING FUNCTIONAL APPLIANCES USING DIGITAL TECHNOLOGIES FOR ADOLESCENTS WITH CLASS II MALOCCLUSION

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BACKGROUND: The optimal method of treatment of class II malocclusion in patients aged between 9 - 11 during the period of dental system growth stages II-IV of maturation of the cervical vertebrae are functional appliances that affect the skeletal growth of the mandible. Our proposed method for manufacturing functional appliances for adolescent patients with Class II malocclusion allows us to determine the constructive bite, controlling the position of the condyle , using digital axiography.
OBJECTIVES: To improve orthodontic treatment of patients with Class II malocclusion using functional appliances designed by digital diagnostic methods.
MATERIAL/METHODS: 12 patients aged from 9 to 11 were treated from 2021 to 2023. The selection criteria were cephalometric parameters: SNA, SNB, ANB, wits, Co-Gn. All patients were divided into 2 groups - group 1 (3 boys, 3 girls); group 2 (2 boys, 4 girls). In group 1, Twin-Block appliances were manufactured by using the traditional method, in group 2, using 3D visualization. The average treatment period was 12 months.

All patients underwent a computed tomogram from which panoramoic x-ray, Ceph, sections of the TMJ were obtained. Cephalometric analysis was performed in the Dolphin Imaging program and determined the stage of maturation of the cervical vertebrae. The digital study included scans of the dentition and optical axiography of the TMJ. The obtained data was combined, we modeled a constructive bite along the trajectories of the condyle, and created a splint, which was used in the technical laboratory to manufacture a functional appliance.
RESULTS: In group 1 , 3 patients had skeletal growth of the mandible, class I molar relationship, an increase in the size of the mandible which was confirmed by cephalometric data. In the remaining patients of group 1 no significant changes according to cephalometry were noted. In group 2, all patients achieved class I molar relationship, skeletal class I, and an increase in the size of the mandible, which was confirmed by cephalometric data.
CONCLUSION: Using digital technologies for treatment of children with class II malocclusion allows us to obtain predictable skeletal changes under the control of the movement of the TMJ condyle.

CP169 - MIGRATION OF LOWER FIRST PERMANENT MOLARS INTO THE CORONOID PROCESS IN A 7-YEAR-OLD FEMALE PATIENT PRESENTING WITH HYPODONTIA

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BACKGROUND: A 7-year-old female, referred for hypodontia, presented at the orthodontic department in Lincoln County Hospital, United Kingdom. On examination, the patient presented with a class 2 div 1 malocclusion on a class II skeletal base with average vertical proportions complicated by hypodontia of four permanent molars. The OPG revealed ectopic positions of both the lower first permanent molars in the coronoid process. The upper right second molar migrated distally. Both the lower E's were present with the lower 5's in a good position for eruption. The upper right first permanent molar appeared to be in the position of the upper right 8. The patient is fit and well with no known drug allergies. The patient did not report any pain associated with her dentition.

A repeat OPG taken three years later revealed further migration of the lower first permanent molars into the coronoid process. The lower left 5 migrated distally. This presentation aims to discuss the aetiology of ectopic first permanent molars and hypodontia, importance of routine radiographs, the appropriate timing of CBCT's and the risks and benefits of early intervention or delayed treatment.

Heteropia (tooth migration) is a common pathological condition documented in clinical literature. However, the ectopic development of first permanent molar is rare, ranging from 2 to 6 per cent. This case compromises a unique combination of conditions that are not commonly presented in literature.

CONCLUSION: Ectopically developing first permanent molars present as an abnormal deviation of the natural tooth eruption pathway. The aetiology of ectopic development of first permanent molars is not completely understood. No specific aetiological factors have been found to be in common to all paediatric patients. The factors to consider in these cases familial tendencies and genetics, abnormal angulation of the permanent molar, maxillary hypoplasia or retrognathism, delayed calcification and macrodontia. It is important for general dental practitioners and paediatric dentists to be aware of the prevalence of these cases and the treatment options available.

CP170 - BIG TOOTH, BIG PROBLEMS?

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OBJECTIVES/AIMS:
Patients that present with macrodontic teeth can require complicated treatment. This case report illustrates the management of a patient with a lower incisor macrodont tooth.
MATERIALS/METHODS:
A 14 year old patient presented with Class II division 1 incisors on class I skeletal pattern with normal FMPA complicated by a macrodont lower incisor and impacted lower second premolar teeth. Management of macrodontic teeth can be very difficult to manage as they can be unsightly and dealing with space can be difficult to manage whether this is restorative or space closure.
RESULTS:
This patient was treated with upper and lower fixed appliances which included extraction of the macrodont and alignment of impacted lower second premolar teeth.
CONCLUSIONS:
This case report illustrates that in the patients presenting with macrodontic teeth can be treated with orthodontics without the complications of long term restorative implications.

CP171 - DOES THE USE OF ANTIBIOTICS PROPHYLAXIS AFFECT THE RATE OF POSTOPERATIVE FISTULA RATES IN CLEFT PALATE PATIENTS?

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OBJECTIVE: Assess whether post-operative antibiotic prophylaxis affected the incidence of oronasal fistula formation in cleft palate patients. The use of antibiotics without proven benefit, however, is not without issue. These include costs to the health service, potential allergies and hypersensitivity reactions and the emergence of antimicrobial resistant bacterial strains. In the era of evidence-based medicine, the proven benefits of targeted antibiotic usage should be tempered with limiting the negative effects of their widespread use
DESIGN AND SETTING: Institutional retrospective study using data from patients undergoing primary palatoplasty
GOLD STANDARD: Fistula rate of no more than 8-10%
MATERIALS/ METHODS: In the first cycle, there were two groups (A and B). In group A, the patients had antibiotics on induction and 24 hours after, in group B, the patients had further antibiotics for a week. Our work from the cleft collective showed no evidence of change in fistula rates in relation to the antibiotic regime. Therefore, group A surgeon changed practice had antibiotics only on induction and group B remained the same from the first cycle.
RESULTS: In cycle 1, we found little evidence to suggest a difference in fistula rate between the use of an antibiotic regimen as binary variables: Grp A(P=0.171) and Grp B (P=0.69). Cycle 2 also demonstrated the following: Grp A (P=0.557) and Grp B(P=0.443).
LIMTATIONS: Retrospective study. It was also not possible to explore those patients who did not have antibiotics as according to the NICE guidelines, we are required to give antibiotics on induction and is considered clean non contaminated surgery. The use of a preoperative antibiotic given at the time of induction of anaesthesia would seem justified to prevent other serious complications from surgery such as sepsis. It has been demonstrated that the prevalence rate for bacteriemia following cleft surgery approaches 50 percent
CONCLUSION: The use of antibiotics and differing regimes, postoperatively do not influence the incidence of postoperative fistulae in cleft palate. Given the limitations and the limited evidence we call for a structured randomised control trial to answer this important questions

CP172 - THE COMPLEX ORTHODONTIC, SURGICAL AND PROSTHETIC TREATMENT IN PATIENTS WITH UNILATERAL CLEFT LIP AND PALATE AND SEVERE MAXILLARY HYPOPLASIA.

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AIM. This study aims to present the treatment outcomes of patients with unilateral complete cleft lip and palate who underwent a comprehensive approach involving orthodontic correction, surgical intervention for maxillary hypoplasia, and subsequent prosthetic rehabilitation. MATERIALS AND METHODS: We report the treatment outcomes of three patients (ages 16, 18, and 26) with unilateral complete cleft lip and palate. Orthodontic treatment included fixed appliances, a customized transpalatal arch (TPA), Beta-Ti cantilever, and face mask. One patient underwent Le Fort I surgical advancement for retrognathic maxilla. Following orthodontic and surgical phases, patients received cast partial dentures with a metal framework, selected based on preparatory treatment results and local morphological factors. RESULTS: The comprehensive treatment approach resulted in improved aesthetic features, closure of the cleft space, and long-term stability of orthodontic outcomes. Cast partial dentures effectively contributed to overall favorable outcomes, ensuring successful prosthetic rehabilitation. CONCLUSIONS. The treatment of unilateral cleft lip and palate patients involves a multidisciplinary approach, combining orthodontic, surgical, and prosthetic interventions. The collaboration of specialists is essential throughout the extended treatment duration, emphasizing the importance of alveolar bone restoration for efficient alignment of anterior teeth and the permanent stability of the upper dental arch. Prosthetic rehabilitation becomes necessary in cases where bone and tooth loss persist despite orthodontic and surgical interventions.

CP173 - OPEN BITE MALOCCLUSION SURGICAL-ORTHODONTIC TREATMENT - A CASE REPORT.

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[1]Zavod Orthos

AIM: To present and objectively evaluate the efffectiveness of interdisciplinary surgical orthodontic treatment of class III skeletal malocclusion.

SUBJECTS AND METHODS: At the time a 16-year-old boy with skeletal class III malocclusion is presented. Facial assimetry, mandibular protrusion, physiologic compensatory retrusion of lower incisors and canines are all present at the patient.

Clinical examination, extra- and intra-oral photographs, panoramic and cephalometric x-rays were taken at baseline (T0). Photographs and intraoral scans were performed at the end of orthodontic preparation (T1), after surgical treatment (T2), after final orthodontic treatment (T3) and in the retention phase (T4)

The treatment was planned to take place in several stages
1. (T1): orthodontic preparation
2. (T2): surgical treatment (extraction of lower third molars, bilateral split sagital osteotomy of the lower jaw, le fort I osteotomy of the upper jaw)
3. (T3): final orthodontic treatment
4. (T4): retention of achieved state

RESULTS: 6 months after finished stage 3, the patient's condition is stable, class I of first molars is achieved, vertical and sagittal relationship of upper and lower canines is appropriate. Facial assimetry is no longer present and facial profile is straight. 1 year after finished active treatment, the patient's condition is still stable and the state achieved at finished active treatment is maintained.

CONCLUSION: Interdisciplinary surgical-orthodontic treatment enables correction of hard esthetic and functional irregularities. Tight cooperation between an orthodontic specialist and a surgeon is required in all stages of treatment for success and desired result.

CP174 - NON-SURGICAL COMPREHENSIVE TREATMENT OF AN ADULT PATIENT TREATED WITH STANDARD EDGEWISE APPLIANCE

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[1]Klinika Limed, [2]Szymczyk Stomatologia

AIM: to show an outcome of a comprehensive, non-surgical treatment of an adult patient treated with standard edgewise appliance.

SUBJECTS AND METHOD: 24-year-old female patient came to the office seeking orthodontic treatment of her malocclusion. Her chief complain was unattractive smile. Patient was diagnosed with skeletal class II, canine class II occlusion with central incisors' retrusion, deep bite, midline shift and severe crowding in upper and lower arch. Treatment plan included extraction of upper first and lower second premolars, bonding the upper and lower standard edgewise appliance, upper canines distalisation, correction of the crowding in upper and lower arch, mesialisation of lower molars and finishing. After the end of active orthodontic treatment patient was referred for the anterior teeth recontouring.

RESULTS: Active treatment was finished in 30 months. Profile, function and smile aesthetics improved significantly. Upper and lower midline were aligned. Canine class I was obtained. Severe overbite was corrected.

CONCLUSIONS: With careful treatment planning, extractions good mechanics and proper force system it's possible to achieve great, stable treatment results with the improvement in function, profile and smile aesthetics.

CP175 - GROWTH MODIFICATION OF CLASS III MALOCCLUSION BY MODIFIED PENDEX WITH LIP PADS AND REVERSE TWIN-BLOCK

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BACKGROUND/AIM
Skeletal malocclusions are successfully treated by growth modification in early growth skeletal growth period. Aim of this case report is to present results that a girl having Class III malocclusion with sagittal maxillary deficiency in early skeletal growth period was treated by modified pendex combined with upper lip pad and reverse twin-block combined with upper lip pad.
MATERIALS/METHODS
The chronological age of the girl was 9 years, and her skeletal growth period was MP3$_{=}$ according to wrist radiography and CS1 according to the cervical vertebra maturation method. She was mouth breather and she was habit nail biting. Similar anomaly was no exist her family. A concave facial profile was determined due to the weak mid-face and prominent lower-face. She was in the late mixed dentition period. She had Angle Class II molar relationship and crossbite was exist in the anterior region. The upper and lower dental midline coincided with each other. Overjet and overbite were -4 mm and 6 mm respectively. Upper and lower arch length discrepancies were -15 mm and 0 mm respectively. According to lateral cephalometric analysis, ANB, GoGn/SN and McNamara's facial axis angle were -1º, 43º and 81.5 º degrees, respectively. As a result of this analysis, anomaly was skeletal Class III characterized by hyperdivergiency. The treatment goals were to stimulate maxillary growth, modify mandibular growth, and achieve ideal overjet and overbite with Class I molar and canine relationships. Treatment was started by modified pendex with upper lip pad (T1). After obtaining overjet, reverse twin-block combined with upper lip pad (T2). After overjet and overbite was established, fixed orthodontic treatment started for levelling and aligning.
RESULTS
It was found by structural superimpositions that sagittal maxillary growth induction, mandibular growth restriction and ideal overjet and overbite and molar Class I relation was obtained.
CONCLUSION
Growth modified appliances is be successful in early skeletal growth period.

