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, and 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.

ARTHROSCOPIC HIP SURGERY VERSUS CONSERVATIVE THERAPY ON FEMOROACETABULAR IMPINGEMENT SYNDROME: A META-ANALYSIS OF RCTS

In this meta-analysis, the authors from China [1] determined the outcome and differences between arthroscopic hip surgery and conservative therapy in patients suffering from femoroacetabular impingement syndrome (FAIS). They searched the articles from PubMed, Embase, Cochrane, Web of Science and Clinicaltrials.gov using a Boolean search algorithm. Only randomized controlled trials comparing arthroscopic hip surgery and conservative therapy were included in this meta-analysis of FAIS management. Two authors determined the eligibility, extracted the needed data and assessed the risk of bias of eligible studies independently. Then they undertook the meta-analysis of three articles to assess pooled estimate size (ES) and 95% confidence interval for Hip Outcome Score of activities of daily living (HOS ADL) subscale, Hip Outcome Score sports (HOS sports) subscale and International Hip Outcome Tool (iHOT-33). Analyses were performed using STATA version 14.0 MP with the principal summary measures were mean between group difference, sample size and standard deviation. They collected 52 articles in total after removing duplicates and screened by titles and abstracts. A total of three RCTs were included finally. There was definite evidence of additional benefit of arthroscopic hip surgery against conservative therapy in the field of improving quality of life (three trials, 575 participants, ES = 2.109 (1.373– 2.845), I2 = 42.8%) and activity of daily living (two trials, 262)

participants, ES = 9.220 (5.931–12.508), I2 = 16.5%). However, no significant difference could be seen in sports function improvement (two trials, ES = 7.562 (–2.957–18.082), I2 = 60.1%). The authors concluded in this meta-analysis that arthroscopic hip surgery provided essential benefit compared with conservative therapy in improving activity of daily living and quality of life.

THE KEY PARTS OF HIP ARTHROSCOPY FOR FEMOROACETABULAR IMPINGEMENT SYNDROME: IMPLICATIONS FOR THE LEARNING CURVE

In this study, Wininger et al. [2] note that hip arthroscopy is a rapidly growing surgical approach to treat femoroacetabular impingement (FAI) syndrome with a significant learning curve pertaining to complication risk, reoperation rate and total hip arthroplasty conversion. Although hip arthroscopy is more frequently being taught in residency and fellowship training, the authors highlighted that the key, or critical, parts of the technique have not yet been defined. They aimed to identify the key components required to perform arthroscopic treatment of FAI syndrome.

The study design was that of a consensus statement. A three-question survey comprising questions on hip arthroscopy for FAI was sent to a convenience sample of 101 high-volume arthroscopic hip surgeons in the United States. Surgeon career length (years) and maintenance volume (cases per year) were queried. Hip arthroscopy was divided into 10 steps using a Delphi technique to achieve a convergence of expert opinion. A step was considered 'key' if it could (i) avoid complications, (ii) reduce risk of revision arthroscopy, (iii) reduce risk of total hip arthroplasty conversion or (iv) optimize patient-reported outcomes. Based on previous literature, steps with > 90% of participants were defined as key. Descriptive and correlation statistics were calculated.

A total of 64 surgeons (63% response rate) reported 5.6 ± 2.1 steps as key. Most surgeons (56.3%) had been performing hip arthroscopy for > 5 years. Most surgeons (71.9%) had performed > 100 hip arthroscopy procedures per year. Labral treatment (97% agreement) and cam correction (91% agreement)

were the two key steps of hip arthroscopy for FAI. Pincer/subspine correction (86% agreement), dynamic examination before capsular closure (63% agreement) and capsular management/closure (63% agreement) were selected by a majority of respondents but did not meet the study definition of key. There was no significant correlation between surgeon experience and designation of certain steps as key.

The authors concluded that based on a Delphi technique and expert opinion survey of high-volume surgeons, labral treatment and cam correction were the two key parts of hip arthroscopy for FAI syndrome.

INDICATIONS AND OUTCOMES AFTER LIGAMENTUM TERES RECONSTRUCTION: A SYSTEMATIC REVIEW

The authors from the United States [3] systematically reviewed the literature to better understand the current indications for ligamentum teres reconstruction (LTR), current graft and acetabular fixation options used, patient-reported outcomes after LTR and incidence of complications and reoperations after LTR.

They conducted a systematic review according to the Preferred Reporting Items for Systematic Reviews and Metaanalyses statement. All literature works related to LTR published prior to July 2020 were identified. The inclusion criteria consisted of investigations reporting on human patients with pathology of the ligamentum teres who underwent LTR, including mentions of the indications, graft type, acetabular fixation method, post-operative patient-reported outcome scores and incidence of complications and reoperations.

Seven studies comprising 26 patients (28 hips) were included. The most commonly reported indication for LTR was persistent pain and instability after failed prior hip arthroscopy (68%, 19 of 28 hips). The mean post-operative modified Harris Hip Score, Non-arthritic Hip Score and visual analogue scale score all showed improvement when compared with pre-operative values. A total of two complications occurred. Complication rates ranged from 0 to 100% in included case reports and 0 to 11% in included case series. A total of nine reoperations were performed. Reoperation rates ranged from 0 to 100% for case reports and 18 to 100% for case series. Reoperation rates ranged from 33 to 100% in studies with patients receiving acetabular fixation using anchors versus 0 to 22% in studies performing LTR with buttons. Reoperation rates in athletic patients and patients with Ehlers-Danlos syndrome ranged from 0 to 100% and 0 to 50%, respectively.

