

What the papers say

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The *Journal of Hip Preservation Surgery* (JHPS) is not the only place where work in the field of hip preservation can be published. Although our aim is to offer the best of the best, we are continually fascinated by work that finds its way into journals other than our own. There is much to learn from it, so JHPS has selected six recent and topical subjects for those who seek a summary of what is taking place in our ever-fascinating world of hip preservation. What you see here are the mildly edited abstracts of the original articles, to give them what JHPS hopes is a more readable feel. If you are pushed for time, what follows should take you no more than 10 min to read. So here goes...

OUTCOMES OF FLUOROSCOPY-FREE HIP ARTHROSCOPY TECHNIQUE IN THE TREATMENT OF FEMOROACETABULAR IMPINGEMENT SYNDROME

The authors from Beijing [1], China, evaluate the effect of the fluoroscopy-free technique in the arthroscopic treatment of femoroacetabular impingement syndrome (FAIS). They carried out a retrospective cohort study. Clinical data of femoroacetabular impingement (FAI) patients treated with hip arthroscopy in the No. 4 Medical Center, PLA General Hospital, from October 2018 to December 2021 were retrospectively analysed. The patients were divided into two groups according to the surgical procedure: the fluoroscopy group and the fluoroscopy-free group. The operation time and the modified Harris hip score (mHHS), international hip outcome tool (iHOT-12) and visual analogue scale (VAS) of hip joint pain before and after the operation were observed and compared between the two groups. The incidence of surgical complications in the two groups was also compared. They reported that a total of 460 patients (213 males and 247 females) with a mean age of 32 years (15–67 years) and a valid follow-up were included in this study. There were 275 cases in the fluoroscopy-free group and 185 cases in the fluoroscopy group. The operation time was significantly shorter in the fluoroscopy-free group (93.3 min) when compared with that in the fluoroscopy group (115.6 min). In both groups, the VAS scores decreased and the mHHS and iHOT-12 scores improved significantly at the last follow-up when compared with those before the operation; however, there was no significant difference in the scores between the two groups. The complication rate

in the fluoroscopy-free group was 10.18% (28/275) and it was 10.81% (20/185) in the fluoroscopy group without any significant difference. The authors thus concluded that the fluoroscopy-free hip arthroscopy technique for FAI can avoid radiation and shorten the operation time, while it does not appear to increase the incidence of complications with reliable clinical outcomes.

GOOD FUNCTIONAL OUTCOMES AFTER ENDOSCOPIC TREATMENT FOR GREATER TROCHANTERIC PAIN SYNDROME

In this Level IV multicentre study from Sweden [2], the authors note greater trochanteric pain syndrome (GTPS) as a term covering different conditions generating lateral hip pain. Recalcitrant cases may require surgery, but there are only a few studies evaluating endoscopic treatment. This study aimed to evaluate the outcome of endoscopically treated GTPS at minimum 2 years post-operatively using patient-reported outcome measures (PROMs) and to assess the complication rate associated with endoscopic surgery.

They included a total of 33 patients, with a mean age of 43.2 years, comprising 88% women and a mean symptom duration of 3.5 years. A total of 36 hip surgeries were performed. Preoperatively and at minimum 2 years post-operatively, the patients completed questionnaires consisting of the iHOT-12 and the Hip Sports Activity Scale (HSAS), the VAS for overall hip function (VAS-OHF), the Copenhagen Hip and Groin Outcome Score (HAGOS), the EuroQoL-5 Dimension Questionnaire (EQ-5D) and the EQ-VAS. Complications were assessed using the Clavien–Dindo classification.

They reported a median follow-up time of 24.5 months post-operatively. Significant improvements were seen for the following PROMs: iHOT-12 (36.3 versus 54.0), different subscores of HAGOS (40.8 versus 59.0, 46.5 versus 62.6, 29.9 versus 53.1, 33.5 versus 51.4, 20.7 versus 41.4 and 23.4 versus 43.3), EQ-VAS (55.9 versus 63.3) and EQ-5D (0.392 versus 0.648). VAS-OHF and HSAS did not show a significant difference. There was a 71% satisfaction rate with the surgery. Three Clavien–Dindo Grade 1 and one Grade 2 complications were registered post-operatively, with 41% of patients achieving patient-acceptable symptom state (PASS) for iHOT-12 at 2 years of follow-up.

The data enabled the authors to conclude that the endoscopic surgery for GTPS improved patient-reported outcomes (PROs) and the procedure was associated with a low risk of complications.

SPINOPELVIC PARAMETERS DO NOT INFLUENCE OUTCOMES FOLLOWING PRIMARY HIP ARTHROSCOPY FOR THE TREATMENT OF FEMOROACETABULAR IMPINGEMENT SYNDROME

In this study, Knapik *et al.* [3] evaluate the influence of spinopelvic parameters on short-term post-operative PROs following primary hip arthroscopy for the treatment of FAIS.