CP176 - THE BUTTERFLY – A NEW, OCCLUSAL OPEN AND BONDED RME APPLIANCE

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[1]Die Kieferorthopäden Am Meer

Aims:
Designing a new, child-friendly, non-invasive and economic expansion appliance for palatal expansion in early mixed dentition.

Mat. / Meth:
Various RME appliances were compared, the clinical advantages evaluated and a new design was developed that aims to combine advantageous design aspects of the compared RME appliances.

Results:
The BUTTERFLY is comparable to the cast and soldered palatal expanders such as RME and the Hybrid Hyrax in terms of tooth accessibility after bonding. It is superior to the acrylic bonded cap Hyrax expander, which caps the entire occlusal plane of the teeth. In terms of the expected tension-free fit, the BUTTERFLY is superior to the soldered RME and equivalent to the cast RME, the Hybrid Hyrax and the acrylic bonded cap Hyrax expander. In terms of cost-effectiveness, it is superior to the cast RME, the hybrid Hyrax and the acrylic bonded cap Hyrax expander, and equivalent to the brazed RME. In terms of use in early mixed dentition, the BUTTERFLY is equivalent to the acrylic bonded cap Hyrax expander and superior to the soldered or cast RME and Hybrid Hyrax. In terms of invasiveness, the BUTTERFLY is superior to the Hybrid Hyrax and equivalent to all other RME devices compared.

Limitations:
The exclusion criterion for the BUTTERFLY is a cleft lip and palate.

Conclusions:
The BUTTERFLY is a child-friendly, non-invasive and economic expansion device. With regard to clinical use, further studies are necessary, for example comparing the loss rate with other devices.

CP177- ORTHODONTIC AND SURGICAL SYNERGY IN THE MANAGEMENT OF HEMIFACIAL MICROSOMIA: A CASE REPORT

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BACKGROUND: Hemifacial Microsomia (HFM) challenges clinicians with its spectrum of asymmetric craniofacial development. A multidisciplinary approach is of paramount importance for correction, focusing on achieving functional stability and aesthetic symmetry.

METHODS: A 19-year-old female with Hemifacial Microsomia (HFM) received a multidisciplinary treatment for her craniofacial asymmetry, with a Skeletal Class II malocclusion, a 4 mm open bite, a 6 mm overjet and a 4-degree maxillary inclination. Pre-operative orthodontic treatment included levelling and alignment of the dental arch in order to be prepared for the first surgery. Initial surgical splint was fabricated in a dental articulator to navigate the maxilla to the correct position. Le Fort I osteotomy with maxillary impaction of 3mm was performed to correct the inclination and reduce the gummy smile. Bilateral Sagittal Split Osteotomy (BSSO) and a second surgical splint was fabricated to advance the mandible on the asymmetric side, which, along with the maxillary changes, facilitated autorotation of the mandible. Between the two surgical operations, the patient was followed up for necessary orthodontic interventions.

RESULTS: Orthodontic therapy together with the two surgical operations resulted in an improved occlusal plane, a more symmetrical facial appearance, as well as an improved oral function.

LIMITATIONS: The limitations of this report are related to the fact that it was only one case with a very short follow-up period and lack of evaluation for long-term treatment stability.

CONCLUSIONS: This case report contributes further to the understanding of the difficulties regarding the treatment of patients with HFM.

CP178 - ORTHODONTIC MANAGEMENT OF GOLDENHAR SYNDROME WITH IMPACTED TEETH

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INTRODUCTION: Goldenhar syndrome or oculo-auriculo-vertebral spectrum is a rare condition affecting the development of face (aural, oral and mandible). The typical manifestations include microtia, epibulbar dermoid, mandibular hypoplasia, and vertebral anomalies.

BACKGROUND: A 16-year-old Thai female diagnosed with OAV was referred to the orthodontics department with a complaint of severe crowding.

CLINICAL FINDINGS: On extraoral examination, marked right facial asymmetry with chin deviation to right 15 mm, convex facial profile, severe unilateral mandibular hypoplasia, an obtuse mandibular angle and incompetent lips. She had severe crowding on both maxillary and mandibular arch, posterior crossbite on the right side and a scissor bite on the left side. There was a 14-mm overjet, a 4 mm overbite. Mouth opening was not restricted but the mandibular deviated to the left side on maximum opening.

RADIOGRAPHIC FINDINGS: A panoramic radiograph revealed hypoplasia of the right condyle (Type IIA) and reduced vertical bone height to the lower mandibular right border and angle. Impacted lower right canine and premolars was observed. The lateral cephalometric analysis showed the skeletal type II pattern with open configuration. Upper incisors were proclined and protruded, while lower incisors were retroclined and retruded.

TREATMENT: The treatment objectives were to correct the dental problem including severe crowding, impacted teeth and align all teeth to their normal positions as the patient rejected surgery options. Removable appliances were used to expand the maxillary arch to improve transverse discrepancy. Followed by fixed appliances in both arches. Tooth 43 was removed to allow 44 and 45 eruptions with artificial eruptions using modified NiTi coil spring engaging to the hooks in upper expansion plate.

RESULTS: The total treatment time was 5.1 years. Artificial eruptions of 44 and 45 were successful. The upper and lower arches were levelled and aligned. The smile aesthetics and lip position were improved. Although, the soft tissue profile and transverse problems remained, the patient was satisfied with the treatment outcome. Clear retainers were used to for control eruption of non-opposing teeth.

CONCLUSION: Artificial eruption is sometimes needed to erupt the embedded permanent teeth in the affected mandibular hypoplasia side.

CP179 - THE TREND OF CLEFT CARE AT OUR DEPARTMENT IN THE LAST TWO DECADE

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BACKGROUND/OBJECTIVES/AIMS: To evaluate the trends of new referral depenging on new lifebirth we examined the data on the presentation and the development of visits for care and treatment at the orthodontic department.
MATERIALS/METHODS : We took the live birth data of Eastern Hungary for the past 20 years and collected the number of patients who appeared in our department based on BNO data. We examined the number of new appearances and the number of patients returning for re-orders.
RESULTS: The covid epidemic affected the appearence of patient with clefts in specialist care.
LIMITATIONS: Further studies are necessary for the effective introduction of possible aids.
CONCLUSIONS/IMPLICATIONS: A condition for the successful rehabilitation of cleft patients is timely, easily accessible health care. Timely selection of children belonging to the risk group can promote the success of complete rehabilitation.

EOS 2024 9-13 JUNE ATHENS

CP180 - MANAGEMENT OF SEVERE BILATERAL IMPACTION OF UPPER CANINES. A CASE REPORT.

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INTRODUCTION: Canine teeth are important for both aesthetics, occlusion and function of the dentition. They are the second most frequently retained, making early diagnosis extremely important.

AIMS: The aim of this case report is to evaluate the treatment modalities for severe bilateral upper canine impaction.

MATERIALS AND METHODS: A 14 year old patient was observed exhibiting a delayed sequence of eruption and an early mixed dentition. A comprehensive diagnosis was conducted utilizing the mathematical prognostic method by Arnautska-Krumova. In adherence to canine impaction guidelines, the treatment approach included extraction of deciduous canines, creating and maintaining space, surgical exposures, and implementing active orthodontic traction.

RESULTS: The initial diagnosis yielded the following: the angle between the axis's of tooth 13 and 11 was 49 degrees and is positioned in sector 2 according to Kurol and Ericson. The angle between the axis's of tooth 23 and 21 = 24 degrees and sector 3 according to Kurol and Ericson. Interceptive treatment included using an active plate for space creation and maintenance. After 1 year and 6 months, the panoramic radiograph showed deterioration of the impaction. Surgical exposure using the V. Kokich technique was performed. Orthopantomography 6 months later showed worsening of the impaction: the angle between the axis's of tooth 13 and 11 reached 66 degree and canine is positioned in sector 1 according to Kurol and Ericson. The angle between the axis's of 23 and 21 increased to 55 degrees and sector 2 according to Kurol and Ericson. In response to this progression, a second surgical exposure was performed and orthodontic traction was applied using Kilroy springs. Four months later both canines were erupted in the oral cavity, and vestibular traction employing cantilevers was applied to align the teeth in the dental arch.

LIMITATIONS: As a case study, it lacks a comparison or control group to compare outcomes in order to have statistical validity.

CONCLUSION: Early diagnosis and interceptive measures can improve the prognosis of impacted canines. In some cases, additional treatments like performing surgical exposure and active orthodontic traction are necessary if improvement is not observed.

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CP181 - ENHANCING POST- OPERATIVE MANAGEMENT IN ORTHOGNATHIC SURGERY: AN AUDIT PERSPECTIVE

Mrs Christina Tsirigoni[1], Mr Mark Cobb[2]
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Aim: This poster presentation outlines the aim of conducting an audit focused on improving the post-operative management protocols in orthognathic surgery at the Royal Victoria Infirmary hospital, in Newcastle upon Tyne. The primary goal is to enhance patients' outcomes, minimise complications and ensure a comprehensive standardised approach to postoperative care of the orthognathic patients.

Methods: Orthognathic surgery is a transformative procedure for correcting facial deformities, which demands vigilant postoperative management to optimize recovery of the patients and reduce potential complications. This audit was initiated to assess the current practices in postoperative management of the orthognathic patients, identify areas of improvement and implement changes to elevate the standard of management for these patients. The audit included a detailed examination of the postoperative care of 30 patients, taking into consideration pain control, infection and postoperative nausea prevention, use of hylotherm mask and placement of elastics.

Results/Conclusions: Results revealed that almost all the practices implemented, requiring enhancement. Interventions will be applied in order to achieve a more comprehensive and standardised postoperative management of the orthognathic patients, aiming in improved patients' experiences, quicker recovery times and overall better surgical outcomes.

CP182 - ORTHODONTIC TREATMENT WITH THE EXTRACTION OF A LOWER INCISOR IN AN ADULT PATIENT WITH CROWDING OF THE MANDIBULAR ANTERIOR TEETH: A CASE REPORT.

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OBJECTIVES:
The aim of this case report is to demonstrate the deliberate extraction of a lower incisor as a viable option for specific cases.

INTRODUCTION:
A compromised treatment for certain malocclusions, in order to achieve a healthier, functional and esthetically harmonized dentition, can be the extraction of a single mandibular incisor. Class I malocclusions with normal maxillary dentition and good buccal interdigitation in which there is severe lower anterior crowding are good cases for this procedure.

CASE REPORT:
A 37 year old man was seeking orthodontic treatment in order to improve the aesthetics of his anterior teeth. The patient had a class II skeletal pattern and a class I malocclusion with deep overbite, trapezoidal shape of the upper and lower dental arches, constricted mandibular arch in the premolar area, moderate maxillary and substantial mandibular crowding and gingival recession in the lower canines. After clinical examination and radiographic analysis, the decision was to extract a lower incisor to create space and solve the crowding issue. Extraction of 4 premolars, instead of a single lower incisor, might affect facial aesthetics negatively. Ceramic brackets were placed on both arches and a removable bite plate appliance was used to expedite the leveling of the curve of Spee.

RESULTS:
Treatment duration was 16 months and the outcomes were improved overjet and overbite ,leveling of the curve of Spee, improvement of the aesthetic zone, improved shape of the upper and lower dental arches and creation of enough space for prosthetic restoration.

DISCUSSION:
Extraction of a lower incisor is less frequently practiced because it increases the risk of less than ideal overjet and overbite, it might create Bolton discrepancy and it finishes with a midline discrepancy, compared to premolar extractions. Some of the advantages of this treatment are minimal changes of the facial profile and a shorter treatment period.

CP183 - SKELETAL CHANGE IN A PATIENT WITH CLASS 3 RELATIONSHIP USING HYBRID RPE APPLICATION

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AIM: The aim of this case report is to evaluate the orthodontic treatment approach performed with hybrid Rapid Palatal Expansion (RPE) application of maxillary skeletal narrowing and class 3 relationship in a non-growing patient with pseudoprognati inferior.

MATERIALS AND METHODS: CBCT was used to evaluate the maxillary suture of a 17-year-old female patient who applied to Ankara Yıldırım Beyazıt University Faculty of Dentistry. Using the CBCT data and the patient's digital measurements, the Hybrid RPE appliance was designed in three dimensions and targeting both incisor protrusion and skeletal expansion of the maxilla. For incisor protrusion, the metal arms extending from the expansion screw were designed to reach the lingual surface of the incisors and push the teeth anteriorly with each screw cycle. The preferred expansion screw had a hexagonal shape and was used to break the turning resistance, with a turning device in the shape of a small spenner. The cast metal part corresponding to the posterior teeth increased retention. In addition, based on the CBCT data, two 12x2 mm miniscrews were placed to the right and left of the maxillary suture, corresponding to 2 mm distal to the suture. Metal screw slots on the appliance were used to guide the placement of the miniscrews. The patient rotated the expansion screw 2 turns per day for a total of 24 days.

RESULTS: One week later, the patient's anterior diastema was opened. The occlusal film taken from the patient at this time also showed that the suture had opened. In the occlusal film taken after 3 months of retention, bone formation was observed in the intermaxillary suture. The incisors were protruding and the patient developed a posterior mandibular rotation. After the application, the patient's ANB increased from -4^{o} to -0.7^{o}, and the SN/GoGn increased from 27,5^{o} to 29^{o} as a result of the posterior mandibular rotation.

