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ENT WORKSHOP

Hands on management of ENT conditions that frequently present to Emergency Departments, with visualisation & instrumentation using the Vorotek V Scope.

SUMMARY

THROAT & NECK (Some of these conditions often deserve nasendoscopy)

Topic	***Management / Technique****
T.1 Stridor	Infection – (especially supraglottitis) vocal cord palsy, foreign body, neoplasia, non organic.
T.2 Oesophageal foreign body	In cervical oesophagus is often low risk. Features that suggest this include ill-defined onset and eating not disrupted. Observation for 24 hours often sorts this out. In mid or lower oesophagus there is more risk e.g. perforation. Localization is poor; complete obstruction is not uncommon; normal radiology does not exclude.
T.3 Deep space neck infection	Suggested by muscle spasm, severe pain, toxic features, onset over 2 – 7 days.
T.4 Mouth pathology – biopsy	Spatula use. Palpation. Local anaesthesia
T.5 Pharyngeal foreign bodies	T.1 plus Mirror and forceps
T.6 Quinzy drainage	T.1 plus Needle blade or scissors to 5mm depth into palate, beside upper pole of tonsil
T.7 Indications for Tonsillectomy	In early childhood this is usually for obstruction
T.8 Tonsillectomy – post op care	Expectations, antibiotics, pain medication, other

NOSE

Topic	***Management / Technique****
N.1 Nose airway assessment	With & without ear speculum. Airflow. History. Co-phenylcaine (lignocaine with epinephrine)
N.2 Nose packing for epistaxis	N.1 plus ½ inch ribbon gauze (Nufold) Plus B.I.P.P.
N.3 Nose cautery	N.2 plus Ear speculum. Silver Nitrate – must be dry
N.4 Nose foreign bodies	N.2 plus 3mm 90deg hook. Rarely G.A. Beware small batteries
N.5 Nose injury – Fracture bones. Septal haematoma (rare but serious).	Palpal bones. Not Xray. Timing of L (or G) A.M.P Septal assessment: L.A plus palpation

EAR

Topic	***Management / Technique****
E.1 Ear wax management	Syringe vs Suction vs wax rings How to instrument the ear canal
E.2 Otitis Externa	E.1 plus Topical. Ie. drops +/- sponge wick
E.3 Infected Grommets or Perforations	E.2 plus +/- irrigation +/- systemic antibiotics.
E.4 Ear foreign body	E.1 plus 2mm 90 deg hook
E.5 Ear pain - Acute O.M.	History, Static otoscopy, pneumatic otoscopy, hearing test. Differential diagnoses. CT scan
E.6 Glue ear assessment of severity	Pure tune audiometry tympanometry. History. Risk/Benefit
E.7 Otoscopy – Static & Pneumatic	Things to look for

* Refer to workshop handouts for details

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HANDOUTS

THROAT & NECK

T.7 Check list for possible T & A surgery for obstructive symptoms

1. Snoring for what % of the night.
2. Ascertain associated struggling +/- obstruction +/-apneoeas.
3. Sleep disturbance/arousals associated with breathing difficulty
4. Tonsil size
5. Nasal airway (When URTI free)
6. Cranio facial abnormality
7. CNS Development
8. Major general health problems
9. Bleeding history

Q. When is obstructive sleep apnoea (OSA) likely to be affecting health?

A. When loud snoring is associated with breathing obstruction and/or poor quality sleep. These children will usually snore for almost 100% of the time that they are asleep.

Q. What about snoring that comes and goes and is not associated with obstructed/ struggled breathing and / or disturbed sleep?

A. There is no evidence that this affects health or day time performance. It may have considerable nuisance value.

Q. What are adenoids?

A. Similar to tonsils ie. A pad or lump of lympnode tissue on the back wall of the throat up behind the nose.

Q. How are adenoids assessed?

A. They are above the soft palate and cannot be seen by looking in the mouth or nose. ENT doctors use a flexible endoscope to look at adenoids. This is passed through the nose. It is a clinic procedure and local anaesthetic spray is used. Endoscopy is not needed if there is other strong evidence of mouth breathing day and night, good nasal airway and large or medium tonsils.

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NOSE

N.2.1 Anterior Epistaxis from the Nasal Septum

Q. How likely is it that bleeding is coming from this site?

A. Almost 100% when the bleeding is minor and recurring in children. Even when bleeding is severe in an adult approximately 80% are from the anterior nasal septum.

