

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, which 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 ...

PATIENTS GENERALLY MAY RETURN TO DRIVING 4 WEEKS AFTER HIP ARTHROSCOPY AND 6 WEEKS AFTER KNEE ARTHROSCOPY: A SYSTEMATIC REVIEW AND META-ANALYSIS

In this study, Palma *et al.* [1] explore an important question that patients often pose, when can I drive after the operation doc? The authors consolidate the evidence from the available literature and undertake a meta-analysis to provide a reference for physicians to make evidence-based recommendations to their patients regarding the return to driving after hip or knee arthroscopic procedures.

They conducted a systematic review using Preferred Reporting Items for Systematic Reviews and Meta-analyses guidelines. The OVID, Embase and Cochrane databases were searched through June 2020 for articles containing keywords and/or Medical Subject Headings terms ‘hip arthroscopy’ and ‘knee arthroscopy’ in conjunction with ‘total brake response time’ or ‘reaction time’ in the context of automobile driving. A title review and full article review were performed to assess quality and select relevant articles. A meta-analysis of qualifying articles was undertaken.

The authors found eight studies that met the inclusion criteria for meta-analysis of brake reaction time (BRT). Meta-analysis of all knee BRTs showed times slower than or equal to baseline BRTs through 5 weeks, with a trend of improving BRTs from 6 to 10 weeks (Weeks 8 and 10 were significant). Among all hip BRTs, Week 2 showed times slower than baseline BRTs, but after Week 4, a trend toward faster BRTs was observed through Week 8 (Week 8 was significant).

The authors concluded that the BRTs met baseline or control values and continued to improve after 6 weeks following knee arthroscopy and after 4 weeks following hip arthroscopy. On the basis of these results, it would be safe to recommend a return to driving at 6 weeks after knee arthroscopic procedures and 4 weeks after hip arthroscopic procedures.

The authors suggested that these results can be used by surgeons to base their recommendations on to provide guidance for their patients on the resumption of driving. Although BRT is an important aspect of driving ability, there are additional factors that need to be taken into consideration when making these recommendations, including cessation of opioid analgesics, strength of the surgical limb and range of motion.

THE EFFECTIVENESS OF PERIPHERAL COMPARTMENT FIRST ACCESS AND PERIORTAL CAPSULOTOMY TECHNIQUE FOR ARTHROSCOPIC MANAGEMENT OF FEMOROACETABULAR IMPINGEMENT: A PROSPECTIVE CASE SERIES

The authors from Ankara and Istanbul, Turkey [2] evaluate the functional results of hip arthroscopy for femoroacetabular impingement (FAI) performed via the periportal capsulotomy technique combined with capsular thinning and peripheral compartment first access.

In this prospective study, the authors included 34 patients (20 female, 14 male; mean age 32.3 years) treated for FAI and labral tears. In the radiographic evaluation, center-edge angle (CEA) and alpha angle were measured preoperatively and postoperatively. Patients’ functional status was assessed at 3, 6, 12 and 24 months using the modified Harris Hip Score (mHHS), Hip Disability and Osteoarthritis Outcome Score—Activities of Daily Living (HOOS-ADL) and Hip Disability and Osteoarthritis Outcome Score—Sports-Specific Subscale (HOOS-SSS) and visual analog scale (VAS).

They reported that mean alpha angle decreased from 55.5° preoperatively to 48.3° postoperatively. The mean CEA decreased from 39.2° preoperatively to 32.9° postoperatively. The mean duration of surgery was 96.7 min, while the mean traction time was 45.5 min. The mean mHHS at the 3, 6, 12

and 24 months showed a significant increase compared to the preoperative value. The mean HOOS-ADL and HOOS-SSS at the postoperative 3, 6 and 12 months demonstrated a significant increase compared to the preoperative values. The same scores measured at the 24th month, however, did not demonstrate any significant increase. The mean VAS scores at the 3 and 6 months postoperative illustrated a significant decrease compared to the preoperative values, whereas this significant decrease was not observed at 12 and 24 months.

The authors thus concluded that the combined technique of periportal capsulotomy and capsular thinning used in this study seems to be a reliable surgical method with favorable functional results, a low complication rate and a low risk of hip instability.

MACHINE LEARNING MODEL IDENTIFIES INCREASED OPERATIVE TIME AND GREATER BODY MASS INDEX AS PREDICTORS FOR OVERNIGHT ADMISSION AFTER OUTPATIENT HIP ARTHROSCOPY

The authors from multiple institutions in the United States [3] state that the purpose of this study was to identify patient characteristics and risk factors for overnight admission following outpatient hip arthroscopy and to develop a machine learning algorithm that could effectively identify patients requiring admission following elective hip arthroscopy.

They carried out a retrospective review of a prospectively collected national surgical outcomes database to identify patients who underwent elective outpatient hip arthroscopy from 2006 to 2018. Patients admitted overnight postoperatively were identified as those with length of stay of one or more days. Models were generated using random forest, extreme gradient boosting (XGBoost), adaptive boosting (AdaBoost) and elastic net penalized logistic regression, and an additional model was produced as a weighted ensemble of the four final algorithms.