Conclusion: In the non-growing class III patients with maxillary discrepancy, hybrid RPE applications may have beneficial results such as improving the class 3 sagittal relationship while increasing the transversal width.

CP184 - SKELETAL ASYMMETRY WITH RIGHT TOTAL CROSS BITE

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Aim:In recent years, patients with jaw deformity in whom Mandibular prognathism or retrognathia has been observed can be treated with orthognathic surgery such as Sagittal split ramus osteotomy (SSRO) and Le fort Ⅰ and pre- and post-operative orthodontic treatment to restore occlusion and improve facial appearance. Improvements are being made. In the oral of a patient with facial asymmetry, occlusion is achieved by correcting the inclination of the tooth axis, but the inclination of the occlusal plane and crossbite are often observed. Here, we report that we obtained a good occlusion by performing surgical orthodontic treatment on a case of facial asymmetry in which a total crossbite was observed on right side.

Case: 28-year-old female. She came to our hospital with a chief complaint of mastication disorder. Her oral Molar relation is class III on the right side, a class II on the left side, and a total crossbite on the right side, indicating narrowing of the mandibular . Examination of her facial features revealed that her lip was tilted upward to the left due to the tilt of her occlusal plane, and her chin was tilted to the left.

Method: In preoperative orthodontics, the maxillary dental arch was reduced using a quad helix, the lower jaw was expanded using a bi helix, Then, for the buccal inculination of the mandibular right premolar, orthodontic anchor screws are used together with the linguoclination of the premolar, which has a total crossbite, to be uprighted and the width and diameter of the upper and lower dental arches adjusted. And the patient's skeletal structure was improved through SSRO and Le fort Ⅰ surgery.

Results: The right side crossbite was completely improved, the occlusal plane tilt was also improved, and the intraoral occlusion was class I, resulting in a good occlusal relationship.
Conclusion: By performing surgical orthodontic treatment, facial asymmetry and inclination of the occlusal plane could be improved.

CP185 - ORTHODONTIC TREATMENT APPROACH IN A RARE CASE OF 3Q29 MICRODUBLICATION SYNDROME

Dr Pelin Acar Ulutas[1], Elif Coskuner Uysal[1]
[1]Altinbas University

AIM: 3q29 microdublication syndrome is a rare genetic disorder characterized by intellectual disability, ocular abnormalities, heart defects, tendency to overweight, microcephaly or macrocephaly and less frequently craniosynostosis, cleft palate, dental anomalies with maxillary constriction. However the symptoms associated with this syndrome are highly variable, many individuals have mild features. The aim of this case report is to evaluate oral manifestation and orthodontic approach of a patient with 3q29 microduplication syndrome.
SUBJECT AND METHOD: A 14 year old female patient at the cervical vertebral maturation stage 4 with 3q29 microduplication syndrome refered to our clinic. The patient with clinical findings of mitral valve prolapse and pseudopapilledema, had a medical history including simian line in her hand, posterior divergent profile, macrocephalic head and ear defect. In addition to these variable clinical situation, pseudocleft palate, transverse maxillary deficiency, multiple impacted teeth with crowding, decreased overjet and overbite were observed in intraoral examination. Medical files, dental casts, intraoral and extraoral photographs, cone-beam computerized tomography (CBCT), created panoramic and lateral cephalogram from CBCT were collected.
RESULTS: According to the dental cast analysis, the arch lenght discrepancies were -23.7 and -4.8 mm in the upper and lower arches respectively. Multiple impacted teeth and no missing teeth (except extracted 38,48) were seen in radiographic evaluation. Cephalometric analysis demonstrated 2.2˚ ANB angle with bimaxillary retrognathie and increased vertical pattern (FMA:33˚). In consideration of CBCT sections, treatment plan included extraction of some of the impacted teeth and bringing remaining impacted teeth into the occlusion. Establishing the ideal arch length were planned with levelling and aligning. After that, maxillary expansion were planned for the transversal deficiency.
CONCLUSIONS: This report will contribute to the literature in terms of orthodontic approach to 3q29 microduplication syndrome. Orthodontic treatment of 3q29 microduplication syndrome is possible, however an individual approach is required. Detailed clinical records should be obtained from patients with this type of syndrome. Also, distinct physiologic and morphologic characteristic of these patient is significant during the treatment.

CP186 - OPEN BIMAXILLARY PROTRUSION CASE

Mrs Jelena Uskokovic[1]
[1]Sso Bożica V.

Objectives
Patient 23 years old with open bite and bimaxillar protrusion.

Methods
I have used 2 radiographs, models and clinical exam for diagnostics. We extract 4 premolars and put MBT upper and lower fixed aplliance.

Results
After 2 years of therapy patient is in class I and good vertical position.

Conclusion
Patient is stabile after 6 years rewiew and still in retention period

CP187 - COMBINED PERIODONTIC-ORTHODONTIC MANAGEMENT OF ADULT PATIENTS WITH PATHOLOGIC TOOTH MIGRATION: CLINICAL CASES

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BACKGROUND: Orthodontic treatment in periodontal patients can be challenging to treat. Pathologic tooth migration is a common finding in periodontal patients and usually is the main reason for them to seek treatment.
METHODS: A 22- year old female presented with chief complaint of spaces in anterior teeth and negative overjet. Clinical examination revealed a concave profile with an Angle Cl III relationship with negative overjet of 4mm, anterior open bite, and spaces in anterior upper and lower teeth. Cephalometric measurements presented a high angle skeletal pattern, with increased lower facial height.
A 30- year old female presented with chief complaint of lip incompetence and the enormous size of her proclined incisors. Clinical examination revealed an Angle Cl II relationship, overjet 10,6 mm and extreme proclined upper and lower incisors, with overhanging composite restorations. Cephalometric measurements presented a low angle case, with reduced lower facial height.
After thorough clinical and radiographic periodontal examination, both patients were diagnosed with Stage III periodontitis and due to the bone loss to age ratio was identified as a Grade C case.
Non-surgical periodontal treatment was performed in a full-mouth debridement scheme. The first re-evaluation at 8 weeks revealed significant improvement of the PI, GI and BoP indices together with the absence of PD>4mm, with the clinical situation remaining stable also at the second re-examination 3 months after the initial periodontal treatment. Thus a decision was made to proceed with the orthodontic treatment, recalling the patient every three months for supportive periodontal therapy.
RESULTS: An Angle CL I molar, canine relationship with normal overjet and overbite were obtained in a short period of time. Tongue posture was improved and occlusal trauma was resolved. The periodontal lesions were stable despite the severity of the orthodontic movements.
CONCLUSIONS: The presented cases indicate that successfully combined orthodontic and periodontal treatment in periodontally compromised patients, even with pathologic tooth migration, can lead to a functional and stable occlusion, with simultaneous achievement of periodontal stability.

CP188 - ORO-FACIAL-DIGITAL SYNDROME TYPE 1: A CASE REPORT

Miss Charlotte Van De Walle[1], Dr. Giacomo Begnoni[1], Prof. Dr. Anna Verdonck[1], Prof. Dr. Guy Willems[1], Prof. Dr. Maria Cadenas de Llano-Pérula[1]
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AIM: To report the facial and dental characteristics of a patient with oro-facial-digital syndrome type 1 (OFD1)
INTRODUCTION: OFD1 results from a dominant X chromosome-linked mutation in the OFD1-gene. It's characterized by oral features such as bifid tongue, cleft palate, abnormally placed gingival frenulae or hypodontia. Facial features include spaced eyes, nose hypoplasia, pseudocleft of the upper lip or micrognathia. Other abnormalities include miliary skin lesions, dry skin, brittle hair, polycystic kidneys and anatomical abnormalities in the brain and fingers. 50% of affected individuals also present intellectual disability.
DIAGNOSIS: A girl was referred at birth to the Cleft team of University Hospitals Leuven, Belgium due to various intraoral abnormalities. Genetic testing confirmed OFD1 due to a mutation on c.1428_1429del (p.Pro477*). Although not clefted, the edentulous maxillary arch showed symmetrical interruptions and an additional lateral frenulum inside the upper lip. The tongue was ankylotic, lobulated and irregularly shaped, with a thick frenulum. Milia were present around the ears and on the lower lip. Hands, feet and psychomotor development were normal.
FOLLOW-UP: Oral manifestations were followed up. The patient showed slow dental development and agenesis of the deciduous lower lateral incisors. At eight years-old, two supernumerary upper central incisors were radiologically diagnosed. The hypomineralized definitive first molars were then erupting. She presented a neutro-occlusion anterior open bite. The patient is now 9 years-old and the upper central incisors have not erupted yet.
TREATMENT PLAN & OUTCOME: At four months-old, the tongue frenulum was resected to facilitate eating. No speech problems were observed during follow-up: the tongue was mobile with good tone and normal tongue tip placement since the resection. Supernumerary elements were removed to facilitate eruption. Since the upper incisors are not erupted yet, molar incisor hypomineralization (MIH) cannot be discarded. The definitive upper first molars were sealed to avoid sensitivity. A possible future orthodontic approach could be to remove them and allow spontaneous mesialization of the second molars if third molars are present.
CONCLUSION: Patients with OFD1 require multidisciplinary dental care and carefully monitoring of dental development, since multiple frenulae can complicate tooth brushing and the use of dental prostheses.

CP189 - EFFECTS OF ORTHOPEDIC TREATMENT (DISTRACTION SPLINT) ON DENTOFACIAL DEFORMITIES IN PATIENTS WITH JUVENILE IDIOPATHIC ARTHRITIS

Dr Stratos Vassis[1], Dr Sanja Sabljic[1], Dr Mohammedreza Sefidroodi[1], Professor Thomas Pedersen[1], Professor Peter Stoustrup[1]
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Summary
Background
Juvenile idiopathic arthritis (JIA) frequently affects the temporomandibular joint (TMJ), which can alter mandibular growth and development and result in dentofacial deformities.
Objective
To assess the outcomes of orthopedic treatment with distraction splint (DS) in patients with JIA-related dentofacial deformity.
Methods
The retrospective study involved 30 patients with JIA and unilateral TMJ involvement, another study group of 20 patients with JIA and bilateral TMJ involvement and a control group of 18 non-JIA orthodontic patients with Class II and III malocclusions. The inclusion criteria were DS treatment and cone-beam computed tomography (CBCT) scans before (T0) and two years after treatment (T1). Dentofacial morphology and deformity were evaluated based on a validated three-dimensional CBCT-based morphometric analysis. Intergroup differences in outcome measures were compared at T0 and T1, and intragroup changes between T0 and T1 were assessed using the Kruskal-Wallis test.
Results
Initial evaluations at T0 revealed significant differences between the unilateral and bilateral JIA groups and the control group for three out of eight dentofacial deformity variables: inter-side difference in total posterior mandibular height, mandibular axial angle, and posterior/anterior face height (ratio). At follow-up (T1), significant inter-group differences were only observed in total posterior mandibular height indicating that intergroup differences were less pronounced after splint treatment. Assessing inter-group changes between T0 and T1 showed a significant improvement in posterior/anterior face height ratio in both JIA groups while all other parameters remained constant between T0 and T1.
Conclusions
The findings demonstrate the potential of DS treatment for patients with JIA and unilateral or bilateral TMJ involvement to enhance dentofacial deformities during growth or at least prevent further deterioration of dentofacial deformities.

CP190 - THE REPERCUSSION OF AMYOTROPHIC LATERAL SCLEROSIS ON THE OROFACIAL SPHERE: A LONGITUDINAL STUDY

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AIMS: Amyotrophic lateral sclerosis (ALS) is a severe neurodegenerative disease with poor prognosis and relatively short life-expectancy mainly due to progressive paresis of respiratory muscles. ALS affect muscle groups such as limb and bulbar muscles (tongue, throat, lips), ALS may have an effect on orofacial function, the development of malocclusions and caries development. This longitudinal study aims to determine whether ALS is associated with disturbed orofacial functions, dental malocclusions and presence of dental pathologies.

MATERIALS & METHODS: Twelve patients recruited at a single center participated. All patients had been diagnosed with ALS according to the Gold Coast Criteria (3 bulbar onset, 9 spinal onset). The patients were seen twice, by the same examinator, approximately 12 months apart. General disease progression was assessed using the ALS Functional Rating Scale Revised (ALS-FRS-R), orofacial function using the Nordic Orofacial Test Screening (NOT-S), the presence and severity of dental malocclusions, the presence of dental pathologies using the DMFT score, and oral hygiene using the plaque index.

RESULTS: Three patients passed away after the initial visit and were thus lost to follow-up. We observed a significant deterioration both in the disease itself and in orofacial function using the NOT-S score (mean increase in 2 points; p=0.002). A significant deterioration in general oral health was observed through the DMFT score (mean increase of 2 teeth; p=0.02) and the plaque index (mean increase of 0.4; p=0.003). No significant changes in dental occlusion were observed.

LIMITATIONS: The sample size was relatively small, and patients were only seen within a short time frame, knowing that the deterioration of a malocclusion would probably take longer. However, given the unfortunate rapid decline in the disease with the passing away of affected patients did not allow for longer follow-up.

CONCLUSION: ALS seems to have a progressive impact on orofacial function and health. The progressive loss of autonomy linked to the disease may explain this deterioration. Compromised oral health can have serious consequences for the well-being of patients already severely affected by the primary symptoms of the disease, which highlights the need of helping these patients to preserve their oral health lifelong.

