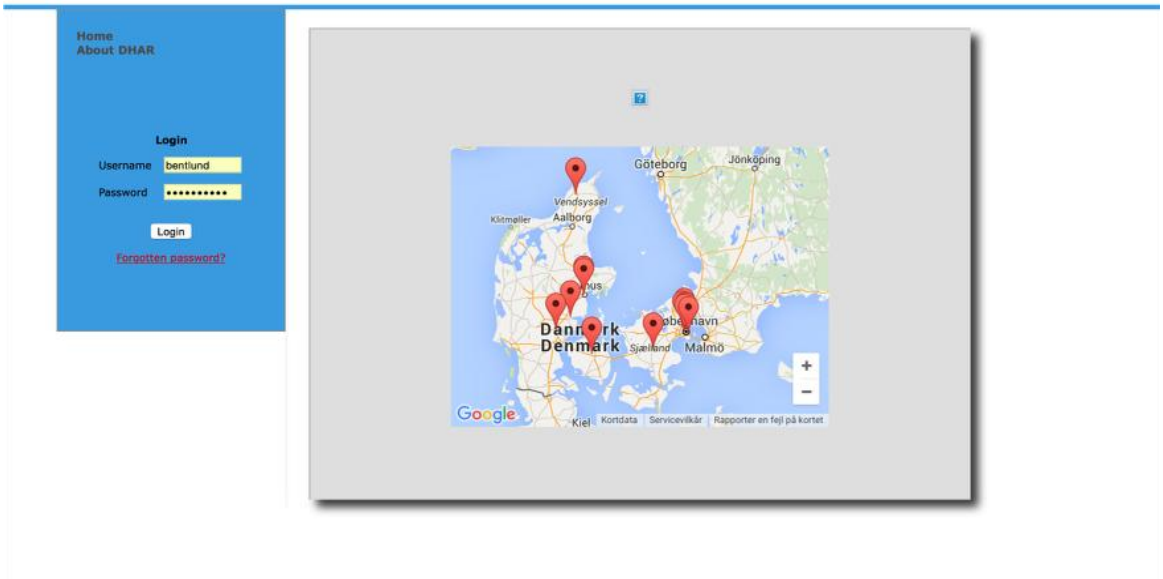
DHAR
Danish Hip Arthroscopy Registry

Annual report 2024

Danish Hip Arthroscopy Registry



Steering committee:
Bjarne Mygind-Klavsen, Aarhus University Hospital, Chairman.
Otto Kraemer, Amager-Hvidovre University Hospital.
Per Hölmich, Amager-Hvidovre University Hospital.
Bent Lund, Horsens Regional Hospital.
Christian Dippmann, Bispebjerg-Frederiksberg University Hospital.
Jens Kristinsson, Hjørring Hospital.

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Introduction

The Danish Hip Arthroscopy Registry (DHAR) is the world's oldest registry dedicated to monitoring hip arthroscopy procedures. It was established in response to the new healthcare legislation introduced in Denmark in 2010, which restricted hip arthroscopies to a limited number of hospitals with designated expertise. These regulations also required hospitals and clinics to document the procedures they performed, prompting the creation of a national registry. DHAR was officially launched on January 27th, 2012, with development funded by a grant from the Danish Association of Arthroscopy and Sports Orthopedics (SAKS). To date, DHAR is one of only three national registries focused on non-arthroplasty hip procedures, alongside the UK's Non-Arthroplasty Hip Registry (NAHR), founded later in 2012, and the US-based HipSTR, established in 2022.

Permission was granted for the Registry in 2012 (Region Midt # 1-16-02-215-12)
Data Agreement according to the GDPR-rules was signed in 2019 (# 2012 - 1-16-02-215-12).

Since its launch in early 2012, the Danish Hip Arthroscopy Registry (DHAR) has been open to online submissions. Over the years, the database structure has undergone several revisions to address minor flaws and correct programming errors. The DHAR Steering Committee meets twice a year, while ad-hoc decisions and data requests are managed via email or virtual meetings.

The first comprehensive annual report was published in 2016, and annual reports have been released regularly since then. In addition, several peer-reviewed studies based on DHAR data have been published [1–17]. A full list of publications can be found on page 36.

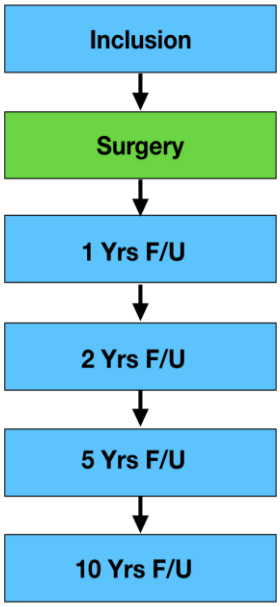
DHAR is maintained through the voluntary efforts of participating surgeons. The technical operations of the database are managed by Procordo Inc., a Danish software company specializing in orthopedic registries. Funding for DHAR is provided exclusively by the participating hospitals and private clinics.

Pleasent reading!

Bjarne Mygind-Klavsen
Chairman of the Steering Committee.

DHAR

The Danish Hip Arthroscopy Registry is based on a flowchart, which forms the basic structure and makes it possible to access the various parts of the Registry in the flowchart.



The patients access the Registry through an online "kiosk", where they can enter their data and complete the pre-scores in the Patient Related Outcome Measures (PROM). The past couple of years we have implemented access to DHAR for the patients through a specific QR-code, so that the patients can enter data form their smartphones. The QR-codes are specific for the hospital/private clinic where their surgery will be performed.
At the time of surgery, the surgeon enters the operative findings and other variables on-line.

When the patients are signed up for hip arthroscopy, they enter the following Patient Related Outcome Measures (PROM) into the registry: HAGOS, iHOT12, HSAS, VAS-overall hip function, NRS pain-rest and NRS pain-walk and EQ5D scores.

The surgeons enter the following data at the time of surgery: various radiographic measurements, previous surgery, anesthesia, antibiotics, DVT-prophylaxis, labral tear, cartilage lesions, other injuries, OR-time, traction time, surgical procedures, number of anchors and type, cartilage treatment, bony work, extraarticular surgery and perioperative complications.

The DHAR generates an automatic e-mail notification to the patients at follow-ups 1, 2, 5 and 10 years after surgery with a link to an on-line questionnaire. If they do not respond, another e-mail is automatically generated as a reminder.

The registry makes it possible to extract data on the actual patient, but also, on groups of patients or different treatment modalities or types of injuries. All surgeons have access to their own data, but only the steering committee has full access to the data. The database is secure and not open to public access. Data can only be made available on written request and with a research protocol stating the type of request. Permission must be granted by the Danish Data Protection Agency.

Quality indicators

We have chosen four indicators of quality for this registry. We find that these data can indicate whether the registry data are valid or not and give some information on the quality of the surgery. The problem with registry data is completeness, which usually is low (known also from the Scandinavian ACL registries). Therefore, we have provided data to support the validity of the registry data. We have published a study in 2020 with data from DHAR, that shows that completeness and patient characteristics are the same between responders and non-responders [8].

There is still a problem with data from DHAR regarding data from the National Patient Registries, but we are working on it, and we hope to be able to present updated data soon. We also hope to present data on hip joint survival soon.

During the next year we will try to increase the PROM completeness. We don't know whether it is a patient or surgeon fatigue. The improvement of QoL in HAGOS seems to be satisfactory and above the target.

Re-arthroscopies are increasing in numbers as well as in percentage. We think this might be caused by the surgeons being less reluctant performing re-arthroscopies. Looking at the results we have no explanation as to why the re-arthroscopies are increasing in numbers.

Completeness (surgeon) DHAR/LPR (Danish National Patients Registry) **Target 90 %**

Table 1. Number of Hip Arthroscopic procedures reported in DHAR and LPR

Completeness	2012	2013	2014	2015	2016	2017	2018*
DHAR	450	709	936	921	803	757	**505**
LPR	576	827	1201	1042	826	880	**571**
DHAR/LPR (%)	78.1	85.7	77.9	88.4	97.2	86.0	**88.4**

***Data included up until September 2018. Due to procedural changes accessing data from the National Patient Registries, data is not yet available after September 2018.**

Completeness of PROMS (patient)/DHAR (surgeon) **Pre-op. Target 65%**

Table 2. Number of PROMs completed compared to surgical registrations in DHAR.

Completeness PROMS (n (%))	2012-2021	2022	2023	2024	Total
Pre	**4567** (58)	**367** (51)	**397** (53)	**476** (61)	**5807** (58)
1 year	**4045** (52)	**252** (35)	**229** (30)	-	**4526** (49)
2 years	**3147** (40)	**135** (19)	-	-	**3280** (38)
5 years	**1997** (32)	-	-	-	**1997** (32)
10 years	**461 (23)**	-	-	-	**461 (23)**

QoL improvement of >25 points **1-year Target 50 %**

Table 3. The number of patients reaching an improvement in HAGOS item QoL of more than 25 (range 0-100) points at 1, 2, 5 and 10 years. MCID for QoL is 7.8 points (Table 18).

HAGOS QoL (n (%))	2012-2021	2022	2023	2024	Total
1 year	**1266** (45)	**114** (47)	**108** (50)	-	**1488** (45)
2 years	**1100** (50)	**77** (57)	-	-	**1177** (50)
5 years	**710** (56)	-	-	-	**7310** (56)
10 years	**161 (58)**	-	-	-	**161 (58)**

Re-arthroscopies **Target <12 %**

Table 4. Re-arthroscopies per year

Re-arthroscopies (n (%))	2012-2021	2022	2023	2024	Total
Re-arthroscopies pr. year (n (%))	**956** (12)	**114** (16)	**111** (15)	**137** (18)	**1319** (13)

Overall data

At the end of 2024 there were a total of **10070 arthroscopic hip surgeries** registered in DHAR. The data presented in this annual report is a summation of all the registrations from 2012 and until Dec. 31st, 2024. There are in total **10070 procedures** and **5807 Pre-PROM datasets** from patients.

Table 5. In Denmark **7** public hospitals and 4 private hospitals have a Regional Function (®) in hip arthroscopy, which means that they have permission to perform surgery on public healthcare patients. There are also 5 private clinics operating only on privately insured patients who contribute to the registry. In total **16** hospitals and clinics have reported to the DHAR.

Year	2012-2021	2022	2023	2024	Total
North Region					
Hjørring Regionshospital ®	**749**	**44**	**72**	**35**	**900**
Mid Region					
Aarhus Universitetshospital ®	**442**	**44**	**42**	**44**	**572**
Aleris Hamlet Aarhus ®	**697**	**43**	**46**	**85**	**871**
Horsens Regionshospital ®	**1688**	**162**	**134**	**166**	**2150**
Capio Aarhus	**32**	**6**	**10**	**10**	**58**
South Region					
Odense Universitetshospital OUH ®	**677**	**30**	**21**	**32**	**760**
Privathospitalet Mølholm	**342**	**40**	**49**	**28**	**459**
Capital Region					
Aleris Hamlet København ®	**829**	**160**	**183**	**168**	**1340**
AHH Amager Hvidovre Hospital ®	**662**	**65**	**68**	**83**	**838**
Bispebjerg Frederiksberg Hospital ®	**460**	**32**	**26**	**38**	**556**
Capio Hellerup ®	**820**	**54**	**54**	**52**	**980**
Gildhøj Privathospital	**81**	**0**	**0**	**0**	**81**
ADEAS Parken ®	**243**	**0**	**9**	**4**	**256**
CPH Privathospital	**114**	**36**	**21**	**13**	**184**
Zealand Region					

Køge Sygehus®	**12**	**8**	**16**	**20**	**56**
Aleris Hamlet Ringsted	**9**	**0**	**0**	**0**	**9**
Total # procedures	**7817**	**724**	**751**	**778**	**10070**

Demographics

Comments:
During the last years we have seen an increasing number of surgeries in women. Whether this is due to an increasing focus on pincer-type morphology, or it is because of a general tendency of women contacting the health care system more often for different problems, we do not know.

Table 6. Demographic data

Demographics	**2012-2021**	**2022**	**2023**	**2024**	**Total**
Male	**3238**	**276**	**247**	**296**	**4057**
Female	**4582**	**448**	**504**	**482**	**6016**
Ratio (m/f)	**41/59**	**38/62**	**33/67**	**38/62**	**40/60**
Mean age (year)	**37.4**	**35.7**	**36.9**	**36.4**	**37.2**

Previous surgery

Table 7. Of the **10070** procedures 2056 had previous surgery in the affected hip. Among these were 501 patients, who were operated on with a PAO (Peri-Acetabular Osteotomy) due to developmental dysplasia of the hip (DDH). Finally, 55 patients had a previous THR (Total Hip Replacement).

Previous surgery (n)	**2012-2021**	**2022**	**2023**	**2024**	**Total**
FAI	943	114	110	136	**1303**
Loose bodies /chondromatosis	14	0	1	2	**17**
Lig. teres rupture	5	0	0	0	**5**
Infection	2	0	0	0	**2**
PAO	421	28	31	21	**501**
Osteosynthesis of SCFE	40	3	1	1	**45**
Z-plasty ITB	24	2	1	2	**29**
THR	47	4	0	4	**55**
Other	82	3	7	7	**99**
Total	1578	154	151	173	**2056**

Radiology

Table 8. Radiological parameters

Radiology	2012-2021	2022	2023	2024	Total
LCE-angle (Wiberg) (mean)	**31**	**30**	**30**	**30**	**31**
Anterior alpha angle (mean)	**67**	**65**	**64**	**65**	**66**
Tönnis AI-angle (mean)	**5.5**	**5.3**	**5.3**	**4.8**	**5.4**
Ischial spine sign (n (%))	**1949** (25)	**156** (22)	**165** (22)	**166** (21)	**2436** (24)
Tönnis Grade (n (%))					
Grade 0.	**2242 (67)**	**498 (69)**	**496 (66)**	**521 (67)**	**3757 (68)**
Grade 1	**1037 (31)**	**216 (30)**	**247 (33)**	**249 (32)**	**1749 (31)**
Grade 2	**54 (2)**	**6 (1)**	**7 (1)**	**4 (1)**	**71 (1)**
Grade 3	**3 (0)**	**0 (0)**	**0 (0)**	**0 (0)**	**3 (0)**
Lateral Joint Space Width (n (%))					
<2 mm.	**40** (1)	1 (0)	0 (0)	5 (1)	**46** (4)
2,1-3,0 mm.	**317** (4)	**22** (3)	**39** (5)	**25** (3)	**403** (4)
3,1-4,0 mm.	**2405** (31)	**173** (24)	**218** (29)	**209** (27)	**3005** (30)
>4 mm.	**5040** (64)	**524** (73)	**493** (66)	**535** (69)	**6592** (66)

Labral surgery

Table 9. Labral findings and procedures

Labral tear (n (%))	2012-2021	2022	2023	2024	Total
Yes	**6981** (89)	**682** (94)	**727** (97)	**746** (96)	**9136** (91)
No	**839** (11)	**42** (6)	**24** (3)	**32** (4)	**937** (9)
Type of Surgery (n (%))	**2012-2021**	**2022**	**2023**	**2024**	**Total**
Labrum untouched (no treatment)	**12** (0)	**0** (0)	**1** (0)	**1** (0)	**13** (0)
Labral remodeling/ partial resection	**793** (12)	**66** (10)	**86** (12)	**119** (16)	**1064** (12)
Labral full thickness resection	**384** (6)	**73** (11)	**92** (13)	**87** (12)	**636** (7)
Labral repair	**5594** (80)	**535** (78)	**541** (74)	**531** (71)	**7201** (79)
Labral reconstruction	**30** (0)	**1** (0)	**0** (0)	**0** (0)	**31** (0)
Unknown	**168** (2)	**7** (1)	**7** (1)	**9** (1)	**191** (2)

Cartilage lesions

Table 10. Size and grading of cartilage lesions in the acetabulum and femoral head

Cartilage lesion Acetabulum n (%))	2012-2021	2022	2023	2024	Total
Beck Gr. 0 – Healthy	**148** (2)	**18** (3)	**19** (3)	**37** (6)	**222** (2)
Beck Gr. 1 – Fibrillation	**1057** (16)	**104** (18)	**97** (16)	**117** (20)	**1375** (16)
Beck Gr. 2 - Wave sign	**2960** (44)	**274** (46)	**264** (43)	**224** (38)	**3722** (44)
Beck Gr. 3 - Delamination	**1924** (28)	**154** (26)	**164** (27)	**153** (26)	**2395** (28)
Beck Gr. 4 - Exposed bone	**670** (10)	**42** (7)	**67** (11)	**62** (10)	**841** (10)

Acetabular cartilage lesion size (n (%))	2012-2021	2022	2023	2024	Total
0	**170** (3)	**18** (3)	**20** (3)	**40** (8)	**248** (3)
Size <1 cm^2	**2360** (35)	**257** (43)	**233** (38)	**251** (42)	**3101** (36)
Size 1-2 cm^2	**3319** (49)	**251** (42)	**288** (48)	**252** (42)	**4110** (48)
Size >2 cm^2	**910** (13)	**66** (11)	**70** (11)	**50** (8)	**1096** (13)

Cartilage lesion Head (n (%))	2012-2021	2022	2023	2024	Total
ICRS Gr. 0 – Normal	**4668** (69)	**423** (71)	**445** (73)	**392** (66)	**5928** (69)
ICRS Gr. 1 - Almost normal	**617** (9)	**55** (9)	**50** (8)	**60** (10)	**782** (9)
ICRS Gr. 2 – Abnormal	**901** (13)	**58** (10)	**62** (10)	**79** (13)	**1100** (13)
ICRS Gr. 3 - Severely Abnormal	**395** (6)	**44** (8)	**46** (8)	**43** (7)	**528** (6)
ICRS Gr. 4 - Exposed bone	**178** (3)	**12** (2)	**8** (1)	**19** (3)	**217** (3)

Femoral head lesion size (n (%))	2012-2021	2022	2023	2024	Total
0	**4715** (70)	**434** (73)	**465** (76)	**403** (68)	**6017** (70)
Size < 1 cm^2	**617** (9)	**42** (7)	**46** (8)	**64** (11)	**769** (9)
Size 1-2 cm^2	**853** (12)	**77** (13)	**67** (11)	**83** (14)	**1080** (13)
Size > 2 cm^2	**574** (8)	**39** (7)	**33** (5)	**43** (7)	**689** (8)

Patient Reported Outcome Measures (PROMs)

Comments on the PROMs:

The data show significant improvements in all PROMs but one.
The improvements in all PROMs are larger than the MCID (Minimal Clinical Important Difference, defined as SD/2 of the pre-operative values), except for HSAS. This exception is in accordance with the published paper on "Return to sport" [4]. The largest improvement is seen between pre-op and 1-year post-op. Table 18 shows the percentage reaching the MCID.