Q. How difficult is it to find the vessel responsible?

A. Between bleeds this can be difficult. Application of local anaesthetic plus vaso constrictor (Cophenylcaine) will reduce background redness and make larger vessels more conspicuous. Gentle abrasion (use the wooden end of a swab stick) can be helpful by restarting bleeding.

Q. How best to cauterize with a silver nitrate stick?

A. The area to be cauterized should be clean, dry and numb. Mucus and blood will prevent chemical action. Hold the tip of a clean, fresh stick firmly against one spot for 3-5 seconds.

Q. How best to get access?

A. Use the largest size of ear speculum directed medially towards the septum (not posteriorly) and almost touching the septum.

Q. How best to use topical anaesthetic? E.g. Cophenylcaine spray

A. This will reduce pain substantially and is easy to use. It is more effective if sprayed accurately under vision. For even more effect it can be applied on damp cotton wool or ribbon gauze which is then positioned inside the nose and left for 10 minutes.

N.2.2 Posterior Epistaxis

Q. What features suggest that bleeding is <u>not</u> from the anterior septum?

A. When bleeding is on/off and severe; the history is short. Older age group. Not controlled by anterior pressure.

Q. Can diathermy or cautery be successful?

A. Yes. But in less than 30%. Note that this often needs a general anaesthetic and is difficult to perform. It is usually only considered when posterior and nasopharyngeal packing has failed.

Q. What are tips for posterior packing?

A. Packing must extend to and just beyond the posterior naries. i.e. the back edge of the hard palate. A ballon system (e.g.Rapid Rhino) or nasal sponge (e.g. Merocel) are reasonably easy to insert. These should be removed early e.g. 12 to 48hrs. For prolonged packing BIPP (Bismouth Iodoform Parafin Paste) on ribbon gauze is the best option.

Q. How long should packing remain in the nose?

A. Mucosal damage/necrosis/infection can develop.

- Local anaesthetic/vaso constrictor on gauze - 1 hour
- Rapid Rhino – 24 hours
- Antibiotic on gauze - 24 hours
- Sponge (Merocel) - 48 hours.
- BIPP on gauze - > 1 week

Q. What is the place of vessel ligation?

A. This is needed for less than 5% of severe posterior epistaxes. It is only considered when bleeding has recurred over many days despite repeated packing and/ or diathermy.

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N.2.3 Post Nasal Packing or Plugging

Q. When is this used?

A. When bleeding persists (usually down the throat) despite a well inserted anterior BIPP pack.

Q. How to achieve this packing/ plugging?

A. A relatively easy option is a Foley's catheter. The balloon is often inflated to around 7cc's so the Foley's should be nominally bigger than 5cc's. It is usually possible to introduce the Foley's through the nose while leaving the intra nasal pack in place. To do this, the pack should be displaced upwards creating a tunnel along the floor of the nose. The catheter tip should be seen at the back of the mouth before the balloon is inflated. The aim is to occlude the posterior nares without causing oral airway obstruction by bulging the soft palate downwards. 7cc's of water into the Foley's is often appropriate for an adult. There must be secure forward tension on the catheter. The system of securing must avoid pressure necrosis to the edge of the anterior nares.

Q. Are there serious risks?

A. Yes. Pressure necrosis as mentioned above. Airway obstruction especially if the catheter descends into the larynx. Patients with post nasal packs insitu should be nursed in high dependency units in hospital. Phone advice from an ENT Specialist can be invaluable.

Q. For prolonged packing (greater than 1 or 2 days) what nasal packing is used?

A. BIPP on half inch ribbon gauze (Nufold). Anything else will become infected and will cause inflammation +/- ulceration +/- adhesions.

N.4 Nasal Foreign Bodies

Q. How urgent is removal? Is there risk?

A. There is theoretical risk of inhalation into larynx/trachea/bronchi. It is the same as with eating and swallowing. i.e. negligible. Removal can be delayed until a convenient time without risk.

Q. Does any foreign material carry special risk?

A. Batteries which are typically from hearing aids. Electrical current can cause death of mucosa, perichondrium and cartilage. Thus nasal septal perforation is a serious risk. Removal should be as soon as possible. A delay of even a few hours can be important.

Q. Is a general anaesthetic needed?

A. Removal usually takes less than 30 seconds and compares with splinter removal. Most young children will have to be restrained but a general anaesthetic is rarely required.

Q. What instruments are needed?

A. For all solid objects, a hook is the answer. (forceps will often push objects further inwards) A typical hook will have a 90 degree bend that is 3mm long.
If the foreign body is adherent (e.g. putrid foam rubber), then pass a wax ring or similar past the material on all sides before exerting traction.

