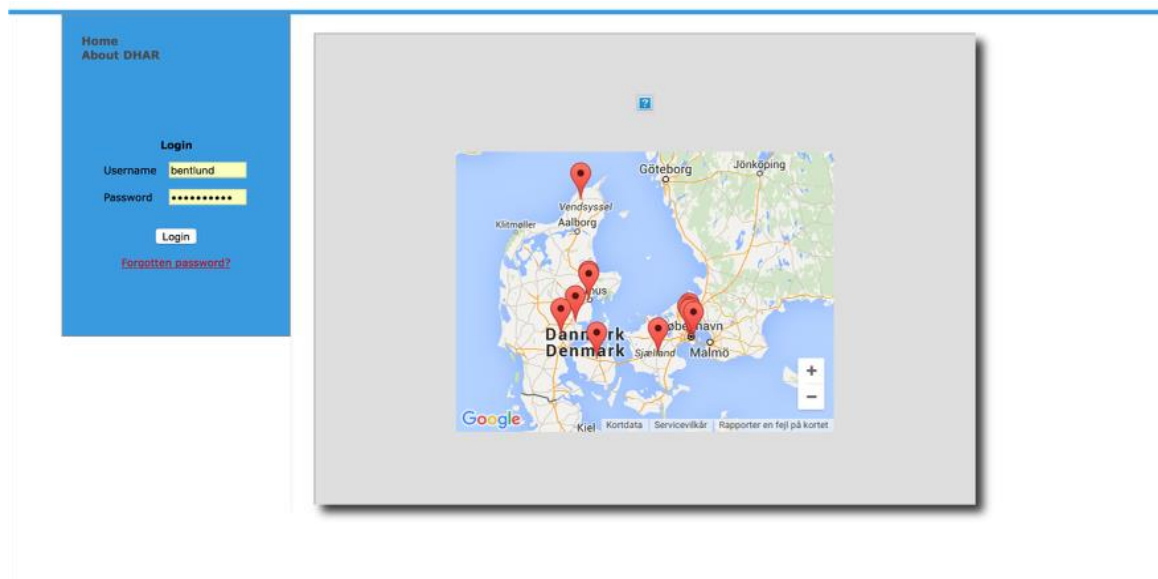


Annual report 2023

Danish Hip Arthroscopy Registry



Steering committee:

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



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Introduction

The Danish Hip Arthroscopy Registry is the world's oldest registry dedicated to register hip arthroscopies and was started because new health legislation in 2010 demanded that hip arthroscopies only could be performed at a limited number of hospitals with specific levels of expertise in Denmark. These new regulations demanded that the hospitals and clinics registered the procedures they performed. This gave the inspiration for a national hip arthroscopy registry. The Danish Hip Arthroscopy Registry (DHAR) was initiated in 2012 and the development was funded by a grant from The Danish Association of Arthroscopy and Sports Orthopedics (SAKS). DHAR is one of only two national non-arthroplasty hip registries existing so far. The other one is UK's Non-Arthroplasty Registry (NHAR).

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).

DHAR has been open to submissions on-line since the beginning of 2012 and the database structure has been modified several times over the years, mainly because of minor flaws and programming errors that had to be adjusted and corrected. The Steering Committee meets twice a year and ad-hoc decisions, and data requests are handled pr. e-mail or during on-line meetings.

In 2016 the first full Annual report was published and since then we have published annual reports. Peer reviewed papers based on data from the DHAR will also be listed here and in fact several have already been published [1–15]. See the publication list p. 32.

DHAR is run by a voluntary effort among the participating surgeons and the actual database is run by Procordo Inc., a Danish software company hosting a variety of orthopedic registries.

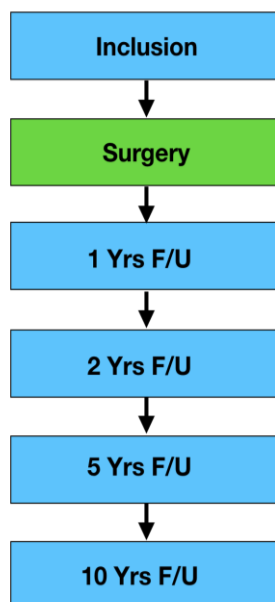
DHAR is solely funded by the participating hospitals and private clinics.

Bent Lund
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 from 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 be able to present data for hip joint survival.

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 percent. We think this might be caused by the surgeons being less reluctant performing re-arthroscopies. Looking at the results we have no explanations 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 (%))	2012-2020	2021	2022	2023	Total
Pre	4094 (58)	459 (60)	362 (50)	382 (51)	5297 (57)
1 year	3746 (53)	299 (39)	252 (35)	-	4354 (51)
2 years	2939 (42)	208 (27)	-	-	3172 (41)
5 years	1629 (31)	-	-	-	1630 (31)

**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 and 5 years. MCID for QoL is 7.8 points (Table 18).

HAGOS QoL (n (%))	2012-2020	2021	2022	2023	Total
1 year	1133 (45)	132 (47)	114 (47)	-	1410 (45)
2 years	1006 (50)	93 (45)	-	-	1114 (50)
5 years	552 (56)	-	-	-	552 (56)

Re-arthroscopies**Target <12 %****Table 4.** Re-arthroscopies per year

Re-arthroscopies (n (%))	2012-2020	2021	2022	2023	Total
Re-arthroscopies pr. year (n (%))	856 (12)	100 (13)	114 (16)	108 (15)	1178 (13)

Overall data

At the end of 2023 there were a total of **9283 arthroscopic hip surgeries** registered in DHAR. Data presented in this annual report is a summation of all the registrations since 2012 and until Dec. 31st, 2023. There are in total **9283 procedures** and **5297 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 is 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	2012-2020	2021	2022	2023	Total
North Region					
Hjørring Regionshospital ®	700	49	44	72	865
Mid Region					
Aarhus Universitetshospital ®	413	29	44	42	728
Aleris Hamlet Aarhus ®	643	54	43	46	786
Horsens Regionshospital ®	1532	156	162	133	1983
Capio Aarhus	17	15	6	10	48
South Region					
Odense Universitetshospital OUH ®	644	33	30	21	728
Privathospitalet Mølholm	289	53	40	49	431
Capital Region					
Aleris Hamlet København ®	676	153	160	183	1172
AHH Amager Hvidovre Hospital ®	554	68	65	62	749
Bispebjerg Frederiksberg Hospital ®	395	65	32	25	517
Capio Hellerup ®	775	45	54	54	928
Gildhøj Privathospital	81	0	0	0	81
ADEAS Parken ®	243	0	0	9	252
CPH Privathospital	69	45	36	21	171
Zealand Region					
Køge Sygehus®	11	1	8	15	35
Aleris Hamlet Ringsted	9	0	0	0	9
Total # procedures	7051	766	724	742	9283



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	2012-2020	2021	2022	2023	Total
Male	2922	316	276	243	3757
Female	4132	450	448	499	5529
Ratio (m/f)	41/59	41/59	38/62	33/67	40/60
Mean age (year)	37.5	36.9	35.7	37.0	37.2

Previous surgery

Table 7. Of the **9283** procedures 1879 had previous surgery in the affected hip. Among these were 479 patients, who were operated with a PAO (Peri-Acetabular Osteotomy) due to developmental dysplasia of the hip (DDH). Finally, 51 patients had a previous THR (Total Hip Replacement).

Previous surgery (n)	2012-2020	2021	2022	2023	Total
FAI	843	100	114	107	1164
Loose bodies /chondromatosis	14	0	0	1	15
Lig. teres rupture	5	0	0	0	5
Infection	2	0	0	0	2
PAO	391	30	28	30	479
Osteosynthesis of SCFE	34	6	3	1	44
Z-plasty ITB	23	1	2	1	27
THR	41	6	4	0	51
Other	79	3	3	7	92
Total	1432	146	154	147	1879

Radiology

Table 8. Radiological parameters

Radiology	2012-2020	2021	2022	2023	Total
LCE-angle (Wiberg) (mean)	31	30	30	30	31
Anterior alpha angle (mean)	67	67	65	64	66
Tönnis AI-angle (mean)	5.5	5.2	5.3	5.3	5.5
Ischial spine sign (n (%))	1799 (26)	150 (20)	156 (22)	163 (22)	2268 (24)
Lateral Joint Space Width (n (%))					
<2 mm.	38 (1)	2 (0)	1 (0)	0 (0)	41 (1)
2,1-3,0 mm.	283 (4)	34 (4)	22 (3)	38 (5)	377 (4)
3,1-4,0 mm.	2161 (31)	244 (32)	173 (24)	213 (29)	2791 (30)
>4 mm.	4560 (64)	480 (64)	524 (73)	490 (66)	6054 (65)

Labral surgery

Table 9. Labral findings and procedures

Labral tear (n (%))	2012-2020	2021	2022	2023	Total
Yes	6258 (89)	723 (94)	682 (94)	720 (97)	8383 (90)
No	796 (11)	43 (6)	42 (6)	22 (3)	903 (10)
Type of Surgery (n (%))	2012-2020	2021	2022	2023	Total
Labrum untouched (no treatment)	10 (0)	2 (0)	0 (0)	1 (0)	13 (0)
Labral remodeling/ partial resection	722 (12)	71 (10)	66 (10)	85 (10)	944 (12)
Labral full thickness resection	324 (5)	60 (8)	73 (11)	92 (11)	549 (7)
Labral repair	5019 (80)	575 (80)	535 (78)	535 (78)	6664 (79)
Labral reconstruction	30 (1)	0 (0)	1 (0)	0 (0)	31 (0)
Unknown	153 (3)	15 (2)	7 (1)	7 (1)	182 (2)

Cartilage lesions

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

Cartilage lesion Acetabulum n (%)	2012-2020	2021	2022	2023	Total
Beck Gr. 0 – Healthy	124 (2)	24 (4)	18 (3)	19 (3)	185 (2)
Beck Gr. 1 – Fibrillation	941 (15)	116 (17)	104 (18)	96 (16)	1257 (16)
Beck Gr. 2 - Wave sign	2656 (44)	304 (45)	274 (46)	262 (43)	3496 (44)
Beck Gr. 3 - Delamination	1742 (29)	182 (27)	154 (26)	160 (27)	2238 (28)
Beck Gr. 4 - Exposed bone	617 (10)	53 (8)	42 (7)	67 (11)	779 (10)

Acetabular cartilage lesion size (n (%))	2012-2020	2021	2022	2023	Total
0	144 (2)	26 (4)	18 (3)	20 (3)	208 (3)
Size <1 cm ²	2082 (34)	278 (41)	257 (43)	229 (38)	2846 (36)
Size 1-2 cm ²	3019 (50)	300 (44)	251 (42)	285 (49)	3855 (48)
Size >2 cm ²	835 (14)	75 (11)	66 (11)	70 (12)	1046 (13)

Cartilage lesion Head (n (%))	2012-2020	2021	2022	2023	Total
ICRS Gr. 0 – Normal	4222 (69)	446 (65)	423 (71)	438 (73)	5529 (70)
ICRS Gr. 1 - Almost normal	552 (9)	65 (10)	55 (9)	50 (8)	722 (9)
ICRS Gr. 2 – Abnormal	807 (13)	94 (14)	58 (10)	62 (10)	1021 (13)
ICRS Gr. 3 - Severely Abnormal	340 (6)	55 (8)	44 (8)	46 (8)	485 (6)
ICRS Gr. 4 - Exposed bone	159 (3)	19 (3)	12 (2)	8 (1)	198 (2)

Femoral head lesion size (n (%))	2012-2020	2021	2022	2023	Total
0	4256 (70)	459 (67)	434 (73)	458 (76)	5607 (70)
Size < 1 cm ²	552 (9)	65 (10)	42 (7)	46 (8)	705 (9)
Size 1-2 cm ²	759 (12)	94 (14)	77 (13)	67 (11)	997 (13)
Size > 2 cm ²	513 (8)	61 (9)	39 (7)	33 (5)	646 (8)

Patient Reported Outcome Measures (PROMs)

Comments to 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*).

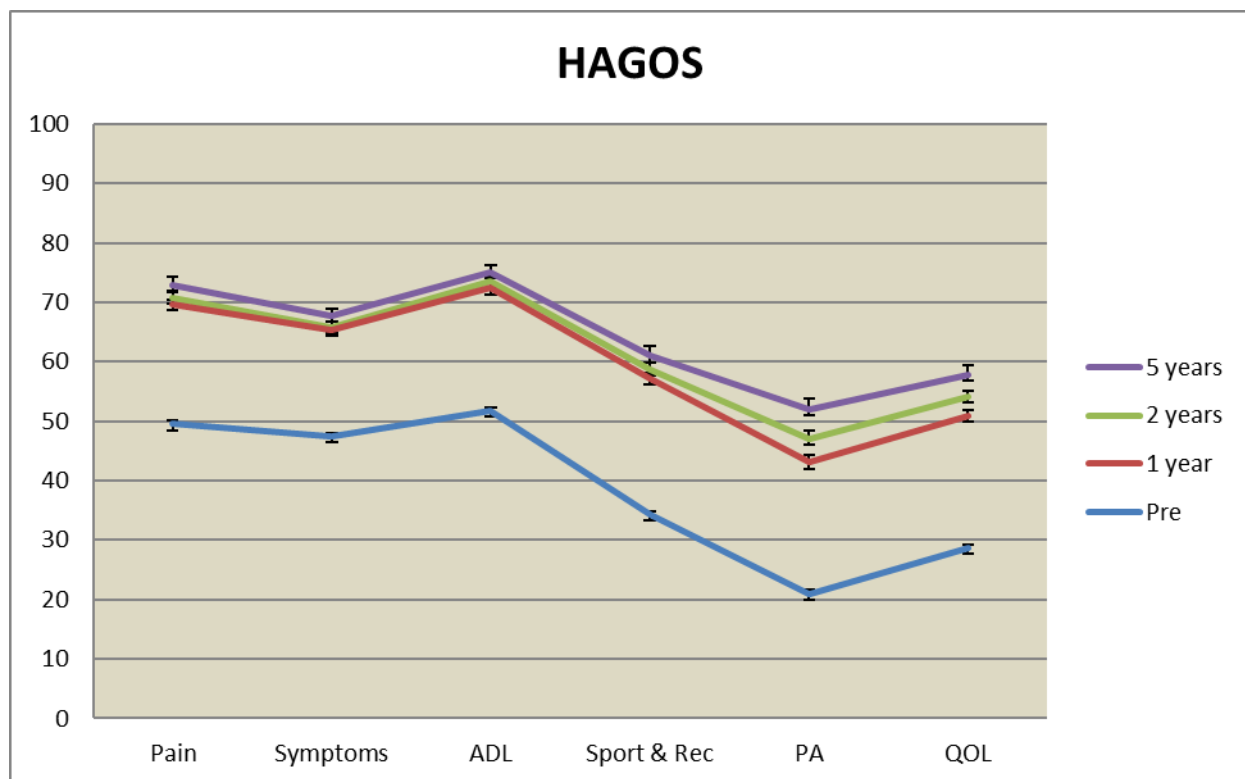


Fig. 1. HAGOS outcomes at 1, 2 and 5 years for all surgeries compared to the pre-scores.