Regarding HAGOS the improvements are also significant for PA and QoL (Physical Activity and Quality of Life) between 1 and 2 years and between 2 and 5 years. This late improvement might be explained by a change in patients' expectations over time, because of accepting their hip function as it is, even if it is not at the level of a hip symptom-free control group (*Thorborg K. et al. Patient-Reported Outcomes Within the First Year After Hip Arthroscopy and Rehabilitation for Femoroacetabular Impingement and/or Labral Injury. The Difference Between Getting Better and Getting Back to Normal. Am J Sport Med 2018;46(11):2607–2614*).

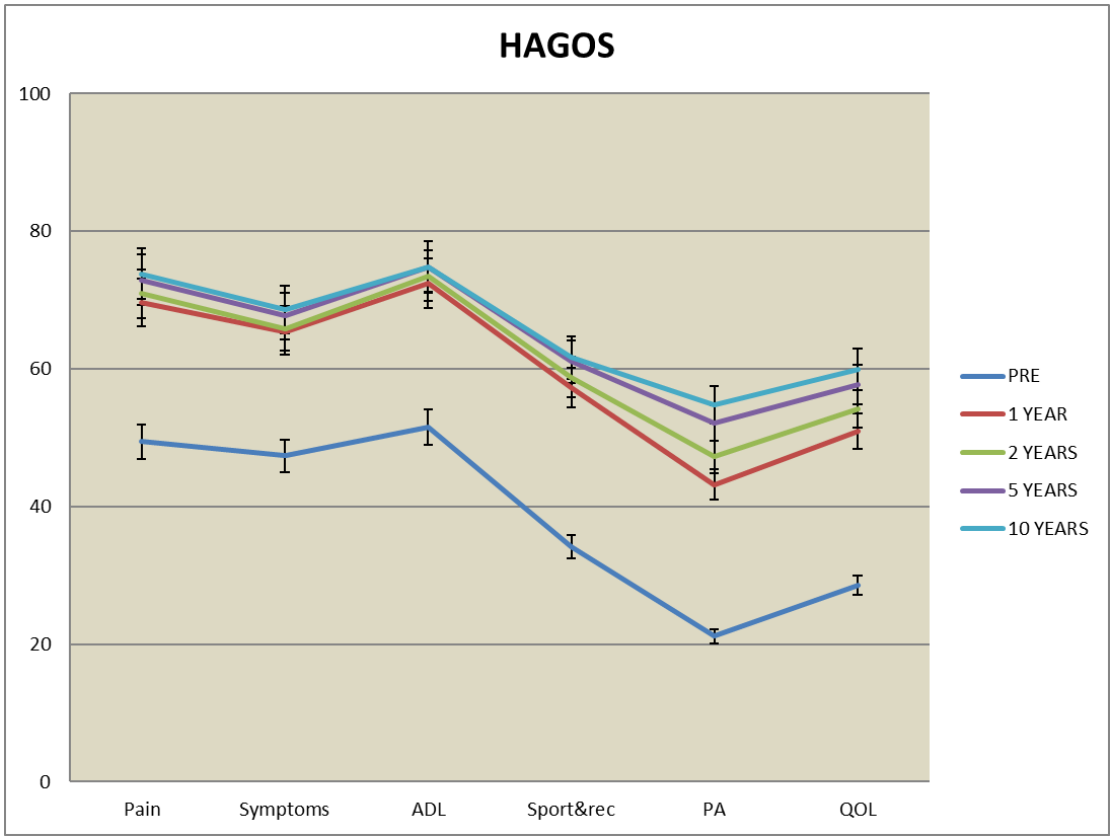


Fig. 1. HAGOS outcomes at 1, 2 5, and 10 years for all surgeries compared to the pre-scores.

Table 11. HAGOS (Copenhagen Hip and Groin Outcome Score)

PROMS pre (n=5808 (58%))	2012-2021	2022	2023	2024	Mean (95% CI)
HAGOS					
Pain	**49.5**	**48.9**	**49.8**	**48.6**	**49.4 (48.9 - 50.0)**
Symptoms	**47.7**	**46.2**	**46.9**	**45.7**	**47.4 (46.9 – 47.9)**
ADL	**51.5**	**52.4**	**52.7**	**50.1**	**51.6 (50.9 – 52.2)**
Sport & rec	**34.1**	**35.4**	**35.0**	**32.8**	**34.2 (33.5 – 34.8)**
PA	**20.5**	**22.0**	**24.9**	**23.6**	**21.1 (20.4 - 21.8)**
QoL	**28.7**	**28.3**	**29.0**	**27.8**	**28.6 (28.1 - 29.0)**

PROMS 1 year (n=4527 (49%))	2012-2020	2021	2022	2023	Mean (95% CI)
HAGOS					
Pain	**69.4**	**70.1**	**72.6**	**70.4**	**69.7 (68.9 - 70.4)**
Symptoms	**65.1**	**65.9**	**66.8**	**67.5**	**65.4 (64.7 – 66.1)**
ADL	**72.0**	**74.7**	**75.6**	**73.4**	**72.4 (71.6 – 73.3)**
Sport & rec	**56.8**	**58.7**	**61.2**	**57.8**	**57.2 (56.3 - 58.2)**
PA	**42.5**	**44.4**	**49.7**	**46.8**	**43.3 (42.1 – 44.3)**
QoL	**50.7**	**51.2**	**52.7**	**52.8**	**51.0 (50.1 - 51.8)**

PROMS 2 years (n=3282 (38%))	2012-2019	2020	2021	2022	Mean (95% CI)
HAGOS					
Pain	**70.7**	**71.2**	**71.9**	**72.6**	**70.9 (70.0 - 71.8)**
Symptoms	**65.8**	**65.7**	**66.9**	**66.8**	**65.9 (65.1 - 66.7)**
ADL	**73.3**	**74.4**	**74.1**	**75.6**	**73.5 (72.6 - 74.5)**
Sport & rec	**58.5**	**59.6**	**60.3**	**61.2**	**58.8 (57.7 - 59.9)**
PA	**46.7**	**47.9**	**47.8**	**49.7**	**47.2 (45.8 - 48.6)**
QoL	**54.0**	**54.8**	**53.3**	**52.7**	**54.2 (53.2 - 55.2)**

PROMS 5 years (n=1998 (32%))	2012-2016	2017	2018	2019	Mean (95% CI)
HAGOS					
Pain	**73.2**	**71.7**	**72.9**	**74.3**	**72.9 (71.8 - 74.1)**
Symptoms	**67.7**	**66.1**	**68.4**	**69.6**	**67.7 (66.6 - 68.8)**
ADL	**75.3**	**73.8**	**74.0**	**76.2**	**74.9 (73.7 - 76.1)**
Sport & rec	**61.2**	**58.6**	**61.0**	**64.0**	**61.1 (59.6 – 62.5)**
PA	**51.9**	**50.2**	**53.0**	**56.0**	**52.1 (50.4 – 53.8)**
QoL	**58.3**	**55.8**	**56.4**	**60.7**	**57.8 (56.4 – 59.1)**

PROMS 10 years (n=461 (23%))	2012-2014	-	-	-	Mean (95% CI)
HAGOS					
Pain	**73.9**	-	-	-	**73.9 (71.4 - 76.3)**
Symptoms	**68.6**	-	-	-	**68.6 (66.4 – 70.9)**
ADL	**74.9**	-	-	-	**74.9 (72.2 – 77.5)**
Sport & rec	**61.6**	-	-	-	**61.6 (58.6 – 64.7)**
PA	**54.8**	-	-	-	**54.8 (51.2 – 58.5)**
QoL	**59.9**	-	-	-	**59.9 (57.1 – 62.8)**

iHOT$_{12}$

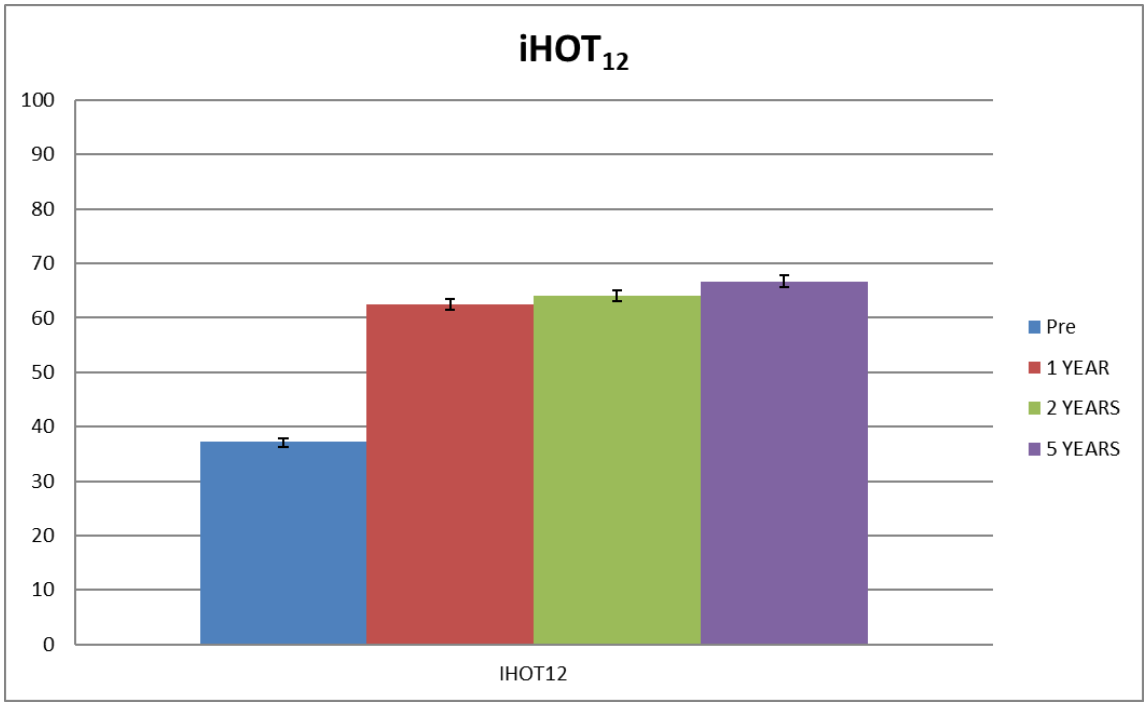


Fig. 2. iHOT$_{12}$ outcomes at 1, 2 and 5 years compared to the pre-scores.

Table 12. A Danish version of iHOT$_{12}$ was not existing before 2019, so data doesn't go further back.

iHOT$_{12}$	2019-2021	2022	2023	2024	Mean (95% CI)
Pre (n=2731)	**37.1**	**37.8**	**38.3**	**36.2**	**37.2 (36.4 – 38.1)**
1 year (n=2053)	**62.4**	**63.1**	**62.4**	**-**	**62.5 (61.2-63.8)**
2 years (n=1575)	**63.9**	**66.2**	**-**	**-**	**64.0 (62.6-65.5)**
5 years (n=1550)	**66.6**	**-**	**-**	**-**	**66.0 (65.1-68.2)**

NRS scores for pain

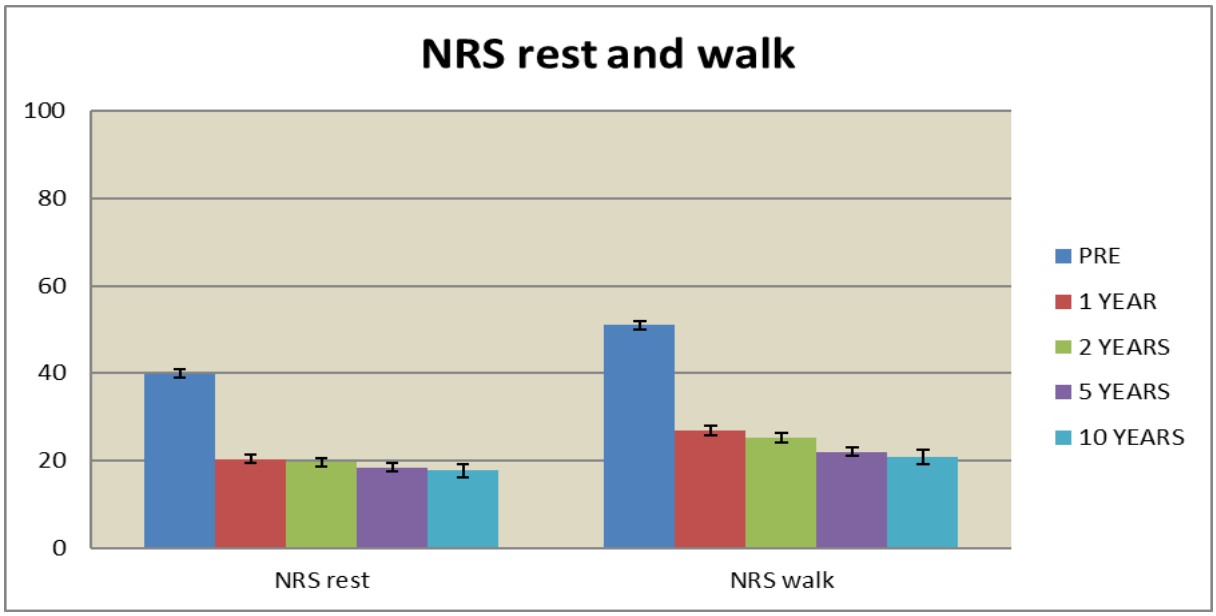


Fig. 3. NRS pain score at rest and after 15 min. walk. Outcome data at 1, 2, 5 and 10 years compared to the pre-scores.

Table 13. Numerical Rating Scale for pain at rest and after 15 minutes of walking.

NRS Pain - rest	2012-2021	2022	2023	2024	Mean (95% CI)
Pre	**40.0**	**39.6**	**38.3**	**39.8**	**39.9 (39.2 – 40.7)**
1 year	**20.6**	**18.9**	**18.0**	**-**	**20.4 (19.6 – 21.1)**
2 years	**19.6**	**18.7**	**-**	**-**	**19.6 (18.7 – 20.5)**
5 years	**18.4**	**-**	**-**	**-**	**18.4 (17.3 – 19.5)**
10 years	**17.7**	**-**	**-**	**-**	**17.7 (15.3 – 20.1)**

NRS pain – walking 15 mins.	2012-2021	2022	2023	2024	Mean (95% CI)
Pre	**51.1**	**51.9**	**50.2**	**50.4**	**51.0 (50.2 – 51.8)**
1 year	**27.3**	**23.5**	**23.4**	**-**	**26.9 (26.0 – 27.8)**
2 years	**25.2**	**24.3**	**-**	**-**	**25.2 (24.1 – 26.2)**
5 years	**22.0**	**-**	**-**	**-**	**22.0 (20.7 – 23.3)**
10 years	**20.8**	**-**	**-**	**-**	**20.8 (18.0 – 23.5)**

Overall hip function

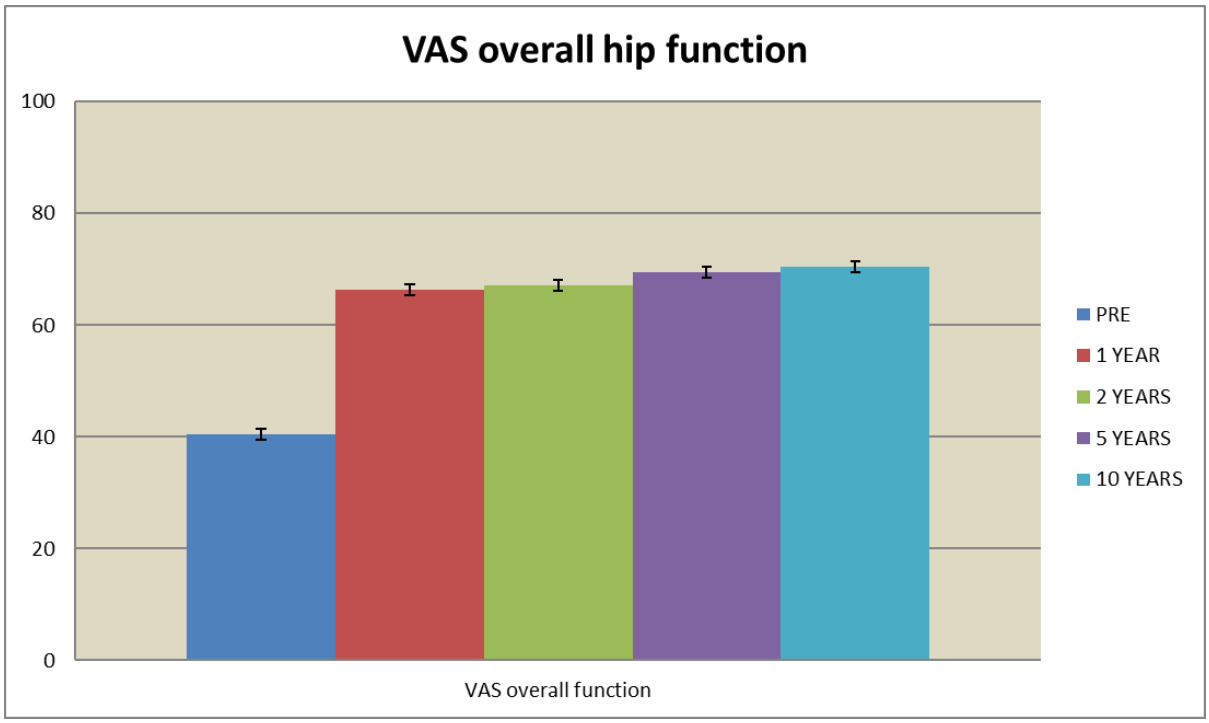


Fig. 4. VAS overall hip function outcome at 1, 2, 5 and 10 years compared to the pre-scores

Table 14. The patient's opinion of their overall hip function. 100 is perfect without hip symptoms.