Q. Should topical anaesthetic be used? E.g. Cophenylcaine

A. Yes. It should reduce pain substantially and is easy to use. It is more effective if sprayed accurately under vision. For even more effect it can be applied on damp cotton wool or ribbon gauze which is then positioned inside the nose and left for 10 minutes.

EAR

E.1 Wax Management Using Head Worn View Systems

Instrumentation Removal Technique (refer Figure 1)

Wax ring removal is the technique used for greater than 90% of wax removal by ENT's (and others) who have all options available. Crocodile forceps and right angle pick are other instruments that are in fact infrequently used. If technique is good, pain is minimal in most cases. The deep ear canal skin is occasionally lacerated or bruised. There are either zero or extremely few reports of damage to the drum or deep structures. However if basic principles (see below) are ignored damage could occur. The skin of the deep half of the ear canal is very thin, adherent to bone and very pain sensitive. Thus if possible wax should be lifted off the skin to minimise instrument contact to skin. The drum itself is reasonably non-tender as is the skin of the outer half of the ear canal. The deep half skin begins where fine hair ceases.

Technique Detail

If the meatus is open and not hairy, then a speculum is not needed. However in about 50% of ears a speculum is needed. In a small percentage of ears, the anatomy of the ear canal makes access very difficult even with a speculum. A very small percentage of ear toilets are impossible without general anaesthetic. One example is keratosis obturans which is an extreme wax plug problem.
For reasons of safety and steadiness the fifth finger of the hand holding the wax ring should rest against the edge of the speculum or the side of the head.
The pinna needs to be pulled firmly outwards and backwards in almost every ear even if a speculum is being used. When a speculum is being used it will be held by the thumb and first finger so the middle and ring fingers have to control the pinna.
Wax removal must be under visual control (also tactile). This means a Vorotek O Scope, frontal mirror or microscope will be needed. Instrumentation via a handheld otoscope is considerably more difficult and rarely if ever a preferred option.
Wax is often adherent to skin and should be lifted and loosened before being scooped or hooked out.

Wax Ring Detail Is Important

i.e. the diameter of the ring; the angle of the ring; and the metal thickness of the ring which needs to be 0.5mm or less. The outside diameter will be 2mm for the smallest ears and 6mm for mastoid cavities. 3mm and 4mm are popular sizes.
The wax ring handle must be held so vision is not obstructed, i.e. with the tips of the thumb and first two fingers.

Ear Syringing (Rarely The Best Option)

Occasionally this results in ear drum rupture and there are a few negligence or compensation claims every year for this problem. The technique is rarely used when an alternative such as wax ring removal is available. Wax that is adherent to skin will fail syringing without prior softening and quite often even after the use of oily eardrops. However syringing or suction is the preferred method when wax is very soft and filling the deep ear canal. Often in these situations there is associated infection.

Suction (Rarely The Best Option)

Suction will not remove hard wax or adherent wax. It is used as an alternative to syringing (mainly by ENT Doctors) when wax +/- infection is very soft and quantities are large. Suction can cause damage to deep structures especially if the ear drum is thin and scarred.

Bleeding

In old people with adherent wax this occurs quite easily. It has nuisance value only. This should be managed like a shaving cut, i.e. use facial tissue and leave it in place for more than ten minutes. In the ear tissue has to be twisted tightly and then inserted well down into the ear canal.

Getting Started

Practice with a pen top with or without a speculum. For wax simulation use Blu-tack, plasticine, rice grains, etc… The next stage should involve an adult friend even if wax is minimal. Initially patients should be selected and have the following features:

*Not too young, too old or too fearful
*Ear canal anatomy reasonably friendly
*Wax mostly in the outer half of the ear canal

Before beginning, tell the patient that in most cases like this the process is successful and saves time. Also state clearly that if difficulties arise, the attempt will stop and a referral will be organized. If a patient has had major ear surgery and in particular has a mastoid cavity, then leave wax management to an ENT specialist unless otherwise advised.