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

PROMS pre (n=5297 (57%))	2012-2020	2021	2022	2023	Mean (95% CI)
HAGOS					
Pain	49.6	48.8	49.1	49.6	49.5 (48.9 - 50.1)
Symptoms	47.7	47.3	46.4	46.7	47.5 (47.0 - 48.1)
ADL	51.5	52.1	52.6	52.3	51.7 (51.0 - 52.4)
Sport & rec	34.1	33.9	35.6	34.7	34.2 (33.5 - 34.9)
PA	20.7	18.6	22.2	24.8	20.9 (20.2 - 21.6)
QoL	28.8	27.4	28.3	28.7	28.6 (28.2 - 29.1)

PROMS 1 year (n=4355 (51%))	2012-2019	2020	2021	2022	Mean (95% CI)
HAGOS					
Pain	69.3	70.1	70.1	72.6	69.7 (68.9 - 70.4)
Symptoms	65.1	65.9	66.0	66.8	65.3 (64.6 - 66.1)
ADL	71.7	74.1	74.6	75.6	72.4 (71.5 - 73.2)
Sport & rec	56.5	59.5	58.7	61.2	57.2 (56.2 - 58.2)
PA	42.4	43.3	44.4	49.7	43.0 (41.9 - 44.2)
QoL	50.6	51.3	51.2	52.7	50.9 (50.0 - 51.8)

PROMS 2 years (n=3172 (41%))	2012-2018	2019	2020	2021	Mean (95% CI)
HAGOS					
Pain	70.6	71.2	71.2	71.9	70.8 (69.9 - 71.7)
Symptoms	65.7	66.6	65.7	66.9	65.9 (65.0 - 66.7)
ADL	73.0	74.9	74.4	74.1	73.4 (72.5 - 74.4)
Sport & rec	58.2	59.9	59.6	60.3	58.7 (57.6 - 59.9)
PA	46.4	48.9	47.9	47.8	47.0 (45.6 - 48.4)
QoL	54.0	54.2	54.8	53.3	54.1 (53.1 - 55.1)



PROMS 5 years (n=1630 (31%))	2012-2015	2016	2017	2018	Mean (95% CI)
HAGOS					
Pain	72.9	74.0	71.8	73.6	73.0 (71.7 - 74.2)
Symptoms	67.4	69.0	66.1	69.3	67.7 (66.5 - 68.9)
ADL	74.7	77.1	73.7	75.1	75.0 (73.6 - 76.3)
Sport & rec	60.2	64.2	58.7	62.4	60.9 (59.3 - 62.6)
PA	51.2	53.8	50.4	54.2	51.9 (50.0 - 53.8)
QoL	57.8	59.8	55.8	58.5	57.9 (56.4 - 59.4)

iHOT₁₂

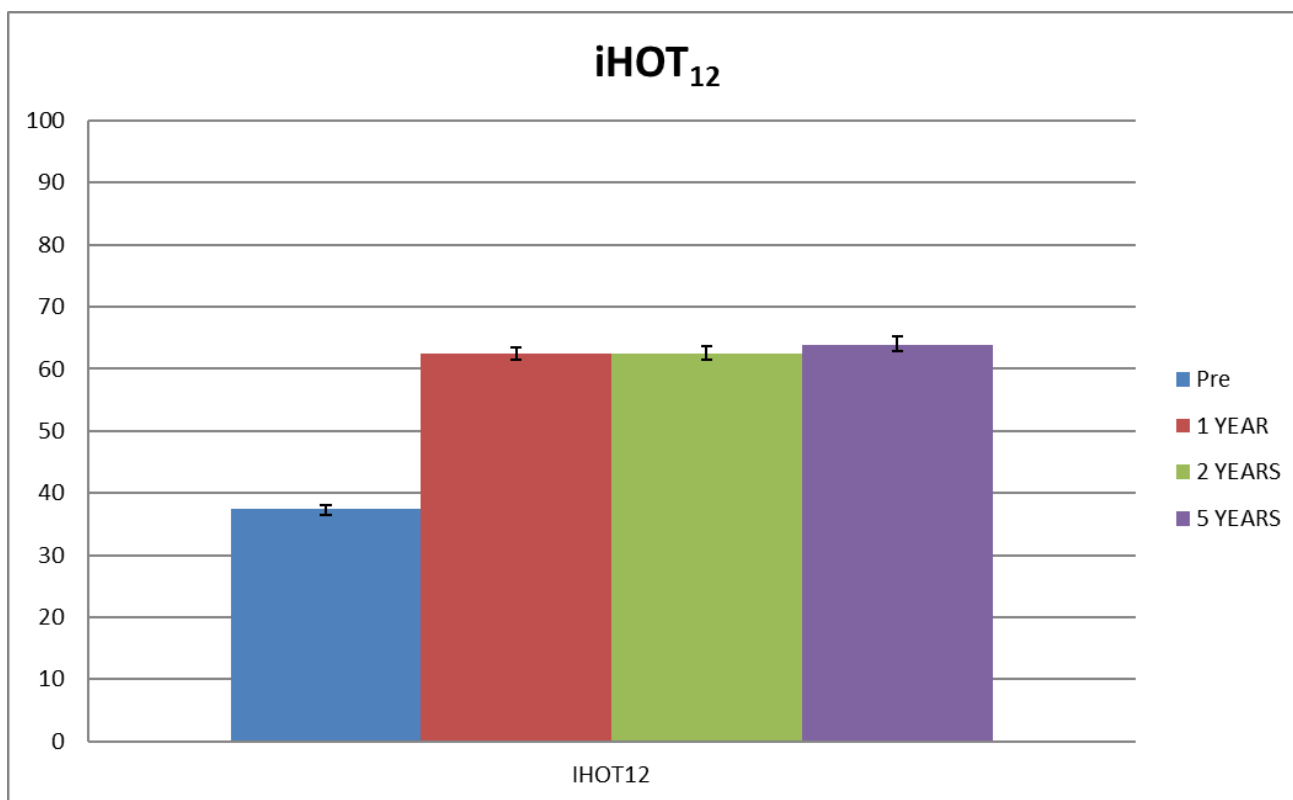


Fig. 2. iHOT₁₂ outcomes at 1, 2 and 5 years compared to the pre-scores.

Table 12. A Danish version of iHOT₁₂ was not existing before 2019 The 5-year data are therefore not available until next year.

iHOT ₁₂	2019-2020	2021	2022	2023	Mean (95% CI)
Pre (n=2234)	37.3	36.9	37.9	38.2	37.5 (36.6 – 38.4)
1 year (n=1388)	62.2	63.0	63.1	-	62.5 (60.9-64.1)
2 years (n=813)	64.0	63.9	-	-	64.0 61.9-66.0)

NRS scores for pain

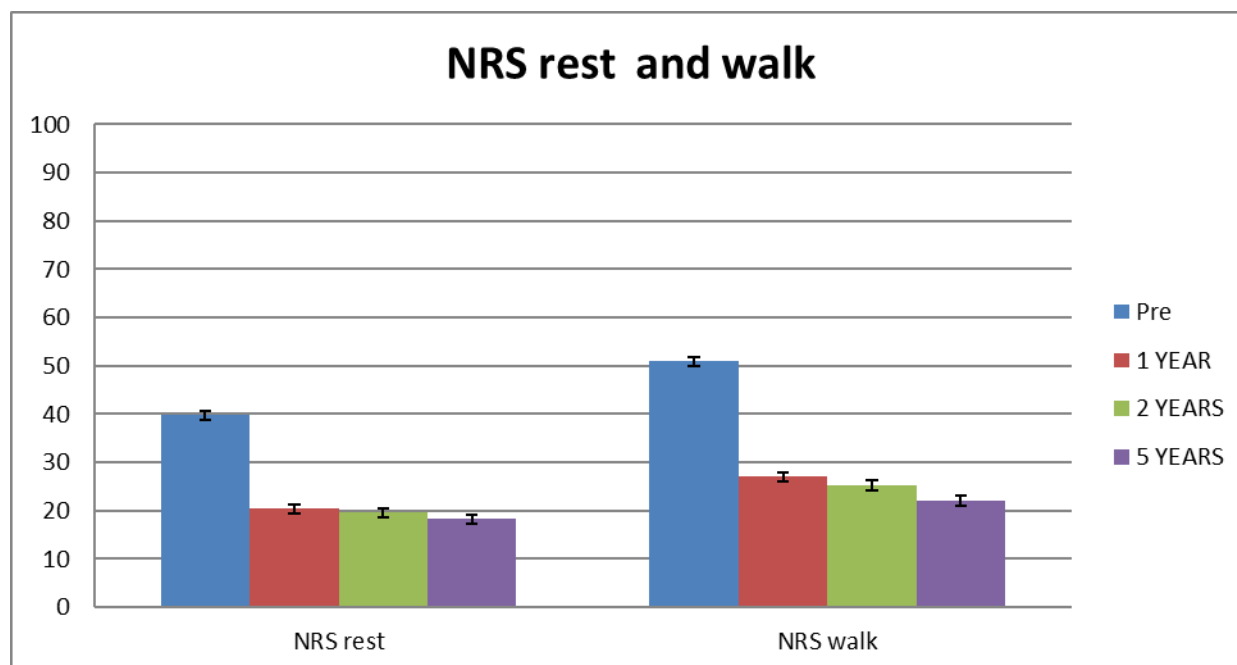


Fig. 3. NRS pain score at rest and after 15 min. walk. Outcome data at 1, 2 and 5 years compared to the pre-scores.

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

NRS Pain - rest	2012-2020	2021	2022	2023	Mean (95% CI)
Pre	40.1	39.1	39.3	39.2	39.9 (39.1 – 40.7)
1 year	20.6	20.1	18.9	-	20.5 (19.7 – 21.2)
2 years	19.6	19.1	-	-	19.6 (18.7 – 20.5)
5 years	18.3	-	-	-	18.4 (17.1 – 19.6)

NRS pain – walking 15 mins.	2012-2020	2021	2022	2023	Mean (95% CI)
Pre	51.2	49.6	51.6	50.4	51.1 (50.2 – 51.9)
1 year	27.6	23.3	23.5	-	27.0 (26.0 – 28.0)
2 years	25.4	22.6	-	-	25.2 (24.1 – 26.3)
5 years	22.1	-	-	-	22.1 (20.6 – 23.5)

Overall hip function

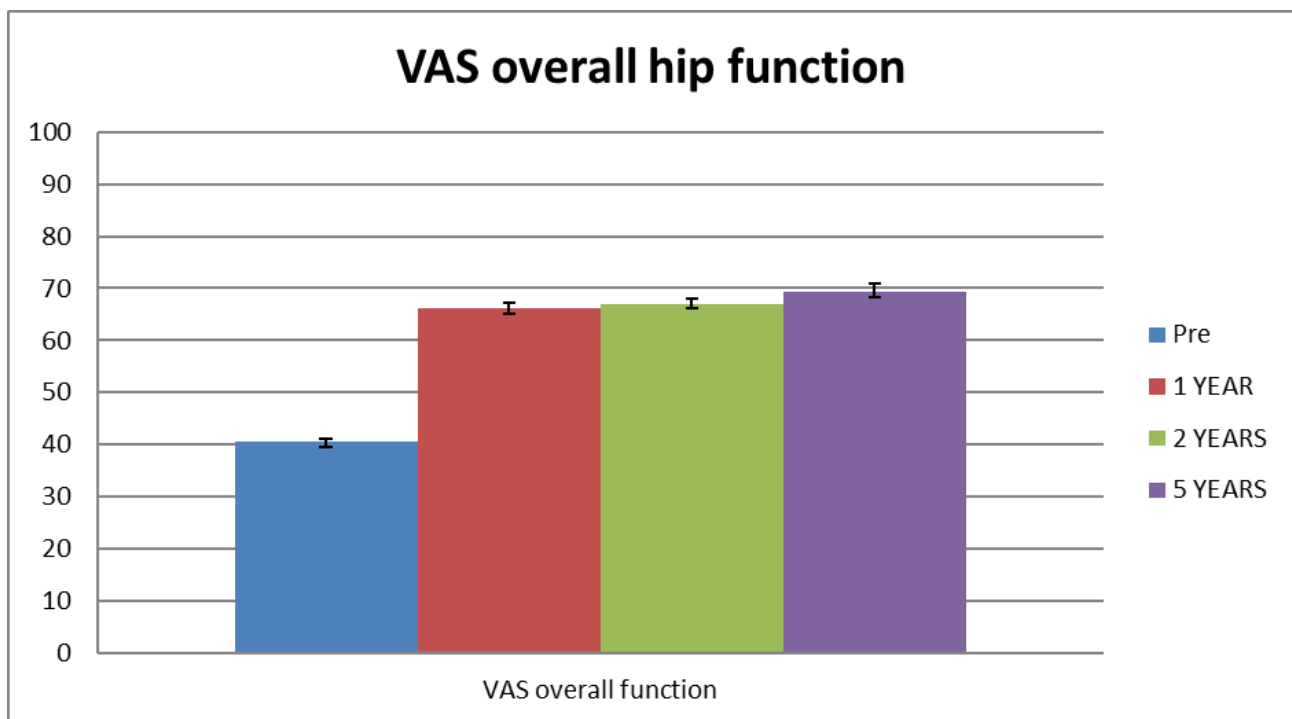


Fig. 4. VAS overall hip function outcome at 1, 2 and 5 years compared to the pre-scores

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

VAS – overall hip function	2012-2020	2021	2022	2023	Mean (95% CI)
Pre	40.7	40.1	38.6	40.2	40.5 (39.9 – 41.1)
1 year	66.1	66.0	68.3	-	66.2 (65.3 – 67.1)
2 years	67.0	67.7	-	-	67.1 (66.0 – 68.1)
5 years	69.4	-	-	-	69.4 (68.0 – 70.8)

EQ5D scores

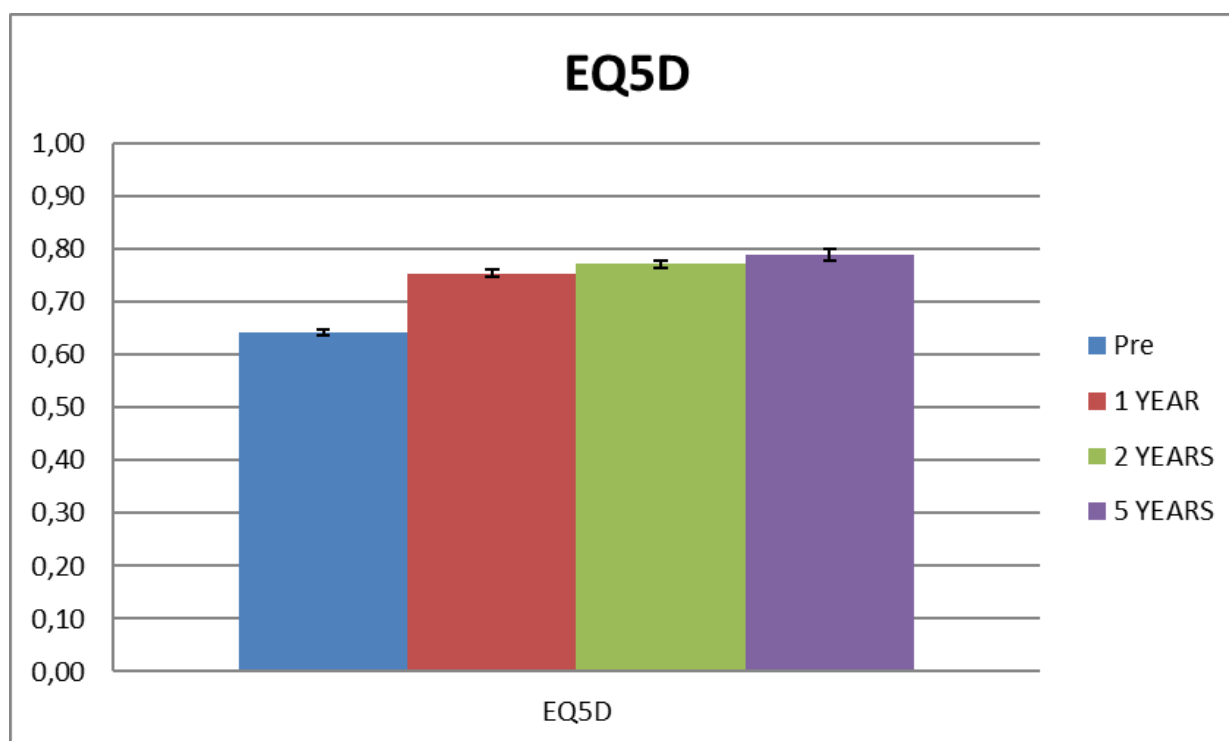


Fig. 5. EQ5D outcome data at 1, 2 and 5 years compared to the pre-scores.