VAS – overall hip function	2012-2021	2022	2023	2024	Mean (95% CI)
Pre	**40.7**	**38.6**	**40.5**	**40.7**	**40.5 (40.0 – 41.1)**
1 year	**66.0**	**68.3**	**68.6**	-	**66.3 (65.5 – 67.1)**
2 years	**67.0**	**71.0**	-	-	**67.2 (66.2 – 68.2)**
5 years	**69.5**	-	-	-	**69.5 (68.3 – 70.8)**
10 years	**70.4**	-	-	-	**70.4 (67.7 – 73.2)**

EQ5D scores

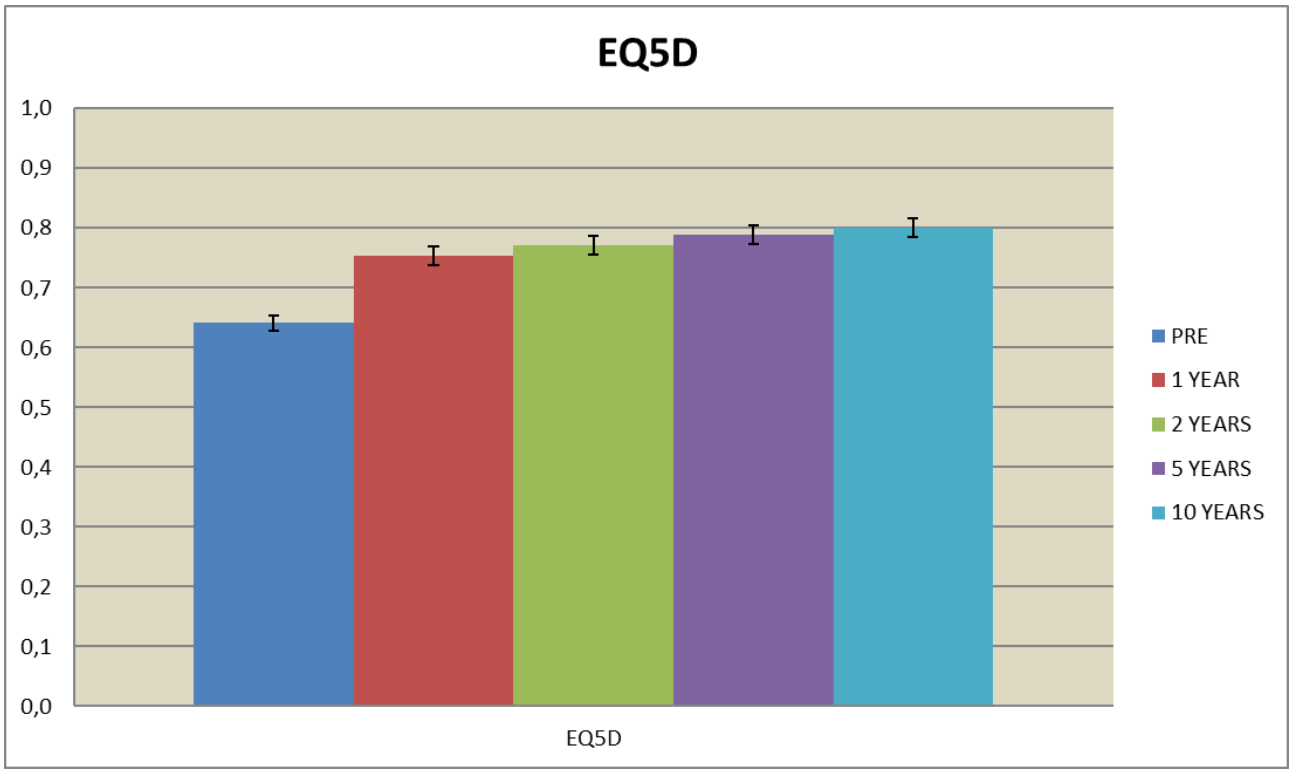


Fig. 5. EQ5D outcome data at 1, 2, 5 and 10 years compared to the pre-scores.

Table 15. Patient assessed general quality of life score.

EQ5D	2012-2021	2022	2023	2024	Mean (95% CI)
Pre	**0.64**	**0.64**	**0.65**	**0.64**	**0.64 (0.64 - 0.65)**
1 year	**0.75**	**0.75**	**0.77**	-	**0.75 (0.75 - 0.76)**
2 years	**0.77**	**0.78**	-	-	**0.77 (0.76 - 0.78)**
5 years	**0.79**	-	-	-	**0.79 (0.78 - 0.80)**
10 years	**0.80**	-	-	-	**0.80 (0.78 – 0.82)**

HSAS score (Hip Sports Activity Score)

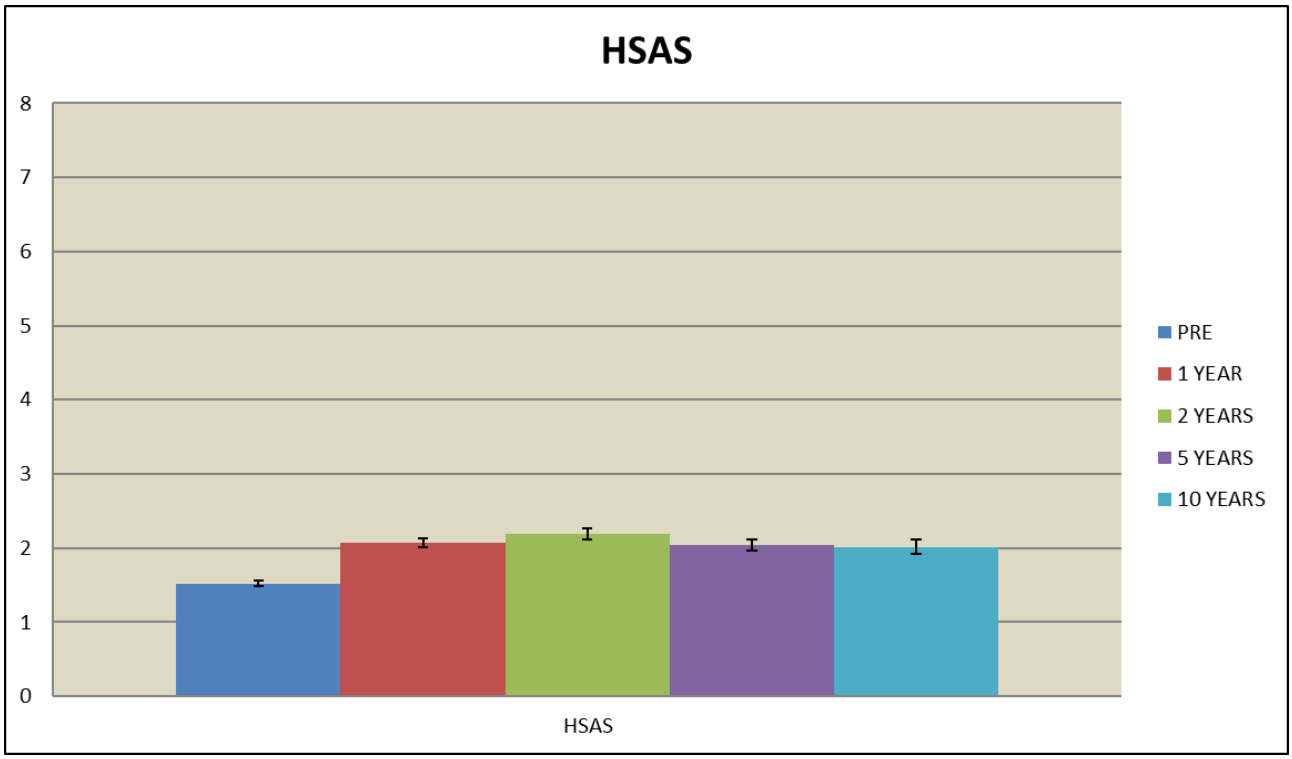


Fig. 6. HSAS outcome data at 1, 2, 5 and 10 years compared to the pre-scores.

Table 16. Patient assessed sports activity scores, specifically for hip related activities.

HSAS	2012-2021	2022	2023	2024	Mean (95% CI)
Pre	**1.5**	**1.6**	**1.7**	**1.7**	**1.5 (1.47 - 1.58)**
1 year	**2.0**	**2.4**	**2.3**	**-**	**2.1 (2.00 – 2.16)**
2 years	**2.2**	**2.6**	**-**	**-**	**2.2 (2.09 – 2.29)**
5 years	**2.0**	**-**	**-**	**-**	**2.0 (1.95 – 2.13)**
10 years	**2.0**	**-**	**-**	**-**	**2.0 (1.83 – 2.20)**

HSAS score (Hip Sports Activity Score)

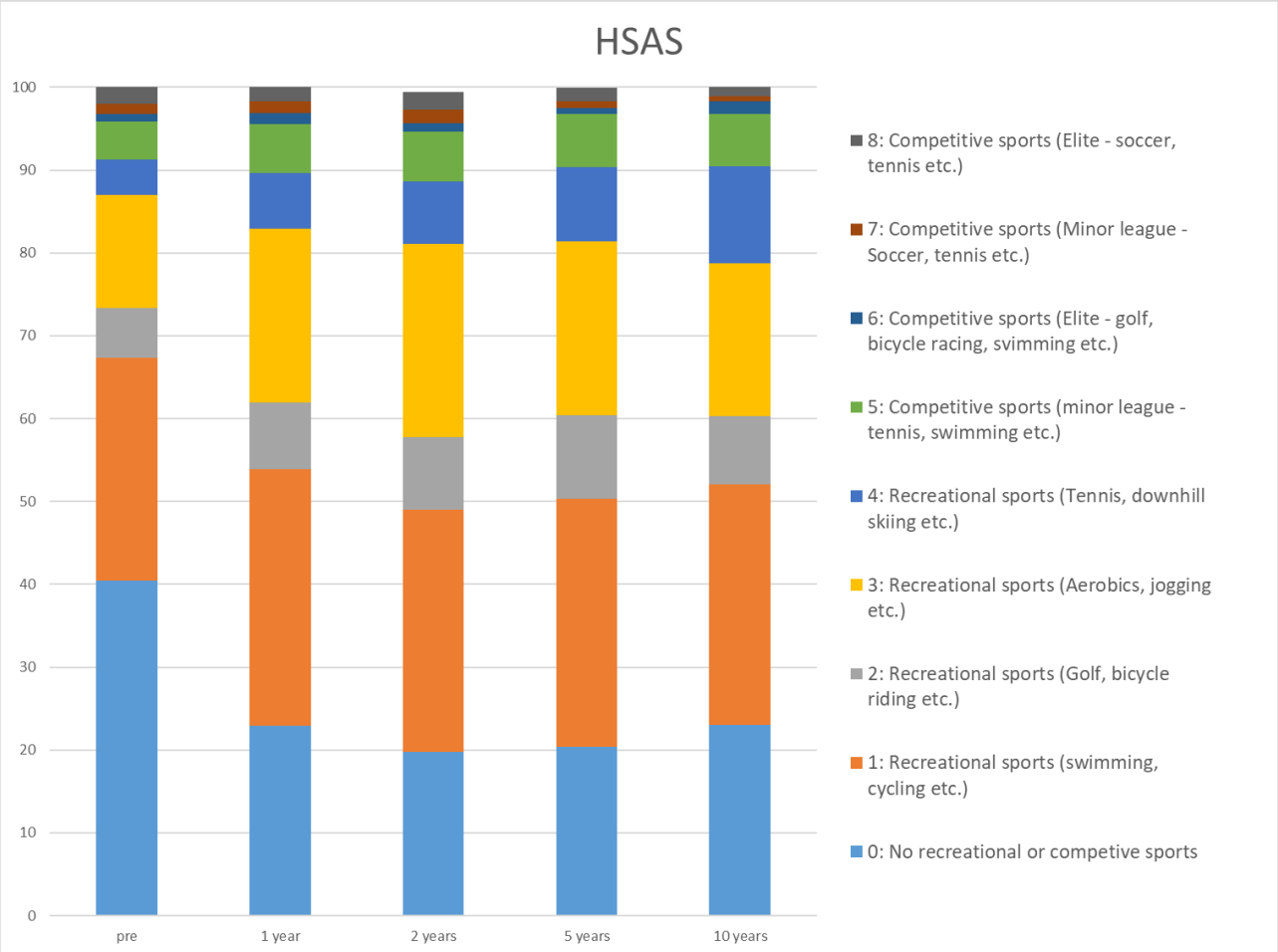


Fig. 7. HSAS outcome data at pre, 1, 2, 5 and 10 years. There is a decline in the number of patients not participating in any recreational or competitive sports. Patients seem to go from "no recreational sports" to different kinds of "recreational sports". Also, a slight increase in competitive sports is seen. There is a slight increase in elite sports 1 year after surgery, but the number is declining after that. We know from the literature that only approximately 17 % return to their previous sport at the same level with optimal performance [4].

Table 17. Patient assessed sports activity scores, specific for hip related activities.

N (%)	Pre	1 year	2 years	5 years	10 years
8: Competitive sports (Elite - soccer, tennis etc.)	**130 (2)**	**130 (3)**	**73 (2)**	**32 (2)**	**5 (1)**
7: Competitive sports (Minor league - Soccer, tennis etc.)	**64 (1)**	**64 (1)**	**59 (2)**	**17 (1)**	**3 (1)**
6: Competitive sports (Elite - golf, bicycle racing, swimming etc.)	**56 (1)**	**60 (1)**	**30 (1)**	**15 (1)**	**7 (2**
5: Competitive sports (minor league - tennis, swimming etc.)	**269 (5)**	**267 (6)**	**215 (6)**	**125 (6)**	**29 (6)**
4: Recreational sports (Tennis, downhill skiing etc.)	**259 (4)**	**307 (7)**	**258 (8)**	**181 (9)**	**54 (12)**
3: Recreational sports (Aerobics, jogging etc.)	**801 (14)**	**936 (21)**	**767 (23)**	**429 (21)**	**85 (18)**
2: Recreational sports (Golf, bicycle riding etc.)	**347 (6)**	**362 (8)**	**288 (9)**	**190 (10)**	**38 (8)**
1: Recreational sports (swimming, cycling etc.)	**1546 (27)**	**1382 (31)**	**949 (29)**	**593 (30)**	**134 (29)**
0: No recreational or competitive sports	**2345 (40)**	**1030 (23)**	**646 (20)**	**416 (20)**	**106 (23)**
Total	**5817 (100)**	**4538 (100)**	**3285 (100)**	**1998 (100)**	**461 (100)**

MCID

Table 18. This shows the percentage of patients that reaches the Minimal Clinical Important Difference (MCID) at follow-ups compared to baseline data. MCID is calculated from baseline data (SD/2).

%	MCID	1 Year	2 Years	5 Years	10 Years
HAGOS					
Pain	9.3	68	70	73	75
Symptoms	8.6	64	66	68	66
ADL	11.6	60	62	65	61
Sport & rec	11.1	63	66	67	74
PA	11.8	61	64	69	76
QoL	7.7	68	73	77	84
NRS – pain rest	12.5	56	56	58	56
NRS – pain walk	13.6	61	62	65	70
VAS – Hip function overall	9.5	71	71	73	74
EQ5D	0.09	45	49	53	57
HSAS	0.95	41	43	44	44
iHOT$_{12}$	9.4	71	75	81	-

Revision arthroscopies

Failure rates of primary hip arthroscopies. (Revisions)

Failures here are defined as re-arthroscopies, and we are struggling to extract the THA revision numbers.

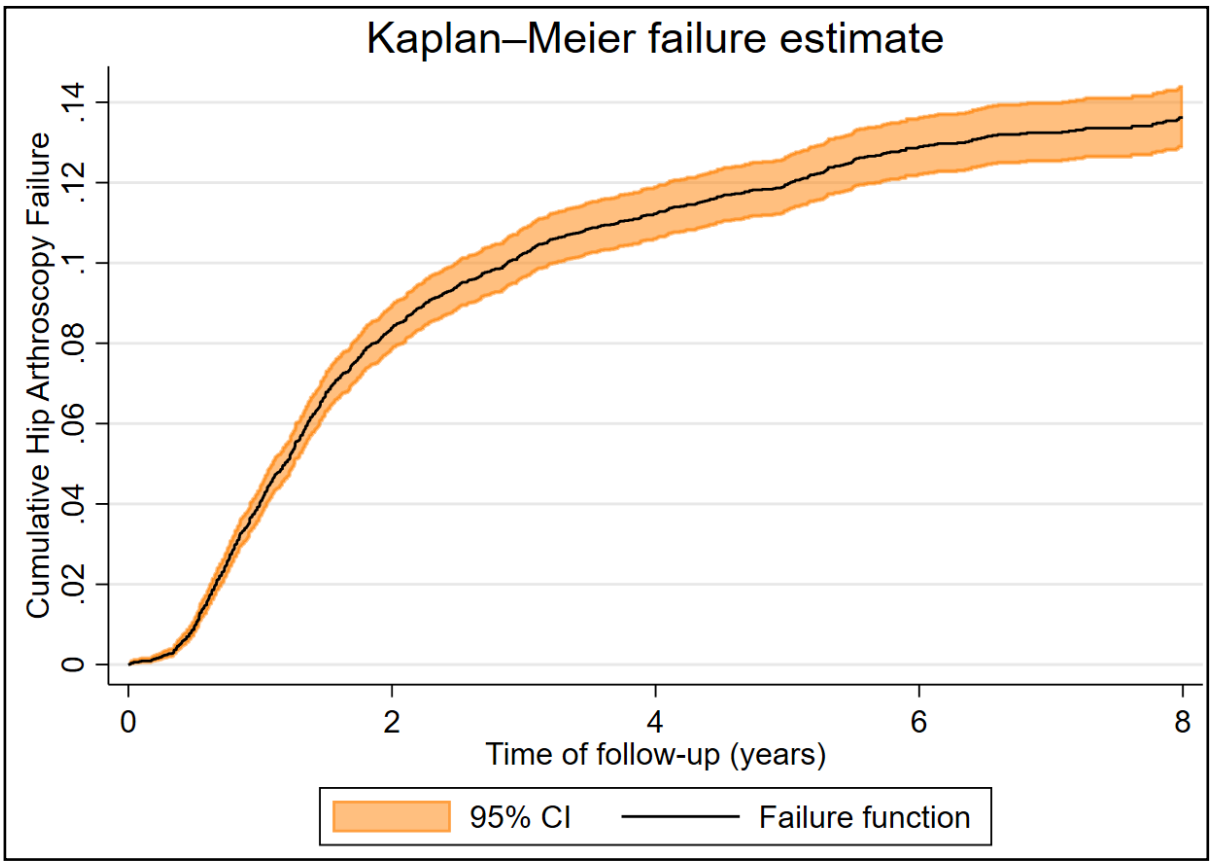


Fig. 8. After 8 years 13-14 % have had a revision arthroscopy and the numbers of revisions pr. year seems to be increasing. (See Tabel 4). We do not have an explanation to this, but we might not be so reluctant to do a revision hip arthroscopy as before. We are also being more aware of adhesions/arthrofibrosis as a cause of increasing pain within the first 3-6 months after the index arthroscopy.

Table 19. Failure is defined as a re-arthroscopy and not low PROM results.