CP191 - THE ASYMMETRIC ANTERIOR OPEN BITE AND CLASS II MALOCCUSION TREATMENT: A CASE REPORT

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AIM:The aim of this case report is to present the dental and skeletal effects of the treatment of asymmetric anterior open bite caused by thumb sucking , tongue thrust and elongotion of posterior teeth.
SUBJECT AND METHOD : A 13-year-old female patient applied to our clinic with the complaint of anterior open bite.In the clinical and radiographic examination, a skeletal Class II and dental Class II relationship in the right-left canine-molar regions, a convex profile with 7 mm overjet and anterior asymmetric open bite (0-5 mm) were found. Cephalometric analysis values were as follows:SNA:82.7°,SNB:78.6°, ANB:4.1°, SnGoGn:29.2°, Mx1-SN:108.5°, IMPA:101.9°.In the history taken, it was learned that she had a habit of thumb sucking and tongue thrust since her childhood. Treatment was initiated with teaching the patient about quitting her oral habits. In treatment plan, intrusion of posterior teeth using skelatal anchorage was confirmed.For this purpose 2 (SS) IZC miniscrews were used as anchorage units and intrusion forces were applied.Vertical holding appliance was also used in this treatment for reducing the vertical dentoalveolar development of maxillary first molars.When the intrusion was completed screws were removed.After leveling and alignment were achieved,forsus appliance were inserted bilaterally when 0.019 x 0.025-inch SS archwires were inserted at both maxillary and mandibular arches to correct Class II dental relationship.
RESULTS:The after treatment cephlometric values:SNA:82.0°,SNB:78.9°,ANB:3,1°,SnGoGn:29.8°,Mx1-SN:103.8°,IMPA:95.5°. As a result of the treatment, dental Class I molar- canine relationship,ideal overjet and overbite were achieved.The patient's basic complaints were resolved.
CONCLUSIONS: Patient-clinician collaboration is of the great importance in orthodontic treatment.Anterior open bite cases caused by oral habits, can be solved with the combination of habit training and appropriate orthodontic treatment.

CP192 - MULTIDISCIPLINARY MANAGEMENT OF A PATIENT WITH 18 MISSING TEETH: A CASE-REPORT

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AIM: To report the multidisciplinary treatment of a boy with 18 missing teeth.
BACKROUND: Oligodontia is a congenital condition characterized by the absence of more than six permanent teeth, excluding the third molars. It can be either an isolated trait or part of a syndrome.
DIAGNOSIS AND ETIOLOGY: An 11-year-old boy with congenital absence of 18 permanent teeth was referred by his own dentist to the section of Orthodontics of University Hospitals Leuven, Belgium. The isolated oligodontia observed in this case had a genetic origin, specifically a mutation in the WNT10A gene present in both parents. Heterozygous expression of two pathogenic mutations, namely c.682T>A (at protein level p.Phe228Ile) and c.1084T>C (at protein level p.Cys362Arg), was identified. Interestingly, the patient's sibling exhibited a normal dentition. The occlusion was characterized by bilateral crossbite, lateral open bite, mesial step of the deciduous molars, normal overbite and overjet.
TREATMENT PLAN & OUTCOME: The initial phase of treatment involved rapid palatal expansion with a hyrax to address the bilateral crossbite. Subsequently, pre-prosthetic orthodontic interventions with fixed appliances were implemented to optimize both aesthetics and function. A removable partial denture was placed on the maxillary arch and a pontic on the mandibular arch. The patient reported satisfaction with the achieved aesthetic improvements and enhanced speech and masticatory function. Future plans include an interdisciplinary treatment approach, encompassing orthognathic surgery, orthodontic, and restorative interventions with the incorporation of implants in adulthood.
CONCLUSION: Patients with multiple missing teeth often present esthetic- and functional problems that may affect their psychosocial wellbeing. Early diagnosis and interdisciplinary treatment of these patients, often consisting of several phases, are necessary to achieve optimal aesthetic and functional outcomes.

CP193 - CASE REPORT: LATE PRESENTATION OF UNILATERAL CONDYLAR HYPERPLASIA IN A 25 YEAR-OLD PATIENT, FIVE YEARS AFTER BIMAXILLARY ORTHOGNATHIC SURGERY

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BACKGROUND: Condylar hyperplasia (CH) is a bony deformity of the mandible causing increased development of one of the mandibular condyles compared to the other. The exact aetiology is currently unknown, however previous literature has shown it is due to excessive cellular growth of part of the condyle.

Presenting extra-oral features include progressive mandibular asymmetry and enlargement of the condyle. Intra-oral features may include alteration of the occlusion with unilateral/bilateral cross-bite and/or open bite.

AIMS: The aim of this case report is to illustrate late presentation of condylar hyperplasia in a 28-year-old female who was previously treated for a class III malocclusion and an anterior-open bite using upper and lower fixed orthodontic appliances and a bimaxillary osteotomy.

MATERIALS/METHODS: Five years following treatment, the patient presented with progressive facial asymmetry and a deranged occlusion. A panoramic radiograph showed a considerably larger right condylar head compared to previous radiographs.

A series of images including an MRI, cone beam CT mandible and a Technetium-99m radioisotope scan confirmed the clinical diagnosis of right sided condylar hyperplasia.

RESULTS: The condylar hyperplasia was corrected with a high condylar shave and further orthodontic retreatment to address the occlusal anomalies. To date, there has been no further recurrence of condylar hyperplasia with normal facial symmetry and a stable dental occlusion being maintained.

CONCLUSIONS: Condylar hyperplasia is normally diagnosed in the late adolescent patient where progressive facial asymmetry and associated occlusal anomalies are detected. This case report highlights that when this is identified in a post-surgical patient, condylar hyperplasia should be suspected as one of the aetiologies and the patient subsequently managed appropriately.

CP194 - THE QUALITY OF CLINICAL ORTHODONTIC PHOTOGRAPHS: A TWO-CYCLE AUDIT

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[1]Nhs

BACKGROUND: Clinical photographs are an important part of orthodontic dentistry. Clinicians use clinical photographs to assist with treatment planning, and then to monitor treatment progress. They are also important for communicating with patients as well as for teaching, research, or audits.

AIMS: To assess through audit the quality of both intra- and extra-oral clinical orthodontic photographs taken in an orthodontic primary care setting. To identify any potential issues when taking clinical orthodontic photographs, to provide any appropriate training or protocol, and then, if necessary, to re-assess the subsequent quality.

METHODS: This was achieved using a prospective two-cycle audit in a single primary care setting. Fifty sequential patient records were assessed for each of the two audit cycles against a set of 15 standards. Between the two audit cycles there was the reminder of the gold standard coupled with the implementation of a new standard operating procedure.

RESULTS: The percentage of patients with a complete set of intra-oral pre-treatment clinical photographs increased from 94% to 100%. There were improvements noted in most of the other 14 standards measured, however some standards still fell far short of the 100% target, for example, in the second audit cycle there were still only 74% of patients with extra-oral photographs that had an appropriate background.

LIMITATIONS: The two cycles of the audit were conducted at different times of the year when external influences might have varied. As a prospective audit, the clinicians were aware of having their clinical photographs observed and this could have influenced the effort made by those photographing. The samples for each audit cycle were just taken from the sequence of patients presenting, but this does not consider patient factors that might have influenced some results.

CONCLUSIONS: The implementation of training and a new protocol appears to have improved both the actual taking of clinical orthodontic photographs as well as the quality of these clinical orthodontic photographs. It would be prudent to conduct a further audit cycle to see how standards have been maintained in the longer term.

CP195 - THE PAR INDEX EVALUATION TO THE CASES OF POSTGRADUATE

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OBJECTIVES：The post-graduate course in the Department of Orthodontics, Tokyo Dental College was established in 1975, and 375 students have completed. The three-year curriculum is designed to train orthodontists to acquire basic knowledge, skills, and attitudes toward orthodontic treatment in order to become certified orthodontists, in accordance with the goals of the Japanese Association of Orthodontists. In particular, the clinical skills of treatment and management are focused on the acquisition of magnification devices, functional orthodontic appliances, and extraoral appliance in the first stage treatment, and multi-bracket devices in the second stage treatment (including surgical orthodontic treatment). The cases include those with jaw deformities, cleft lip and cleft palate, various syndromes, periodontal diseases, and temporomandibular disorders.
The purpose of this study is to evaluate 48 cases with PAR Index, submitted by 12 students of the class 2023 who completed the graduate course.
MATERIALS：The following are pre- and post-treatment dental cast, X-rays, facial photographs, and intraoral photographs of 48 cases submitted by 12 students who completed the basic post-graduate training course this year. There were 20 cases of tooth extraction, 17 cases of non-extraction, and 11 cases of surgical orthodontic treatment (including 2 cases of tooth extraction). Of these, 15 were classified as Angle Class I, 21 as Angle Class II, and 12 as Angle III. Gender was male in 14 cases and female in 34 cases.The duration of dynamic treatment ranged from 1 year and 2 months to 2 years and 9 months.
RESULTS and CONCLUSIONS：The PAR Index was used to evaluate all 48 cases. As a result, 22 cases were judged to be Greatly improved and 26 cases were judged to be Improved. According to experience these treatment results, it is thought that we have learned the basic knowledge and skills necessary for orthodontic specialist.

CP196 - ORTHODONTIC TREATMENT WITHOUT ORTHOGNATHIC SURGERY IN A PATIENT WITH UNILATERAL CLEFT LIP AND PALATE: A CASE REPORT

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AIM: To present improvement of soft tissue and occlusion with non-surgical orthodontic treatment using a lower anterior inclined plane appliance and an upper utility arch in a skeletal Class III malocclusion patient with unilateral cleft lip and palate.
MATERIALS: A 22-year-old male patient with unilateral cleft lip and palate applied to our clinic for poorly aligned teeth and unaesthetic smile. Clinical and radiological examination revealed a Class III dental relationship, arch asymmetry, congenitally missing upper left lateral incisor and concave profile. De Nevreze maneuver was positive. Cephalometric analysis showed a skeletal Class III malocclusion and horizontal growth pattern (SNA:81.3°, SNB:84.9°, ANB:-3.6, FMA:13.2°, SN-GoGn:23.3°, Mx1-SN:102.0°, IMPA 91.1). In the first stage, while the upper teeth were bonded, a transpalatal arch and a removable lower anterior inclined plane appliance were also applied. During the leveling phase of the maxillary arch, 0.14” NiTi, 0.16” NiTi and 16x22” NiTi archwires were used. While the leveling was at this stage, incisor proclination was targeted by performing utility arch bending on the 16x22” SS wire. Then, when the appropriate overjet and overbite were obtained, the anterior inclined bite plane was left and bonding mandibular teeth was performed. Alignment was continued with straight wires, including 17x25” NiTi, 19x25” NiTi and 19x25” SS wires in the maxillary arch. During the mandibular leveling phase, 0.14” NiTi, 0.16” NiTi, 16x22”, 17x25” NiTi and 17x25” SS wires were used. Finally, the space in the incisor area was shared proportionally for the prosthetic restoration for the lateral deficiency. LR was applied to both sides of the gap in the maxilla and between the canines in the mandible.
RESULTS: At the end of the treatment, cephalometric values improved (SNA: 82.2°, SNB: 83.4°, ANB: -1.1, FMA:13.6°, SN-GoGn:24.6°, Mx1-SN:116.7°, IMPA 85.2). A harmonious profile and acceptable occlusal relationships, appropriate overjet, overbite and the necessary spaces for prosthetic restoration were achieved without an orthognathic surgical treatment.
CONCLUSIONS: As long as the patient profile and incisor inclination are appropriate, dental compensation treatment can be an alternative to orthognathic surgery in skeletal Class III malocclusion cases with unilateral cleft lip and palate.

CP197 - NONSURGICAL STAGED ARCH DEVELOPMENT AND EXPANSION IN AN ADULT PATIENT WITH SEVERELY CONSTRICTED MAXILLARY AND MANDIBULAR ARCHES, CROSSBITE AND DEEP-BITE

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OBJECTIVES: To introduce the concept of nonsurgical staged arch development and expansion for corrections of severely constricted maxillary and mandibular arches, crossbite, and deep-bite.
PATIENT: A 19-year-old male exhibited convex facial profile, deep-bite, severely constricted maxillary and mandibular arches, premolar crossbites, and congenitally missing mandibular lateral incisors (MLIs).
TREATMENT: In Phase I, the maxillary dentition was bonded with brackets and the maxillary dental arch was expanded by round and rectangular Cu-NiTi wires. In Phase II, the maxillary basal arch was expanded by miniscrew-assisted rapid palatal expansion (MARPE) and maintained by a modified quad-helix. Then, the mandibular dentition was bonded with brackets. The mandibular dental arch was expanded by round and rectangular Cu-NiTi wires and maintained by a modified lingual arch. In Phase III, both arches were stabilized by rectangular Cu-NiTi, NiTi, and stainless steel wires. Deep curve of Spee in the mandibular arch was flattened by NiTi wires with reverse curve of Spee. The spaces for missing MLIs were created. Premolar crossbites were corrected. After debonding, the missing MLIs were restored by Maryland bridges. Total treatment duration was 47 months. Class I canine and molar relationships, normal inclinations and angulations of the canines and posterior teeth, and normal overbite and overjet were obtained. Treatment outcome was well maintained at 1 year follow-up.
CONCLUSION: Nonsurgical staged approach using light orthodontic force and MARPE can upright the posterior teeth buccally, expand the dental and basal arches, and induce alveolar bone remodeling in an adult patient without significant side effects.