Table 15. Patient assessed general quality of life score.

EQ5D	2012-2020	2021	2022	2023	Mean (95% CI)
Pre	0.64	0.65	0.64	0.65	0.64 (0.64 - 0.65)
1 year	0.75	0.77	0.75	-	0.75 (0.75 - 0.76)
2 years	0.77	0.79	-	-	0.77 (0.76 - 0.78)
5 years	0.79	-	-	-	0.79 (0.78 - 0.80)

HSAS score (Hip Sports Activity Score)

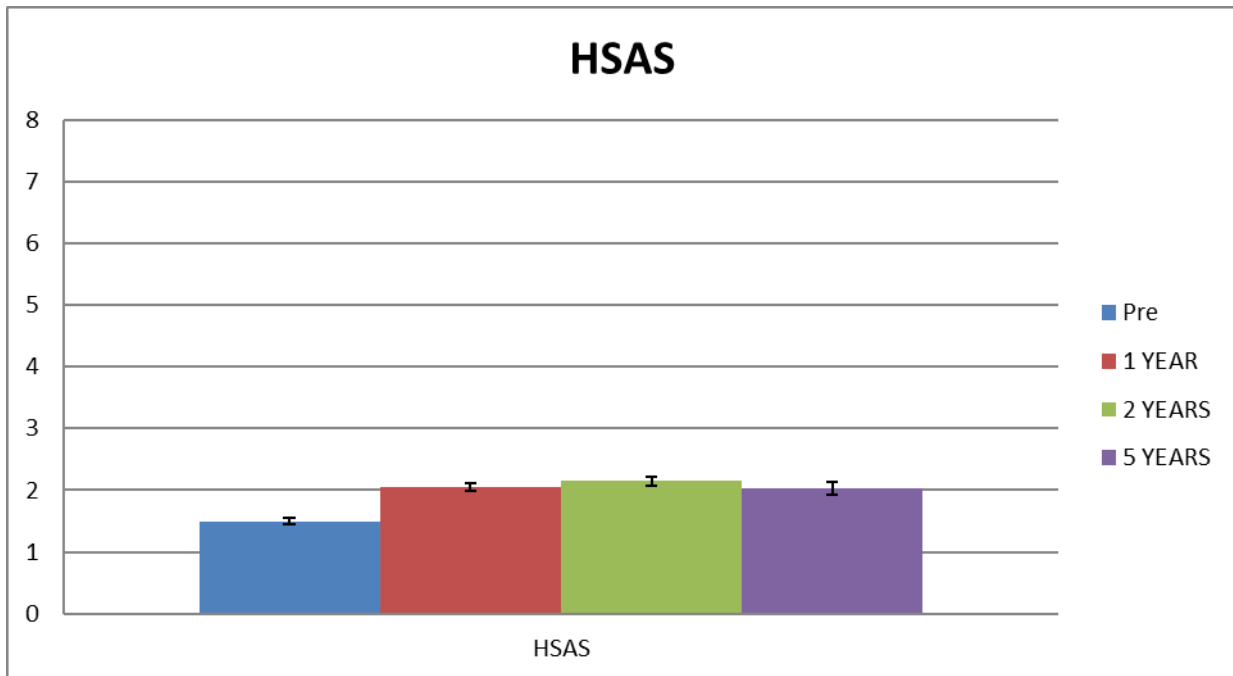


Fig. 6. HSAS outcome data at 1, 2 and 5 years compared to the pre-scores.

Table 16. Patient assessed sports activity score, specific for hip related activities.

HSAS	2012-2020	2021	2022	2023	Mean (95% CI)
Pre	1.5	1.3	1.6	1.7	1.5 (1.44 - 1.56)
1 year	2.0	2.1	2.4	-	2.0 (1.98 - 2.11)
2 years	2.1	2.3	-	-	2.1 (2.07 - 2.22)
5 years	2.0	-	-	-	2.0 (1.93 - 2.13)



HSAS score (Hip Sports Activity Score)

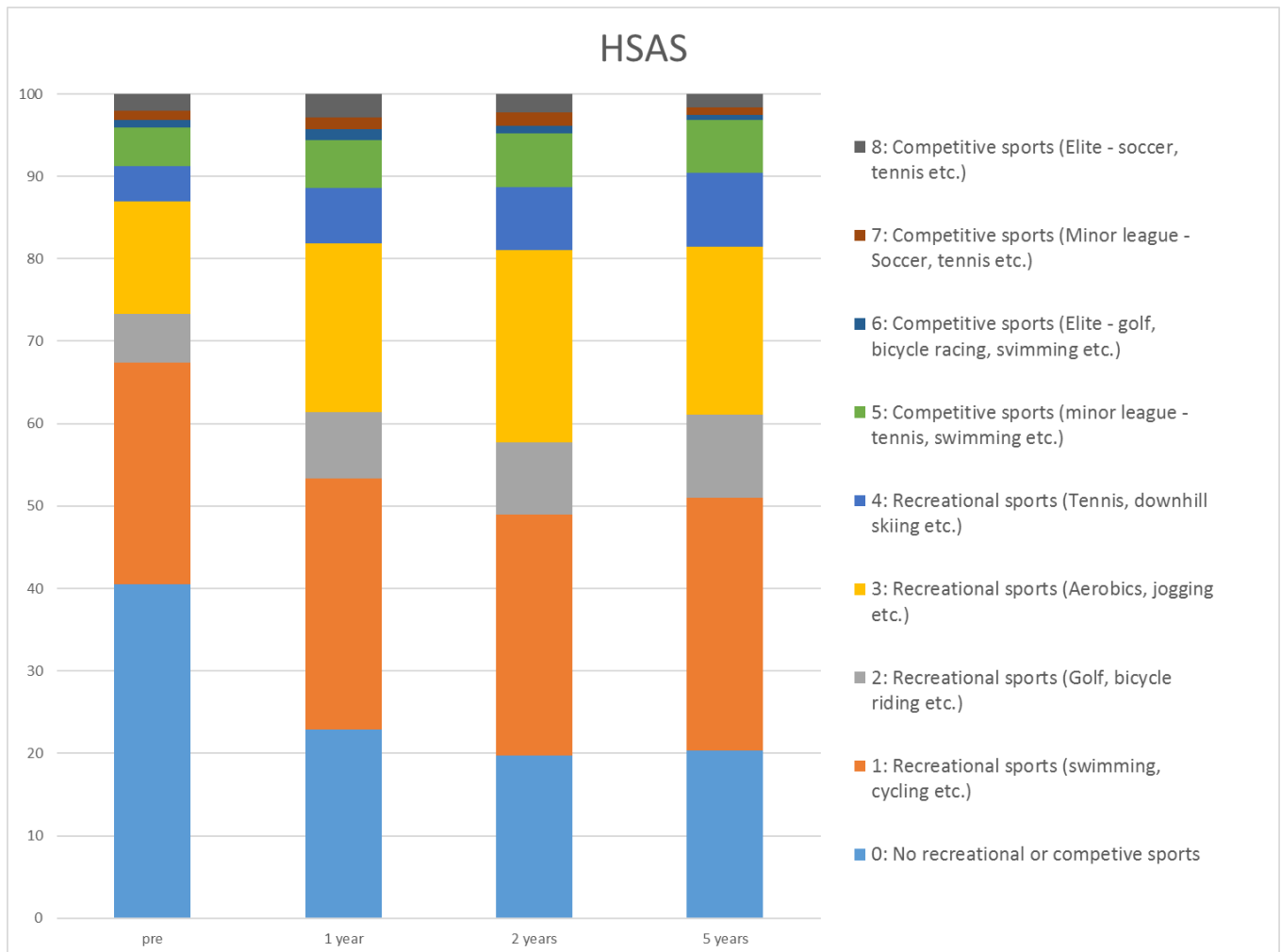


Fig. 7. HSAS outcome data at pre, 1, 2 and 5 years. There is a decline in the number of patients not participating in any recreational or competitive sports. Patients seem to go from “no recreational sports” to different kinds of “recreational sports”. Also, a slight increase in competitive sports is 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 score, specific for hip related activities.

N (%)	Pre	1 year	2 years	5 years
8: Competitive sports (Elite - soccer, tennis etc.)	108 (2)	124 (3)	70 (2)	27 (2)
7: Competitive sports (Minor league - Soccer, tennis etc.)	61 (1)	62 (1)	52 (2)	14 (1)
6: Competitive sports (Elite - golf, bicycle racing, swimming etc.)	50 (1)	57 (1)	30 (1)	11 (1)
5: Competitive sports (minor league - tennis, swimming etc.)	245 (5)	256 (6)	208 (7)	104 (6)
4: Recreational sports (Tennis, downhill skiing etc.)	229 (4)	295 (7)	242 (8)	146 (9)
3: Recreational sports (Aerobics, jogging etc.)	724 (14)	893 (20)	741 (23)	332 (20)
2: Recreational sports (Golf, bicycle riding etc.)	315 (6)	350 (8)	278 (9)	164 (10)
1: Recreational sports (swimming, cycling etc.)	1428 (27)	1330 (30)	927 (30)	500 (31)
0: No recreational or competitive sports	2149 (41)	1001 (23)	628 (20)	332 (20)
Total	5309 (100)	4368 (100)	3176 (100)	1630 (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
HAGOS				
Pain	9.3	62	65	68
Symptoms	8.6	64	66	62
ADL	11.6	60	63	65
Sport & rec	11.2	59	62	64
PA	11.8	47	52	58
QoL	7.8	60	65	70
NRS – pain rest	12.5	58	58	62
NRS – pain walk	13.5	60	62	66
VAS – Hip function overall	9.5	67	67	69
EQ5D	0.09	44	49	53
HSAS	0.94	41	43	44
iHOT₁₂	9.4	66	69	-

Revision arthroscopies

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 8). This would be expected, but it has not been shown previously in DHAR.

The negative results seen in figure 9 shows 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.

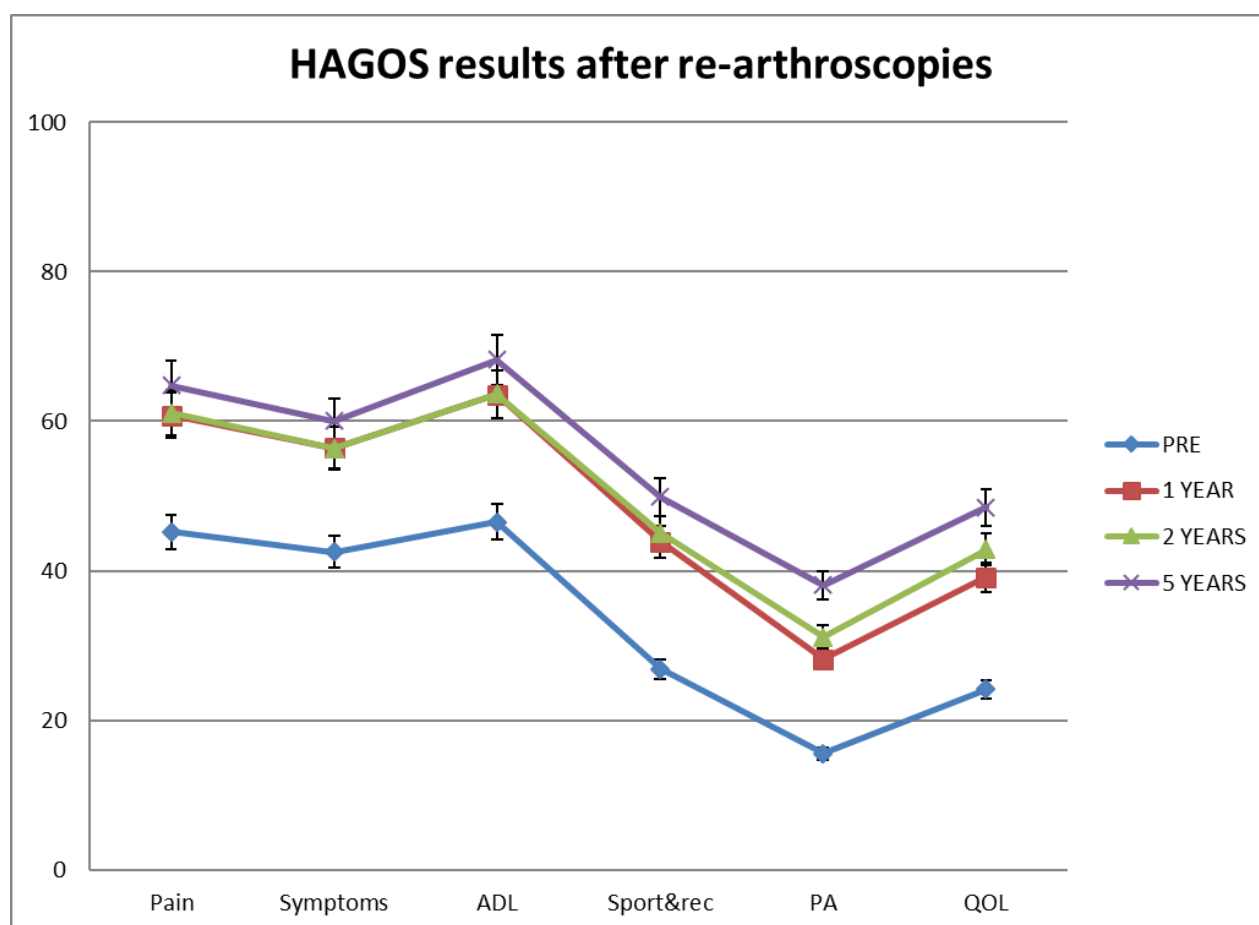


Fig. 8. HAGOS results after re-arthroscopies show the same tendencies with improvements over time, but slightly impaired results compared to primary hip arthroscopies are seen.