	1 Year (n=8886)	**2 years (n=7802)**	**5 years (n=5425)**
Failure rates (%)	4.1 (3.8 – 4.5)	8.4 (7.8 – 9.0)	12.0 (11.3 – 12.7)

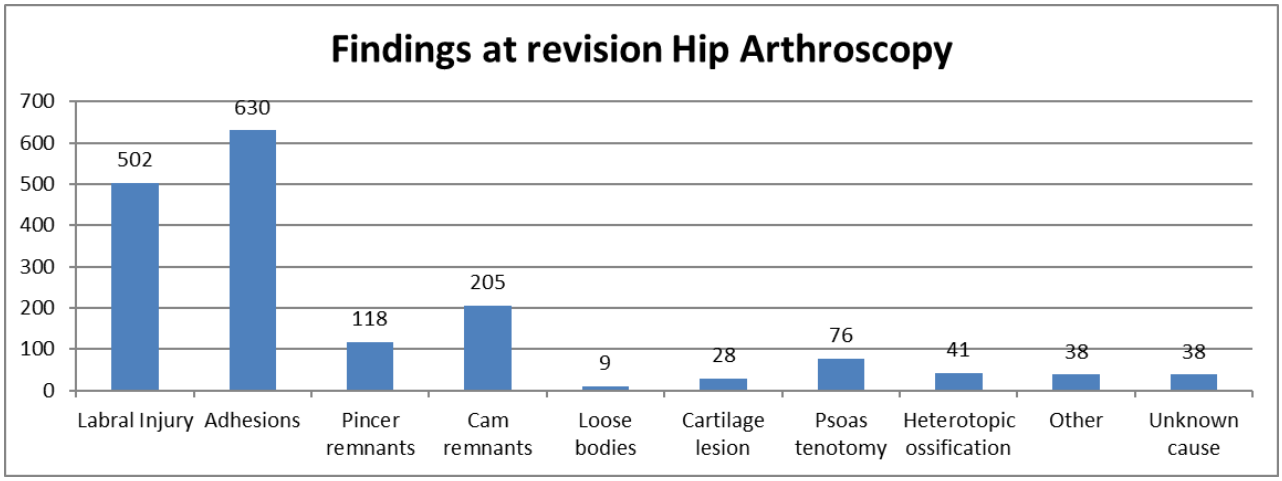


Fig. 9. Cumulated numbers of findings and procedures during re-arthroscopies. This shows the reported findings at revision hip arthroscopy as stated by the surgeons. The predominant reasons were adhesions, non-healed labral tears, residual cam, and pincer among others.

PROMs for revision arthroscopies

Comments:
These data show the same improvement tendencies in HAGOS results as for primary hip-arthroscopies, but the improvements are lower (figure 10). This would be expected, but it has not been shown previously in DHAR.

The negative results seen in figure 11 show that the results after re-arthroscopies are less good than after primary arthroscopies. This is most pronounced in the physically demanding activities where the difference is exceeding the MCID for primary arthroscopies. At 5 years there seems to be a markedly improvement in the non-physical activities, but the results are still at a lower level than after primary hip arthroscopies.

10-years results seem to decline, and the results are at a lower level than the 5-year results. This might be caused by degenerative changes in the hip joint. The number of 10-year data are still quite few and we will have to wait and see what will happen when numbers increase.

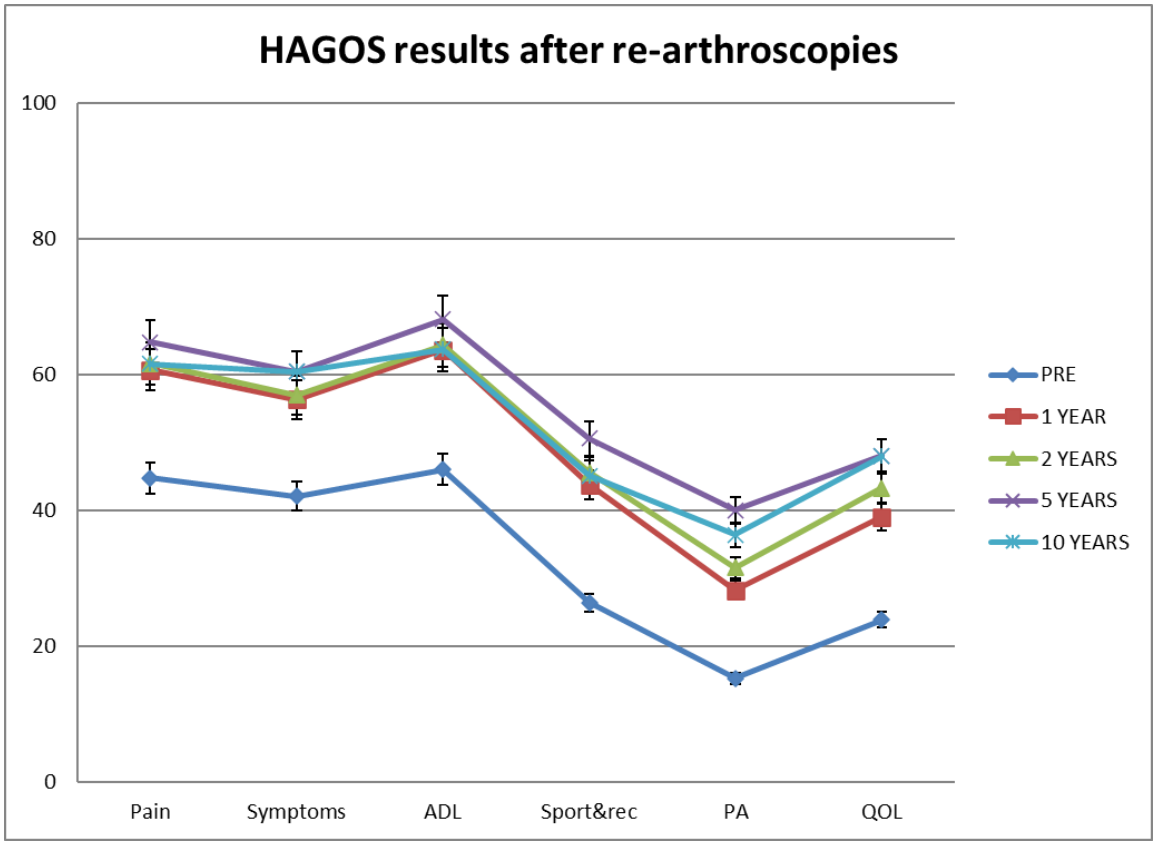


Fig. 10. HAGOS results after re-arthroscopies show the same tendencies with improvements over time, but slightly impaired results compared to primary hip arthroscopies are seen.

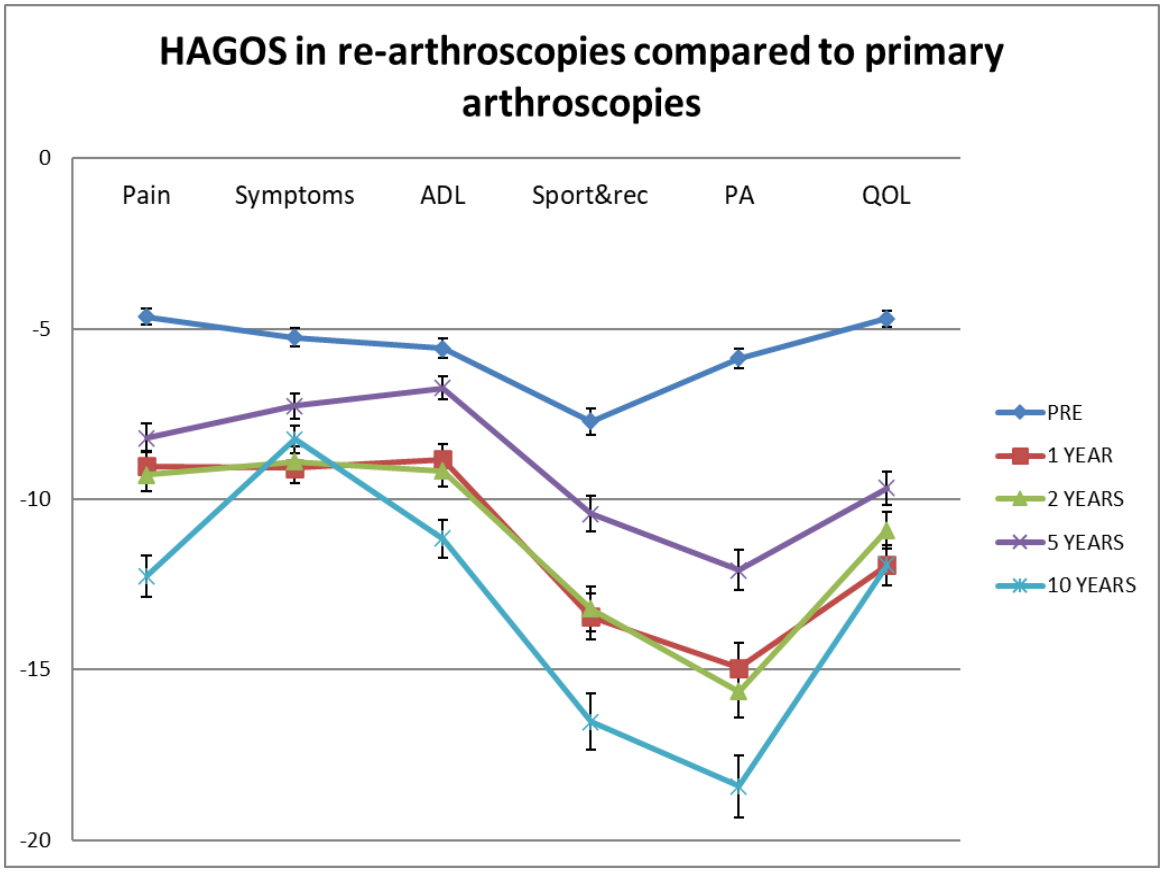


Fig. 11. Shows the difference in mean HAGOS points between primary hip arthroscopies and re-arthroscopies. Data for primary arthroscopies are used as baseline. The negative values show that the re-arthroscopies are not improving as much as the primary arthroscopies. There is clearly less improvement in the HAGOS results after re-arthroscopies, especially for the physically demanding activities. The 5-year results seem to have improved a bit except for Physical Activity.

Table 20. Development of PROM results over time for revision arthroscopies and the mean results after 1, 2, 5 and 10 years.

PROMS pre (n=642 (49%))	2012-2021	2022	2023	2024	Mean (95% CI)
HAGOS					
Pain	**45.2**	**45.3**	**45.5**	**40.8**	**44.8 (43.2 – 46.3)**
Symptoms	**42.4**	**42.6**	**43.8**	**38.4**	**42.1 (40.7 – 43.5)**
ADL	**46.0**	**49.7**	**48.4**	**41.1**	**46.0 (44.0 –47.9)**
Sport & rec	**26.2**	**31.1**	**27.9**	**22.5**	**26.4 (24.6 – 28.1)**
PA	**15.2**	**17.6**	**17.2**	**12.5**	**15.3 (13.5 – 17.4)**
QoL	**24.0**	**25.5**	**24.7**	**21.4**	**23.9 (22.6 – 25.1)**
$iHOT_{12}$	**32.3**	**34.9**	**33.7**	**27.9**	**32.1 (30.0 – 34.2)**
NRS Pain - rest	**43.9**	**43.0**	**45.9**	**48.2**	**44.4 (42.2 – 46.6)**
NRS pain – walking 15 mins.	**58.3**	**58.7**	**56.9**	**62.4**	**58.6 (56.3 – 60.9)**
VAS – Hip function overall	**34.4**	**33.7**	**34.3**	**30.8**	**34.0 (32.4 – 35.6)**
EQ5D	**0.60**	**0.61**	**0.59**	**0.58**	**0.59 (0.58 – 0.61)**
HSAS	**1.1**	**1.2**	**1.6**	**1.0**	**1.1 (1.0 – 1.3)**

PROMS 1 Year (n=546 (46%))	2012-2021	2022	2023	2024	Mean (95% CI)
HAGOS					
Pain	**60.8**	**60.8**	**58.6**	**-**	**60.7 (58.5 – 62.8)**
Symptoms	**56.3**	**56.0**	**56.4**	**-**	**56.3 (54.4 – 58.3)**
ADL	**63.5**	**64.4**	**63.9**	**-**	**63.6 (61.1 – 66.1)**
Sport & rec	**43.7**	**46.5**	**41.8**	**-**	**43.8 (41.1 – 46.4)**
PA	**27.9**	**34.8**	**27.5**	**-**	**28.3 (25.4 – 31.1)**
QoL	**39.1**	**39.7**	**36.9**	**-**	**39.0 (36.8 – 41.2)**
$iHOT_{12}$	**53.6**	**48.6**	**49.3**	**-**	**52.5 (49.0 – 56.0)**
NRS Pain - rest	**27.9**	**26.5**	**25.8**	**-**	**27.7 (25.3 – 30.0)**
NRS pain – walking 15 mins.	**38.1**	**34.7**	**34.2**	**-**	**37.6 (34.8 – 40.5)**
VAS – Hip function overall	**55.4**	**59.2**	**57.2**	**-**	**55.7 (53.3 – 58.1)**
EQ5D	**0.70**	**0.66**	**0.67**	**-**	**0.70 (0.68 – 0.71)**
HSAS	**1.4**	**1.9**	**2.0**	**-**	**1.5 (1.3 – 1.7)**

PROMS 2 Years (n=378 (35%))	2012-2021	2022	2023	2024	Mean (95% CI)
HAGOS					
Pain	**61.3**	**66.3**	-	-	**61.6 (59.0 – 64.3)**
Symptoms	**56.6**	**63.5**	-	-	**57.0 (54.5 – 59.4)**
ADL	**63.8**	**73.2**	-	-	**64.4 (61.3 – 67.5)**
Sport & rec	**45.2**	**51.8**	-	-	**45.6 (42.4 – 48.8)**
PA	**314**	**34.7**	-	-	**31.6 (27.9 – 35.2)**
QoL	**43.1**	**46.1**	-	-	**43.3 (40.6 – 46.0)**
$iHOT_{12}$	**53.6**	**59.6**	-	-	**54.2 (50.1 – 58.4)**
NRS Pain - rest	**27.4**	**21.5**	-	-	**27.1 (24.1 – 30.0)**
NRS pain – walking 15 mins.	**36.6**	**29.8**	-	-	**36.2 (32.6 – 39.7)**
VAS – Hip function overall	**55.9**	**64.0**	-	-	**56.4 (53.4 – 59.4)**
EQ5D	**0.70**	**0.74**	-	-	**0.70 (0.68 – 0.73)**
HSAS	**1.6**	**2.0**	-	-	**1.6 (1.4 – 1.8)**

PROMS 5 Years (n=228 (30%))	2012-2017	2018	2019		Mean (95% CI)
HAGOS					
Pain	**64.8**	**64.1**	**67.3**	-	**64.7 (61.3 – 68.2)**
Symptoms	**60.2**	**59.8**	**64.7**	-	**60.4 (57.1 – 63.8)**
ADL	**68.1**	**67.8**	**69.7**	-	**68.1 (64.2 – 72.0)**
Sport & rec	**49.8**	**49.6**	**58.7**	-	**50.6 (46.5 – 54.8)**
PA	**37.4**	**45.4**	**51.3**	-	**40.0 (35.2 – 44.9)**
QoL	**48.3**	**48.3**	**50.9**	-	**48.1 (44.2 – 52.0)**
$iHOT_{12}$	**57.1**	**57.5**	**63.4**	-	**57.9 (53.4 – 62.5)**
NRS Pain - rest	**24.8**	**23.5**	**26.4**	-	**25.0 (21.3 – 28.6)**
NRS pain – walking 15 mins.	**30.9**	**33.8**	**28.9**	-	**31.3 (27.0 – 35.6)**
VAS – Hip function overall	**58.9**	**68.9**	**63.9**	-	**59.4 (55.4 – 63.3)**
EQ5D	**0.73**	**0.72**	**0.77**	-	**0.73 (0.70 – 0.76)**
HSAS	**1.7**	**1.8**	**1.9**	-	**1.7 (1.5 – 2.0)**

PROMS 10 Years (n=47 (20%))	2012-2014				Mean (95% CI)
HAGOS					
Pain	**61.6**	-	-	-	**61.6 (53.8 – 69.5)**
Symptoms	**60.4**	-	-	-	**60.4 (53.9 – 6.70)**
ADL	**63.7**	-	-	-	**63.7 (54.7 – 72.7)**
Sport & rec	**45.1**	-	-	-	**45.1 (35.2 – 54.9)**
PA	**36.4**	-	-	-	**36.4 (25.7 – 47.1)**
QoL	**48.0**	-	-	-	**48.0 (39.4 – 56.6)**
$iHOT_{12}$	**52.9**	-	-	-	**52.9 (43.5 – 62.2)**
NRS Pain - rest	**25.1**	-	-	-	**25.1 (16.1 – 34.2)**
NRS pain – walking 15 mins.	**32.9**	-	-	-	**32.9 (22.5 – 43.2)**
VAS – Hip function overall	**58.0**	-	-	-	**58.0 (48.7 – 67.2)**
EQ5D	**0.75**	-	-	-	**0.75 (0.69 – 0.80)**
HSAS	**1.3**	-	-	-	**1.3 (0.8 – 1.9)**

MCID – Revisions.

Table 21. Show the percentage of patients that reaches the Minimal Clinical Important Difference (MCID) at follow-ups compared to baseline data. MCID is calculated from baseline data of the revisions (SD/2). The percentages can't be compared directly with the MCID for primary arthroscopies.

%	MCID	1 Year	2 Years	5 Years	10 Years
HAGOS					
Pain	8.7	61	60	67	70
Symptoms	8.1	59	61	65	57
ADL	11.0	56	53	61	57
Sport & rec	9.9	53	53	61	54
PA	10.1	53	54	67	58
QoL	7.1	60	67	77	75
NRS – pain rest	12.4	53	50	57	65
NRS – pain walk	13.0	58	59	66	74
VAS – Hip function overall	9.1	64	58	69	61
EQ5D	0.10	32	36	42	61
HSAS	0.77	35	38	44	36
iHOT$_{12}$	8.8	62	63	79	-

Supplementary questions

In 2021 DHAR implemented a series of patient related questions regarding persisting symptoms related to the surgery, the satisfaction and willingness to repeat the surgery.
There seems to be general satisfaction with the result of the surgery but still a little more than 30 % are not satisfied.
Between 70 and 90 % would have the surgery again if needed.