They reviewed patients undergoing primary hip arthroscopy between January 2012 and December 2015. Hip Outcome Score—Activities of Daily Living, Hip Outcome Score—Sports-Specific Subscale, mHHS, iHOT-12 and VAS pain scores were recorded preoperatively and at the final follow-up. Lumbar lordosis (LL), pelvic tilt (PT), sacral slope and pelvic incidence (PI) were measured on lateral radiographs in standing position. Patients were split into subgroups for individual analyses based on previous literature cut-offs: $|PI-LL| > \text{or} < 10^\circ$, $PT > \text{or} < 20^\circ$ and $PI < 40^\circ$, $40^\circ < PI < 65^\circ$ and $PI > 65^\circ$. PROs and rate of achievement of PASS were compared between subgroups at the final follow-up.

They included 61 patients who underwent unilateral hip arthroscopy, of which 66% were females. The mean age of patients was 37.6 ± 11.3 years, whereas the mean body mass index (BMI) was 25.0 ± 5.7 . The mean follow-up time was 27.6 ± 9.0 months. No significant differences in preoperative or post-operative PROs were appreciated in patients with spinopelvic mismatch ($|PI-LL| > 10^\circ$) versus those without, whereas patients with mismatch achieved PASS according to the mHHS ($P = 0.037$) and iHOT-12 ($P = 0.030$) at greater rates. When they compared patients with a $PT \geq 20^\circ$ versus $PT < 20^\circ$, no significant differences in post-operative PROs were present. When they compared patients in the PI groups, such as $PI < 40^\circ$, $40^\circ < PI < 65^\circ$ and $PI > 65^\circ$, no significant differences in 2-year PROs or rates of PASS achievement for any PRO were appreciated.

In this study, the authors concluded that spinopelvic parameters and traditional measures of sagittal imbalance did not influence PROs in patients undergoing primary hip arthroscopy for FAIS. Patients with sagittal imbalance ($|PI-LL| > 10^\circ$ or $PT > 20^\circ$) achieved a greater rate of PASS.

QUANTIFYING SURGEON INTUITION USING A JUDGEMENT ANALYSIS MODEL: SURGEON ACCURACY OF PREDICTING PATIENT-REPORTED OUTCOMES IN PATIENTS UNDERGOING HIP ARTHROSCOPY FOR FEMOROACETABULAR IMPINGEMENT IS MODERATE AT BEST

The authors from Rochester, NY, United States, [4] quantify surgeon intuition, determine whether a surgeon's prediction of outcomes after hip arthroscopy correlates with actual PRO and identify differences in clinical judgement between expert and novice examiners in this Level III study.

The prospective, longitudinal study was conducted at an academic medical centre on adults undergoing primary hip arthroscopy for the treatment of FAI. A Surgeon Intuition and Prediction (SIP) score was completed preoperatively by an attending surgeon (expert) and physician assistant (novice). Baseline and post-operative outcome measures included legacy hip scores (e.g. mHHS) and Patient-Reported Outcomes Information System tools. Mean differences were assessed using *t*-tests. Generalized estimating equations assessed longitudinal changes. Pearson correlation coefficients (*r*) evaluated associations between SIP score and PRO scores.

Data from 98 patients (mean age 36 years, 67% females) with complete datasets at 12-month follow-up were analysed. Weak-to-moderate strength correlations were seen between SIP score and PRO scores ($r = 0.36$ to $r = 0.53$) for pain, activity and physical function. Significant improvements were seen in all primary outcome measures at 6 and 12 months post-operatively when compared with baseline scores, with about 50–80% of patients achieving the minimum clinically important difference and patient-acceptable symptomatic state thresholds post-operatively.

In this interesting study, the authors noted that an experienced, high-volume hip arthroscopist had only weak-to-moderate ability to intuitively predict PRO. Surgical intuition and judgement were not superior in an expert examiner compared with a novice.

LIMITED EXTERNAL ROTATION AND HIP EXTENSION DUE TO POSTERIOR EXTRA-ARTICULAR ISCHIOFEMORAL HIP IMPINGEMENT IN FEMALE PATIENTS WITH INCREASED FEMORAL ANTEVERSION: IMPLICATIONS FOR SPORTS, SEXUAL AND DAILY ACTIVITIES

The authors from Switzerland and the United States [5] state that the posterior FAI is poorly understood. Patients with increased femoral anteversion (FV) exhibit posterior hip pain.

The aim of their Level III cross-sectional study was to correlate the hip impingement area with FV and with a combined version and to investigate the frequency of limited external rotation (ER) and hip extension ($< 40^\circ$, $< 20^\circ$ and $< 0^\circ$) due to posterior extra-articular ischiofemoral impingement.