The authors maintained that the main indication for LTR was persistent hip or groin pain and instability after a prior hip arthroscopy. The short-term post-operative modified Harris Hip Score, Non-arthritic Hip Score and visual analogue scale score after LTR showed favourable outcomes. However, reoperations after LTR were not uncommon.

FUNCTIONAL OUTCOMES OF ARTHROSCOPIC TREATMENT IN 230 FEMOROACETABULAR IMPINGEMENT CASES

The authors from Brazil [4] analysed the functional outcomes after arthroscopic treatment of FAI. A total of 194 patients (131 males and 63 females), with a mean age of 39 and 43 years

for males and females, respectively, were included. The mean follow-up was 17 months. In total, 103 patients presented with cam-type, 25 with Pincer-type and the remaining 102 with mixed impingement. Unilateral arthroscopy was performed in 161 cases, bilateral (only once each side) in 46 cases and multiple (more than one procedure on the same hip) in 23 cases. Women had greater prevalence of Pincer-type FAI (76%), while in males the prevalences of mixed and cam-type impingement were 74.5% and 72.8%, respectively. The mean HHS score was 63.7 pre-operatively and 87.1 post-operatively. The complications rates in this series were 18.7% and 7% progressed to total hip arthroplasty. The arthroscopic FAI treatment improved the post-operative clinical scores of these patients, especially in cases of mixed-type FAI, which had a greater improvement. They noted that insufficient femoral osteoplasty was the main cause for surgical re-intervention, particularly in the initial cases of this series.

PRE-AND POST-OPERATIVE WALKING GAIT IN FEMALES WITH ACETABULAR LABRAL TEARS AND FEMOROACETABULAR IMPINGEMENT SYNDROME

In this case-control study, the authors from Hawaii [5] explored the symptomatic FAIS, which being a painful condition leads to decreased function. They evaluated how the walking gait changes over time following surgery for FAIS earlier than one year and how these changes present in females? Their aim was to determine biomechanical gait differences between females with FAIS/labral tears and controls pre-operatively and at three- and six-months post-operatively. The study included 18 female participants (nine FAIS patients and nine controls). The main outcome measures included between-group comparisons of the Hip Outcome Score activity of daily living subscale (HOS ADL) and gait biomechanics, which were evaluated at pre-operative, three and six-months post-operative sessions. Statistical parametric mapping was conducted on normalized time-series data.

Pre-operatively, the FAIS group had significantly poor HOS ADL scores [pre-operative: 64.1 (15.4), controls 100.0 (0)], walked 15% slower and had several gait differences compared to the controls. Three months post-operatively, the FAIS group had significantly greater vGRF, ankle dorsiflexion angles and external dorsiflexion moment in midstance, as well as greater knee flexion through the second half of stance. The FAIS group also demonstrated significantly less hip extension and hip abduction through the second half of stance, which transitioned into less hip extension and hip abduction during the subsequent swing phase. The FAIS improved their HOS ADL to 87.6 (7.6) by six-months post-operatively and had significantly greater dorsiflexion moment and ankle external rotation during stance. The FAIS patients also showed greater external hip ER moment in late stance.

The authors concluded that most biomechanical differences between groups occurred at three-months post-operatively, suggesting that female FAIS patients have more post-operative gait compensations in the short-term after surgery. By sixmonth post-operatively, the patient-reported outcomes greatly improved and there were few gait differences compared to the control group.

MAXIMAL HIP MUSCLE STRENGTH AND RATE OF TORQUE DEVELOPMENT 6-30 MONTHS AFTER HIP ARTHROSCOPY FOR FEMOROACETABULAR IMPINGEMENT SYNDROME: A CROSS-SECTIONAL STUDY

The authors from Denmark, Australia and USA [6] report in this cross-sectional study that reduced sports function is often observed after hip arthroscopy for FAIS. Impaired muscle strength could be a reason for this. They investigated hip muscle strength after hip arthroscopy for FAIS and its association with sports function and participation.

They included 45 patients (34 males; mean age: 30.6 years) after unilateral hip arthroscopy for FAIS (mean follow-up 19.3 months). Maximal isometric hip muscle strength (Nm/kg) including early (0–100 ms) and late-phase (0–200 ms) rate of torque development (Nm*kg⁻¹*s⁻¹) for adduction, abduction, flexion and extension was measured with an externally fixated handheld dynamometer and compared between operated and non-operated hip. Associations between muscle strength and self-reported sports function and return to sport were investigated.

For maximal hip muscle strength, no significant between-hip differences were observed for adduction, abduction, flexion and extension. However, for rate of torque development, significantly lower values were observed for the operated hip in flexion at both 0–100 ms (mean difference: 1.58 Nm*kg⁻¹*s⁻¹) and 0–200 ms (mean difference: 0.72 Nm*kg⁻¹*s⁻¹). Higher maximal hip extension strength was significantly associated with greater ability to participate fully in pre-injury sport at pre-injury level (odds ratio: 17.71, 95% CI 1.77, 177.60).

The authors concluded that after hip arthroscopy for FAIS subjects show limited impairments in maximal and explosive hip muscle strength between operated and non-operated hip. Higher muscle strength was positively associated with higher sports function and ability to participate in sport.

CONFLICT OF INTEREST STATEMENT

None declared.

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