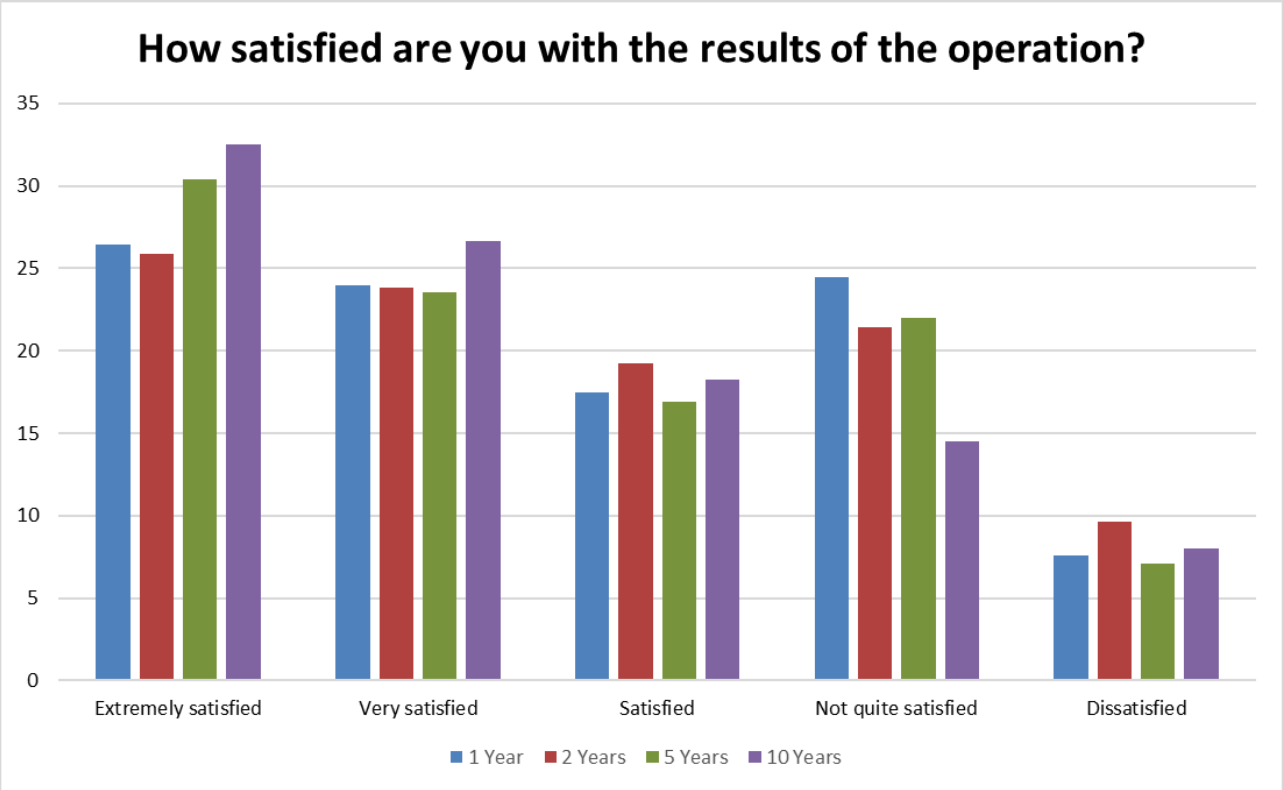


Fig. 12. Overall satisfaction is around 70%.

Table 22. How satisfied are you with the result of the operation?

N (%)	1 year	2 years	5 years	10 years
Extremely satisfied	**400 (26)**	**322 (26)**	**384 (30)**	**150 (32)**
Very satisfied	**363 (24)**	**296 (24)**	**298 (24)**	**123 (27)**
Satisfied	**264 (17)**	**239 (19)**	**214 (17)**	**84 (18)**
Not quite satisfied	**370 (25)**	**260 (21)**	**278 (22)**	**67 (15)**
Dissatisfied	**115 (8)**	**120 (10)**	**90 (7)**	**37 (8)**
Total	**1512 (100)**	**1243 (100)**	**1264 (100)**	**461 (100)**

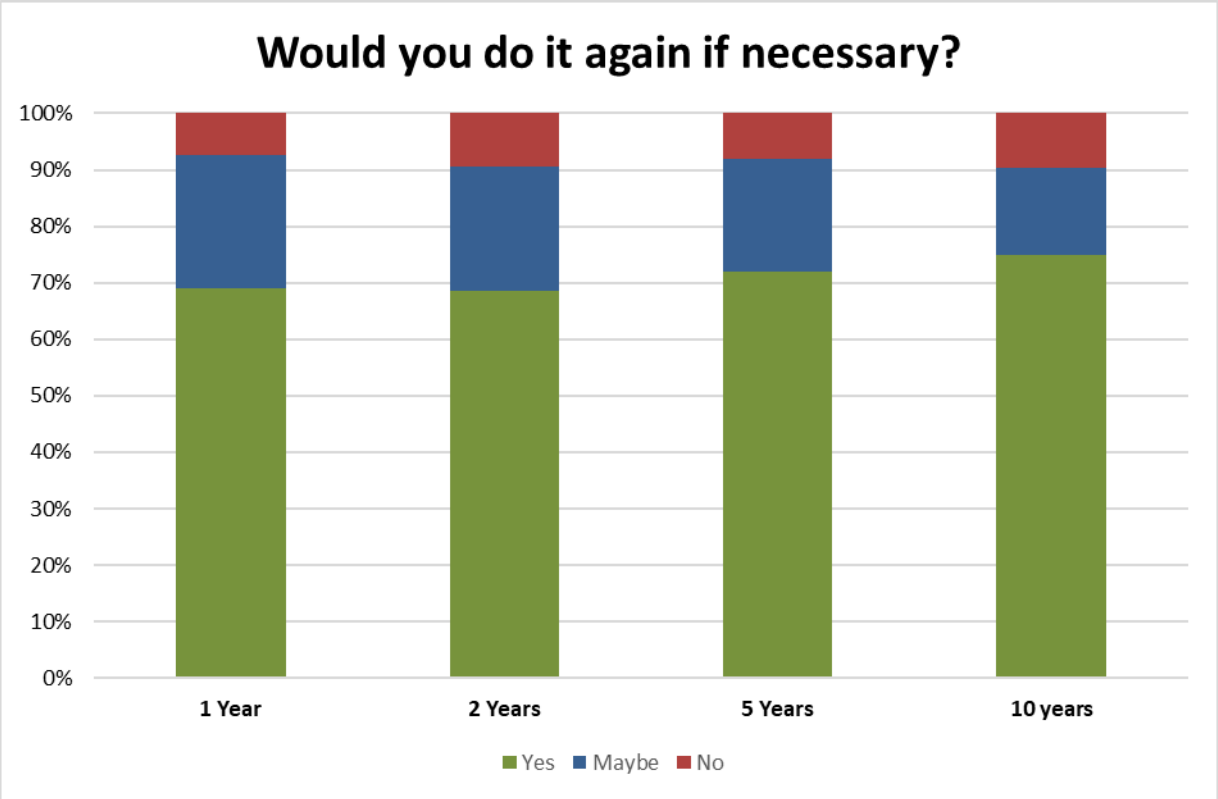


Fig. 13. The willingness to repeat surgery is around 70 %.

Table 23. Would you do it again if necessary?

N (%)	1 year	2 years	5 years	10 years
Yes	**1042 (69)**	**852 (69)**	**911 (72)**	**345 (75)**
Maybe	**358 (24)**	**275 (22)**	**252 (20)**	**72 (16)**
No	**112 (7)**	**116 (9)**	**101 (8)**	**44 (9)**
Total	**1512 (100)**	**1243 (100)**	**1264 (100)**	**461 (100)**

Dansk resume

I Danmark er hofteartroskopier reguleret af Sundhedsstyrelsen via Specialeplanen for Ortopædkirurgi og er en såkaldt regionsfunktion. Dvs. kun hospitaler og klinikker med denne tildelte funktion må lave hofteartroskopier på patienter i det offentlige sundhedsvæsen. Aktuelt er der 11 hospitaler og klinikker, der har denne tilladelse.

Siden 2012 har det været muligt at indberette online til Dansk Hofte Artroskopi Register (DHAR). Aktuelt er der 16 hospitaler og privatklinikker, der indberetter. Forsikringspatienter er ikke omfattet af Specialeplanen for Ortopædkirurgi, men der indberettes også fra privatklinikker, der udfører hofteartroskopier på forsikringspatienter.

Patienterne bedes om at udfylde Patient Related Outcome Measures online før operationen og igen efter 1, 2, 5 og 10 år. (VAS-hoftefunktion, NRS-rest (smerte), NRS-walk (smerte), HAGOS, iHOT$_{12}$, EQ5D og HSAS score). Pga. en tidligere manglende dansk version er iHOT-12 først blevet tilgængelig fra 2019.

Ved årsskiftet 2024-2025 var der registreret i alt **10.070** hofteartroskopier i DHAR. Der er ved årsskiftet registreret **5.807** præoperative inklusion PROMs i registeret. Der er **4.526** PROMs registreret efter 1 år og der er i alt registreret **3.280** 2 års PRO i DHAR. Desuden er der ved årsskiftet registreret **1.997** PROMs med et follow-up på 5 år og 461 med et follow-up på 10 år.

DHAR Styregruppe, Torsten Grønbech Nielsen (databehandler).

Bjarne Mygind-Klavsen, Formand, overlæge
Ortopædkirurgisk Afd. Aarhus University Hospital.
bjarne.mygind.klavsen@rm.dk

English summary

In Denmark, hip arthroscopies are regulated by the Danish Health Authorities and only 11 public hospitals have the permission to perform the operation on patients from the Public Healthcare System. In 2012 the Danish Hip Arthroscopy Registry (DHAR) was initiated, and the surgeons started to complete the forms on-line. In total 16 hospitals and clinics are reporting to the DHAR. Most private clinics report to DHAR even though they are not entitled to.

The patients were asked to complete various Patient Related Outcome Measures pre-operatively (HAGOS, iHOT$_{12}$, VAS-hip function, NRS-rest (pain), NRS-walk (pain), EQ5D and the HSAS score). Both the surgeon related, and patient related registrations are web based. Due to lack of a Danish version, iHOT12 was only included from 2019.

At the end of 2024 there are **10.070** hip arthroscopies in the DHAR. There are **5.807** pre-op inclusion PROMs included in this report. There are **4.526** PROMs included at 1-year and there are **3.280** 2-year PROMs in the registry. So far, we have **1.997** PROMs with a 5-year follow-up and 461 with a 10-year follow-up.

Bjarne Mygind-Klavsen, Chairman, Chief Surgeon
Dept. of Orthopedic Surgery
Aarhus University Hospital, Denmark
bjarne.mygind.klavsen@rm.dk

Publications from DHAR:

1. Mygind-Klavsen B, Nielsen TG, Maagaard N *et al.* Danish Hip Arthroscopy Registry: an epidemiologic and perioperative description of the first 2000 procedures. *J Hip Preserv Surg* 2016 Feb 25;3(2):138-45.

2. Lund B, Mygind-Klavsen B, Nielsen TG *et al.* Danish Hip Arthroscopy Registry (DHAR): the outcome of patients with femoroacetabular impingement (FAI). *J Hip Preserv Surg*. 2017 Apr 4;4(2):170-177. doi: 10.1093/jhps/hnx009.

3. Lund B, Nielsen TG, Lind M. Cartilage status in FAI patients – results from the Danish Hip Arthroscopy Registry (DHAR). *SICOT J*. 2017; 3:44. doi: 10.1051/sicotj/2017023.

4. Ishøi L, Thorborg K, Kraemer O *et al.* Return to Sport and Performance After Hip Arthroscopy for Femoroacetabular Impingement in 18- to 30-Year-Old Athletes: A Cross-sectional Cohort Study of 189 Athletes. *Am J Sports Med*. 2018 Sep;46(11):2578-2587. doi: 10.1177/0363546518789070.

5. Ishøi L, Thorborg K, Kraemer O *et al.* The association between specific sports activities and sport performance following hip arthroscopy for femoroacetabular impingement syndrome: A secondary analysis of a cross-sectional cohort study including 184 athletes. *J Hip Preserv Surg*. 2019 Jun 5;6(2):124-133. doi: 10.1093/jhps/hnz017.

6. Ishøi L, Thorborg K, Kraemer O *et al.* Demographic and Radiographic Factors Associated with Intra-articular Hip Cartilage Injury: A Cross-sectional Study of 1511 Hip Arthroscopy Procedures. *Am J Sports Med*. 2019 Sep;47(11):2617-2625. doi: 10.1177/0363546519861088.

7. Mygind-Klavsen B, Lund B, Nielsen TG *et al.* Danish Hip Arthroscopy Registry: Predictors of Outcome in Patients with Femoroacetabular Impingement (FAI). *Knee Surg Sports Traumatol Arthrosc.* 2019 Oct;27(10):3110-3120. doi: 10.1007/s00167-018-4941-3

8. Poulsen E, Lund B, Roos EM. The Danish Hip Arthroscopy Registry: Registration Completeness and Patient Characteristics Between Responders and Non-Responders. *Clin Epidemiol*. 2020 Aug 4; 12:825-833. doi: 10.2147/CLEP.S264683.

9. Mygind-Klavsen B, Kraemer O, Hölmich P, Lund B. An Updated Description of More Than 5,000 Procedures from the Danish Hip Arthroscopy Registry. *J Bone Joint Surg Am*. 2020 Nov 4;102(Suppl 2):43-50. doi: 10.2106/JBJS.19.01496.

10. Mygind-Klavsen B, Lund B, Nielsen TG, Maagaard N, Kraemer O, Hölmich P, Winge S, Lind M. Capsular closure in patients with femoroacetabular impingement syndrome (FAIS): results of a matched-cohort study from the Danish hip arthroscopy registry. *J Hip Preserv Surg*. 2020 Oct, p. 474-482. hnaa033, https://doi.org/10.1093/jhps/hnaa033

11. Mygind-Klavsen B, Nielsen TG, Lund B, Lind M. Clinical outcomes after revision hip arthroscopy in patients with femoroacetabular impingement syndrome (FAIS) are inferior compared to primary procedures. Results from the Danish Hip Arthroscopy Registry (DHAR). *Knee Surg Sports Traumatol Arthrosc.* 2021 Apr;29(4):1340-1348. doi: 10.1007/s00167-020-06135-w.

12. Ishøi L, Thorborg K, Ørum G, Kemp J, Reiman M P, Hölmich P. How Many Patients Achieve an Acceptable Symptom State After Hip Arthroscopy for Femoroacetabular Impingement Syndrome? A Cross-sectional Study Including PASS Cutoff Values for the HAGOS and iHOT-33. *Orthop J Sports Med.* 2021 Apr 9;9(4):2325967121995267. doi: 10.1177/2325967121995267.

13. Dippmann C, Siersma V, Overgaard S *et al.* Acetabular retroversion does not affect outcome in primary hip arthroscopy for femoroacetabular impingement. *Knee Surgery, Sport Traumatol Arthrosc* 2022;**30**:3535–43.

14. Martin RK, Wastvedt S, Lange J *et al.* Limited clinical utility of a machine learning revision prediction model based on a national hip arthroscopy registry. *Knee Surgery, Sport-Traumatol Arthrosc* 2022, DOI: 10.1007/s00167-022-07054-8.

15. Ishøi L, Thorborg K, Kallemose T, Kemp JL, Reiman MP, Nielsen MF, Hölmich P. Stratified care in hip arthroscopy: can we predict successful and unsuccessful outcomes? Development and external temporal validation of multivariable prediction models. *Br J Sports Med 2023; 57: 1025-1034. Doi: 10.1136/bjsports-2022-105534*

16. Richter C, Ishøj L, Kraemer O, Hölmich P. Association of 5-Year Hip Arthroscopy Outcomes with Hip Morphology and Cartilage Status at Time of Surgery. A National Registry Study with HAGOS Outcomes in 281 Patients with Femoroacetabular Impingement Syndrome. *The Orthopaedic Journal of Sports Medicine, 12(3), 23259671241238742 DOI: 10.1177/23259671241238742*

17. Mygind-Klavsen B, Lund B, Nielsen TG, Lind M. Clinical outcomes after hip arthroscopy in acetabular dysplastic patients, previously treated with periacetabular osteotomy: a minimum of two-year follow-up data from the Danish Hip Arthroscopy Registry. *Journal of Hip Preservation Surgery, 2024,00,1-6. DOI: https:// doi.org/10.1093/jhps/hnae015*

Appendix

(Supplementary data from the report)

Sub-analyses on Outcome Data

HAGOS Age Related data

Comments:

This is a comparison of HAGOS results for 3 different age groups after first hip arthroscopies. The PROM results have improved for all age groups, and there is no real difference between the age groups at 2 years, but at 5 years the youngest group seems to have improved a bit more. The middle age group seems to have slightly reduced results compared to the two other age groups.

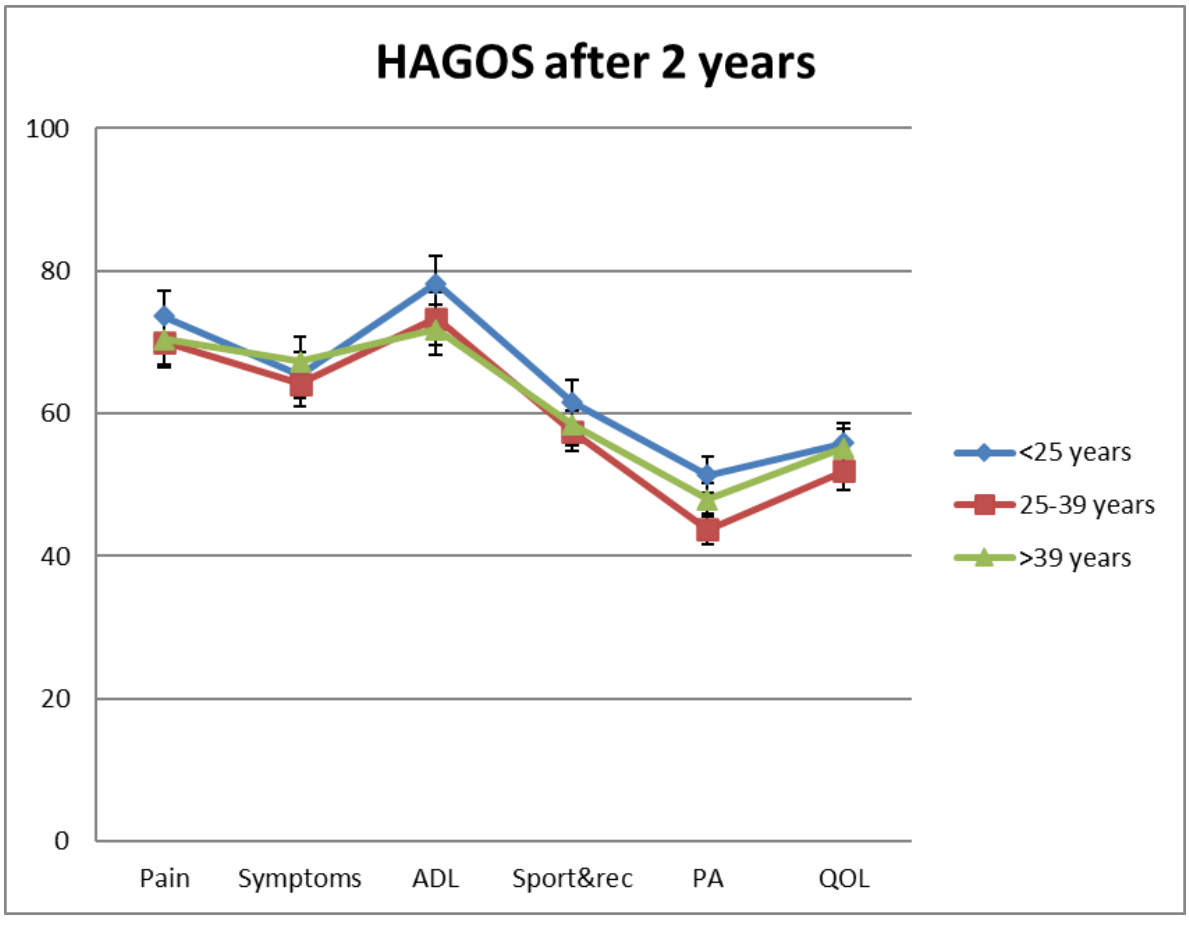


Fig. 14. HAGOS data for 2 years. Comparison of the 3 age groups.