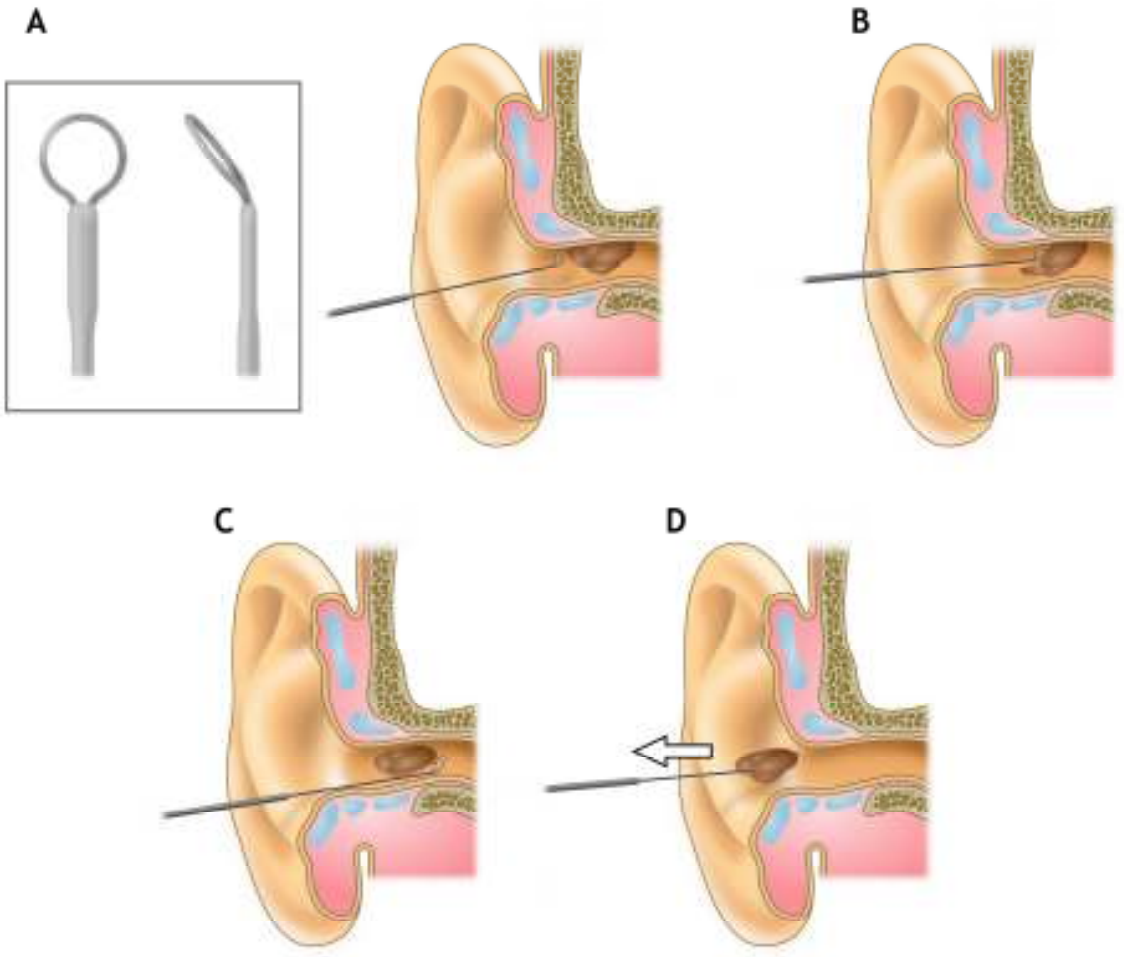

Figure 1. Correct use of Wax Rings.

E.2 Otitis externa treatment

Topical treatment is much more important that systemic antibiotics.

Usually the canal can be at least partly cleared. This removes the culture medium (often soggy wax) & allows medication to reach the canal.

In mild to moderate cases antibiotics drops will suffice eg. Sofradex, Ciprox, Chloramphenicol.

The next step up is drops via a sponge wick eg. Merocel Otowick. In extreme cases, especially when there is spreading cellulitis systemic antibiotics (eg. gentamycin) will be needed **in addition** to topical treatment.

E.3 Treatment of ear infection and discharge when there is a ventilating tube in the ear drum and or a perforation

Keeping water out of the ears helps to prevent this problem e.g. with Blu-Tack, DOC'S Pro Plugs or other ear plugs.

Without treatment infection often continues and sometimes becomes chronic.

At onset if there is a lot of discharge, oral antibiotics (e.g. Amoxicillin) are preferred because the discharge prevents drops going through the VT into the middle ear.

If infection and discharge persist for more than a few days antibiotic ear drops are a better option. Higher doses of more suitable antibiotics can be given this way. (e.g. Ciprofloxacin, Chloramphenicol). Drugs should be pumped down to make them go through to middle ear. (use the flat of the hand and a squeezing action) The ear should be cleared before drops are put in. A doctor may do this with swabs or suction. A family can use twisted tissue corners.