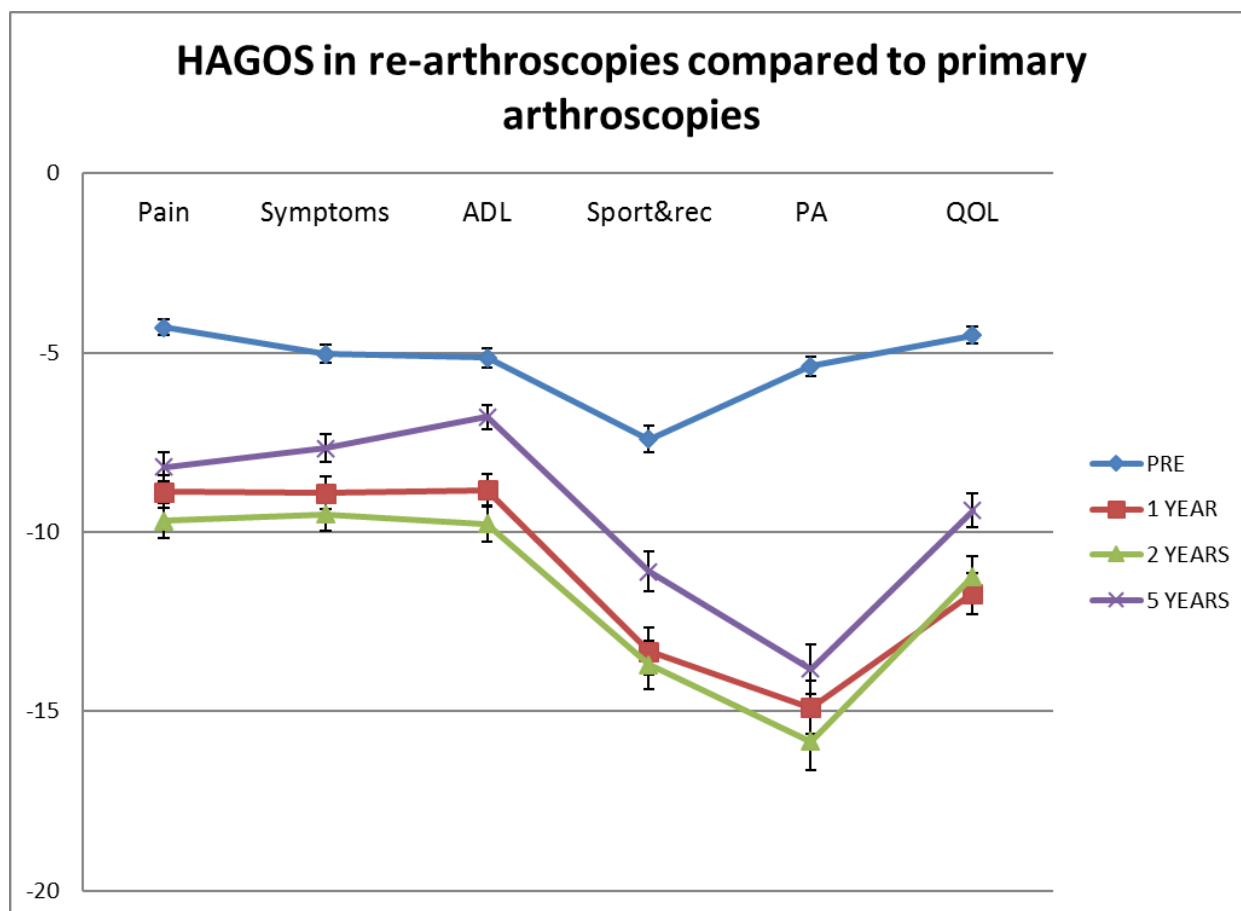


Fig. 9. Shows the difference in mean HAGOS points between primary hip arthroscopies and re-arthroscopies. Data for primary arthroscopies are used as baseline. The negative values shows that the re-arthroscopies are not improving as much as the primary arthroscopies. There is clearly less improvement in the HAGOS results after re-arthroscopies, especially for the physically demanding activities. 5-year results seem to improve a bit except for Physical Activity.

Table 19. Development of PROM results over time for revision arthroscopies and the mean results after 1, 2 and 5 years.

PROMS pre (n=576 (49%))	2012-2020	2021	2022	2023	Mean (95% CI)
HAGOS					
Pain	44.9	47.2	45.3	45.5	45.2 (43.6 – 46.8)
Symptoms	42.3	43.2	42.6	43.6	42.5 (40.9 – 44.0)
ADL	45.5	50.8	49.7	48.4	46.5 (44.4 – 48.6)
Sport & rec	25.8	29.9	31.1	27.9	26.8 (24.9 – 28.7)
PA	15.0	16.9	17.6	16.6	15.5 (13.6 – 17.4)
QoL	24.1	22.9	25.5	24.3	24.1 (22.8 – 25.5)



iHOT ₁₂	32.6	31.9	34.9	33.4	33.0 (30.7 – 35.4)
NRS Pain - rest	44.1	41.4	43.0	46.0	44.0 (41.6 – 46.3)
NRS pain – walking 15 mins.	58.6	55.0	58.7	57.6	58.3 (55.8 – 60.7)
VAS – Hip function overall	34.4	35.0	33.7	34.1	34.3 (32.6 – 36.1)
EQ5D	0.60	0.60	0.61	0.59	0.60 (0.58 – 0.62)
HSAS	1.0	1.4	1.2	1.6	1.1 (1.0 – 1.3)

PROMS 1 Year (n=520 (49%))	2012-2020	2021	2022	2023	Mean (95% CI)
HAGOS					
Pain	60.4	65.5	60.8	-	60.8 (58.6 – 63.0)
Symptoms	56.1	59.7	56.0	-	56.4 (54.4 – 58.4)
ADL	63.0	70.6	64.4	-	63.6 (61.0 – 66.1)
Sport & rec	43.3	49.1	46.5	-	43.9 (41.2 – 46.6)
PA	27.5	32.1	34.8	-	28.1 (25.2 – 31.1)
QoL	38.8	43.7	39.7	-	39.2 (36.9 – 41.4)
iHOT ₁₂	54.1	51.7	48.6	-	52.8 (49.0 – 56.5)
NRS Pain - rest	27.9	28.1	26.5	-	27.7 (25.3 – 30.1)
NRS pain – walking 15 mins.	38.5	33.0	34.7	-	37.7 (34.8 – 40.6)
VAS – Hip function overall	55.5	54.3	59.2	-	55.7 (53.2 – 58.1)
EQ5D	0.70	0.71	0.66	-	0.70 (0.68 – 0.72)
HSAS	1.4	2.2	1.9	-	1.5 (1.3 – 1.6)



PROMS 2 Years (n=360 (38%))	2012-2020	2021	2022	2023	Mean (95% CI)
HAGOS					
Pain	61.2	61.6	-	-	61.1 (58.4 – 63.9)
Symptoms	56.4	57.3	-	-	56.4 (53.9 – 58.9)
ADL	63.7	63.9	-	-	63.7 (60.5 – 66.9)
Sport & rec	44.9	47.8	-	-	45.0 (41.7 – 48.3)
PA	31.5	26.6	-	-	31.1 (27.4 – 34.9)
QoL	43.3	38.3	-	-	42.8 (40.1 – 44.6)
iHOT ₁₂	54.1	47.6	-	-	53.3 (49.0 – 57.6)
NRS Pain - rest	27.4	28.9	-	-	27.5 (24.5 – 30.5)
NRS pain – walking 15 mins.	36.3	41.4	-	-	36.7 (33.0 – 40.4)
VAS – Hip function overall	56.2	49.0	-	-	55.8 (52.7 – 58.8)
EQ5D	0.70	0.67	-	-	0.70 (0.67 – 0.72)
HSAS	1.6	1.9	-	-	1.6 (1.4 – 1.8)



PROMS 5 Years (n=172 (27%))	2012-2017	2018			Mean (95% CI)
HAGOS					
Pain	64.6	67.5	-	-	64.8 (60.9 – 68.7)
Symptoms	59.9	61.5	-	-	60.0 (56.1 – 63.9)
ADL	67.9	71.4	-	-	68.2 (63.6 – 72.8)
Sport & rec	49.4	52.4	-	-	49.8 (45.0 – 57.7)
PA	37.0	46.0	-	-	38.1 (32.6 – 43.5)
QoL	48.0	53.0	-	-	48.5 (44.0 – 53.0)
iHOT ₁₂	57.1	57.8	-	-	57.2 (51.9 – 62.6)
NRS Pain - rest	24.9	24.8	-	-	25.0 (20.8 – 29.2)
NRS pain – walking 15 mins.	31.1	31.0	-	-	31.1 (26.2 – 36.1)
VAS – Hip function overall	58.7	62.0	-	-	59.2 (54.6 – 63.8)
EQ5D	0.73	0.72	-	-	0.73 (0.69 – 0.76)
HSAS	1.6	2.2	-	-	1.7 (1.4 – 2.0)

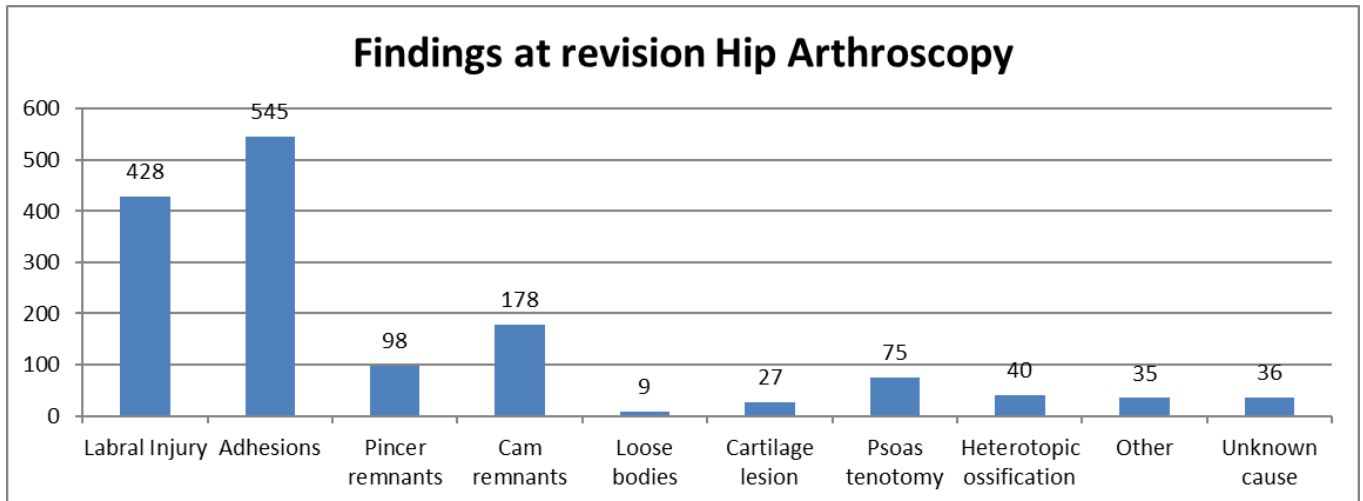


Fig. 10. Cumulated numbers of findings and procedures during re-arthroscopies. This shows the reported findings at revision hip arthroscopy as stated by the surgeons. The predominant reasons were adhesions, non-healed labral tears, residual cam, and pincer among others.

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 a 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.

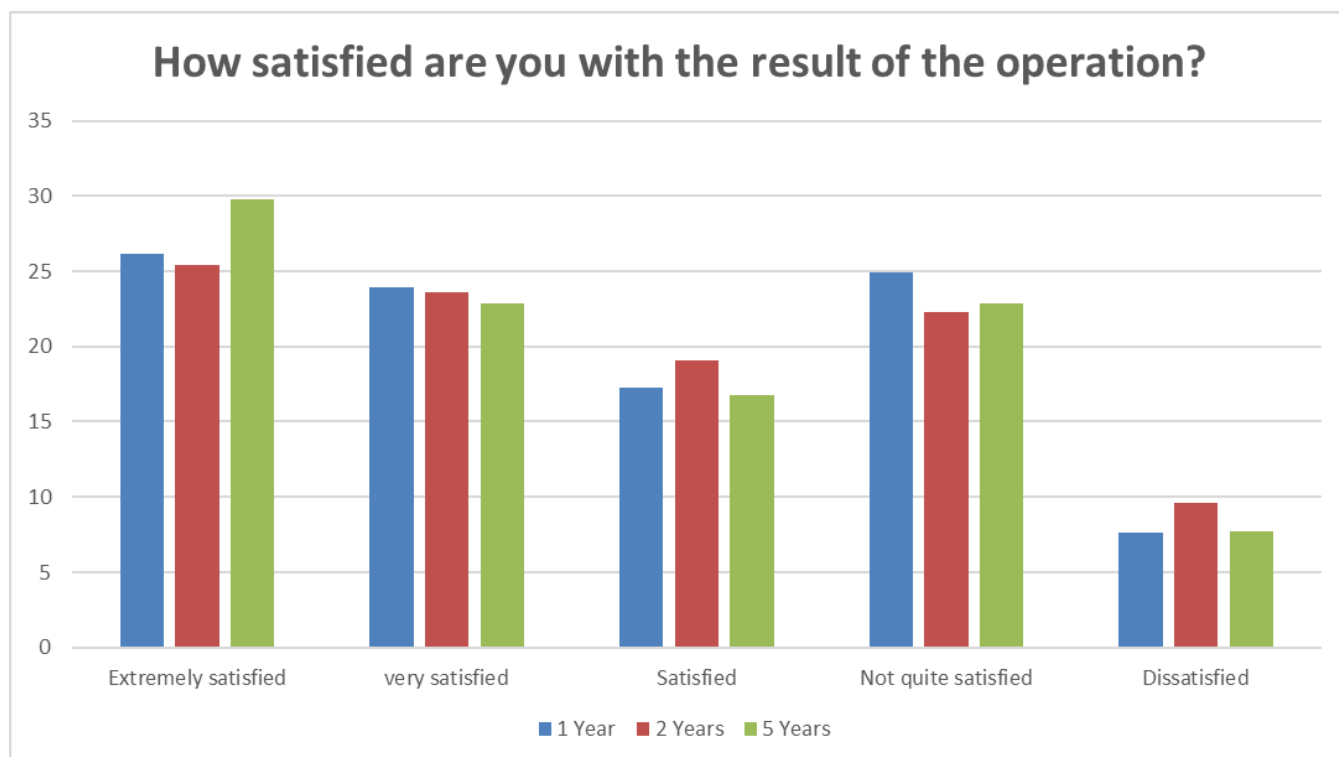


Fig. 11. Overall satisfaction is around 70%.

Table 20. How satisfied are you with the result of the operation?