The authors included 1276 patients in this study. The median age was 43 years, and 64.2% (819) were female. Of the included patients, 109 (8.5%) required an overnight stay following elective outpatient hip arthroscopy. The most important factors for inpatient admission were increasing operative time, general anesthesia, age extremes, male gender, greater body mass index (BMI), American Society of Anesthesiologists classification >1 and the following preoperative lab values outside of normal ranges: sodium, platelet count, hematocrit and leukocyte count. The ensemble model achieved the best performance based on discrimination assessed via internal validation (area under the curve = 0.71), calibration and decision curve analysis. The model was integrated into a web-based open-access application able to provide both personalized predictions and explanations.

The researchers developed a machine learning algorithm based on preoperative features identified increasing operative time, age extremes, greater BMI, sodium, hematocrit, platelets and leukocyte count as the most important variables associated with inpatient admission with fair validity.

ARTHROSCOPIC ACETABULAR LABRUM RECONSTRUCTION WITH CAPSULAR AUTOGRAFT: CLINICAL OUTCOME AND PRELIMINARY RESULTS

The authors from China and India [4] introduce a novel technique to reconstruct the acetabular labrum using capsular autograft and evaluate the preliminary clinical outcome. A retrospective review of a prospectively collected registry was undertaken that identified 21 patients (21 hips) who underwent arthroscopic reconstruction of the labrum by capsular autograft. Modified Harris Hip Score (mHHS), Hip Outcome Score (HOS) and Hip Outcome Score-Activities of Daily Living (HOS-ADL) were recorded preoperatively and postoperatively. Clinical outcomes were analyzed to evaluate the effectiveness of this technique. Twenty-one patients, with an average follow-up of 25.4 months, were included in this study. Seven patients were diagnosed with hypoplastic labrum (width < 5 mm), nine patients with complex tear of the labrum and five patients with degenerative labrum. The mHHS (61.3 versus 87.5), HOS (52.5 versus 87.3, $P < 0.001$) and HOS-ADL (48.5 versus 75.2) between preoperative and the 6 month follow-up, respectively, were significantly better. Authors found that gender did not influence the outcome. They concluded that local capsular autograft is readily available during arthroscopy with no donor-site morbidity. The authors further commented that the reconstruction of the hip labrum may be valuable for patients with hypoplastic or dysplastic labrum, complex tear of labrum and severe degeneration.

IN-LINE PULLOUT STRENGTH OF 2 ACETABULAR FIXATION METHODS FOR LIGAMENTUM TERES RECONSTRUCTION OF THE HIP: A CADAVERIC STUDY

In this study, Lall *et al.* [5] note that Ligamentum teres (LT) reconstruction is an appropriate alternative in select cases of LT full-thickness tears, resulting in hip microinstability or macroinstability. Graft fixation at the acetabular fossa is critical to achieving the best functional results. The purpose of their study was to compare the pullout strength of two graft fixation methods used for LT reconstruction of the hip, and they used the study design of a controlled laboratory study.

In seven cadaveric specimens, the acetabular socket was prepared after the native LT was transected and the femoral head was removed. Seven separate tibialis anterior grafts were then prepared by suturing a running-locking No. 2 suture on each tail of the graft. Three specimens had fixation of the graft to the acetabulum using an adjustable cortical suspension suture button; the remaining four were fixed to the acetabulum using a knotless suture anchor. Specimens were then mounted onto a custom jig within a mechanical test frame to allow for the in-line pull of the graft fixation construct. After a preload of 5 N, each specimen was loaded to failure at 0.5 mm/s. Stiffness and load to failure were measured for each specimen construct.

The authors noted that suture button fixation had a higher mean load to failure when compared with the knotless anchor fixation method (mean 438.1 versus 195.9 N). There was no

significant difference in mean stiffness between the methods of fixation (24.5 versus 26.5 N/mm). The authors summarized that in this cadaveric study, the suture button fixation demonstrated a greater load to failure than the knotless anchor fixation. Results of this study can guide surgical decision-making when selecting an acetabular fixation method for LT reconstruction.

ISOLATED ARTHROSCOPIC TREATMENT OF INTRA-ARTICULAR PATHOLOGIES IN MILD HIP DYSPLASIA: A SHORT-TERM CASE CONTROL STUDY

The authors from Bologna, Italy [6] aim to compare the results of isolated hip arthroscopy in patients with borderline dysplasia with lateral center-edge angle (LCEA) between 18° and 25° with a control group of patients with normal LCEA (>25°) in this study.

Fifty hip arthroscopies performed in 45 patients were retrospectively evaluated. The exclusion criteria were age >40, hip arthritis >Grade 2 on Tonnis classification, femoral head avascular necrosis, pediatric orthopedic conditions and true dysplasia with LCEA <18°. Two groups were identified by the authors: Group A with 15 hips had LCEA between 25° and 18° and Group control B made of 35 hips with LCEA >25°.

They found that the groups were homogeneous for demography and preoperative WOMAC and HOOS. Osteoplasty for Cam was performed in 100% of patients in both groups; only in 12 hips (34.4%) in Group B, they had both femoral and acetabular osteoplasty. Labral repair was performed in 86% of patients in Group A while in 60% of patients in Group B, capsular plication in 93% of Group A and in 5% of the cases of Group B. WOMAC and HOOS statically significant improved in both groups at the final follow-up of 24 months. No cases in both groups required

conversion to total hip arthroplasty. Clinical outcomes of study group were comparable to the control group.

The authors thus concluded that even if the present small series was not conclusive, it suggested that isolated arthroscopic management of patients with FAI and LCEA between 18° and 25° is feasible; however, capsular plication and careful labral management strategies were strongly recommended.

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CONFLICT OF INTEREST STATEMENT

None declared.

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