If more vigorous treatment is needed then hydrogen peroxide irrigation may be used in addition to the above. Hydrogen peroxide 3% solution kills many bacteria, yeasts, fungi etc. The flushing/ fizzing action helps to clean the ear canal. A prescription is not required. Hydrogen peroxide is sold by pharmacists and is usually the correct strength. Body temperature is essential to avoid dizziness and pain. Twice daily treatment is usual.

Instillation is most easily done using a 5cc. syringe connected to fine plastic tubing. This allows gentle flushing well down into the ear canal. For the first few times the hydrogen peroxide will cause a hot feeling and possibly slight pain. To begin with the peroxide solution should be immediately tipped out of the ear to minimize any possible pain or burning feeling. Once the ear has become used to the hydrogen peroxide it should be left in the ear for about 30 seconds before it is tipped out and the ear dried with a towel around a finger.
The solution should be used at body temperature or it will cause vertigo and pain.

Antibiotic eardrops can be used in conjunction with Hydrogen peroxide. However Hydrogen peroxide will destroy antibiotics so there should be a 30 minute delay between hydrogen peroxide use and when eardrops are instilled.

With this treatment almost all infections will resolve but if not, the options will include hospital admission, ear toilet under anesthetic, intravenous antibiotics, and lastly removal of the ventilating tubes.

If infection and discharge persists for many weeks extra problems can arise. (E.g. polyps or granulation tissue can develop)

E.5 Antibiotics for acute O.M.

Q. Do antibiotics help?

A. Published research shows no benefit. Common sense also no - Except when very severe and prolonged. Wait at least 12 hours before deciding.

Q. Severity considerations.

A. Duration > 12 hours – usually 3 to 7 days.
Systemic upset.
Special features:-

- Mastoiditis
- Facial weakness
- Vertigo
- Nerve deafness
- Intra cranial features

E.6. "Glue Ears & Grommets" (Middle Ear Mucous & Ventilating Tubes)

Probable Benefits	Possible Problems
Hearing Severe Glue Ear (both middle ears full of mucous) blocks hearing by around 30% which is similar to wearing ear muffs. This is considered an unacceptable handicap. A tube in the ear drum (grommet) usually reaerates the middle ear and hearing returns to normal. Mild Glue Ear usually means variable air/ fluid mixtures in the middle ears. Hearing blockage is minor and tube insertion rarely produces a noticeable improvement in hearing. **Ear Damage Prevention** The main risk is to the ear drum. With most cases of glue ear, no damage occurs. The presence or absence of damage can only be determined by careful ear drum examination including pneumatic otoscopy. **Less Trouble with Acute Middle Ear Infections** If infection occurs and there is a tube in the ear drum there will be discharge (and treatment will be needed) but pressure will not build up and cause pain. Usually less ear infections occur after tubes are inserted.	Tube insertion is not a permanent cure. When the ear drum heals and the tube comes out there is no ongoing benefit and problems may recur. Thus 1 in 4 children need repeat tube insertion. Most tubes remain patent and in the ear drum for 6 to 9 months. Ear drum scarring often develops but is usually minor and symptomless. Tubes can become blocked. Tubes can extrude early. The ear drum may not heal up so a hole remains in the ear drum. (a 1% risk) Keeping the ears dry can be difficult. Infection can develop in the middle ear and then discharge out through the tube. With treatment, infection usually settles quickly and no damage results. See over for treatment of ear infection associated with ventilating tubes.

Natural History of Middle Ear Infections & Glue Ear

Approximately 5%of children have insertion of ventilating tubes usually for severe glue ear. Another 25% have mild variable glue ear often with few symptoms. Medications are not helpful. In severe cases the only proved effective treatment is insertion of ventilating tubes. Most children will outgrow these problems and after mid primary school age they are infrequent.

Even without treatment many ears end up normal with no damage and normal hearing.

E.7 Otoscopy – Static & Pneumatic

Static Otoscopy. Examples of T.M. findings

- Dull, no light reflex (can still be a normal ear)
- Perforation
- White pearl or rounded bulge inside T.M. (possible cholesteatoma)
- Brown, yellow or purple colour (always fluid)
- Fluid Levels
- Retraction (a deep pocket can become a cholesteatoma)
- Myringosclerosis (white scar +/- calcification)
- Vesicles e.g. acute OM and rarely herpes zoster oticius

Pneumatic Otoscopy – Examples of extra findings

- Sluggish movement
- Air/fluid interfaces
- Retraction severity
- “Invisible” perforation
- Patency of grommet (V.T)
- T.M. adhesions
- Reservoir effect