In this study, osseous patient-specific three-dimensional (3D) models based on 3D computed tomography scans were generated for 37 female patients (50 hips) with positive posterior impingement test (100%) and increased FV $> 35^\circ$ (Murphy method). Surgery was performed in 50% of patients (mean age, 30 years; 100% females). FV and acetabular version (AV) were added to calculate the combined version. Subgroups of patients (24 hips) with increased combined version $> 70^\circ$ and patients (9 valgus hips) with increased combined version $> 50^\circ$ were analysed. The control group (20 hips) had normal FV, normal AV and no valgus. Bone segmentation was performed to generate 3D models of every patient. Validated 3D collision detection software was used for the simulation of impingement-free hip motion (equidistant method). The impingement area was evaluated in combined 20° of ER and 20° of extension.

They noted that the posterior extra-articular ischiofemoral impingement occurred between the ischium and the lesser trochanter in 92% of patients with FV $>35^\circ$ in combined 20° of ER and 20° of extension. The impingement area in combined 20° of ER and 20° of extension was larger with increasing FV and with a higher combined version; the correlation was significant ($r = 0.57$ and $r = 0.65$). The impingement area was significantly larger (681 versus 296 mm²) for patients with combined version $>70^\circ$ (versus $<70^\circ$, respectively) in combined 20° of ER and 20° of extension. All symptomatic patients with increased FV $>35^\circ$ (100%) had limited ER $<40^\circ$, and most (88%) had limited extension $<40^\circ$. The frequency of posterior intra- and extra-articular hip impingement of symptomatic patients (100% and 88%, respectively) was significantly higher compared with the control group (10% and 10%, respectively). The frequency of patients with increased FV $>35^\circ$ with limited extension $<20^\circ$ (70%) and patients with limited ER $<20^\circ$ (54%) was significantly higher compared with the control group (0% and 0%, respectively). The frequency of completely limited extension $<0^\circ$ (no extension) and ER $<0^\circ$ (no ER in extension) was significantly higher for valgus hips (44%) with combined version $>50^\circ$ compared with patients with FV $>35^\circ$ (0%).

The authors concluded that all patients with increased FV $>35^\circ$ had limited ER $<40^\circ$, and most of them had limited extension $<20^\circ$ due to posterior intra- or extra-articular hip impingement. This was deemed important for patient counselling, physical therapy and planning of hip preservation surgery (e.g. hip arthroscopy). This finding has implications and could limit daily activities (long-stride walking), sexual activity, ballet dancing and sports (e.g. yoga or skiing) although not studied directly. A good correlation between the impingement area and combined version supports the evaluation of combined version in female patients with positive posterior impingement test or posterior hip pain.

PATIENT-REPORTED OUTCOMES AND SURVIVORSHIP ARE NOT DIFFERENT FOR PRIMARY HIP ARTHROSCOPY PATIENTS OF AGE 50 YEARS AND OLDER COMPARED WITH A 20- TO 35-YEAR-OLD MATCHED COHORT AT MINIMUM 5-YEAR FOLLOW-UP

In this Level III study, Shankar et al [6] aim to assess clinical outcomes among patients aged ≥ 50 years after primary hip arthroscopy for FAI with or without labral tears compared with a matched control group of younger patients aged 20–35 years at a minimum 5-year follow-up.

They conducted a retrospective, comparative prognostic study using a prospectively collected database of patients who underwent hip arthroscopy with a minimum 5-year follow-up. Subjects completed the mHHS and Non-Arthritic Hip Score (NAHS) before surgery and at 5-year follow-up. Patients aged ≥ 50 years

were propensity score matched on sex, BMI and preoperative mHHS to controls aged 20–35 years. Pre- to post-operative changes in the mHHS and NAHS were compared between groups using the Mann–Whitney U-test. Hip survivorship rates and minimum clinically important difference achievement rates were compared between the groups using Fisher's exact test. $P < 0.05$ was considered statistically significant.

In total, 35 older patients (mean age 58.3 years) were matched to 35 younger controls (mean age 29.2 years). Both groups were mostly female (65.7%) and had equal mean BMI (26.0). Acetabular chondral lesions of Outerbridge Grades III and IV were more prevalent in the older group (older 28.6% versus younger 0%). Five-year reoperation rates were not significantly different between the groups (older 8.6% versus younger 2.9%, $P = 0.61$). There were no significant intergroup differences in 5-year improvement in the mHHS (older 32.7 versus younger 30.6) or NAHS (older 34.4 versus younger 37.9) or in 5-year minimum clinically important difference achievement rates for the mHHS (older 93.6% versus younger 93.6%) or NAHS (older 87.1% versus younger 96.8%).

The authors thus concluded that there are no significant differences in reoperation rates and PROs between patients aged ≥ 50 years versus matched controls aged 20–35 years after primary hip arthroscopy for FAI.

CONFLICT OF INTEREST STATEMENT

None declared.

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