CP198 - LH WIRE FOR THE TREATMENT OF ANGLES CLASS III WITH ANTERIOR OPEN BITE AND CROSSBITE

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OBJECTIVES: LH wire (low hysteresis, ISW, Improved Super-elastic Ti-Ni alloy Wire, developed by Tokyo Medical and Dental University) for the treatment of Angle Class III with anterior open bite and crossbite will be discussed.
CASE: A 23 years old male came to our clinic with a chief complaint of anterior open bite and crossbite and not able to chew food well. Clinical examination revealed an Angle Class III malocclusion with anterior open bite, crossbite and spaced arch. Radiographic and clinical examination showed a skeletal Class III pattern. We used LH wire (low hysteresis, ISW, Improved Super-elastic Ti-Ni alloy Wire, developed by Tokyo Medical and Dental University) to level the upper and lower arch and to correct the anterior open bite and crossbite. Intermaxillary elastics (IME) were also used to achieve a better interdigitation. Finally, adequate overbite, overjet and a desirable occlusion were achieved. The active treatment time took two years and two months.
DISCUSSION: In this case, we will discuss the non-extraction strategy by using LH wire (low hysteresis, ISW, Improved Super-elastic Ti-Ni alloy Wire, developed by Tokyo Medical and Dental University) to correct the anterior open bite, crossbite and inter-jaw relationship.The use of IME to achieve a better interdigitation was also discussed.
SUMMARY: A desirable occlusion (with adequate overbite and overjet) and a favorable facial profile after the active treatment were achieved.

CP199 - INTRODUCTION OF DENTAL VIRTUAL REALITY DEVELOPMENT FOR PRELIMINARY CLINICAL EDUCATION

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OBJECTIVES: Clinical practice associated with dental education can be very difficult. In orthodontic education, students are asked to bond brackets on Typodont. Waste of dental materials and infection control are frequently encountered problems. With stimulation practice under VR (Virtual Reality) technology, we invented dental VR DESSERT (Dental Education Simulation System, Enhanced Reality Technology) system to enhance the motivation of students and can solve the problems mentioned above.

MATERIALS: Thirty students from Dental School of China Medical University were selected. Students first attended lectures of orthodontic bracket bonding, and then attended VR bracket bonding curriculum. Each curriculum was about 1 hour. After the curriculum, students were asked to fill out some questionnaires when the semester was over.

RESULTS: The evaluation results can be classified into two parts. The first part is the accuracy evaluation of instrument recognition and clinical practice. Teachers can observe students' action from monitors and give the students immediate instruction or correction. In VR bracket bonding curriculum, students need to choose the correct bracket, and finish the bracket bonding operating procedure.
The second part is the clinical feedback. To examine the performance of VR in dental education, students need to fill out some questionnaires. The result can be the evidence to improve educational modality and VR stimulation quality.

CONCLUSIONS: We first introduce VR education combine with orthodontic bracket bonding procedure. After the curriculum, students were satisfied with this teaching procedure, and the accuracy of bracket position was improved.

CP200 - CENTRAL INCISOR MACRODONTIA

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OBJECTIVES: Macrodontia of the anterior teeth has a negative effect on smile aesthetics. The aim of this case report is to present the solution of the smile asymmetry caused by macrodontia in a young patient with aesthetic concerns by orthodontic treatment.

METHODS: A 13-year-old patient, who applied to our clinic for orthodontic treatment with aesthetic complaint, was found to have macrodontia of the upper left central incisor. Patient also had Class II dental and skeletal relationship accompanied with severe deep bite and crowding due to space deficiency. After careful clinical examination and review of the diagnostic records, extraction of the macrodont tooth and upper right lateral were planned. The upper left lateral was planned to be converted into a central tooth and both upper canine teeth into laterals. In the lower arch, improvement of deep bite through intrusion of incisors was planned. Following the leveling of the upper teeth, the extraction gaps were closed, only spaces needed for restorations of the teeth were arranged and left.

RESULTS: Class II molar relationship was maintained while upper first premolars which were converted to canines fitted in Class I canine occlusion. In anterior region, teeth were aligned accordingly, spaces were created for restorations. Deepbite was corrected while ideal overjet and overbite was created.

CONCLUSION: Crowding and deepbite were solved. The positions of the anterior teeth were corrected and pre-restorative orthodontic treatment was completed.

CP201 - RISKS OF COMPLICATION DEVELOPMENT IN CLASS II PATIENTS AFTER ORTHOGNATHIC SURGERY AND WAYS OF RESOLVING THEM

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AIM: increasing effectiveness of treatment of Class II patients who need orthognathic surgery.

MATERIALS AND METHODS: 14 Class II patients were treated with braces and orthognathic surgery in the period of 2021-2023. This group included 10 female and 4 male patients. Some patients complained about insignificant clicking and pain in the TMJ area. All the patients had CBCT scans of the head, anthropometric analysis of the dental arches, cephalometric analysis, MRI studies with their mouth open and closed. All the patients were diagnosed with internal derangements from III to V stage according to the Wilkes classification. 9 patients (group 1) had preoperative orthodontics, orthognathic surgery and postoperative orthodontic correction. 5 patients (group 2) had arthroplasty with the aim of disc repositioning during preoperative orthodontics and after 6 months they underwent an orthognathic procedure with further postoperative orthodontics.

RESULTS: 12 months after orthognathic surgery 6 out of 9 patients from group 1 reported worsening in the TMJ area, pain and limited mouth opening, there was relapse of overjet increase by 2-3 mm compared to the immediate postoperative occlusion. 5 patients from group 2 who had undergone arthroplasty and orthognathic surgery were evaluated as stable with no complaints.

CONCLUSION: Class II patients need a more specific diagnosis of the TMJ because of a high risk of complications. Patients with complete disc displacement are recommended to have the disc position surgically corrected.

CP202 - CONE BEAM COMPUTED TOMOGRAPHY (CBCT) ANALYSIS OF THE MIDPALATAL SUTURE MATURATION IN MAXILLARY EXPANSION TREATMENT PLANNING

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AIM: To assess the importance of CBCT analysis of the midpalatal suture (MPS) when deciding on the optimal maxillary expansion treatment.
MATERIAL AND METHODS: Firstly, we collected high-resolution CBCT maxillary images of three different patients with transverse maxillary deficiency. Maturation stages (A-E) described by Angelieri et al were determined for each MPS. Furthermore, midpalatal suture density (MPSD) ratio proposed by Grünheid was calculated (ratio ranges from 0 to 1 – lower values indicate that the suture region is less calcified and values close to 1 indicate more highly calcified suture).
RESULTS: Patient 1 is a 10-year-old female with maturation stage B. MPSD ratio is 0,42 which contributes to the findings that the suture is not fused. Therefore, an expansion device anchored solely on teeth should provide sufficient expansion of the maxilla with minimal side effects.
Patient 2 is a 16-year-old male with maturation stage C. MPSD ratio is 0,73. Due to patient's age and increased degree of interdigitation, the possibility of unwanted dentoalveolar side effects when using tooth-borne devices increases. Therefore, expansion device anchored on miniscrews inserted into the palate should be used instead. Miniscrews enable the expansion force being delivered directly to the basal bone of the maxilla, which maximizes skeletal and minimizes dentoalveolar effects. Additionaly, miniscrews offer a less invasive treatment option for patients who would normally apply for a surgical procedure.
Patient 3 is a 39-year-old male with maturation stage E. MPSD ratio is 0,89. The analysis indicates that the suture is totally fused, therefore surgically-assisted rapid palatal expansion (SARPE) is needed. Treatment without surgically releasing such interdigitated suture prior to expansion with a device would most likely result in limited skeletal expansion or failure, relapse or unwanted dentoalveolar side effects.
CONCLUSIONS: Many studies suggested that chronological age should not be the only factor used to determine which maxillary expansion treatment should be performed. CBCT analysis of the midpalatal suture offers easily accessible information of the suture's morphology and maturation which can importantly support the treatment decision making.

CP203 - A MULTIDISCIPLINARY APPROACH TO MICRODONTIA: ORTHODONTIC AND RESTORATIVE TREATMENT WITH INJECTABLE TECHNIQUE FOR IMPROVING SMILE ESTHETICS

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BACKGROUND: Microdontia is a dental condition caused by disturbances in the odontogenesis process. If this complex process is influenced by genetic or environmental factors, it can lead to changes in tooth size, which significantly affects the function, form and esthetics of the dentition.

CASE PRESENTATION: This case presents a comprehensive treatment of a 16-year-old female patient dissatisfied with her smile and noticeable spaces between her anterior teeth due to microdontia of incisors. Apart from this, the patient had an impacted upper right second premolar. The impacted premolar had a good form and orientation but insufficient space in the dental arch for its eruption. A multidisciplinary treatment plan was made, including the orthodontic and restorative phases. The orthodontic phase with conventional fixed appliance aimed to align the teeth, gain space in the upper arch for the impacted premolar and place it in the dental arch. Another aim was to create a stable foundation for the subsequent restorations. When these aims were achieved, intraoral scans of dental arches and intraoral and extraoral clinical photographs were made. The restorations were digitally designed, considering the patient's facial features, lip line and overall smile esthetics. Since the patient was young, injectable composite veneers for incisors and canines were chosen as a minimally invasive restorative solution. The final result was a natural-looking, symmetrical smile that met the patient's expectations and significantly improved her confidence and overall satisfaction with her smile.

CONCLUSION: Esthetic management of microdontia requires a comprehensive, multidisciplinary treatment, including orthodontics and restorative treatment to achieve a smile transformation. Injectable composite veneers are optimal solution for post-orthodontic restorative treatment in the case of microdontia, particularly in young patients, since the technique is minimally invasive and gives harmonious and esthetically pleasing results.

CP204 - DEEP-BITE AND CLASS II SUBDIVISION CORRECTION WITH ALIGNERS: A CASE REPORT

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BACKGROUND/OBJECTIVES/AIMS: Correction of deep-bites, as well as dental asymmetries, are challenging for the orthodontist with the use of orthodontic aligners.

MATERIALS/METHODS: The patient presented dental Class II, division 2 and right subdivision, lower midline deviated to right, gummy smile and deep overbite, with crowding in both arches. Cephalometric analysis showed a normal skeletal measure and a mesocephalic facial pattern were observed. The upper incisors were retroclined and the lower incisors were well positioned. Overbite correction was achieved by relative intrusion of the upper and lower incisors, what it means, the combination of intrusion and projection of the incisors and extrusion of the posterior teeth. Class II subdivision correction was performed using asymmetrical intermaxillary elastics.

RESULTS: At the end of the treatment, correct overbite and overjet relationships were acquired, as well as a Class I molar and canine relationship. The midlines are coincident, with an adequate smile arch, maintaining symmetry and facial aesthetics.

CONCLUSIONS/IMPLICATIONS: Considering aligners limitations to correct deep overbite, the case presented satisfactory results, with adequate occlusion, function and aesthetic relationship. For cases with deep-bite that allow projection of incisors, the correction of malocclusion by relative intrusion is favored by the synergistic movements of intrusion and incisors proclination. The patient's collaboration was essential to correct the deep-bite and Class II with the use of intermaxillary elastics and orthodontic aligners.

CP205 - CLEAR ALIGNERS AND IMPLANT SITE DEVELOPMENT THROUGH SPACE OPENING IN TWO ADULTS PATIENTS: ARE THE CLINCHECKS ACCURATE?

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BACKGROUND/AIM:
Clear aligners is an alternative to conventional fixed orthodontic appliances, especially for adult patients, however with several limitations. Tooth uprighting and root paralleling as well as tooth extrusion are more difficult to be accomplished with clear aligners. The aim of this study is to determine the diagnostic criteria for proper case selection for pre-prosthetic space opening of permanent teeth with clear aligners. Additionally, the predictability of space opening simulations (clincheck) in two adult patients will be discussed.

MATERIAL/METHODS:
2 Caucasian adult patients (a female 52 years and a male 70 years old) presented with one congenitally missing upper lateral incisor (both patients) and one upper second premolar (the latter patient) were treated with Invisalign Lite package for space opening. Photographs, dental scans and CBCT post-treatment assessed bone sufficiency for implant placement. Tracking was reviewed every 4-6 aligners.

RESULTS:
For the desired space of at least 5.7 mm at the apex and 6,2 mm at the lateral incisor area 3 sets of 14 aligners each were used. The predictability reached 45% in the first clincheck, 84% in the second and 93% in the last one. A 7-day aligner change protocol was prescribed in both cases. Due to poor tracking in the first case, a 10-day protocol was prescribed for aligners 15-42. The total treatment time was less than 14 months.

LIMITATIONS:
Tooth tipping is the main type of tooth movement in these cases. Clinical tooth movements may be lagging behind the Clincheck anticipated movements.

CONCLUSIONS:
Clear aligners may be used for pre-prosthetic space opening / implant site development after careful consideration of the advantages and disadvantages of this approach. The patient should be informed about possible refinements and the need of additional aligners and/or the change of prescribed days per aligner in order to achieve the treatment goal.