N (%)	1 year	2 years	5 years
Extremely satisfied	336 (26)	278 (25)	267 (30)
Very satisfied	307 (24)	258 (24)	205 (23)
Satisfied	222 (17)	209 (19)	150 (16)
Not quite satisfied	320 (25)	244 (22)	205 (23)
Dissatisfied	98 (8)	105 (10)	69 (8)
Total	1283 (100)	1094 (100)	896 (100)

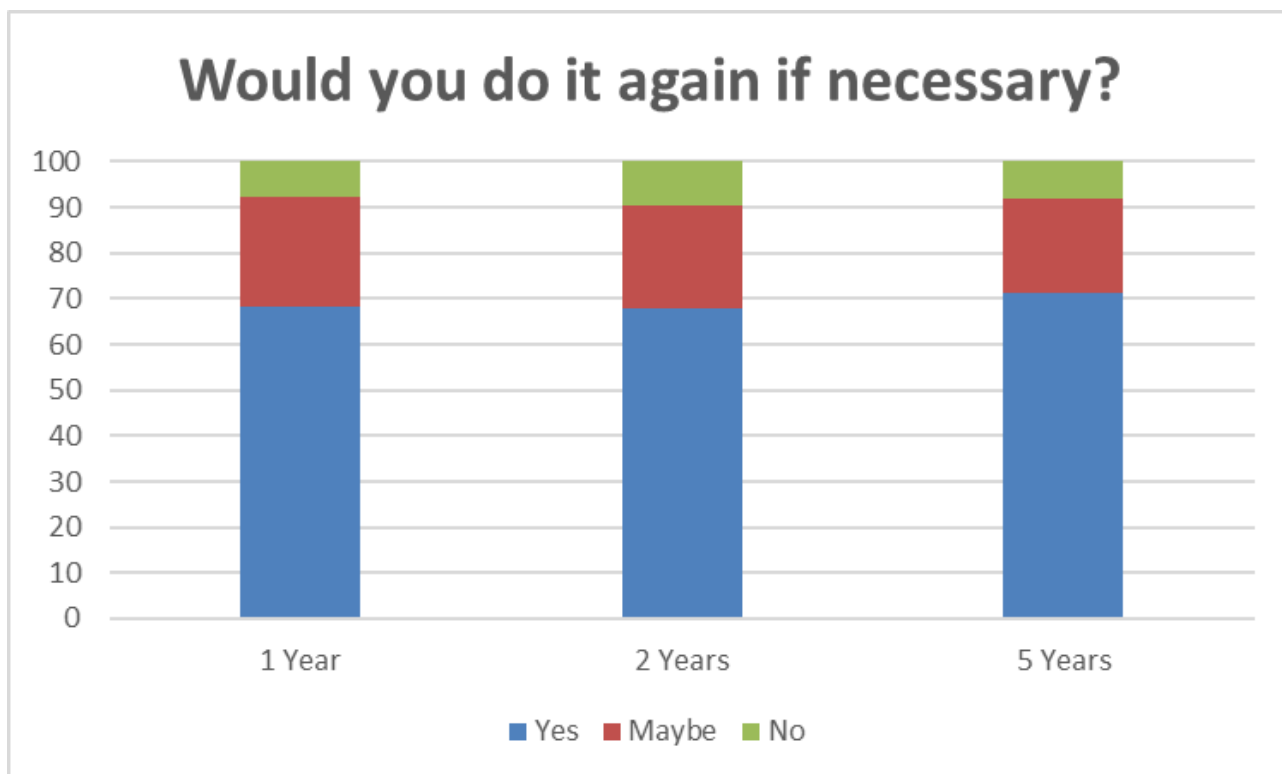


Fig. 12. Willingness to repeat surgery is around 70 %.

Table 21. Would you do it again if necessary?

N (%)	1 year	2 years	5 years
Yes	877 (68)	744 (68)	640 (72)
Maybe	308 (24)	243 (22)	183 (20)
No	65 (8)	107 (10)	73 (8)
Total	1283 (100)	1094 (100)	896 (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, iHOT₁₂, EQ5D og HSAS score). Pga. en tidligere manglende dansk version er iHOT-12 først blevet tilgængelig fra 2019.

Ved årsskiftet 2023-2024 var der registreret i alt **9.283** hofteartroskopier i DHAR. Der er ved årsskiftet registreret **5.297** præoperative inklusion PROMs i registeret. Der er **4.354** PROMs registreret efter 1 år og der er i alt registreret **3.172** 2 års PROMs i DHAR. Desuden er der ved årsskiftet registreret **1.630** PROMs med et follow-up på 5 år.

DHAR Styregruppe, Torsten Grønbech Nielsen (databehandler).

Bent Lund, Formand, overlæge
Ortopædkirurgisk Afd. Hospitalsenheden i Horsens
bentlund@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, iHOT₁₂, 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 2023 there are included **9.283** hip arthroscopies in the DHAR. There are **5.297** pre-op inclusion PROMs included in this report. There are **4.354** PROMs included at 1-year and there are **3.172** 2-year PROMs in the registry. So far, we have **1.630** PROMs with a 5-year follow-up.

Bent Lund, Chairman, Chief Surgeon
Dept. of Orthopedic Surgery
Horsens Regional Hospital, Denmark
bentlund@rm.dk

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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, SportTraumatol 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

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 time 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 seem to have improved a bit more. The middle age group seems to have slightly reduced results compared to the two other age groups.

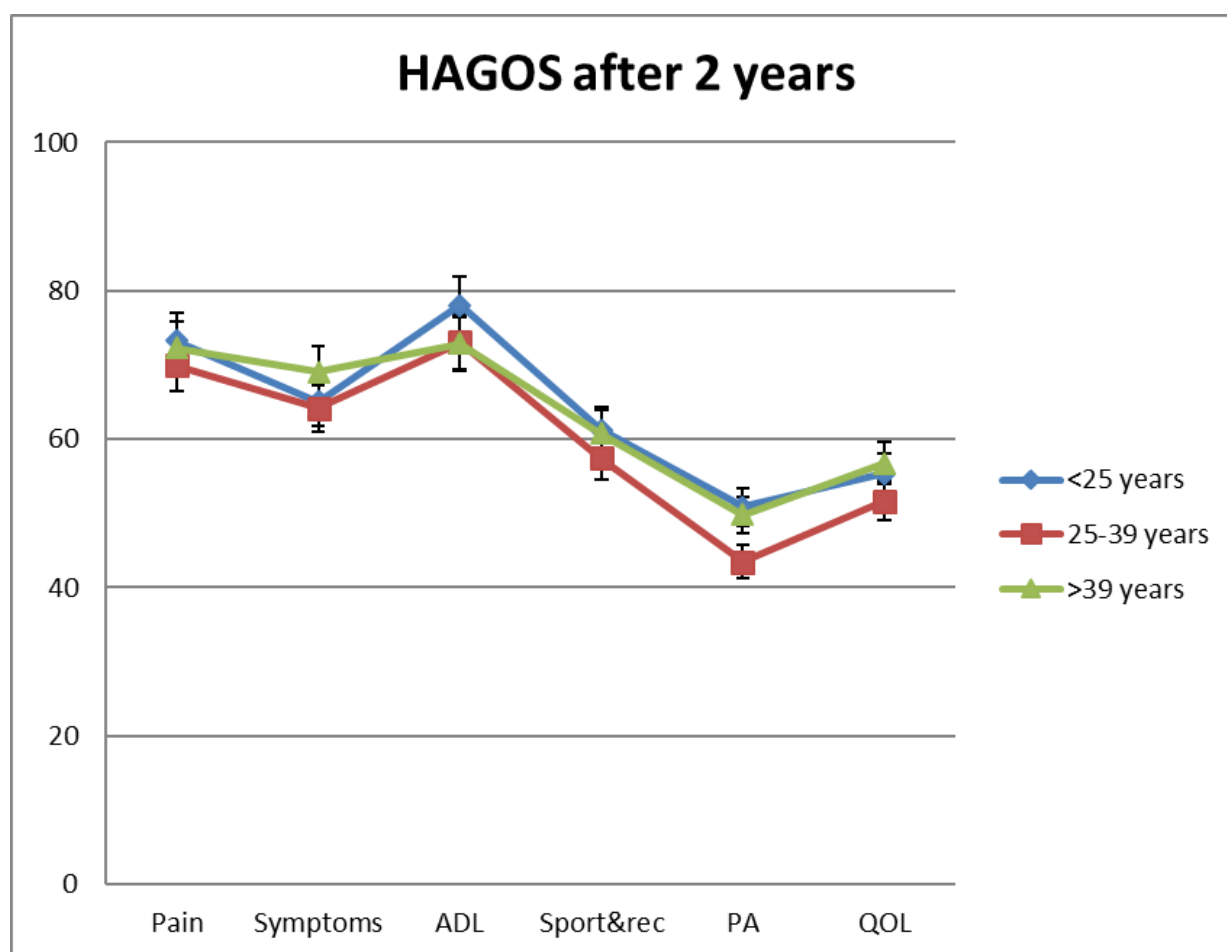


Fig. 13. HAGOS data at 2 years. Comparison of the 3 age groups.

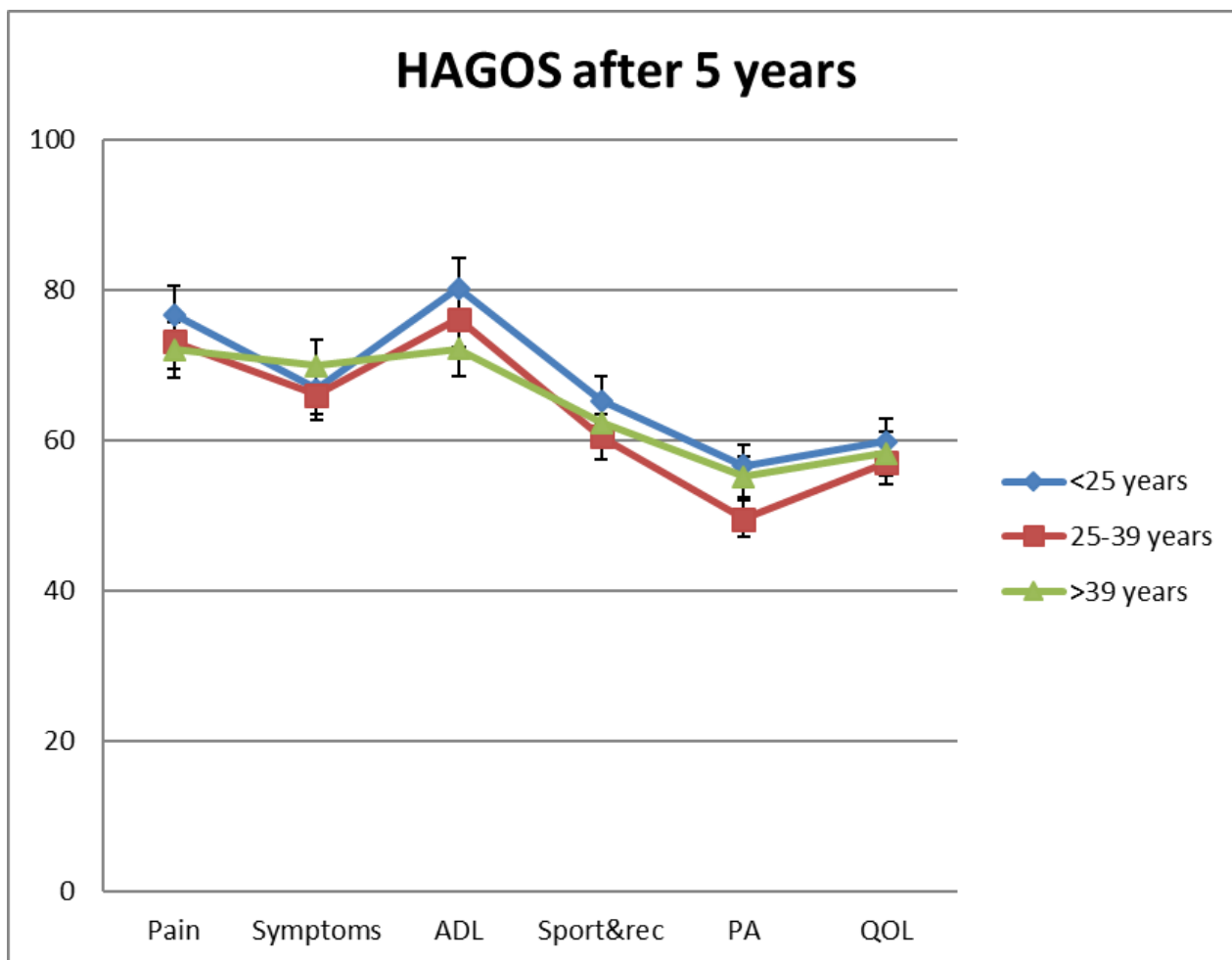


Fig. 14. HAGOS data at 5 years. Comparison of the 3 age groups

Table 22. Comparison of HAGOS scores for 3 different age groups at 5 years.

Age <25 years (n=281 (26%)) (PROMS 5 years)	2012-2016	2017	2018	Mean
HAGOS				
Pain	76.9	78.3	74.2	76.7 (73.9 – 79.5)
Symptoms	66.1	68.1	69.4	66.8 (64.0 – 69.7)
ADL	80.5	81.9	77.5	80.2 (77.3 – 83.2)
Sport & rec	66.4	63.2	61.8	65.3 (61.5 – 69.1)
PA	57.0	54.1	57.5	56.6 (52.1 – 61.2)
QoL	59.8	59.5	60.9	59.9 (56.3 – 63.5)



Age 25-39 years (n=503 (28%)) (PROMS 5 years)	2012-2016	2017	2018	Mean
HAGOS				
Pain	73.4	70.0	75.8	73.2 (70.9 – 75.4)
Symptoms	66.9	60.6	68.3	66.1 (63.8 – 68.3)
ADL	76.5	73.4	78.1	76.2 (73.8 – 78.6)
Sport & rec	60.7	57.5	63.0	60.5 (57.7 – 63.3)
PA	49.9	47.7	50.4	49.6 (46.1 – 53.1)
QoL	58.1	52.3	57.3	57.1 (54.4 – 59.7)

Age ≥40 years (n=846 (34%)) (PROMS 5 years)	2012-2016	2017	2018	Mean
HAGOS				
Pain	71.8	70.9	72.0	71.7 (69.9 – 73.4)
Symptoms	68.8	68.6	70.0	68.9 (67.3 – 70.6)
ADL	72.8	71.6	72.2	72.5 (70.6 – 74.5)
Sport & rec	59.7	58.1	62.4	59.7 (57.5 – 62.0)
PA	51.3	50.8	55.2	51.7 (49.0 – 54.4)
QoL	57.9	56.7	58.3	57.7 (55.7 – 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 shows 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 cm²) 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.