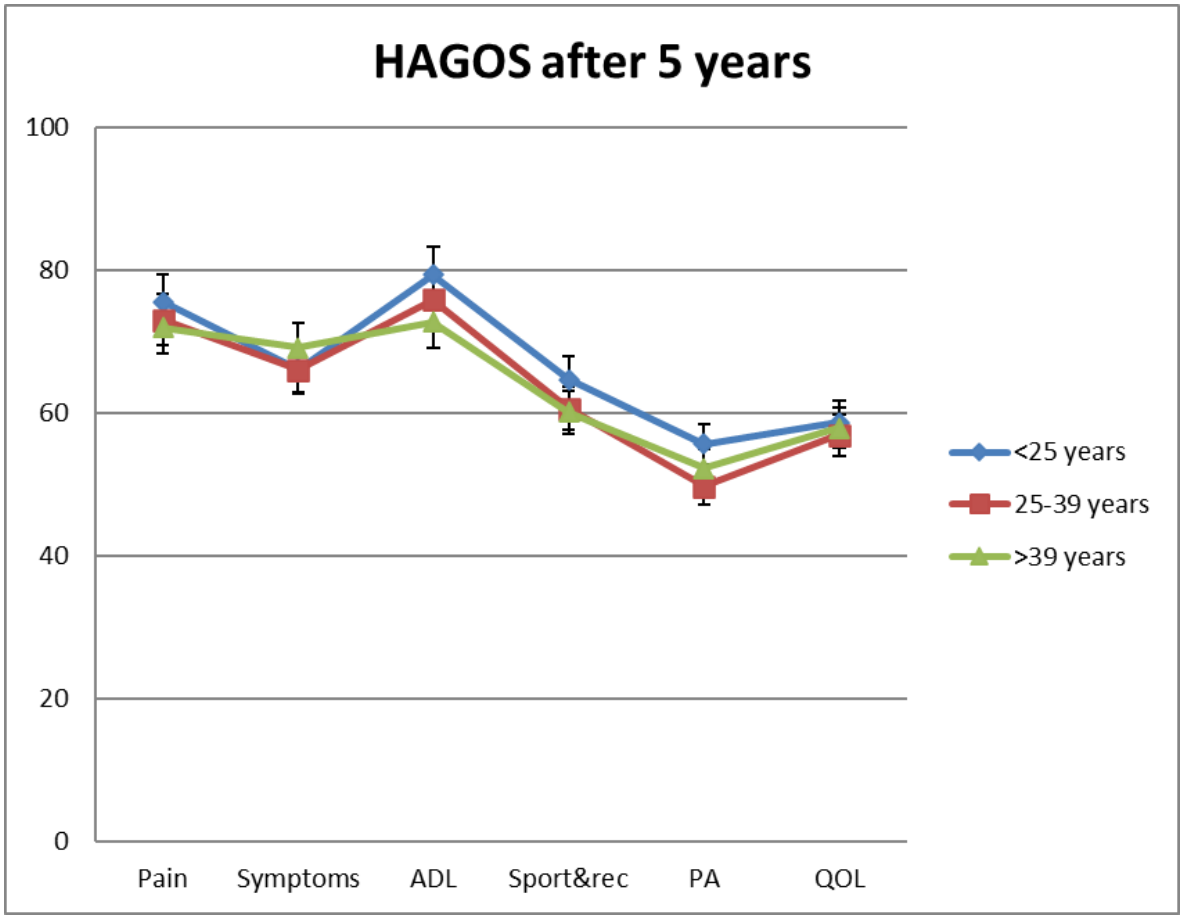


Fig. 15. HAGOS data for 5 years. Comparison of the 3 age groups

Table 24. Comparison of HAGOS scores for 3 different age groups at 5 years.

Age <25 years (n=348 (27%)) (PROMS 5 years)	**2012-2017**	**2018**	**2019**	**Mean**
HAGOS				
Pain	**77.1**	**70.8**	**74.2**	**75.6 (73.0 – 78.1)**
Symptoms	**66.3**	**66.8**	**65.7**	**66.1 (63.6 – 68.7)**
ADL	**80.7**	**74.8**	**79.0**	**79.4 (76.7 – 82.1)**
Sport & rec	**65.8**	**59.3**	**66.7**	**64.7 (61.3 – 68.1)**
PA	**56.3**	**53.4**	**57.7**	**55.7 (51.6 – 59.7)**
QoL	**59.7**	**55.8**	**60.0**	**58.7 (55.5 – 61.9)**

Age 25-39 years (n=606 (29%)) (PROMS 5 years)	2012-2017	2018	2019	Mean
HAGOS				
Pain	**72.8**	**74.4**	**73.6**	**73.1 (71.1 – 75.1)**
Symptoms	**65.8**	**67.1**	**67.6**	**66.1 (64.0 – 68.1)**
ADL	**76.0**	**76.5**	**74.4**	**75.8 (73.7 – 78.0)**
Sport & rec	**60.2**	**62.1**	**62.1**	**60.6 (58.0 – 63.2)**
PA	**49.5**	**49.6**	**51.7**	**49.7 (46.6 – 52.9)**
QoL	**57.1**	**55.3**	**55.8**	**56.9 (54.5 – 59.3)**

Age ≥40 years (n=1044 (37%)) (PROMS 5 years)	2012-2017	2018	2019	Mean
HAGOS				
Pain	**71.6**	**77.7**	**74.6**	**72.0 (70.4 – 73.6)**
Symptoms	**68.8**	**69.8**	**71.9**	**69.2 (67.7 – 70.6)**
ADL	**72.6**	**72.3**	**76.2**	**72.8 (71.1 – 74.5)**
Sport & rec	**59.4**	**61.0**	**64.1**	**60.1 (58.1 – 62.1)**
PA	**51.2**	**54.8**	**57.8**	**52.3 (49.9 – 54.7)**
QoL	**57.6**	**57.2**	**62.1**	**58.0 (56.1 – 59.8)**

HAGOS data at 2 years and 5 years related to cartilage lesions found during surgery.

Comments:
Because of the small numbers in some of the groups it is not possible to make reliable diagrams that show combinations of all the different sizes and grades of cartilage lesions. Therefore, we show two simplified diagrams that show the important tendencies. The grade of acetabular cartilage lesions seen at surgery seems only to be of significance for the large size lesions in the acetabulum on the HAGOS results after 2 years. The size alone seems also to be of significance, since the large size lesions (>2 cm^2) have worse results than all the others, and there is no difference between the small and middle size lesions.
The size of the lesions on the femoral head does not have much significance since any size lesions have impaired results but worse results are seen for the large lesions in the physically demanding items in HAGOS.
Preoperative patient selection seems to work since only very few patients with severe cartilage lesions have had an arthroscopic procedure.

In this section we only show the tables for the 5-year outcomes but have kept the diagrams for both the 2-year as well as the 5-year outcomes for comparison.

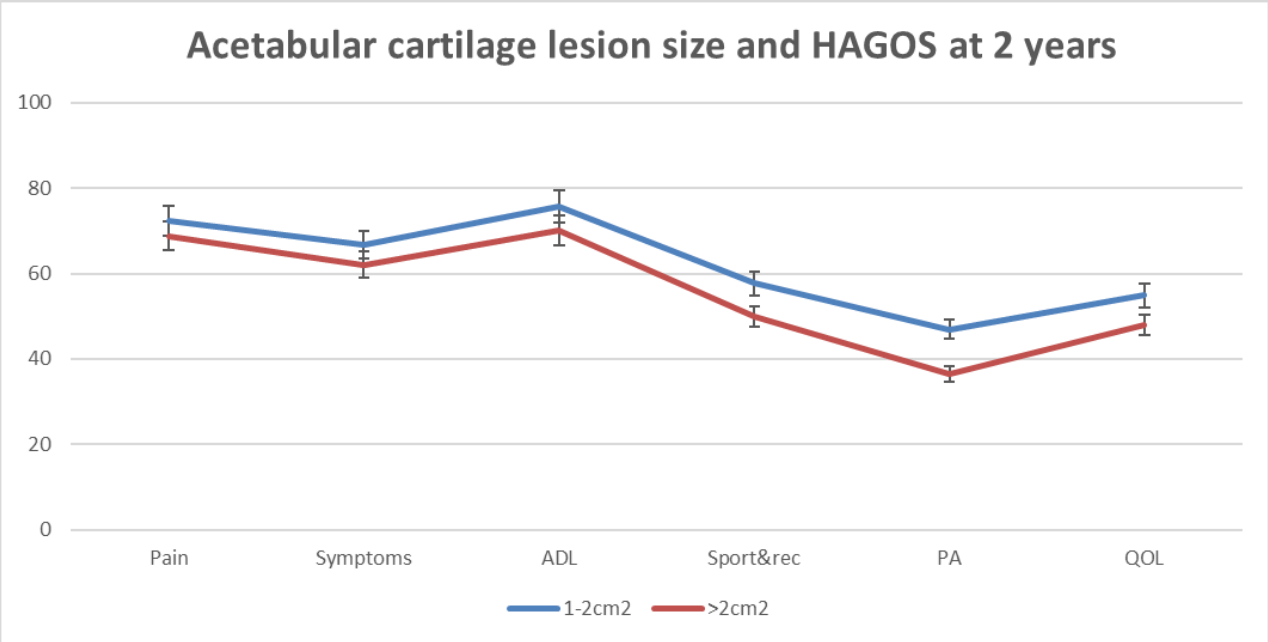


Fig. 16. HAGOS results for Beck grade 2-4 cartilage lesions. Only the large size lesion seems to affect the results.

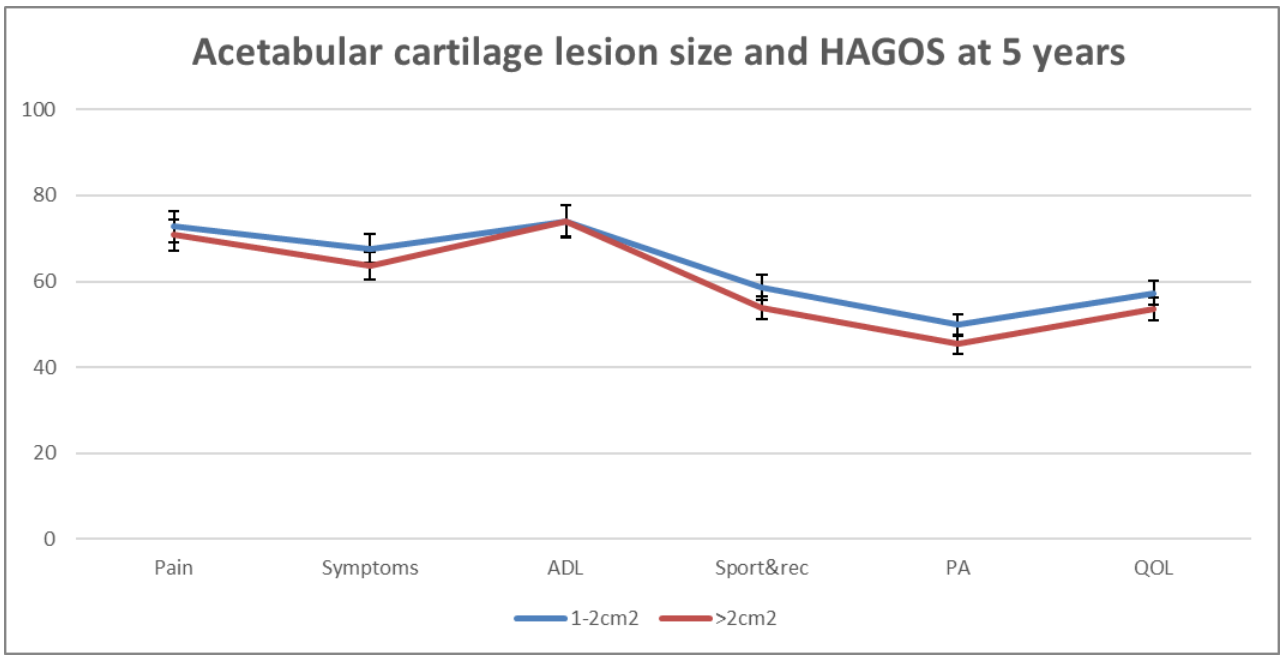


Fig. 17. HAGOS results for Beck grade 2-4 cartilage lesions. Only the large size lesion seems to affect the results. The difference seems to be rather small, and acetabular cartilage lesions probably don't affect the results much.

Table 25. Comparisons of 5-year data for HAGOS and different grades and sizes of cartilage lesions in the acetabulum. Be aware of the small numbers in some of the tables.

Beck gr. 2 / 1-2cm^2 (n=406 (32%))	**2012-2017**	**2018**	**2019**	**Mean**
HAGOS	(n=293)	(n=60)	(n=53)	
Pain	**73.8**	**71.8**	**76.8**	**73.9 (71.3 – 76.5)**
Symptoms	**69.0**	**68.8**	**72.2**	**69.4 (67.0 – 71.8)**
ADL	**75.9**	**71.8**	**76.5**	**75.4 (72.5 – 78.2)**
Sport & rec	**63.0**	**59.9**	**65.8**	**62.9 (59.6 – 66.3)**
PA	**52.9**	**54.0**	**61.8**	**54.2 (50.4 – 58.1)**
QoL	**60.2**	**55.1**	**63.4**	**59.8 (56.8 – 62.9)**

Beck gr. 2 / >2cm² (n=27 (24%))	2012-2017	2018	2019	Mean
HAGOS	(n=19)	(n=7)	(n=1)	
Pain	**59.2**	**77.1**	**70.0**	**64.3 (53.3 – 75.2)**
Symptoms	**60.2**	**71.9**	**57.1**	**63.1 (53.3 – 72.9)**
ADL	**60.5**	**83.6**	**85.0**	**67.4 (54.8 – 80.0)**
Sport & rec	**45.4**	**65.6**	**50.0**	**50.8 (36.4 – 65.2)**
PA	**48.0**	**50.0**	**37.5**	**48.1 (33.1 – 63.2)**
QoL	**52.1**	**55.7**	**50.0**	**53.0 (42.0 – 63.9)**

Beck gr. 3 / 1-2cm² (n=278 (32%))	2012-2017	2018	2019	Mean
HAGOS	(n=218)	(n=38)	(n=22)	
Pain	**75.6**	**78.3**	**72.8**	**75.7 (73.0 – 78.4)**
Symptoms	**68.1**	**71.1**	**65.7**	**68.3 (65.4 – 71.2)**
ADL	**77.8**	**78.6**	**73.6**	**77.6 (74.6 – 80.5)**
Sport & rec	**62.7**	**63.2**	**57.5**	**62.4 (58.6 – 66.1)**
PA	**49.7**	**53.9**	**55.1**	**50.7 (45.9 – 55.4)**
QoL	**59.2**	**57.6**	**56.4**	**58.7 (55.3 – 62.1)**

Beck gr. 3 / >2cm² (n=74 (33%))	2012-2017	2018	2019	Mean
HAGOS	(n=46)	(n=13)	(n=15)	
Pain	**71.8**	**69.6**	**76.7**	**72.4 (66.8 – 78.0)**
Symptoms	**67.2**	**64.0**	**66.4**	**66.5 (60.8 – 72.2)**
ADL	**74.8**	**70.8**	**83.7**	**75.9 (69.4 – 82.3)**
Sport & rec	**58.8**	**60.8**	**64.4**	**60.3 (53.0 – 67.6)**
PA	**48.4**	**40.4**	**47.5**	**46.8 (37.7 – 55.9)**
QoL	**53.8**	**47.7**	**58.0**	**53.6 (46.7 – 60.4)**

Beck gr. 4 / 1-2cm^2 (n=76 (35%))	2012-2017	2018	2019	Mean
HAGOS	(n=62)	(n=10)	(n=4)	
Pain	**69.2**	**92.8**	**72.5**	**72.5 (66.2 – 78.8)**
Symptoms	**63.5**	**86.4**	**69.6**	**66.8 (60.6 – 73.0)**
ADL	**71.3**	**89.5**	**68.8**	**73.6 (66.5 – 80.6)**
Sport & rec	**53.1**	**78.1**	**56.3**	**56.6 (48.5 – 64.7)**
PA	**42.9**	**70.0**	**56.3**	**47.2 (38.1 – 56.3)**
QoL	**52.4**	**78.5**	**62.5**	**56.4 (49.3 – 63.5)**

Beck gr. 4 / >2cm^2 (n=68 (25%))	2012-2017	2018	2019	Mean
HAGOS	(n=55)	(n=10)	(n=3)	
Pain	**71.5**	**64.3**	**75.8**	**70.6 (64.8 – 76.4)**
Symptoms	**64.7**	**56.4**	**71.4**	**63.8 (58.0 – 69.5)**
ADL	**75.8**	**63.5**	**76.7**	**74.0 (68.1 – 79.9)**
Sport & rec	**55.1**	**48.8**	**45.8**	**53.7 (45.7 – 61.8)**
PA	**48.4**	**33.8**	**41.7**	**46.0 (36.5 – 55.4)**
QoL	**54.2**	**47.5**	**65.0**	**53.7 (46.9 – 60.5)**

Supplementary questions

In 2021 DHAR implemented a series of patient related questions regarding persisting symptoms related to the surgery.
The questions about the satisfaction and willingness to repeat the surgery are included in the main report.

PASS question: "If you think of your hip- and groin pain in the past week and how it affects your daily life, do you then think your symptoms are acceptable as they are now if they stay the same for the rest of your life? If you have pain in both hips, try to answer for the hip that has been operated."