CP206 - ORTHODONTIC ANCHORAGE REINFORCEMENT USING ANTERIOR PALATE MINI-SCREWS - CASE REPORT OF CHAIR-SIDE INDIRECT TECHNIQUES

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BACKGROUND AND RATIONALE: Temporary anchorage devices (TADs) have been introduced to provide absolute orthodontic anchorage. A recent systematic review (2019) assessing the success of anterior palatal TADs reported an average failure of only 6%. This is explained by the high quantity and quality of cortical bone in the anterior palate. Mini-screws inserted in the anterior palate could utilize direct or indirect mechanics. Several types of tooth movements can be achieved: distalization, mesialization or intrusion of maxillary molars, retraction of anterior teeth, or a combination. A variety of mini-screw appliance designs exist for the anterior palate and are becoming increasingly competitive with manufacturers in the market; however, these complex designs often require laboratory fabrication with increased fees and time.

AIM: The aim of this case report is to present simple, convenient, and cost-effective method of obtaining indirect anchorage using an anterior palate mini-screw in high-anchorage orthodontic cases.

MATERIALS AND METHODS: Three patients who are medically fit and well (2 male and 1 female) aged between 13 and 15 years presented at The Royal London Hospital. They present with different malocclusions ranging from class II division II to class III incisors relationships. Infinitas TADs (size: L9mm, D1.5mm, N2.5mm) were placed in all cases in the anterior palate lateral to the mid-palatal suture using a speed-reducing handpiece with a set speed of (10-12 RPM). Subsequently, a digital scan of the upper arch and a 3D printed dental model was produced for each patient. A (0.017×0.025) stainless steel archwire “strut” was developed through wire bending and bonded to the palatal surface of the teeth and secured to the TAD slot with medium viscosity resin adhesive (BracePaste). Conventional labial straight wire mechanics were then applied to obtain the planned tooth movements (protraction of molars, retraction of anteriors and alignment of buccally excluded canine with centreline correction).

CONCLUSION: This case report highlights on chair-side techniques used with anterior palate TADs to provide absolute anchorage (indirect). This approach entails development of a “wire strut” to engage the TAD thus eliminating expensive laboratory costs for complex appliance fabrications whilst allowing for conventional straight wire mechanics and absolute anchorage.

CP207 - TREATMENT WITH ANTERIOR SPACE CLOSURE AND AESTHETIC PROSTHESIS IN A PATIENT WITH MAXILLARY ANTERIOR INCISOR LOSS DUE TO TRAUMA

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AIM: When a traumatized maxillary central incisor is extracted, it can be replaced with a lateral incisor or a canine, and it is important to consider the torque and angulation of the tooth when moving the tooth. In this case, we present a case of an adult patient who lost three anterior teeth, including maxillary central incisors and a lateral incisor, due to childhood trauma and achieved aesthetic improvement through orthodontic space closure of the anterior teeth and implant placement.
MATERIALS & METHODS: A 21-year-old male patient was referred with space closure for maxillary central incisors implant placement due to loss of maxillary central incisors and a lateral incisor in an automobile accident 11 years ago. The patient was diagnosed with a skeletal Class I malocclusion with a normodivergent skeletal pattern and a straight face, and he was aesthetically unappealing due to the predominant exposure of the mandibular anterior teeth when smiling. He showed an end-on Class II molar relationship on the right side, and a Class I molar relationship on the left side. The following treatment objectives were established: (1) protraction of the posterior teeth including right maxillary canine, (2) establishing a full Class II molar relationship on the right side, (3) placement of implants at maxillary central incisors.
RESULTS: For aesthetic recovery of the edentulous region and vertical adjustment for tooth alignment, initial alignment was performed by wearing a flipper on the maxilla. A miniscrew was then placed at the distal aspect of the left second premolar to protract the right dentition for space closure at the right maxillary lateral incisor. It took a total of 30 months to achieve the final goal due to the long intervals between visits due to the patient's military enlistment.
CONCLUSION: The advantages of protraction of the posterior dentition include the possibility of using the patient's natural dentition and a decreased number of implant prostheses. In this case, in a patient who lost the maxillary anterior teeth due to trauma, aesthetic and functional recovery was achieved through successful anterior migration of the posterior dentition to close the space and implant prosthesis.

CP208 - THE USE OF CLEAR ALIGNERS IN THE TREATMENT OF MAXILLARY DEFICIENCY IN GROWING PATIENTS: TWO CASE REPORTS

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Aims: This clinical poster presents the effects of using class III elastics with clear aligners on two patients with class III malocclusion resulting from maxillary deficiency in growing individuals.
Material and Methods:
Case 1: A 12.1-year-old female and Case 2: A 13.5-year-old male met the following criteria: Class III molar and canine relationship, maxillary deficiency, concave profile, and no anterior mandibular shift. Both of them refused to wear face masks and other extra-oral maxillary protractions.
A tightly fitting upper and lower clear aligner was fabricated for each patient, and some attachments were added to the upper and lower teeth for more retention. In both cases, two buttons were bonded on the buccal surface of lower permanent canines, and two buttons were bonded on the buccal surface of the upper first molars. The space of the buttons was cut by cutting pliers in the area of the lower canines and first upper molars. Then, patients were instructed to use class III elastic from buttons on the lower canines to the upper first molars. Patients were also required to wear the appliance full-time except for eating and contact sports.
Results:
In cases 1 and 2, the active treatment time was 10 and 12 months, respectively. After correcting maxillary deficiency (skeletal problem), two cases achieved normal overjet and overbite; the patient's expectations were met, along with satisfactory clinical effects.
Discussion
patients prefer to use intraoral devices instead of large extraoral devices. Bulky size and skin abrasion on the chin are face masks' most common side effects, especially in hot climates and patients wearing glasses. Small size and being intra-oral are the advantages of clear aligners. One of the disadvantages of this method is that the treatment must be delayed until the eruption of the canines begins, resulting in a missed opportunity to utilize the patient's growth.
Conclusion: Clear aligners are an alternative method for treating maxillary deficiency due to their small size. They are replaced with bulky facemask appliances. However, further evidence is required to integrate this method into clinical practice fully.

CP209 - MANAGEMENT OF ANTERIOR OPEN BITE WITH SEVERE UPPER TEETH PROTRUSION IN A PERIODONTALLY COMPROMISED PATIENT WITH SEGMENTED ARCH TECHNIQUE: A CASE REPORT

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AIM: The aim of this report is to evaluate the treatment planning and outcomes of an ongoing orthodontic treatment with segmented arch technique for a periodontally compromised patient with open bite and severe protrusion of upper anterior teeth.

MATERIALS AND METHODS: A 22-year old male patient presented to our observation with the following features: severe upper teeth protrusion, increased overjet, anterior open bite, skeletal Class II, hyperdivergent skeletal pattern and active periodontal disease. Upon these findings a treatment plan was established. The initial phase involved the application of segmented lingual braces on the upper four anterior teeth. A line of force application was implemented in order to achieve controlled retrusion and intrusion of the incisors and improvement of the periodontal health.

RESULTS: Within three months of the initiation of the orthodontic treatment, correction of the upper teeth protrusion and overjet was observed, along with an improvement in the anterior open bite and periodontal health of the anterior teeth.

CONCLUSION: The treatment approach outlined above suggests that the segmental technique with the appropriate force system application leads to controlled movement, which preserves and improves the periodontal condition of the periodontally compromised teeth accompanied with severe protrusion and bone loss.

CP210 - THE ROLE OF REMOVAL ORTHODONTIC APPLIANCES IN INVESTIGATION OF SPEECH DEFICIENCIES IN CLEFT PATIENTS

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BACKGROUND:
Tertiary care Orthodontics involves management of cleft palate patients who may concurrently present with speech deficiencies. In such cases, orthodontic appliances play a role in palate investigation, tying in closely with the Speech and Language Therapy (SLT) and Cleft Surgical team. Secondary fistulae may occur in repaired cases and be symptomatic. Fistula obturation with orthodontic appliances can aid in assessing the relative contribution of fistulae and palatal insufficiency to speech issues.

PATIENT INFORMATION:
A 7-year old female with a repaired bilateral cleft lip and palate was seen for an Orthodontic assessment. She presented with a central slit fistula in the posterior hard palate measuring 6x2mm and active speech problems involving mild hypernasal resonance with audible nasal emission. Her cleft speech characteristics were backing, lateralisation, palatalisation and active nasal fricatives. There was concern whether the fistula provided an additional route for nasal escape thus causing hypernasality. She was then seen on the Palate Investigation Clinic to delineate this.

MANAGEMENT:
The patient was assessed on a Joint Cleft clinic. Temporary obturation of defects have previously involved silicone putty or use of a moulded wax sheet adapting to the palatal contours. Due to posterior position of this fistula and to prevent aspiration, an upper removal appliance (URA) consisting of an acrylic baseplate, retained by Adams' clasps on the URE and ULE, and C-Clasps on the URC and ULC, was preferred and utilised for diagnostic purposes. Speech assessments and lateral video-fluoroscopy were then carried out with and without the URA. Results showed some reduction of nasal flow with obturation. The difference in assessments may have been limited due to a small margin of fistula that was unoccluded posteriorly. The lateral video-fluoroscopy revealed an average-length soft palate with good extensibility and elevation. There was complete and consistent closure at the back wall in both cases.This indicated that pharyngoplasty was not required but that surgical intervention should target correction of the fistula. The patient was therefore listed for direct repair of the fistula +/- buccinator flaps. We encouraged the patient to continue wearing the URA in between her speech therapy leading up to surgery.

CP211 - ORTHODONTIC MINI IMPLANT SMARTPEG (OMIS): A NOVEL MI STABILITY VERIFIER USING OSSTELL ISQ DEVICE

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BACKGROUND: The stability of mini implants (MIs) plays a crucial role in orthodontic anchorage, significantly impacting the success of orthodontic treatments. Resonance Frequency Analysis (RFA) represents a recent and more precise method used to quantify the stability of implants. It involves measuring the stiffness of the implant within the bone tissue using magnetic pulses. Commercially, this assessment is performed with the Osstell ISQ device, which introduces controlled vibrations to the implant via a sensor connected to a Smartpeg. These Smartpegs are typically fabricated based on a conventional implant.
OBJECTIVE: To develop and validate a method for utilizing the Osstell ISQ device in assessing the stability of orthodontic MIs.
MATERIALS AND METHODS: The Orthodontic Mini Implant SmartPeg (OMIS) was created as a specialized Smartpeg designed to attach to various orthodontic MIs. To validate it, a 3.5 mm (diameter) x 7.5 mm (height) SICace® screw implant was placed into a goat's jawbone. Using the Osstell ISQ device, the implant stability was measured. This involved comparing a conventional SmartPeg attachment (gold-standard measurement) with the OMIS attached to the implant via an adaptor approximating a MI's head (test measurement). The Implant Stability Quotient (ISQ) values were evaluated for agreement, repeatability, and reproducibility.
RESULTS: Strong positive correlations were observed between the ISQ values obtained using the OMIS and those derived from the standard SmartPeg attachment. The consistency and reliability of ISQ values using the OMIS were comparable to those obtained with the conventional attachment, demonstrating similar levels of repeatability and reproducibility.
LIMITATION: The conventional implant is the subject of the current ISQ scale. To more accurately depict orthodontic MI, which has reduced diameters and lengths, a new ISQ scale is required.
CONCLUSION: The OMIS was developed and validated for evaluating the stability of orthodontic MIs using the Osstell ISQ system. This new MI stability verifier consistently provided repeatable and reproducible measurements of MI stability, akin to those achieved through the conventional SmartPeg attachment. This customized Smartpeg facilitates non-invasive stability assessments of various types of MIs, including many that cannot be evaluated using the traditional SmartPeg attachment due to incompatibility.

CP212 - ARTHROCENTESIS WITH INFILTRATION OF PLASMA RICH IN GROWTH FACTORS: A CLINICAL CASE REPORT

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BACKGROUND: Arthrocentesis is a minimally invasive surgical intervention used as a first line treatment for patients resistant to conservative treatment, aiming to remove inflammatory mediators, restore fluid viscosity, and improve joint mobility. A 56-year-old female patient with persistent left preauricular pain after a car accident sought treatment at the Orthodontic Department. The patient was then derived to the Department of Craneomandibular Disfunction. The patient presented a maximum opening of 25mm with hard end feel and a limited right laterality of 5mm. The patient presented local masseter myalgia and inflammation of the retrodiscal and synovial tissues. CBCT revealed joint degeneration in the left and right condyle, with the presence of osteophyte in the latter. The Magnetic Resonance Imaging confirmed disc displacement with and without reduction of the left and right TMJ, respectively. After three months of self-care, rehabilitation and physiotherapy, no significant difference in pain and symptomatology was found. The patient was advised to continue with a minimally invasive approach

OBJECTIVE: Demonstrate the efficiency of Arthrocentesis with PRGF to a failed conservative management of patient with disc pathology. Highlight the importance of correct diagnosis prior orthodontic treatment.