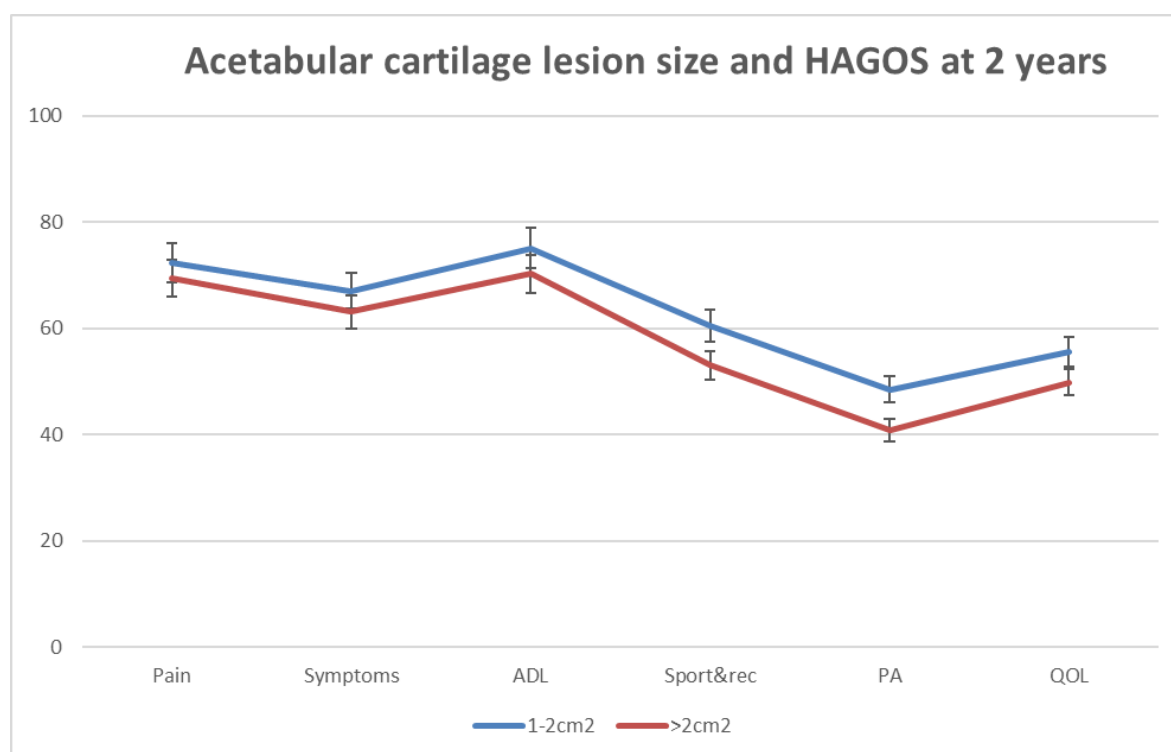


Fig. 15. HAGOS results for Beck grade 2-4 cartilage lesions. Only the large size lesion seems to affect the results.

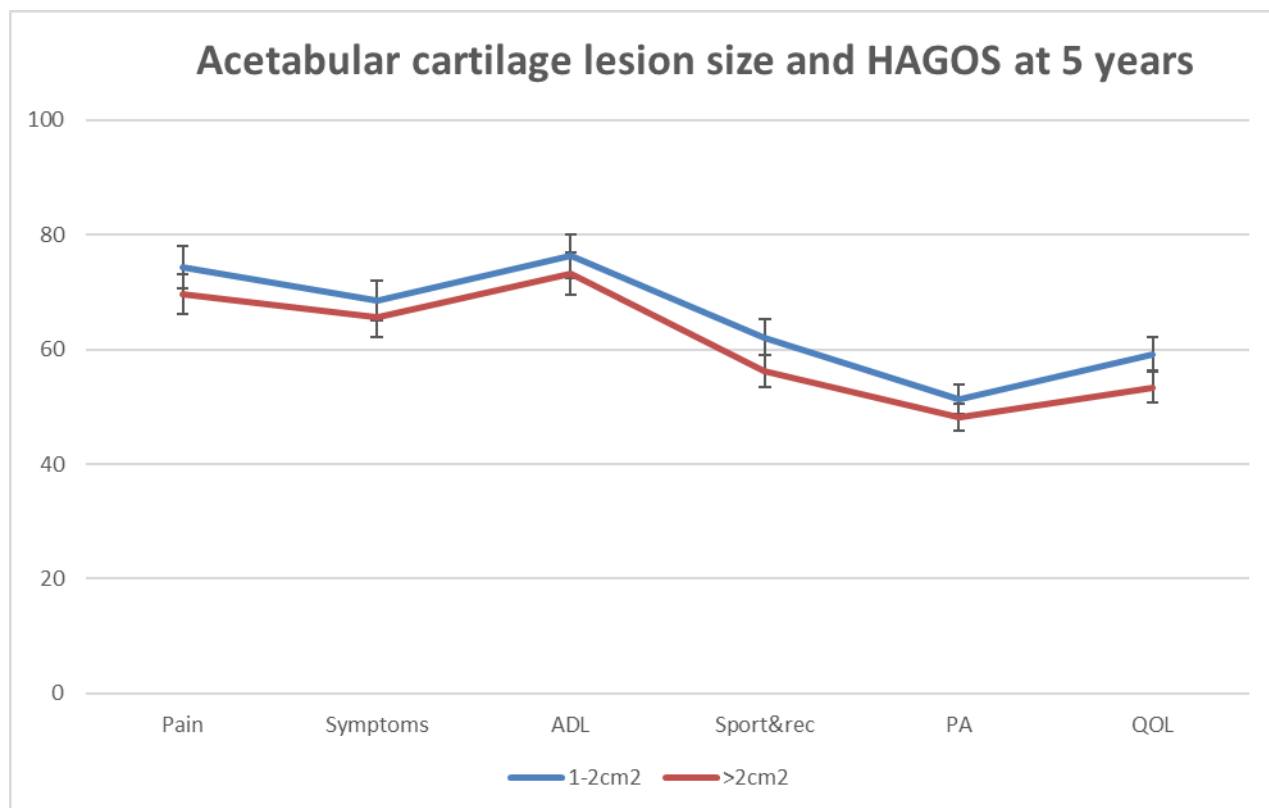


Fig. 16. HAGOS results for Beck grade 2-4 cartilage lesions. Only the large size lesion seems to affect the results. The difference seems to be rather small, and acetabular cartilage lesions probably doesn't affect the results much.

Table 23. 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=328 (31%))	2012-2016	2017	2018	Mean
HAGOS	(n=253)	(n=40)	(n=35)	
Pain	74.7	68.1	71.0	73.5 (70.5 – 76.4)
Symptoms	69.5	65.9	65.9	68.7 (65.9– 71.4)
ADL	76.8	70.0	70.6	75.3 (72.2 – 78.4)
Sport & rec	64.2	55.7	58.4	62.5 (58.7 – 66.4)
PA	53.9	47.2	53.2	53.0 (48.5 – 57.4)
QoL	61.2	53.4	56.9	59.8 (56.4 – 63.2)



	2012-2016	2017	2018	Mean
HAGOS	(n=15)	(n=4)	(n=6)	
Pain	55.5	73.1	79.2	64.0 (52.1 – 75.9)
Symptoms	58.1	67.9	78.0	64.4 (54.1 – 74.7)
ADL	55.7	78.8	87.5	67.0 (53.5 – 80.5)
Sport & rec	42.7	55.5	71.9	51.8 (36.3 – 67.2)
PA	42.5	68.8	58.3	50.5 (34.9 – 66.1)
QoL	49.7	61.3	60.8	54.2 (42.6 – 65.8)

Beck gr. 3 / 1-2cm ² (n=247 (32%))	2012-2016	2017	2018	Mean
HAGOS	(n=186)	(n=34)	(n=27)	
Pain	75.3	77.1	80.8	76.2 (73.3 – 79.0)
Symptoms	67.9	69.6	73.8	68.8 (65.8 – 71.8)
ADL	77.3	81.0	81.5	78.2 (75.2 – 81.3)
Sport & rec	62.0	66.0	67.1	63.1 (59.2 – 67.1)
PA	49.1	53.7	57.9	50.7 (45.6 – 55.7)
QoL	58.7	61.8	61.5	59.4 (55.8 – 63.0)

Beck gr. 3 / >2cm ² (n=55 (30%))	2012-2016	2017	2018	Mean
HAGOS	(n=35)	(n=10)	(n=10)	
Pain	73.6	66.5	70.0	71.6 (64.5 – 78.7)
Symptoms	69.3	62.1	66.1	67.4 (60.6 – 74.2)
ADL	75.0	73.0	73.5	74.4 (66.5 – 82.2)
Sport & rec	59.7	57.8	65.3	60.4 (51.7 – 69.1)
PA	51.8	41.3	36.3	47.0 (36.6 – 57.5)
QoL	54.3	53.0	48.5	53.0 (44.6 – 61.4)



Beck gr. 4 / 1-2cm² (n=70 (34%))	2012-2016	2017	2018	Mean
HAGOS	(n=55)	(n=7)	(n=8)	
Pain	69.4	68.2	94.7	72.1 (65.7 – 78.6)
Symptoms	63.2	65.3	88.4	66.3 (59.7 – 72.9)
ADL	71.4	70.7	93.1	73.8 (66.6 – 81.0)
Sport & rec	51.8	63.8	83.2	56.6 (48.2 – 65.0)
PA	41.6	53.6	73.4	46.4 (36.9 – 55.9)
QoL	51.5	59.3	81.9	55.8 (48.3 – 63.3)

Beck gr. 4 / >2cm² (n=59 (24%))	2012-2016	2017	2018	Mean
HAGOS	(n=51)	(n=4)	(n=4)	
Pain	70.7	80.6	54.4	70.3 (63.8 – 76.8)
Symptoms	64.6	65.2	57.1	64.2 (58.0 – 70.4)
ADL	75.2	83.8	58.8	74.7 (68.2 – 81.1)
Sport & rec	54.3	64.8	43.8	54.3 (45.6 – 63.0)
PA	48.3	50.0	43.8	48.1 (38.3 – 57.9)
QoL	54.5	50.0	42.5	53.4 (46.1 – 60.6)

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.

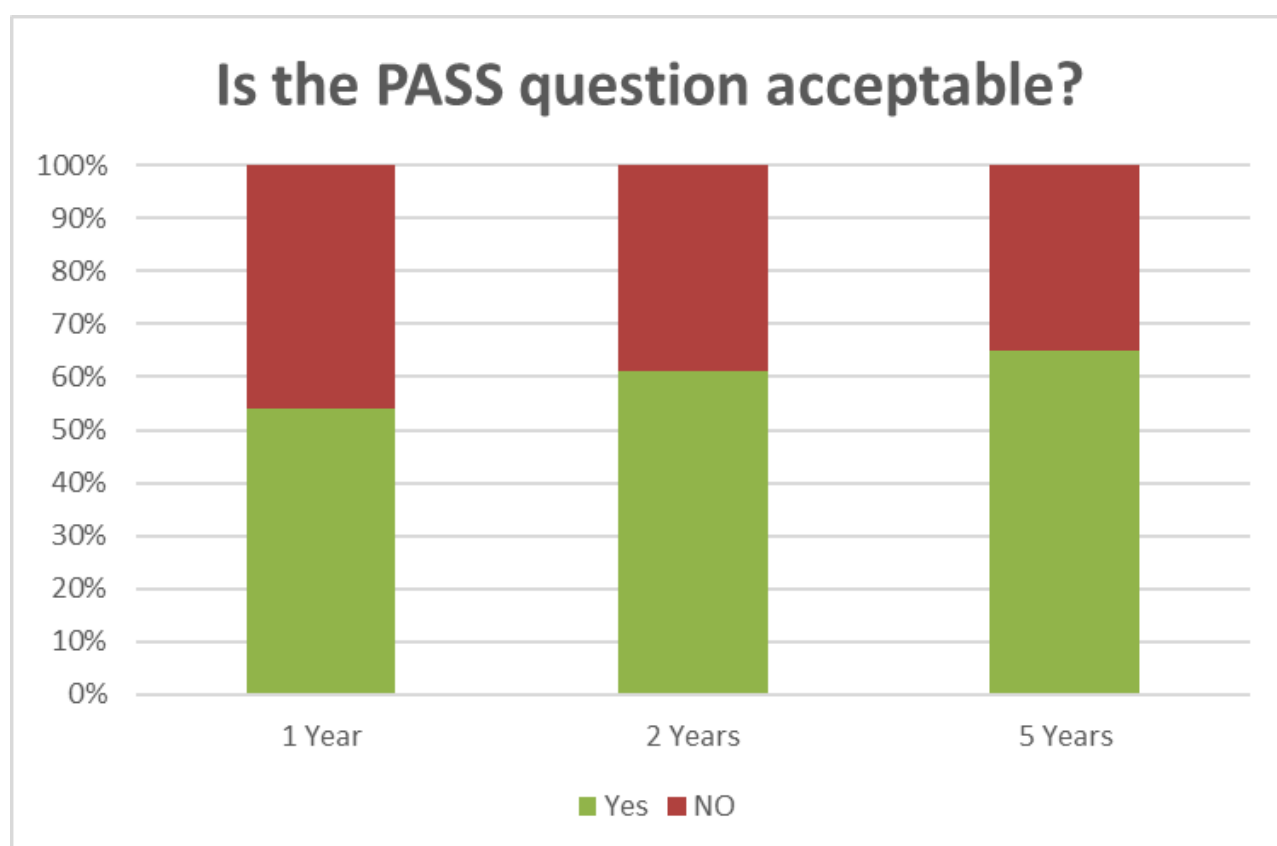


Fig. 17. PASS question shows that approximately 2/3 finds acceptable symptoms at 5 years.

Table 24. PASS (Patient Acceptable Symptom State)

“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.”

N (%)	1 year	2 years	5 years
Yes	695 (54)	668 (61)	579 (65)
No	588 (46)	426 (39)	317 (35)
Total	1283 (100)	1094 (100)	896 (100)

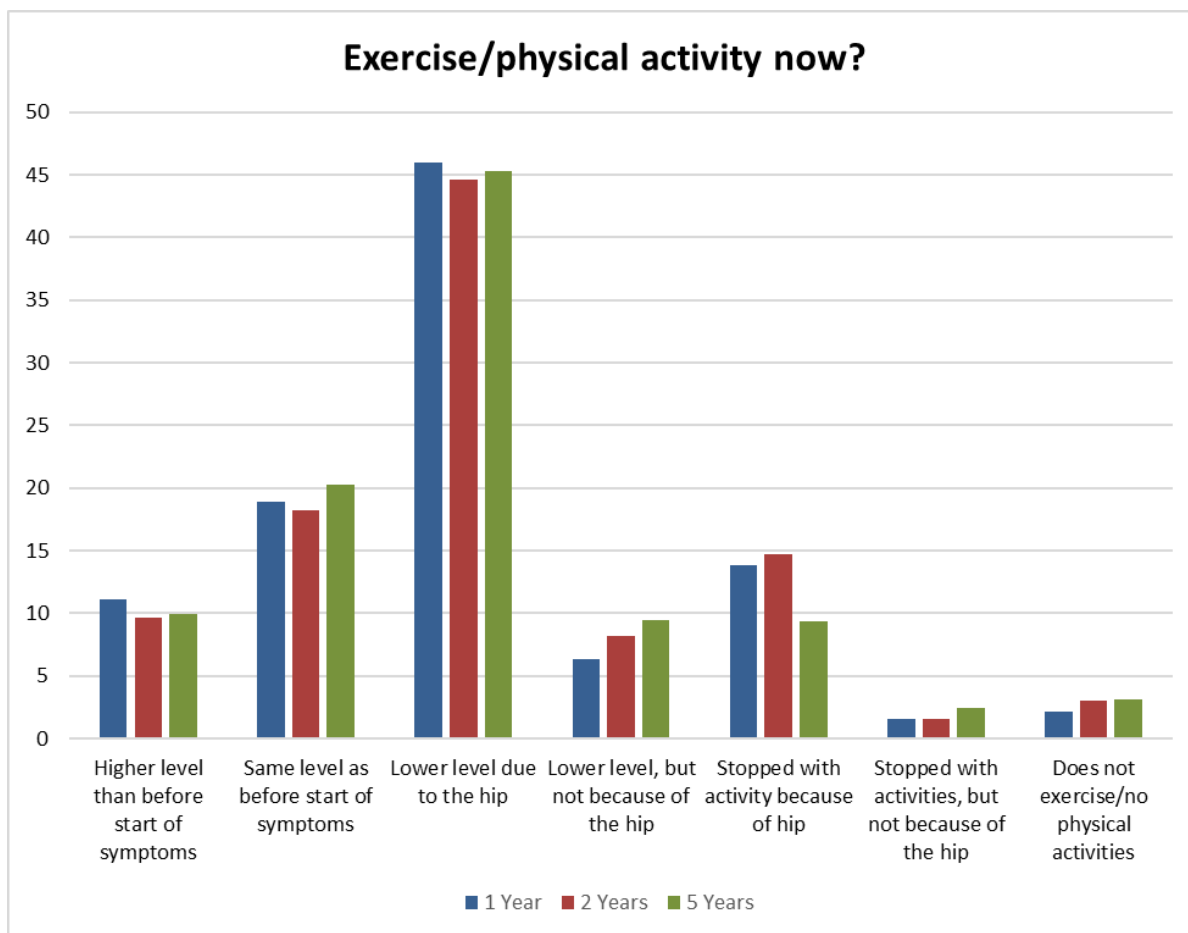


Fig. 18. Activity levels in percent after hip arthroscopy. It seems that a little less than half of the patients have decreased activity levels due to the affected hip and that this seems to be consistent over time. Ten to fifteen % have stopped their activity due to the hip condition. Notice that the X-axis due to the small numbers only goes to 50%.