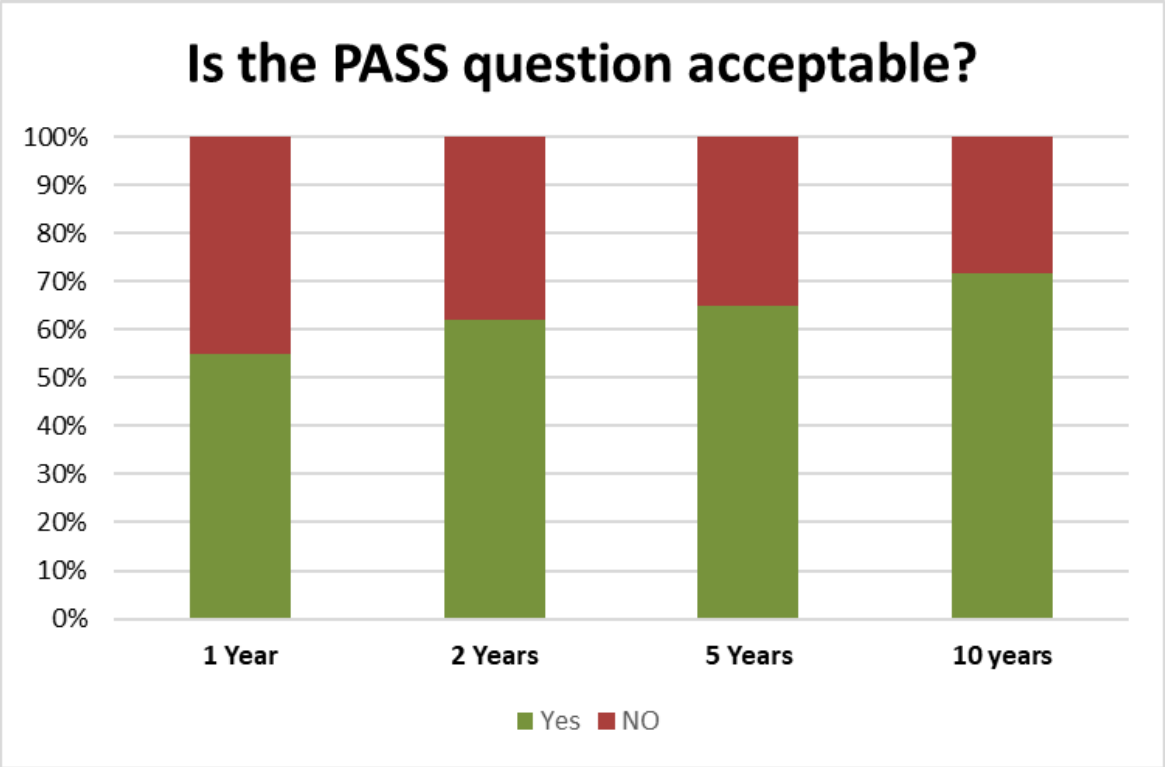


Fig. 18. PASS question shows that approximately 2/3 finds acceptable symptoms at 5 years.

Table 26. PASS (Patient Acceptable Symptom State)

N (%)	1 year	2 years	5 years	10 Years
Yes	**825 (55)**	**768 (62)**	**824 (65)**	**330 (72)**
No	**687 (45)**	**475 (38)**	**440 (35)**	**131 (28)**
Total	**1512 (100)**	**1243 (100)**	**896 (100)**	**461 (100)**

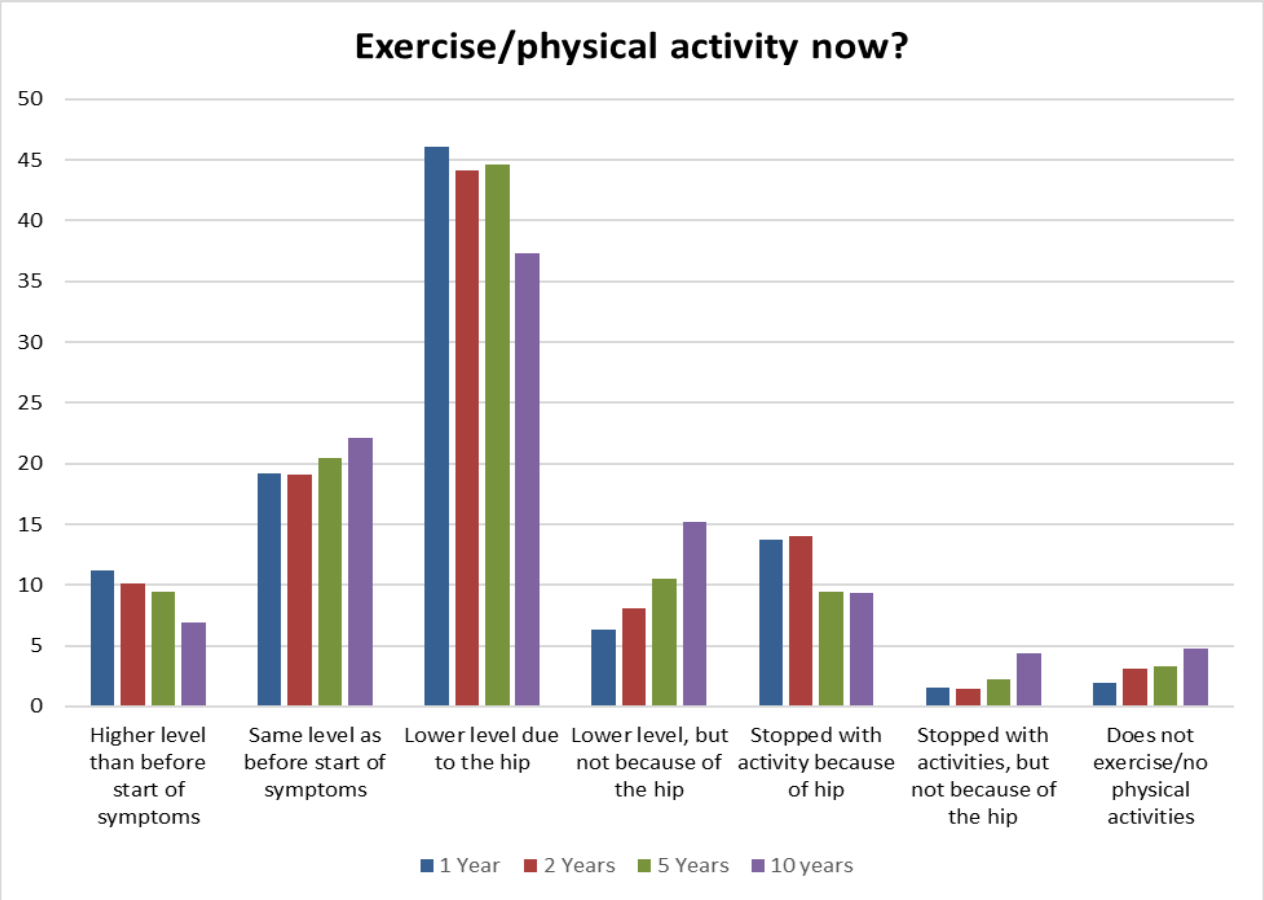


Fig. 19. Activity levels in percentage after hip arthroscopy. It seems that a little less than half of the patients have decreased activity levels due to the affected hip and that this seems to be consistent over time. Ten to fifteen % have stopped their activity due to the hip condition.
Notice that the X-axis due to the small numbers only goes to 50%.

Table 27. What is your exercise/physical activity level now?

N (%)	1 year	2 years	5 years	10 years
Higher level than before start of symptoms	**169 (11)**	**126 (10)**	**119 (9)**	**32 (7)**
Same level as before start of symptoms	**290 (19)**	**237 (18)**	**259 (20)**	**102 (22)**
Lower level due to the hip	**696 (46)**	**548 (44)**	**564 (45)**	**172 (37)**
Lower level, but not because of the hip	**96 (6)**	**101 (8)**	**133 (11)**	**70 (15)**
Stopped with activity because of hip	**207 (14)**	**174 (14)**	**119 (10)**	**43 (9)**
Stopped with activities, but not because of the hip	**24 (2)**	**18 (1)**	**28 (2)**	**20 (4)**
Does not exercise/no physical activities	**30 (2)**	**39 (3)**	**42 (3)**	**22 (5)**
Total	**1512 (100)**	**1243 (100)**	**1264 (100)**	**461 (100)**

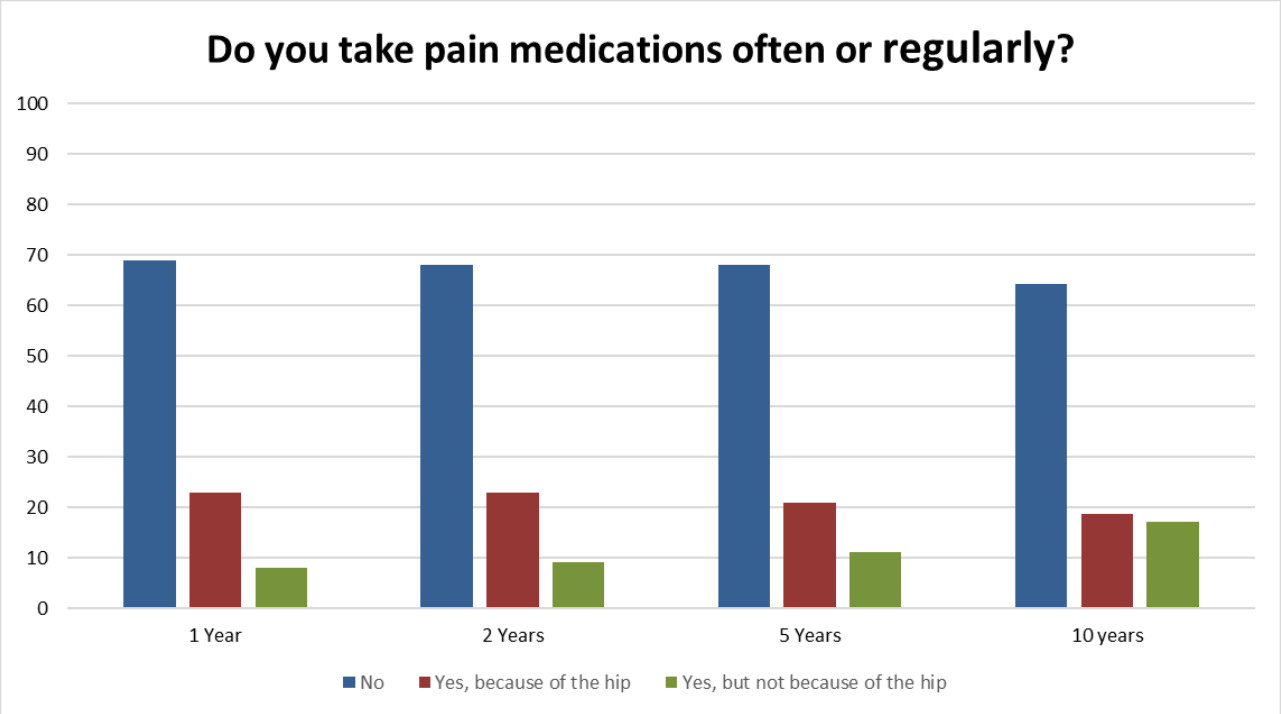


Fig. 20. Around 75 % of patients do not take pain medications regularly, due to the hip.

Table 28. Do you take pain medications due to the hip often or regularly?

N (%)	1 year	2 years	5 years	10 Years
No	**1039 (69)**	**841 (68)**	**858 (68)**	**296 (64)**
Yes, because of the hip	**354 (23)**	**289 (23)**	**268 (21)**	**86 (19)**
Yes, but not because of the hip	**119 (8)**	**113 (9)**	**138 (11)**	**79 (17)**
Total	**1512 (100)**	**1243 (100)**	**1264 (100)**	**461 (100)**

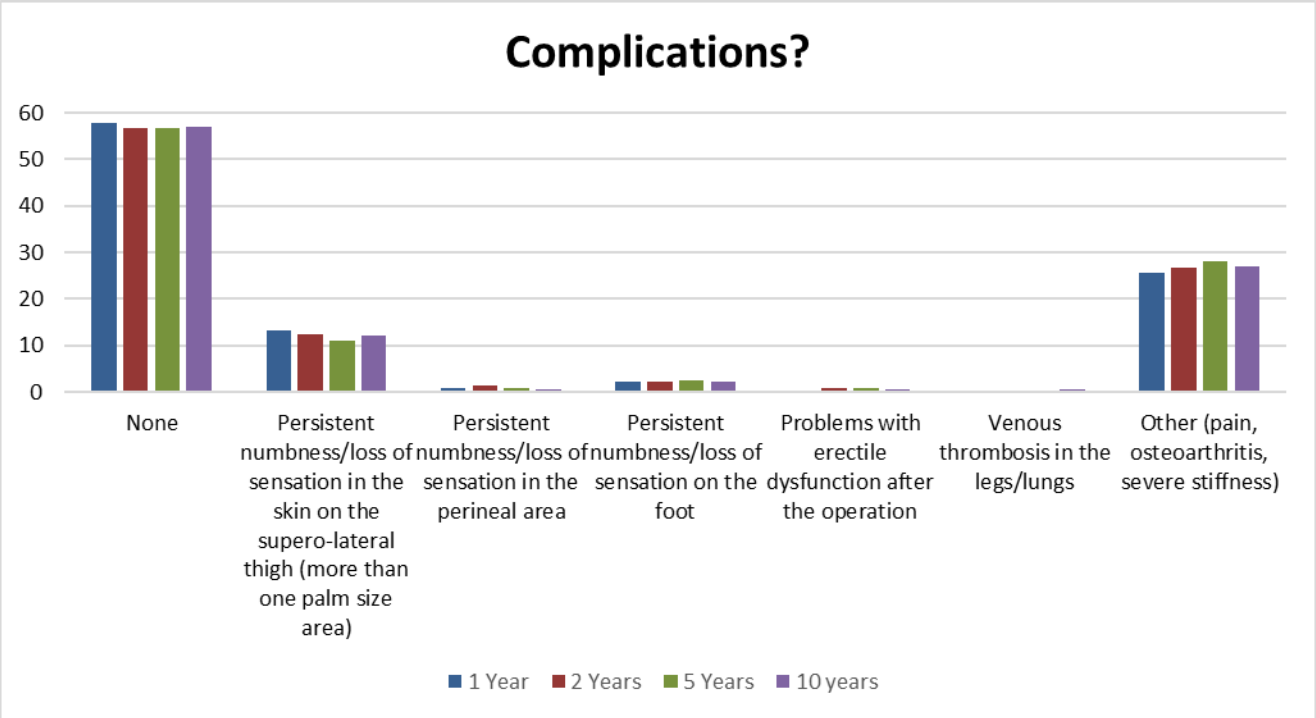


Fig. 21. Approximately 10 % of patients have persistent numbness at the LFCN, and 1 % in the perineal area/genitals.

Table 29: Complications

N (%)	1 year	2 years	5 years	10 years
None	**872 (58)**	**703 (57)**	**717 (57)**	**263 (57)**
Persistent numbness/loss of sensation in the skin on the supero-lateral thigh (more than one palm size area)	**199 (13)**	**153 (12)**	**140 (11)**	**56 (12)**
Persistent numbness/loss of sensation in the perineal area	**11 (1)**	**16 (1)**	**11 (1)**	**3 (1)**
Persistent numbness/loss of sensation on the foot	**35 (2)**	**27 (2)**	**30 (2)**	**10 (2)**
Problems with erectile dysfunction after the operation	**6 (0)**	**10 (1)**	**9 (1)**	**2 (0)**
Venous thrombosis treatment/Pulmonary embolisms	**2 (0)**	**2 (0)**	**3 (0)**	**2 (0)**
Other (pain, osteoarthritis, severe stiffness)	**387 (26)**	**232 (27)**	**354 (28)**	**125 (27)**
Total	**1512 (100)**	**1243 (100)**	**1264 (100)**	**461 (100)**

Sport questions.

We have also added questions about the type of sports prior to surgery.
So far 3560 patients have entered data on sports.

Table 30. Sport

Sport prior to surgery	**N (%)**
Soccer	508 (14)
Fitness	537 (15)
Cycling	281 (8)
Running	265 (7)
Equestrian sport	223 (6)
Team handball	173 (5)
Martial arts	124 (3)
Gymnastics	89 (3)
Badminton	76 (2)
Golf	51 (1)
Dancing	68 (2)
Ice hockey	26 (1)
Tennis	26 (1)
Basketball	13 (0)
Other sports	855 (24)
No Sports	243 (7)

Antibiotic prophylaxis and DVT prophylaxis

Table 31. Use of antibiotics and DVT prophylaxis. The shift from Dicloxacillin to Cloxacillin in 2020 is due to praxis in the public healthcare medicine assortment.

Antibiotics (n (%))	**2012-2021**	**2022**	**2023**	**2024**	**Total**
Dicloxacillin	**2307** (30)	**79** (11)	**50** (7)	**44** (6)	**2480** (25)
Cefuroxim	**4865** (62)	**512** (71)	**465** (63)	**453** (58)	**6295** (62)
Cloxacillin	**405** (5)	**131** (18)	**229** (30)	**279** (36)	**1044** (10)
Other	**6** (0)	**0** (0)	**2** (0)	**0** (0)	**8** (0)
Total	**7583** (97)	**722** (100)	**746** (99)	**776** (100)	**9827** (98)
DVT Prophylaxis (n (%))	**2012-2021**	**2022**	**2023**	**2024**	**Total**
Dalteparin (Fragmin)	**68** (1)	**0** (0)	**0** (0)	**1** (0)	**69** (1)
Fondaparinux (Arixtra)	**1** (0)	**0** (0)	**0** (0)	**0** (0)	**1** (0)
Tinzaparin (Innohep)	**191** (3)	**0** (0)	**1** (0)	**1** (0)	**193** (2)
Rivaroxaban (Xarelto)	**917** (12)	**37** (5)	**28** (4)	**14** (2)	**996** (10)
Total	**1177** (15)	**37** (5)	**29** (4)	**16** (2)	**1259** (12)

OR time

Table 32. Total OR-time (knife-time) and total traction time

OR time	**2012-2021**	**2022**	**2023**	**2024**	**Total**
Total OR-time (min)	**73**	**61**	**57**	**58**	**70**
Total traction time (min)	**44**	**40**	**39**	**39**	**43**

Bony work

Table 33. Relationship between rim-trimming and femoroplasty

Bony work (n (%))	**2012-2021**	**2022**	**2023**	**2024**	Total
Isolated femoroplasty	**1338** (18)	**90** (13)	**104** (15)	**116** (17)	**1648** (18)
Isolated acetabular rimtrimming	**1004** (14)	**166** (25)	**203** (30)	**131** (19)	**1504** (16)
Comb. femoroplasty-rimtrimming	**4967** (68)	**419** (62)	**381** (55)	**446** (64)	**6213** (66)

Extraarticular surgery

Table 34. Additional extraarticular procedures

Type of extraart. proc. (n (%))	2012-2021	2022	2023	2024	Total
Partial AIIS resection	**66** (1)	**6** (1)	**4** (1)	**1** (0)	**77** (1)
Psoas tenotomy	**330** (4)	**12** (2)	**4** (1)	**6** (1)	**352** (3)
Reinsertion of gluteus medius	**13** (0)	**0** (0)	**0** (0)	**0** (0)	**13** (0)
Z-plasty ITB	**40** (1)	**2** (0)	**5** (1)	**1** (0)	**48** (0)
Resection of trochanteric bursa	**51** (1)	**3** (0)	**1** (0)	**1** (0)	**56** (1)
Capsular closure	**2105** (27)	**311** (43)	**254** (34)	**272** (35)	**2942** (29)
Remov. of hardware (AO-screws)	**76** (1)	**7** (1)	**7** (1)	**3** (0)	**93** (1)
Removal of heterotopic ossification	**72** (1)	**9** (1)	**9** (1)	**5** (1)	**95** (1)
Osteosynthesis of os acetabuli	**5** (0)	**0** (0)	**1** (0)	**1** (0)	**7** (0)
Removal of os acetabuli	**60** (1)	**3** (0)	**1** (0)	**8** (1)	**72** (1)
Inforation of bone cyst	**13** (0)	**1** (0)	**0** (0)	**0** (0)	**14** (0)
Other	**83** (1)	**3** (0)	**0** (0)	**1** (0)	**87** (1)
Total	**2914** (37)	**357** (49)	**286** (38)	**299** (38)	**3856** (38)

Types of complications during surgery

Table 35. Complications reported during surgery.