TREATMENT DESCRIPTION: It was decided to perform a unilateral joint lavage of the most affected TMJ. Auriculotemporal nerve block with bupivacaine 0.25% without VC and under intravenous sedation. Asepsis and surgical field. Right TMJ lavage with 60ml of lactated Ringer's lactate and 5ml of PRGF fraction 1. Final joint infiltration with 3ml of PRGF fraction 2.

RESULTS: Immediately after surgery, there was a significant reduction in pain intensity and increased range of motion. At subsequent check-ups the patient presented an opening range of 42 mm and right laterality of 11 mm, being asymptomatic. After 1-year post-operation the patient continues with no symptomatology and a complete opening of 41mm. A 1-year post-op CBCT is taken to compare the bone intensity and alterations.

CONCLUSIONS: It has been shown that joint lavage combined with PRGF infiltration for the treatment of TMDs is more effective than arthrocentesis alone. Improves functional outcomes, diminishes pain and restores quality of life.

CP213 - ORTHODONTIC TREATMENT OF A PATIENT WITH CLEIDOCRANIAL DYSOSTOSIS: A CASE REPORT

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AIM: Cleidocranial dysplasia (CCD) or cleidocranial dysostosis, is an inherited, autosomal-dominant condition that is characterized by several skeletal defects including cranial malformations, underdevelopment, absence of clavicles and multiple supernumerary and impacted teeth as well as Angle's Class III malocclusion. It is usually caused by a mutation in the RUNX2 gene, affecting osteoblast differentiation. The aim of this study is to present the orthodontic management of a young female with CCD.

METHODS: An 8-year-old female aware of her condition, was admitted to our clinic along with her mother which was also diagnosed with CCD. The intraoral examination of the patient revealed delayed exfoliation of primary teeth along with presence of severe attrition. A panoramic X-ray showed multiple supernumerary and impacted permanent teeth, characteristic for this condition.

RESULTS: The treatment provided was comprised from a combination of orthodontics and surgical exposure of impacted teeth along with extraction of supernumeraries. In the initial phase of treatment, a transpalatal arch was used. Later, tooth alignment with fixed orthodontic appliances took place to facilitate surgical exposure of impacted teeth and orthodontic traction into the oral cavity. Surgical exposure of impacted teeth by quadrant along with simultaneous extraction of supernumerary teeth was performed. The duration of treatment was 7 years. After treatment completion, fixed retainers were placed in the upper and lower anterior teeth and removable clear retainers were given to the patient with instructions to wear them every night for a year and then once a week. A regular check-up every 6 months was performed. Follow-up showed minor changes of the final Class I relationship and an esthetically pleasing result.

CONCLUSIONS: Early diagnosis and initiation of orthodontic treatment in CCD patients is essential for achieving optimum results. Patients with CCD benefit from a multidisciplinary approach, necessary for achieving ideal function as well as smile and facial aesthetics, which will greatly improve the patient's self-esteem.

CP214 - A LOCAL 2-CYCLE AUDIT OF LABORATORY WORK PROVIDED TO A HOSPITAL ORTHODONTIC DEPARTMENT.

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BACKGROUND: An audit of laboratory services provided by the in-house and commercial dental laboratories to the orthodontic department in the School of Dentistry, XXXXXXX, was carried out to ensure optimal standards of patient care.
AIMS: To assess the quality of laboratory work against locally agreed gold standards, to identify potential areas for improvement, and to make recommendations to improve the quality of laboratory work.
METHODS: The first cycle ran from 03/01/23 to 07/02/23 (n=55), and the second cycle ran from 30/05/23 to 03/07/23 (n=63). Data was collected prospectively using a standard proforma.
RESULTS: During the first cycle, the in-house laboratory provided 56.4% of laboratory work, and a commercial dental laboratory provided the remaining 43.6%. Orthodontic trimmed study models were the most frequently requested item of laboratory work. 66.7% of study models, 93.8% of vacuum-formed retainers (VFRs) and 66.7% of orthodontic appliances met all locally agreed gold standards.
During the second cycle, the in-house laboratory provided 68.3% of laboratory work, and a commercial dental laboratory provided the remaining 31.7%. Orthodontic trimmed study models remained the most frequently requested item of laboratory work. 83.9% of study models, 84.0% of VFRs and 100.0% of other orthodontic appliances met all locally agreed gold standards.
CONCLUSIONS: Laboratory services continue to be outsourced due to in-house laboratory staffing levels. Additionally, the commercial dental laboratory constructs orthodontic appliances on articulated working models, which reduces the need for excessive chairside adjustment and may increase patient comfort. Outsourcing orthodontic appliances may be a more time and cost-effective long-term solution when balanced against the cost of employing an additional in-house laboratory technician.
Orthodontic trimmed study models were the most frequently requested laboratory work item in both cycles. Poor quality and incorrectly trimmed study models can hinder diagnosis, treatment planning, progress monitoring and pre-orthognathic surgical assessment. The quality of study models significantly improved between the first and second cycles.
In both cycles, the in-house laboratory provided all VFRs; this is advantageous as VFRs are quick and easy to fabricate, allowing for same-day de-bond and retainer fitting and rapid refabrication if issues are encountered.

CP215 - TORQUE CONTROL OF THE UPPER SECOND MOLARS WITH MINISCREW PLACED ON MIDPALATAL SUTURE – A CASE REPORT

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AIM: The aim of this case report is to present the correction of the positive crown torque of upper second molars with the help of a miniscrew placed on the midpalatal suture.

SUBJECT AND METHOD: A 21 year old male patient applied to our clinic with the complaints of deepbite and crowding in the lower teeth. In clinical extraoral examination, he had no asymmetry and had a slightly concave profile. According to the intraoral examination, the patient had Class I molar and canine relationships on both side. There was moderate crowding in the maxilla and severe crowding in the mandible (Fig 1). The lateral cephalometric analysis showed that he had skeletal Class I and brachyfacial growth pattern. The upper and lower incisors were palatally inclined. The overjet and overbite were 3 mm and 7.2 mm, respectively. The treatment of the patient was planned as the correction of deep bite, incisor inclinations and crowding in the mandible with ARS (Air Rotor Stripping). At the beginning of the treatment, bite turbos were placed in the palatal region of the upper central incisors in order to allow the eruption of molar teeth and correction of deepbite. With the increase of crown torque of the upper second molars during the treatment, the need for torque control arose. 1.6-6 mm miniscrew (Jeil Medical) was placed in the midpalatal suture at the level of the palatal cusp of the upper first molars. Force was applied by using elastic chain to the upper second molars through the buttons bonded to their palatal surface (Fig 2).

RESULTS: At the end of the treatment, Class I molar and canine relationships, ideal overjet and overbite were obtained. Positive crown torque of upper second molars were reduced (Fig 3). The treatment lasted 13 months.

CONCLUSION: The miniscrew placed on the midpalatal suture was effective in torque control of the molars.

CP216 - ORTHODONTIC TREATMENT OF CLASS II MALOCCLUSIONS USING INVISALIGN WITH MANDIBULAR ADVANCEMENT: A CASE SERIES

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BACKGROUND: Orthodontic correction of Class II malocclusions with mandibular retrognathia has long been considered challenging. In a growing patient, a functional appliance is usually the modality of choice for overjet reduction by means of growth modification. However in 2017, Align Technology introduced Invisalign with mandibular advancement, the first clear aligner solution for the correction of Class II malocclusions in growing tween and teen patients. This encourages overjet reduction alongside alignment of the teeth to create one simplified phase of treatment without the need for a traditional functional appliance. Functional appliance therapy usually involves multiple treatment phases, including a fixed appliance phase and the overall treatment time can take a number of years. Invisalign with mandibular advancement can be completed in as little as 18 months and is more patient friendly, leading to high patient compliance rates. This case series aims to demonstrate the ease of correction of Class II malocclusions in 7 patients with mandibular retrognathia using Invisalign with mandibular advancement.

DESIGN & SETTING: A case series of 7 patients presenting with a Class II malocclusion and an increased overjet who were treated on a non-extraction basis using Invisalign clear aligners with mandibular advancement. The mean start age of the patients was 11 years and 11 months and the mean start overjet was 10.1mm. A single specialist Orthodontist in a primary care setting in Birmingham, U.K, carried out all treatment.

RESULTS: All patients underwent successful correction of their malocclusion and finished with a Class I incisal relationship. The mean final overjet was 2.4mm with an average overjet reduction of 7.7mm. The average treatment time was 22 months, ranging from 17 to 30 months.

CONCLUSIONS/IMPLICATIONS: Orthodontic correction of Class II malocclusions using Invisalign with mandibular advancement is an effective, efficient, and patient-friendly method of reducing substantial overjets whilst simultaneously aligning teeth. This has the advantage of offering an overall reduced total treatment time in comparison to traditional functional appliance treatment.

CP217 - THE USE OF PASSIVE SELF-LIGATING APPLIANCES IN THE FUNCTIONAL TREATMENT OF CLASS II/2 ANGLE

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BACKGROUND: The philosophy of orthodontic treatment with passive self-ligating (PSLB) appliances asserts that this technique employs brackets with lower frictional resistance compared to other fixed appliance systems. It has been claimed that the Damon system, which utilizes the PSLB technique, offers several advantages over other bracket systems in terms of efficiency and effectiveness. However, there are studies that question the efficacy and efficiency of passive self-ligating appliances compared to other orthodontic appliance systems.
AIM:The purpose of this oral presentation is to demonstrate the effectiveness of PSLB in the functional treatment of Class II/2 Angle anomalies.
CASE PRESENTATION: An 11-year-old adolescent presented to the Orthodontic Clinic without significant dental history, expressing concern about the aesthetic appearance of her teeth. The orthodontic diagnosis indicated a Class II div 2 malocclusion, with narrow maxillary and mandibular dental arches, a convex profile, no overjet, and a covered deep bite with distalized relationships on both sides. After case evaluation, therapy with light intraoral elastics was chosen as the appropriate treatment plan. Treatment progress included the use of various sizes and ratios of Class II elastics, archwire changes, and the use of specific brackets for each part of the dental arch.
CONCLUSION: Treatment with PSLB led to the improvement of the shape of the maxillary dental arch and the correction of dental crowding.

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CP218 - A NOVEL METHOD FOR 3D MEASUREMENTS OF SOFT TISSUE CHANGES IN FACIAL ORTHODONTIC AND ORTHOPAEDIC THERAPY

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BACKGROUND: 3D soft tissue measurements are crucial in orthodontic/orthopaedic therapy for comprehensive treatment planning and evaluation. Existing methods are 2D soft tissue evaluations on cephalometric images or often face limitations in precision. In response, the team at the KU Leuven developed an innovative method, that was implemented at the University of Ghent, representing an inter-university collaboration.

OBJECTIVES: The primary aim of this novel method is to have precise 3D soft tissue measurements in facial orthodontic and orthopaedic therapy, by utilizing MATLAB® and Python® scripts, instead of 2D radiographic images. This allows unlimited comparisons to the initial image for clear colour-mapped soft tissue changes to highlight changes of therapy excluding variations attributed to natural growth.

METHODS: Commencing with standardized 3D image acquisition, the images undergo meticulous cropping in a Python script, focusing solely on facial soft tissues. Landmarks are strategically placed in a specific order to ensure accurate orientation in 3D, preventing inversion in Matlab. Following this, the Python script cleans the images, eliminating noise like accidental hair. Open-source software MeshMonk in Matlab is then utilized for mesh creation, converting cleaned images into structured surfaces. Quasi-landmark identification is applied to pinpoint anatomically meaningful points on the mesh, allowing analysis of specific soft tissue zones. Non-rigid mapping within Matlab involves deforming the initial facial mesh to account for shape changes over time. Comparative analysis via Iterative Closest Point (ICP) registration aligns two meshes, revealing disparities and representing facial alterations as vectors.

RESULTS: Key features include data cleanliness, precise landmark placement, and distance measurements. The combination of MATLAB and Python Scripts contributes to noise reduction and creates a dataset for evaluating soft tissue changes. The interaction between these scripts offers a solution for 3D measurement in facial orthodontic/orthopaedic therapy.

LIMITATIONS: While promising, limitations include potential influences from image quality and facial anatomy complexity.

CONCLUSION: This innovative method represents a significant step forward in 3D soft tissue measurements for facial orthodontic and orthopaedic therapy. Overcoming existing limitations, it offers a reliable tool for orthodontic practitioners, holding potential to revolutionize the assessment of soft tissue changes.