Table 25. What is your exercise/physical activity level now?

N (%)	1 year	2 years	5 years
Higher level than before start of symptoms	143 (11)	106 (10)	89 (10)
Same level as before start of symptoms	243 (19)	199 (18)	182 (20)
Lower level due to the hip	590 (46)	488 (45)	406 (45)
Lower level, but not because of the hip	81 (6)	90 (8)	85 (9)
Stopped with activity because of hip	178 (14)	161 (15)	84 (9)
Stopped with activities, but not because of the hip	20 (2)	17 (2)	22 (2)
Does not exercise/no physical activities	82 (2)	33 (3)	28 (3)
Total	1283 (100)	1094 (100)	896 (100)

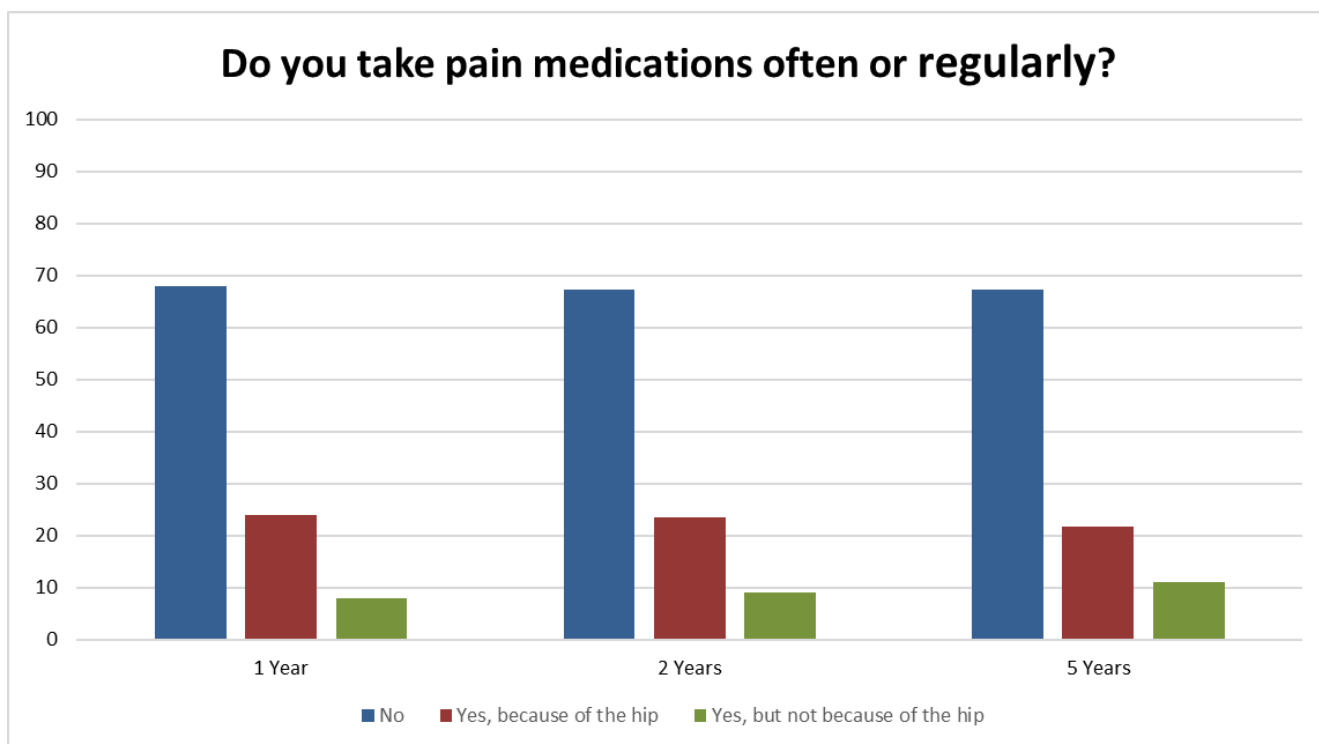


Fig. 19. Around 75 % of patients do not take pain medications regularly, due to the hip.

Table 26. Do you take pain medications due to the hip often or regularly?

N (%)	1 year	2 years	5 years
No	877 (68)	737 (67)	602 (67)
Yes, because of the hip	305 (24)	258 (24)	195 (22)
Yes, but not because of the hip	101 (8)	99 (9)	99 (11)
Total	1283 (100)	1094 (100)	896 (100)

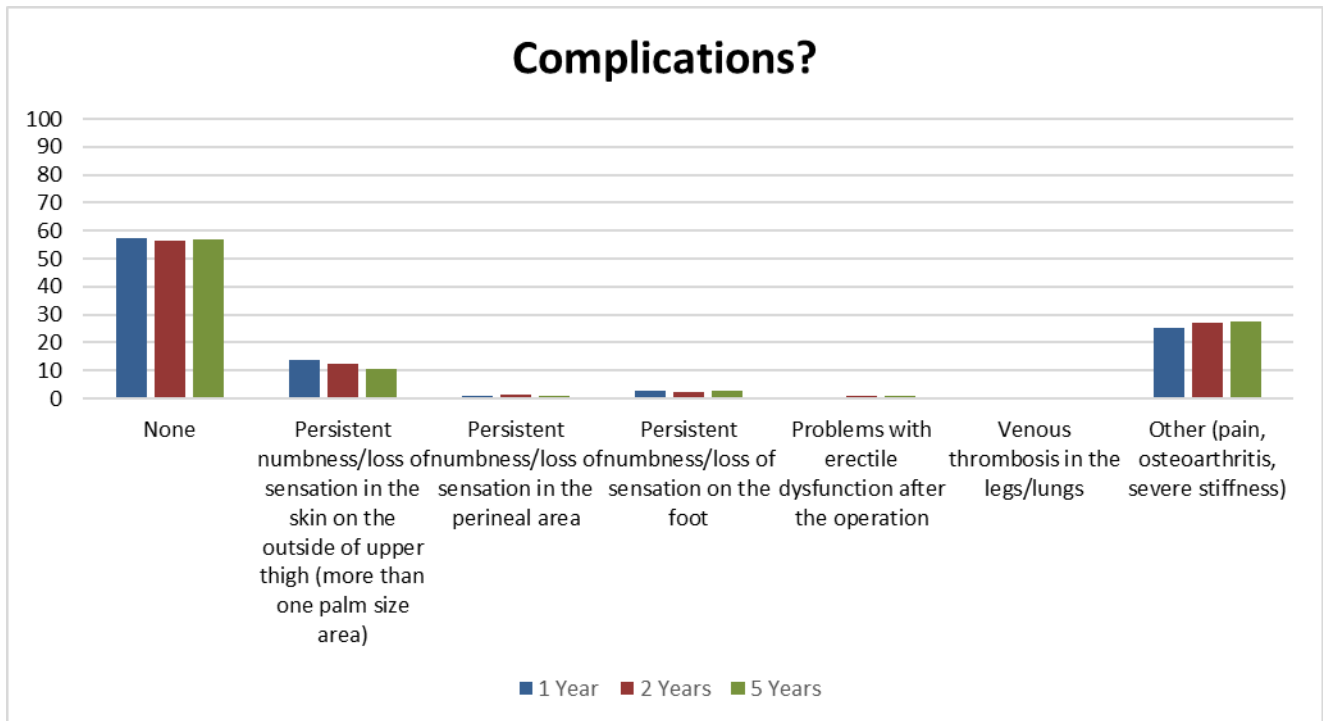


Fig. 20. Approximately 10 % of patients have persistent numbness at the LCFN, and 1 % in the perineal area/genitals.

Table 27: Complications

N (%)	1 year	2 years	5 years
None	734 (57)	615 (56)	509 (57)
Persistent numbness/loss of sensation in the skin on the outside of upper thigh (more than one palm size area)	177 (14)	134 (12)	96 (11)
Persistent numbness/loss of sensation in the perineal area	10 (1)	14 (1)	9 (1)
Persistent numbness/loss of sensation on the foot	34 (0)	24 (2)	25 (3)
Problems with erectile dysfunction after the operation	5 (1)	9 (1)	8 (1)
Venous thrombosis treatment/Pulmonary embolisms	1 (0)	2 (0)	3 (0)
Other (pain, osteoarthritis, severe stiffness)	322 (25)	296 (27)	246 (27)
Total	1283 (100)	1094 (100)	896 (100)

**Sport questions.**

We have also added questions about type of sports prior to surgery.
So far 3052 patients have entered data on sports.

Table 28: Sport

Sport prior to surgery	N (%)
Soccer	443 (15)
Fitness	435 (14)
Cycling	255 (8)
Running	238 (8)
Equestrian sport	195 (6)
Team handball	148 (5)
Martial arts	102 (3)
Gymnastics	77 (3)
Badminton	67 (2)
Golf	44 (1)
Dancing	54 (2)
Ice hockey	24 (1)
Tennis	20 (1)
Basketball	11 (0)
Other sports	742 (24)
No Sports	197 (6)

Antibiotic prophylaxis and DVT prophylaxis

Table 29. 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 (%))	2012-2020	2021	2022	2023	Total
Dicloxacillin	2231 (32)	76 (10)	79 (11)	49 (7)	2435 (26)
Cefuroxim	4341 (62)	524 (68)	512 (71)	464 (63)	5841 (63)
Cloxacillin	240 (3)	165 (22)	131 (18)	223 (30)	759 (8)
Other	6 (0)	0 (0)	0 (0)	2 (0)	8 (0)
Total	6818 (97)	765 (100)	722 (100)	738 (99)	9043 (97)
DVT Prophylaxis (n (%))	2012-2020	2021	2022	2023	Total
Dalteparin (Fragmin)	65 (1)	3 (0)	0 (0)	0 (0)	68 (1)
Fondaparinux (Arixtra)	1 (0)	0 (0)	0 (0)	0 (0)	1 (0)
Tinzaparin (Innohep)	191 (3)	0 (0)	0 (0)	1 (0)	192 (2)
Rivaroxaban (Xarelto)	875 (12)	42 (5)	37 (5)	28 (4)	982 (11)
Total	1132 (16)	45 (6)	37 (5)	29 (4)	1243 (13)

OR time

Table 30. Total OR-time (knife-time) and total traction time

OR time	2012-2020	2021	2022	2023	Total
Total OR-time (min)	75	63	61	57	71
Total traction time (min)	44	40	40	39	43

Bony work

Table 31. Relationship between rim-trimming and femoroplasty

Bony work (n (%))	2012-2020	2021	2022	2023	Total
Isolated femoroplasty	1246 (19)	92 (12)	90 (13)	97 (14)	1525 (18)
Isolated acetabular rimtrimming	860 (13)	144 (20)	166 (25)	202 (30)	1372 (15)
Comb. femoroplasty-rimtrimming	4476 (68)	491 (68)	419 (62)	381 (56)	5767 (67)

Extraarticular surgery

Table 32. Additional extraarticular procedures

Type of extraart. proc. (n (%))	2012-2020	2021	2022	2023	Total
Partial AHS resection	60 (1)	6 (1)	6 (1)	4 (1)	76 (1)
Psoas tenotomy	315 (4)	15 (2)	12 (2)	4 (1)	346 (4)
Reinsertion of gluteus medius	13 (0)	0 (0)	0 (0)	0 (0)	13 (0)
Z-plasty ITB	38 (1)	2 (0)	2 (0)	5 (1)	47 (1)
Resection of trochanteric bursa	50 (1)	1 (0)	3 (0)	1 (0)	55 (1)
Capsular closure	1757 (25)	348 (45)	311 (43)	250 (34)	2666 (29)
Remov. of hardware (AO-screws)	67 (1)	9 (1)	7 (1)	7 (1)	90 (1)
Removal of heterotopic ossification	64 (1)	8 (1)	9 (1)	9 (1)	90 (1)
Osteosynthesis of os acetabuli	5 (0)	0 (0)	0 (0)	1 (0)	6 (0)
Removal of os acetabuli	50 (1)	10 (1)	3 (0)	1 (0)	64 (1)
Infection of bone cyst	13 (0)	0 (0)	1 (0)	0 (0)	14 (0)
Other	80 (1)	3 (0)	3 (0)	0 (0)	86 (1)
Total	2512 (35)	402 (52)	357 (49)	282 (38)	3553 (38)

Types of complications during surgery

Table 33. Complications reported during surgery.

Type of complications (n (%))	2012-2020	2021	2022	2023	Total
Labrum cut	65 (1)	3 (0)	4 (1)	6 (1)	78 (1)
Anchor pull-out	124 (2)	14 (2)	14 (2)	16 (2)	168 (2)
Anchor penetration acetabular surface	58 (1)	1 (0)	4 (1)	6 (1)	69 (1)
Suture-defect (break, pull-out, etc.)	193 (3)	11 (1)	13 (2)	10 (2)	227 (2)
Broken instrument	61 (1)	3 (0)	2 (0)	6 (1)	72 (1)
Loss of traction	36 (1)	3 (0)	4 (1)	2 (0)	45 (0)
"Not possible to apply traction"	37 (1)	8 (1)	4 (1)	7 (1)	56 (1)
Other	132 (2)	8 (1)	12 (2)	12 (2)	166 (1)
Total	706 (10)	53 (7)	57 (8)	65 (9)	881 (9)



Cartilage surgery

Table 34. Types of cartilage treatment (most patients had a combination of treatments)

Type of cartilage surgery	2012-2020	2021	2022	2023	Total
Cartilage resection on femoral head	239 (4)	28 (4)	8 (1)	13 (2)	288 (3)
Cartilage resection in acetabulum	2049 (32)	179 (23)	157 (24)	167 (23)	2552 (30)
Microfracture on femoral head	19 (0)	2 (0)	2 (0)	0 (0)	23 (0)
Microfracture in acetabulum	234 (4)	19 (2)	10 (1)	10 (1)	273 (3)
Cartilage refixation on femoral head	2 (0)	0 (0)	0 (0)	0 (0)	2 (0)
Cartilage refixation in acetabulum	27 (0)	1 (0)	3 (0)	0 (0)	31 (0)
Debridement with RF-wand	3888 (60)	570 (71)	513 (74)	530 (74)	5501 (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.