Type of complications (n (%))	2012-2021	2022	2023	2024	Total
Labrum cut	**68** (1)	**4** (1)	**6** (1)	**3** (0)	**81** (1)
Anchor pull-out	**141** (2)	**17** (3)	**19** (3)	**14** (2)	**182** (2)
Anchor penetration acetabular surface	**59** (1)	**1** (0)	**6** (1)	**3** (0)	**72** (1)
Suture-defect (break, pull-out, etc.)	**204** (3)	**13** (2)	**10** (1)	**15** (2)	**241** (2)
Broken instrument	**64** (1)	**2** (0)	**6** (1)	**5** (1)	**77** (1)
Loss of traction	**43** (1)	**8** (1)	**6** (1)	**8** (1)	**53** (1)
"Not possible to apply traction"	**48** (1)	**7** (1)	**10** (1)	**5** (1)	**61** (1)
Other	**165** (2)	**35** (5)	**35** (5)	**25** (3)	**191** (2)
Total	**793** (10)	**91** (13)	**99** (13)	**79** (10)	**959** (10)

Cartilage surgery

Table 36. Types of cartilage treatment (most patients had a combination of treatments)

Type of cartilage surgery	2012-2021	2022	2023	2024	Total
Cartilage resection on femoral head	**267** (4)	**8** (1)	**13** (2)	**11** (2)	**299** (3)
Cartilage resection in acetabulum	**2228** (31)	**157** (24)	**167** (23)	**145** (22)	**2697** (29)
Microfracture on femoral head	**21** (0)	**2** (0)	**0** (0)	**1** (0)	**24** (0)
Microfracture in acetabulum	**253** (4)	**10** (1)	**10** (1)	**6** (1)	**279** (3)
Cartilage refixation on femoral head	**2** (0)	**0** (0)	**0** (0)	**0** (0)	**2** (0)
Cartilage refixation in acetabulum	**28** (0)	**3** (0)	**0** (0)	**4** (1)	**35** (0)
Debridement with RF-wand	**4458** (61)	**513** (74)	**537** (74)	**502** (75)	**6010** (64)
Other	**14** (0)	**0** (0)	**0** (0)	**0** (0)	**14** (0)

Cartilage lesions.

HAGOS improvements at 2 and 5 years for different sizes of cartilage lesions both in the acetabulum and on the femoral head.
In the acetabulum only the large size lesions seem to have an impact on the results.
On the femoral head, on the contrary any size of a lesion seems to have an effect.

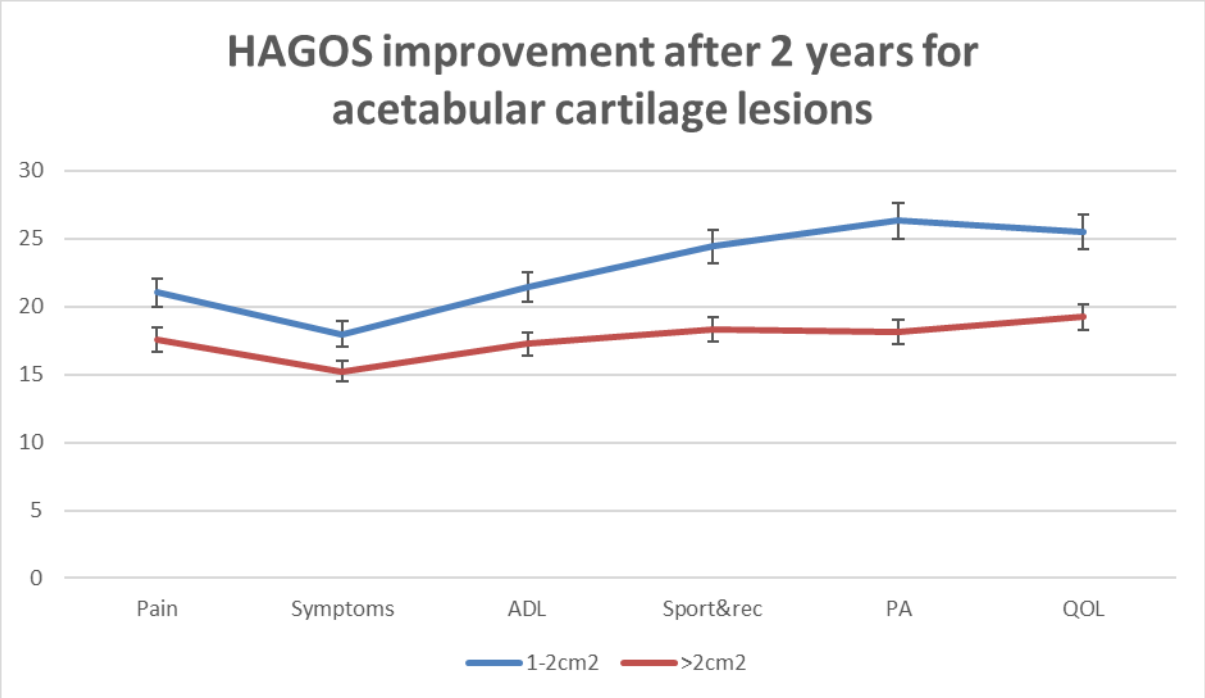


Fig. 22. Difference in HAGOS improvements at 2 years between large and smaller size cartilage lesions in the acetabulum irrespective of the grade. Only the large size lesions seem to differ from the others, and for simplicity all the smaller sizes have been pooled to one line.

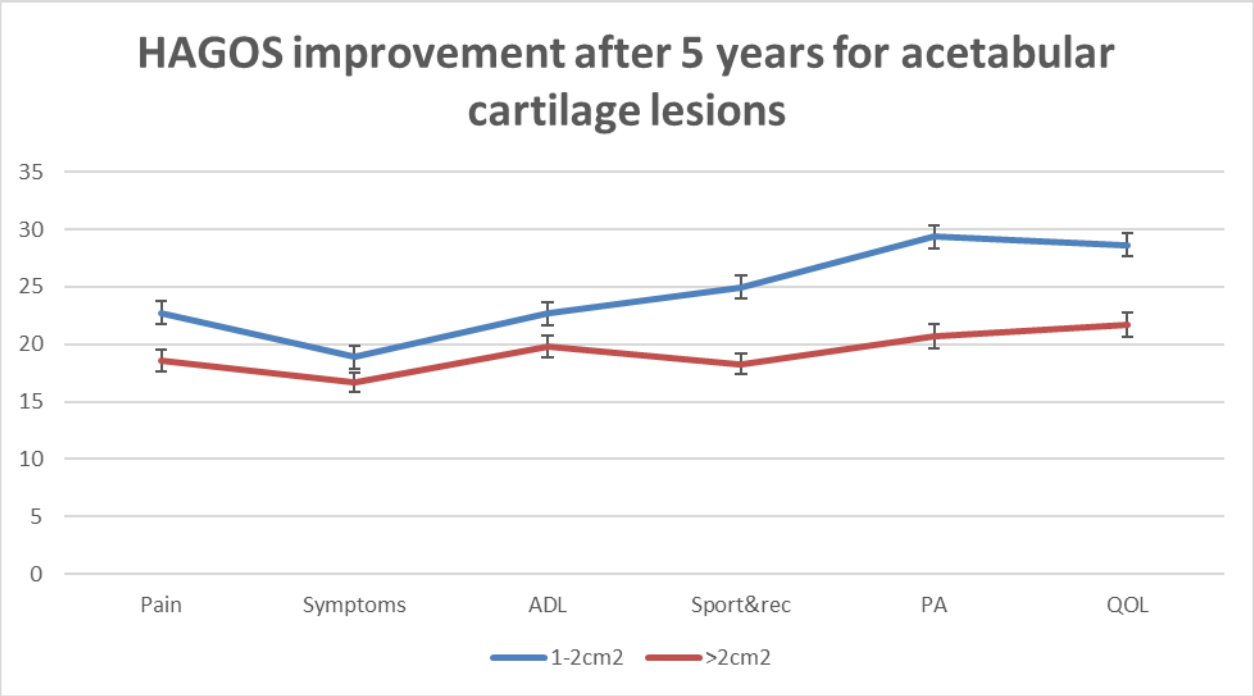


Fig. 23. Difference in HAGOS improvements at 5 years between large and smaller size cartilage lesions in the acetabulum irrespective of the grade. Only the large size lesions seem to differ from the others, and for simplicity all the smaller sizes have been pooled to one line. However, the results have improved for both groups since the 2-year results.

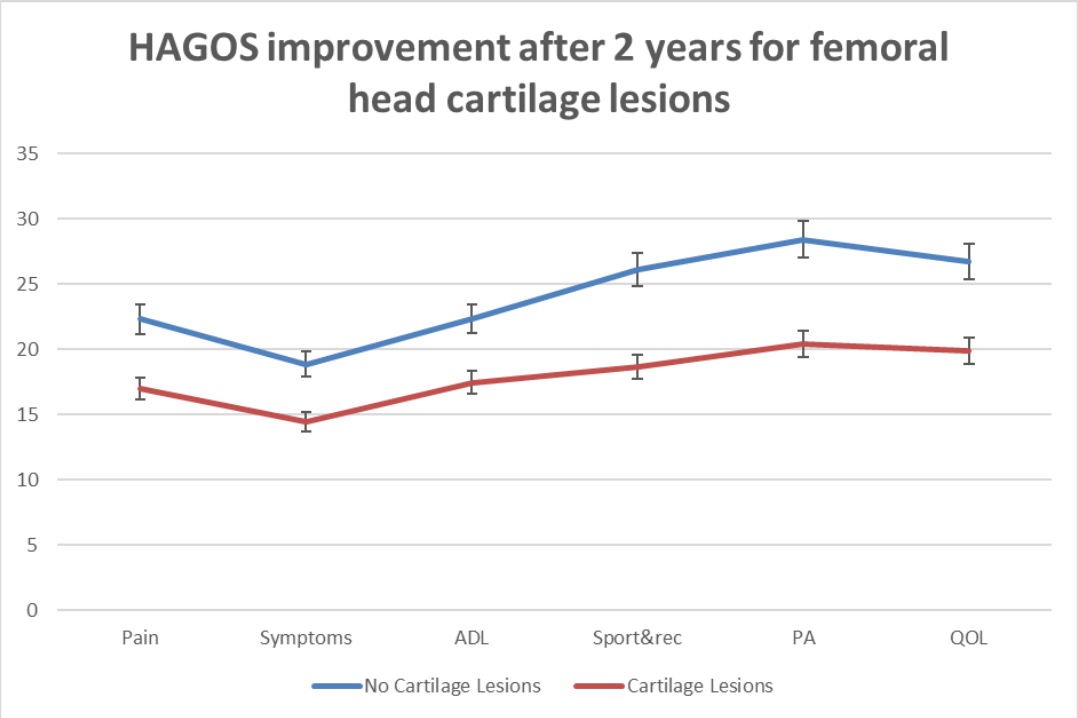


Fig. 24. Difference in HAGOS improvements at 2 years between any size cartilage lesion and no cartilage lesion at all on the femoral head irrespective of the grade. Any cartilage lesion size on the femoral head seems to differ from no lesion.

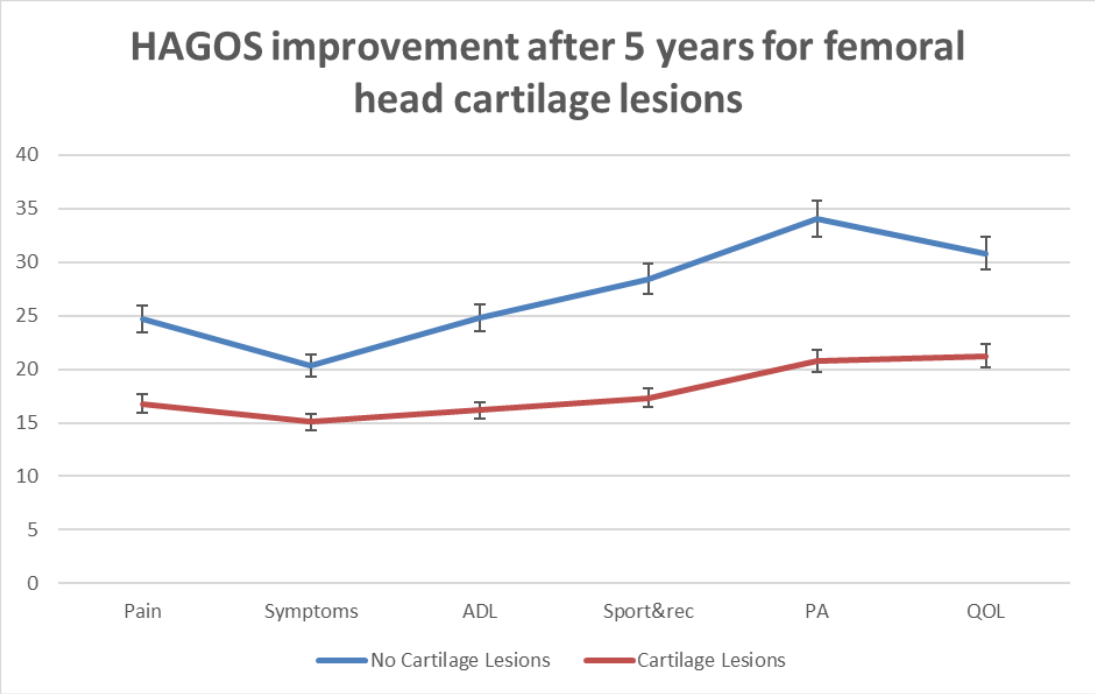


Fig. 25. Difference in HAGOS improvements at 5 years between any size cartilage lesion and no cartilage lesion at all on the femoral head irrespective of the grade. Any cartilage lesion size on the femoral head seems to differ from no lesion. The results of the "no cartilage lesion" group have improved further for the physically demanding activities and QoL since the 2-year results. It seems that results are improving further from 2 years to 5 years.

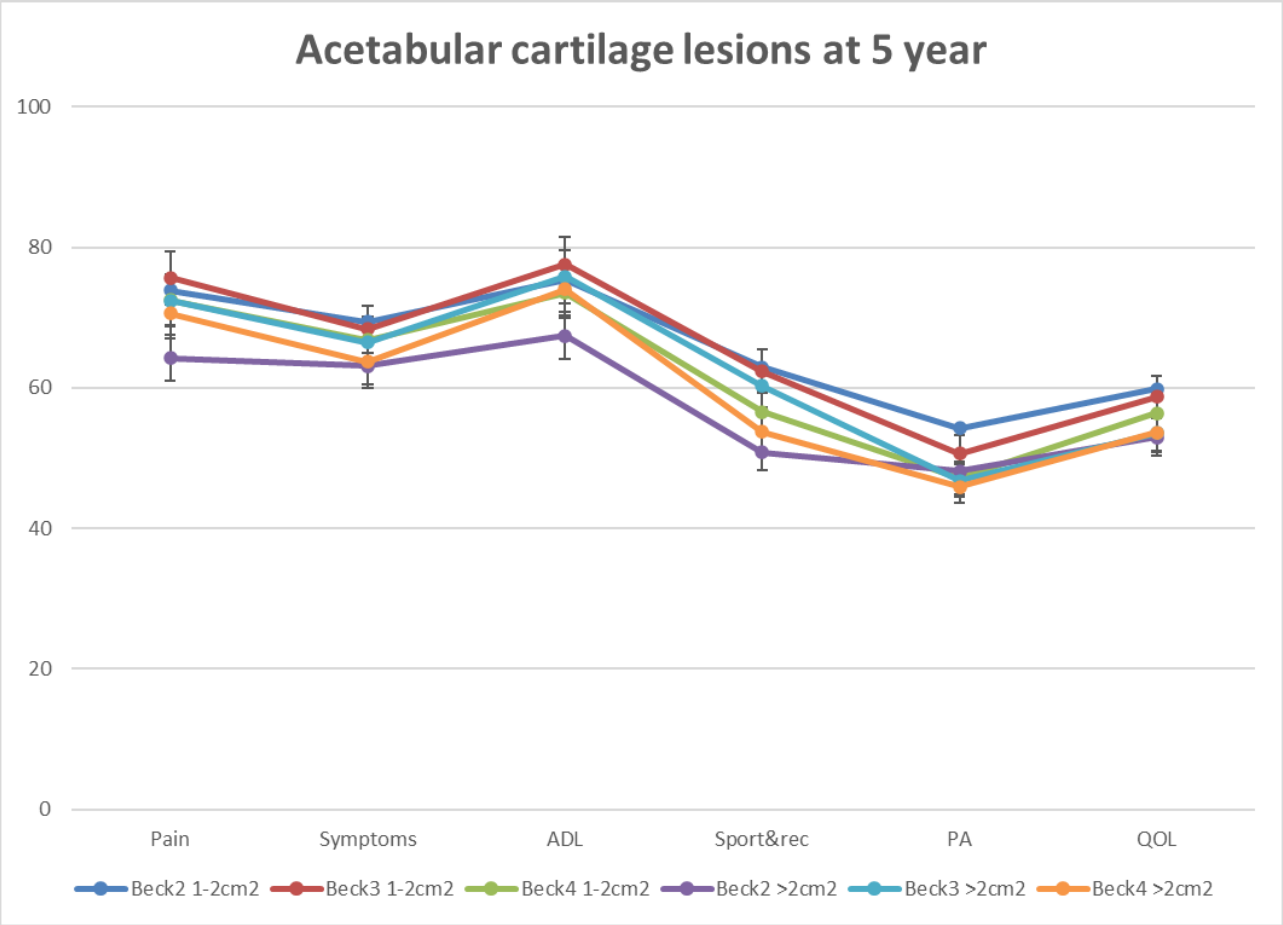


Fig. 26. The medium size grade 2 and 3 lesions have better results than all the large size lesions and the medium size grade 4 lesions. The worst results are seen in the large grade 4 lesions. The data for the largest size lesions are based on very few numbers and should be read cautiously and especially for the Beck2 >2cm2 (see table 23).