CP220 - OPTIMIZING ORTHODONTIC CARE: ADVANCED TECHNIQUES FOR ACCELERATING TOOTH MOVEMENT. SCOPING REVIEW

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BACKGROUND/OBJECTIVES/AIMS: The prolonged duration of orthodontic treatment often leads patients, especially adults, to seek alternatives, driving the need to accelerate tooth movement in order to reduce treatment times and mitigate adverse effects associated with prolonged orthodontic therapy. Various methods, spanning invasive to non-invasive, have emerged aiming to expedite orthodontic processes.
OBJECTIVE/AIMS: The primary aim of this presentation is to explore techniques and interventions designed to accelerate tooth movement within orthodontics. This includes investigating techniques that facilitate quicker orthodontic treatment while considering the scope of mitigating potential adverse effects related to prolonged therapy.
MATERIALS/METHODS: A comprehensive review was conducted using multiple databases including PubMed, Google Scholar, Scopus, and Cochrane to explore techniques for expediting orthodontic tooth movements. English-language studies across invasive, minimally invasive, and non-invasive categories were the focus, aiming for a thorough examination of contemporary methodologies.
RESULTS: Invasive approaches such as interseptal alveolar surgery, corticotomy, and Periodontally Accelerated Osteogenic Orthodontics (PAOO) involve surgical techniques to accelerate tooth movement. Minimally invasive methods like Piezocision and Micro-Osteoperforations (MOPs) stimulate bone with minimal tissue invasion, promoting faster tooth movement. Non-invasive techniques include vibration devices, low-level laser therapy (LLLT) (photobiomodulation) and biological substances, each contributing to expediting tooth movement in orthodontics.
LIMITATIONS: Constraints on accessing non-English studies and the rapid evolution of the field may limit the review's comprehensiveness. Additionally, variability in study methodologies and techniques could influence the overall assessment and generalizability of the findings.
CONCLUSIONS/IMPLICATIONS: Contemporary orthodontics presents a rich array of tools and techniques, providing a multitude of options to enhance treatment approaches and minimize treatment time. The importance of individualized treatment strategies remains paramount. Staying abreast of these innovations empowers practitioners to significantly enhance the landscape of orthodontic care. However, continued research and development are crucial to further refine these methods and ensure continued advancements in orthodontic treatments and patient outcomes

CP221 - MAXILLARY MOLAR DISTALIZATION ACHIEVED WITH INVISALIGN ALIGNERS

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AIM: The aim of this presentation is to study the efficacy of the Invisalign protocol concerning the upper molar distalization in cases of class II non-extraction adult patients.
MATERIALS AND METHODS: Two case reports of adult patients with class II are presented. Both cases were treated with Invisalign clear aligners. Intraoral photos and lateral cephalograms were taken before and after treatment. The first case was about a female adult patient with class II division 1 and the second case concerned a male adult patient with class II division 2. Both cases were treated with Invisalign clear aligners without extractions for two years. All the attachments we used were engineered by Align Technology to achieve predictable tooth movements. The vertical and transverse positions of the attachments on the tooth surfaces were done according to Align Technology's treatment protocol (for incisor torque and molar distalization) or automatically by the software. Maxillary molar distalization was achieved with attachments and class II elastics throughout the treatment.
RESULTS: The exact force systems and their progressions generated by Invisalign clear aligners have not been investigated thoroughly. In our cases the distalization of upper molars was an effective movement, with high accuracy achieved with Invisalign treatment protocol.
CONCLUSIONS: As described in the literature, one of the most difficult movements to perform with an aligner is the molar distalization. To date, no scientific study has evaluated the exact efficacy of molar distalization using aligners. More studies focusing on a number of cases should be conducted in order to properly examine the capability of Invisalign aligners in molar distalization and their ability to be used in more complex cases.

CP222 - CRANIOFACIAL CHARACTERISTICS IN CONGENITAL MYOPATHY: A CASE REPORT

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BACKGROUND: Congenital myopathy is a diverse group of clinically, genetically, and histologically heterogeneous disorders that mainly affect muscle tissue. The estimated prevalence is around 3:100000. More than 30 genes are related with congenital myopathies, with RYR1 being the most frequently involved. Clinical phenotype consists of hypotonia, muscle atrophy, dysphagia, physical disability and significant loss of muscle mass. The craniofacial area is also affected by the impairment of muscle function with an increased prevalence of malocclusions and aberrant craniofacial morphology.

AIM: To present a rare case of congenital myopathy and the associated craniofacial characteristics.

METHODS: A 14-year old female patient was referred to the Orthodontic Department of the School of Dentistry, Athens, seeking orthodontic treatment. Diagnosis of autosomal dominant congenital myopathy was confirmed 22 months prior to arriving to our clinic, via WES, identifying RYR1 mutation. Diagnostic orthodontic records were obtained and included extraoral and intraoral photographs, a panoramic and a lateral cephalometric xray, as well as dental casts.

RESULTS: Onset of the congenital myopathy occurred in infancy, with muscle hypotonia being the first symptom. The patient presented cardiorespiratory insufficiency, positive Gowers sign and muscle atrophy. Scoliosis, flat feet and decreased bone mineral density were also reported. Neurologic involvement consisted of delayed walking and areflexia. Clinical examination of the craniofacial complex revealed a vertical growth pattern with an elongated face, midface deficiency, skeletal Class III, lip incompetence and a high arched palate. The patient had also cleft palate, which was surgically treated at one-year of age. A combination of orthodontics and orthognathic surgery was considered the treatment of choice once skeletal maturity has been reached, however the impairments that result from myopathy should be carefully considered before orthodontic treatment initiation.

CONCLUSIONS: The primary goal of orthodontic treatment in patients with myopahy is to address any dental or skeletal issues while considering the patient's muscular condition and overall health, as well as the high risk of relapse due to muscle atrophy. Collaboration among healthcare professionals and clear communication with the patient and their family are essential for a successful orthodontic outcome while prioritizing the patient's comfort.

CP223 - INVASIVE CERVICAL RESORPTION FOLLOWING ALVEOLAR BONE GRAFTING IN CLEFT LIP AND PALATE PATIENTS: A LITERATURE REVIEW AND CLINICAL CASE

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AIM: To evaluate the available literature regarding invasive cervical resorption (ICR) following alveolar bone grafting (ABG) in patients with cleft lip and palate (CLP), and to illustrate the assessment and surgical repair of ICR through a clinical case.

METHODS: Literature on database MEDLINE via PubMed to November 2023 was reviewed, with a time restriction of 20 years.

RESULTS: Only four articles met the search criteria. Of the four articles available, only two were specifically related to ICR following ABG. One case of near-complete resorption of a supernumerary tooth within an ABG site was documented. Only one investigational study was identified in the literature search, which reported that 14 out of 588 CLP patients reviewed were diagnosed with ICR, 93% of whom had undergone surgical bone grafting. No statistical evaluation or meta-analysis of prevalence or treatment outcomes can be undertaken due to the scarcity of clinical outcome studies on this topic.

CASE SUMMARY: An 11-year-old male presented with a previously repaired bilateral cleft of the lip and palate, Class III incisor relationship on a skeletal III base, a 2mm reverse overjet and hypodontia of the upper permanent lateral incisors. Right-sided ABG was completed at age 14 without complications. Repair of the left side was subsequently completed at age 15, and ICR was identified on the mesial aspect of the upper left permanent canine at the 6-month radiographic review. A multidisciplinary approach was employed for further management. Investigation with CBCT confirmed a 2x3mm defect, extending into the crown and involving the coronal third of the root. Surgical repair involved marginal bone removal to access the defect, debridement of the cavity and restoration with Biodentine. Repair of the ICR defect has been successful to date, and the patient has subsequently commenced fixed appliance orthodontic treatment.

CONCLUSIONS: ICR is a rare, but significant, potential complication following ABG procedures which patients and parents should be informed about during the consent process. Surgical restorative repair is possible, although there remains a need for clinical outcome studies of this type of repair in affected ABG patients to assess the rates of success.

CP224 - APPROPRIATENESS OF NEW PATIENT ORTHODONTIC REFERRALS- A MULTI CENTRED AUDIT

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BACKGROUND: NHS orthodontic services have been increasingly stretched in recent years, worsened by the disruption to dental services during the Covid pandemic. As a result, waiting lists for new patients to be seen are ever increasing, making it paramount that referral pathways are used as efficiently and effectively as possible. Patients referred in for consideration of orthodontic treatment should be dentally fit and motivated for treatment. Additionally, the NHS have released guidance on commissioning dental specialities, which sets out 4 complexity descriptors of care (level 1-3b) with the recommended setting and practitioner competency for each.

METHOD: A 6 month retrospective single cycle multi-centered audit was undertaken at 2 UK NHS hospitals March- August 2022, recording the following primary outcome measures: Unplanned caries status (i.e the referrer hasn't requested advice on it), motivation for treatment and commissioning complexity level. Based on current guidance, we set a gold standard of >80% appropriate referrals, which was defined as patient's motivated for treatment without any unplanned caries, and commissioning complexity level 3a or 3b.

RESULTS: At site 1 (n=173), 76% referrals were deemed appropriate based on the above criteria, and site 2 (n=192), 86% were appropriate. Site 1 had higher (17% Vs 5%) unplanned caries status, and lower levels (86% Vs 92%) of patient motivation.

LIMITATIONS: Site 1 had a significantly higher (67% Vs 38%) number of referrals from primary care orthodontists, which may have resulted in an increased length of time since seeing a general dentist (if the referral pathway was completed twice), reflected in a higher caries incidence. Also, site 2 has a referral proforma on which referrers have to specifically comment on dental health status and motivation, site 1 does not.

CONCLUSIONS: The audit found mixed compliance with our standards for appropriate referrals, with site 1 meeting the standard and site 2 not. Referring clinicians need to consider the extent of waiting lists, and the impact of inappropriate referrals on valuable clinical time. We need to ensure that our referring providers are therefore educated on the above factors in order to improve this process in the future.

CP225 - MAXILLARY CENTRAL INCISOR SUBSTITUTION WITH LATERAL INCISORS FOLLOWING THE REMOVAL OF PRE-EXISTING BRIDGE RESOTRATION IN AN ADULT CLASS II MALOCCUSION

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AIM: Our aim of this case report is to describe and discuss that customized extraction schemes instead of premolar extraction may be necessary especially in aged adults when multiple missing, hopeless teeth, edentulous sites or bridge restorations are pre-existing. We report a case with conservative orthodontic treatment for tooth substitution by space closure of edentulous sites. This case illustrates how the bilateral pontic space of the maxillary central incisors was substituted with lateral incisors and laterals with canines as well as the hopeless second maxillary molar with the third molar instead of premolar extraction to improve protrusion in a middle-aged adult.
MATERIALS AND METHOD: A 47-year-old female was referred from the Dep. conservative dentistry for protraction of the third molar to replace the hopeless maxillary second molar. She indicated Skeletal Class II, hyperdivergent facial profile with lip protrusion, retruded mandible and hyperactivity of mentalis muscle. Maxillary central incisors were missing and restored with a 4-unit bridge supported by her maxillary lateral incisors. Mandibular lateral incisors were congenitally missing as well. To improve her protrusive profile and the overall occlusion, maxillary bridge restoration was removed and pontic space was closed instead of premolar extraction. The third molar was protracted after the extraction of the hopeless second molar. The lower arch was distalized with TADs.
RESULTS: Proper occlusion was obtained by substitution of edentulous sites and total arch distalization with TADS. After the orthodontic treatment, teeth whitening and periodontal surgery was performed. Single crown restoration was done on the lateral incisors substituting the missing central incisor. Canines were reshaped as lateral incisors. Counterclockwise rotation of the mandible, which improved her profile, was induced by total arch intrusion of the maxillary arch.
CONCLUSIONS: Orthodontic treatment by space closure of edentulous sites and substitution of teeth with conservative interdisciplinary team approach improved the occlusion as well as micro, mini and macro-esthetics in a middle-aged Class II malocclusion.

CP226 - OROFACIAL FINDINGS AND ORTHODONTIC TREATMENT CONDITIONS IN PATIENTS DIAGNOSED WITH DOWN SYNDROME.

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BACKGROUND: Down syndrome/Trisomy 21, the most prevalent chromosomal anomaly, is often linked to diverse levels of intellectual disability and physical malformations. This study outlines distinctive orofacial traits related to orthodontic treatment considerations and features, drawing insights from a patient cohort at Witten/Herdecke University in Germany.

MATERIALS/METHODS: This study analyzed data from 20 patients (14 boys and 6 girls, mean age: 11.69 ± 3.94 years) who underwent orthodontic treatment from July 2011 to May 2022. The assessment included baseline skeletal and dental conditions, the presence of hypodontia, displacements, and treatment-related root resorptions. Treatment needs were evaluated using the German KIG classification, with treatment success determined based on patient compliance.

RESULTS: The patient cohort was predominantly characterized by a class III relationship (ΔANB: −2.07 ± 3.90°; ΔWITS: −3.91 ± 4.33 mm) and a brachyfacial cranial configuration (ΔML-NL: −4.38 ± 7.05°, ΔArGoMe: −8.45 ± 10.06°). The transversal discrepancy in dental arch width from maxilla to mandible was −0.91 ± 3.44 mm anteriorly and −4.4 ± 4.12 mm posteriorly. Among the orthodontic indication groups, hypodontia emerged as the most prevalent initial finding and treatment indication (85%), followed by frontal (75%) and unilateral lateral (35%) crossbite. Tooth shape was regular in 55% of cases, while 35% exhibited generalized and 15% isolated hypoplasia. A fixed multiband appliance was applicable to only 25% of patients due to satisfactory cooperation. In this subset, various degrees of root resorptions were observed during treatment, and 45% of all treatments had to be prematurely concluded due to insufficient cooperation from patients or parents.

CONCLUSIONS: The notable prevalence of dental and skeletal malformations, coupled with a high incidence of treatment-worthy findings in individuals with Down syndrome, emphasizes the significant need for orthodontic intervention, as evident in the KIG classification. However, this imperative stands in contrast to the supposedly heightened risk of root resorption and a notable decrease in patient cooperation. Anticipating compromised treatment outcomes and processes, it becomes essential to approach orthodontic treatment with simplicity and realism, aiming for a swift and therapeutically satisfactory result.