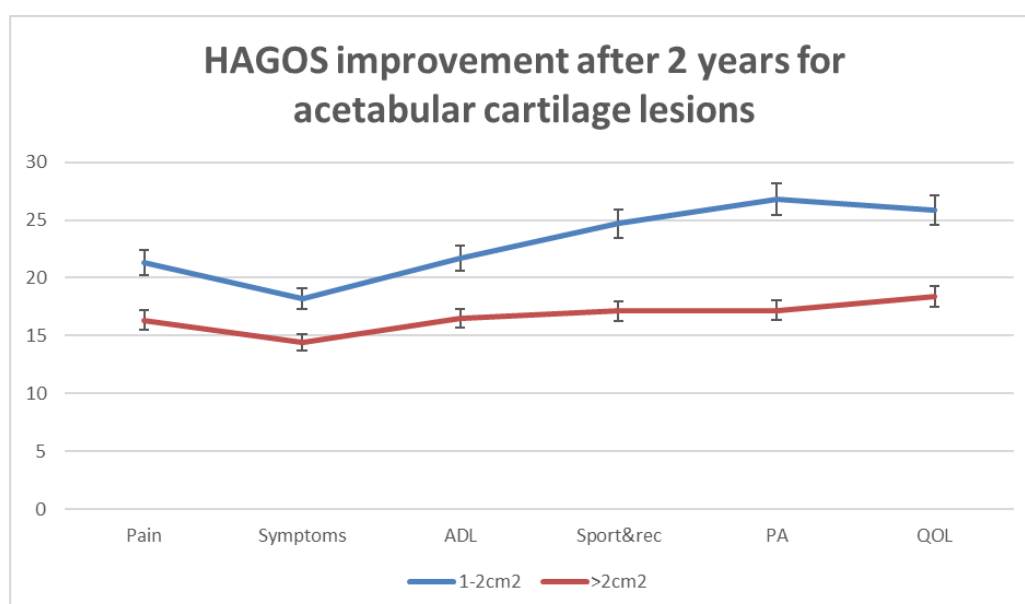


Fig. 21. Difference in HAGOS improvements at 2 years between large and smaller size cartilage lesions in the acetabulum irrespective of the grade. Only the large size lesions seem to differ from the others, and for simplicity all the smaller sizes have been pooled to one line.

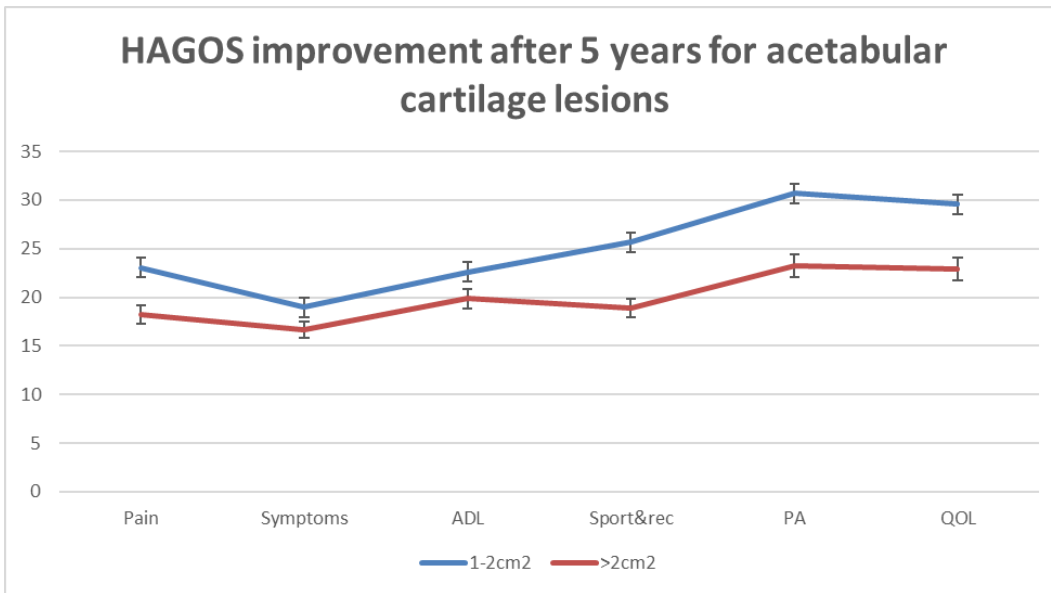


Fig. 22. Difference in HAGOS improvements at 5 years between large and smaller size cartilage lesions in the acetabulum irrespective of the grade. Only the large size lesions seem to differ from the others, and for simplicity all the smaller sizes have been pooled to one line. However, the results have improved for both groups since the 2-year results.

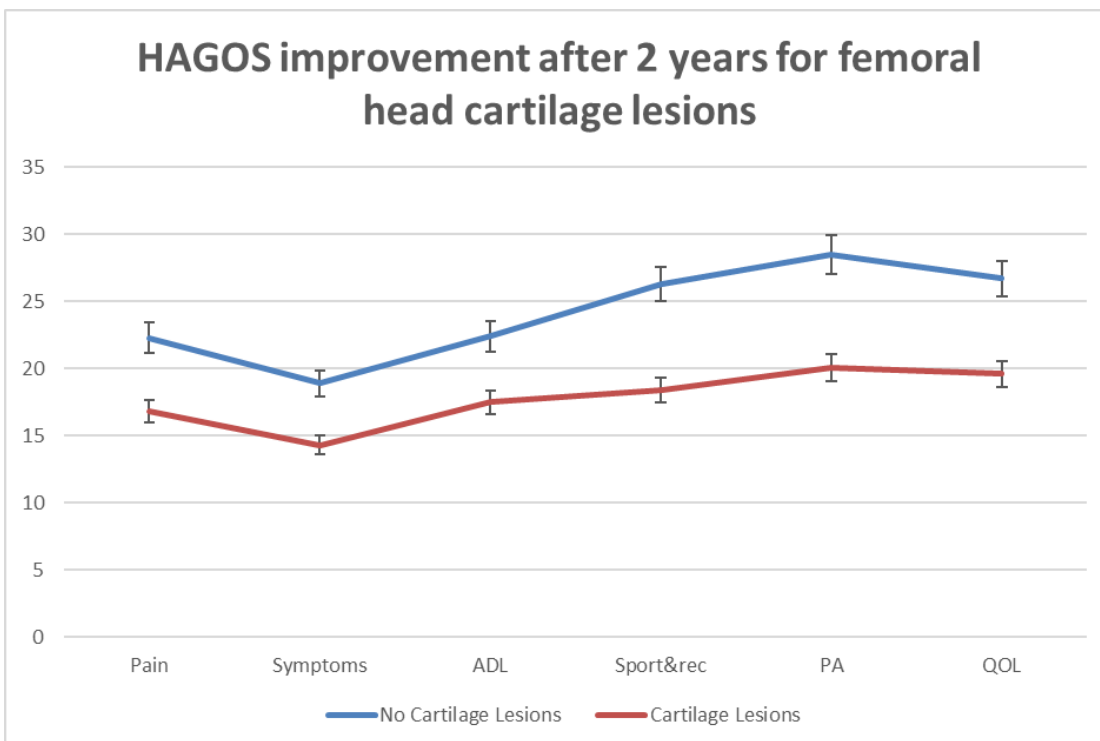


Fig. 23. Difference in HAGOS improvements at 2 years between any size cartilage lesion and no cartilage lesion at all on the femoral head irrespective of the grade. Any cartilage lesion size on the femoral head seem to differ from no lesion.

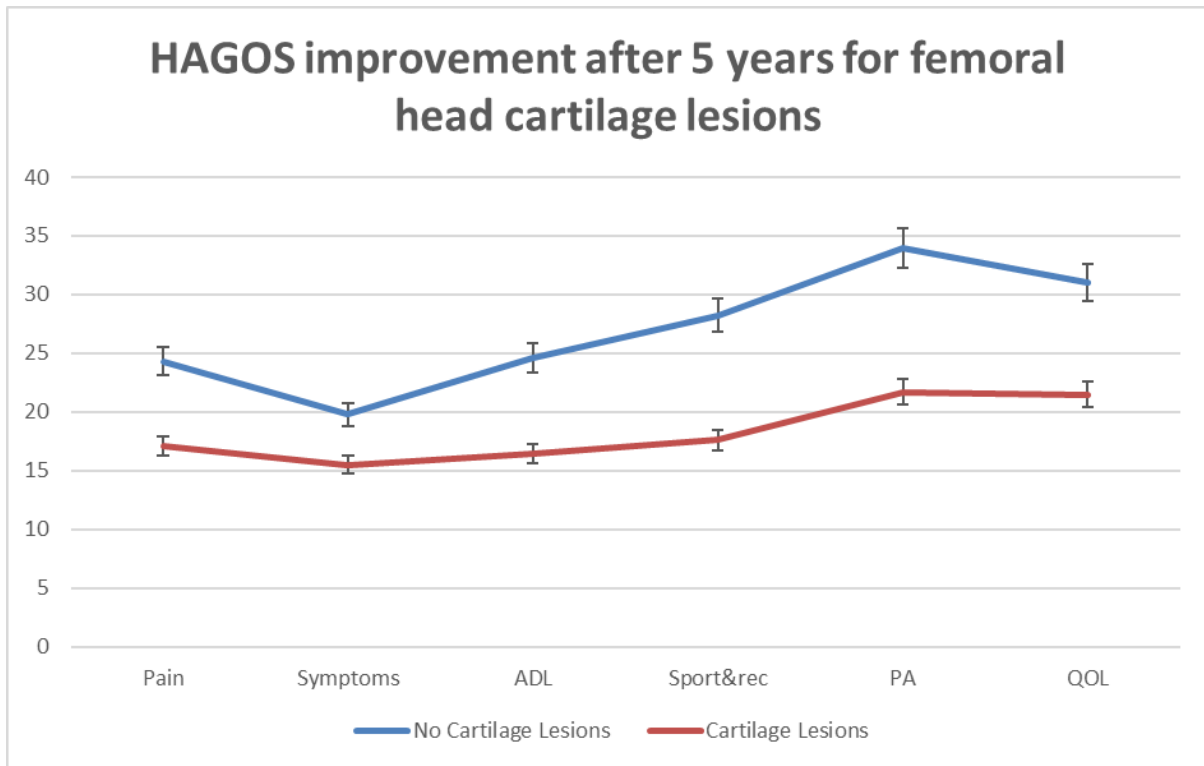


Fig. 24. Difference in HAGOS improvements at 5 years between any size cartilage lesion and no cartilage lesion at all on the femoral head irrespective of the grade. Any cartilage lesion size on the femoral head seem to differ from no lesion. The results of the “no cartilage lesion” group have improved further for the physically demanding activities and QoL since the 2-year results. It seems that results are improving further from 2-year to 5-year.

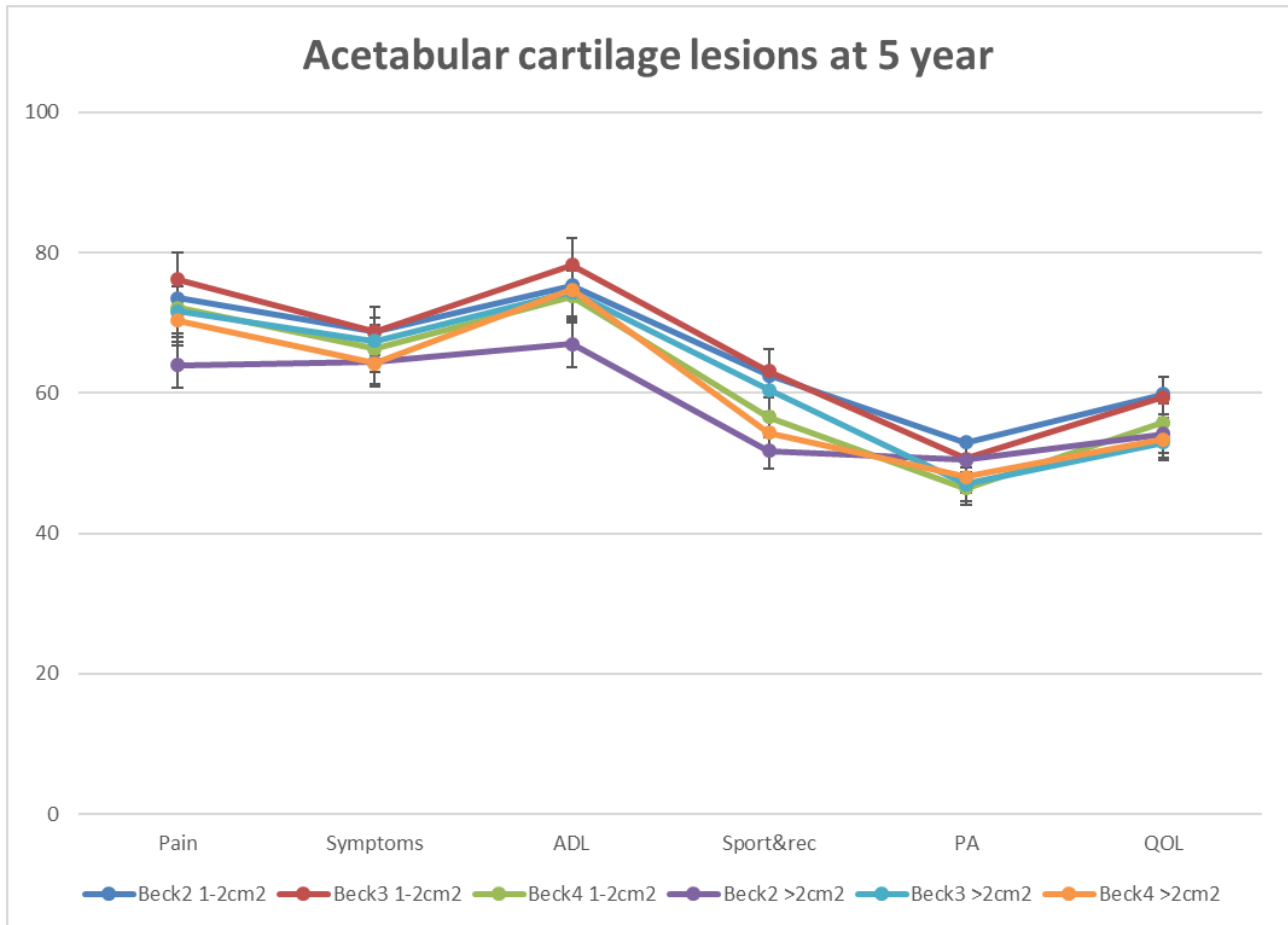


Fig. 25. The medium size grade 2 and 3 lesions have better results than all the large size lesions and the medium size grade 4 lesions. The worst results are seen in the large grade 4 lesions. The data for the largest size lesions are based on very few numbers and should be read cautiously and especially for the Beck2 >2cm2 (see table 23).