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Upper extremity

Arthroscopy, Volume 41, Issue 4

Arthroscopic Subacromial Balloon Spacer for Massive Rotator Cuff Tears Demonstrates Improved Shoulder Functionality and High Revision-Free Survival Rates at a Minimum 5-Year Follow-Up

A.Kishan, R. Russo

DOI: https://doi.org/10.1016/j.arthro.2024.06.024

Purpose: To investigate the efficacy of arthroscopic subacromial balloon placement for massive rotator cuff tear (MRCT), assessing patient satisfaction, outcomes, shoulder functionality, pain scores, and revision-free survivorship up to 8 years after the initial surgery.

Methods: In this retrospective study with prospective data collection, patients with MRCTs undergoing balloon placement from 2014 to 2017 were prospectively enrolled. Their outcomes were analyzed retrospectively over a minimum 5-year follow-up. Demographics, patient satisfaction, reoperations, and complications were documented. Minimal clinically important differences were calculated for 12-Item Short Form Health Survey scores and Constant-Murley score subscores. Pre- and postsurgery measures statistically compared for anatomic and functional evaluations.

Results: In a study with 61 participants initially, 10 were lost to follow-up over 3 years. Of the remaining 51, 9 were lost at the latest follow-up. The cohort (42 participants, mean age 63.17 ± 7.66 years) was monitored for 83.98 ± 9.50 months. Seven participants required revisions within 2 years, resulting in an 83.33% revision-free survival rate. Significant improvements were observed from preoperative to latest follow-up: acromiohumeral interval decreased (7.83 to 6.56, P = .004), critical shoulder angle increased (36.10 to 38.24, P = .001), osteoarthritis grade increased (1.45 to 2.81, P = .001), 12-Item Short Form Health Survey physical score improved (27.40 to 37.69, P = .001), and Constant-Murley total scores increased (26.50 to 68.69, P = .001). Minimal clinically important difference for total Constant-Murley scores was 11.78 points. Among those without revisions, satisfaction rates were 11.43% excellent, 57.14% satisfied, and 31.43% dissatisfied.

Conclusions: Employing a balloon spacer for MRCTs yielded moderate satisfaction at the 5-year follow-up, with stable revision rates within the first 2 years. Notably, low revision surgery rates, high revision-free survival, and significant shoulder functionality improvements were observed at a minimum 5-year follow-up with arthroscopic subacromial balloon placement in conjunction with biceps tenotomy and subacromial bursectomy for MRCT.

Level of Evidence: Level IV, retrospective study.

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Journal of Shoulder and Elbow Surgery (JSES), Volume 34, issue 4

Arthroscopic suture anchor fixation results in similar clinical outcomes, less range of motion limitation, but poorer quality of reduction compared to open screw fixation for acute large anterior glenoid rim fractures

D. Wu, G. Zhang

DOI: https://doi.org/10.1016/j.jse.2024.07.013

Background: The purpose of the present study was to retrospectively compare the clinical and radiologic outcomes of arthroscopic suture anchor fixation and open screw fixation for acute large anterior glenoid rim fractures.

Methods: This study enrolled patients with acute large anterior glenoid rim fractures treated with arthroscopic suture anchor fixation (group A) or open screw fixation (group O) from January 2013 to June 2020 with a minimum follow-up of＞2 years. The Subjective Shoulder Value, American Shoulder and Elbow Surgeons score, Rowe score, Constant score, range of motion, recurrent instability rate, and complications were recorded as clinical results. The quality of the postoperative reduction, reconstructed glenoid sizes, rate of fracture healing, and progression of osteoarthritis (OA) were evaluated as radiologic outcomes.

Results: This retrospective study included 66 patients, including 37 in Group A and 29 in Group O with a mean follow-up of 46.9 (range: 24.3-94.2) months and a mean patient age of 46.8 (range: 21-69) years. No significant differences were found in the clinical outcomes between the two groups. A significant range of motion limitation in all planes was found in both groups and group O showed more limitations in external rotation at the side (18° vs. 10°, P = .002). The reduction quality was better in group O (P < .001). However, there was no significant difference between the two groups in terms of reconstructed glenoid size (101.6% ± 4.6% vs. 100.6% ± 7.1%, P = .460) and the rate of OA progression (26.9% vs. 20%, P = .525).

Conclusion: Arthroscopic suture anchor fixation and open screw fixation achieved similar clinical outcomes, reconstructed glenoid sizes, and OA progression in patients with acute large anterior glenoid rim fractures. Arthroscopic suture fixation showed a poorer quality of reduction but less external rotation at the side limitations.

Level of evidence: Level III, Retrospective Cohort Comparison, Treatment Study

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Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA), Volume 33, Issue 4

Rotator cuff repair: Sleep disturbance significantly improves after arthroscopic tendon repair

P. Feltri, L. Audigé

DOI: https://doi.org/10.1002/ksa.12420

Purpose: The aim of this study was to quantify sleep quality and define its evolution in patients treated for rotator cuff tears (RCTs) with arthroscopic rotator cuff repair (ARCR) and to understand its correlation with patients' depression and anxiety.

Methods: The patients were part of the 'ARCR_Pred cohort study', a prospective multicentre cohort of ARCR patients. Inclusion criteria: adult, RCT diagnosed by magnetic resonance imaging, treated by primary ARCR. Exclusion criteria: irreparable tears, revision operations, open or mini-open reconstructions, pregnancy. Subjective sleep quality (prevalence and level of disturbance) was analysed. Psychological characteristics (PROMIS Sf questionnaire) and functional outcomes (Constant and Murley Score and Oxford Shoulder Score) were investigated. A gender-based analysis was performed as well. Patients were evaluated before the operation and prospectively at 6 and 12 months.

Results: Of the 973 patients, 611 (62.8%) were men, with the mean age being 57.3 ± 9.4 years (range, 21–84). A high prevalence of sleep disturbances was found before ARCR (88.4%), with 59% of the patients complaining of disturbance every night. Sleep disturbances progressively improved at 6 (37.2%) and 12 months (22.0%). Also, nocturnal pain (frequency of night disturbed by pain) progressively improved from 94.3% to 62.4% and then 37.9%. For depression and anxiety, a statistically significant difference ($p < 0.05$) was retrieved among every group (undisturbed, occasionally and always disturbed) at all follow-ups. On the other hand, the post-op improvement led to a decrease in anxiety and depression levels passing from 50.1 and 51.4 points at baseline to 45.0 and 45.4 at 12 months, respectively. Women had statistically worse sleep quality at 6 and 12 months (41% vs. 36% and 27% vs. 19%, respectively) ($p < 0.05$).

Conclusion: RCTs cause a high prevalence of sleep disturbance and nocturnal pain, which progressively resolves after an arthroscopic tendon repair. Women have a higher risk than men of presenting disturbed sleep quality.

Level of Evidence: Level III, prognostic cohort study

BACK

Reduced retear rates yet similar clinical outcomes following arthroscopic partial repair of large and massive irreparable rotator cuff tears with biceps augmentation compared to repairs without biceps augmentation: A systematic review and meta-analysis

N. Thamrongskulsiri, D. Limskul

DOI: https://doi.org/10.1002/ksa.12440

Purpose: To compare the clinical outcomes between arthroscopic partial rotator cuff repair with biceps augmentation (BA) and partial repair (PR) without BA.

Methods: This systematic review included studies comparing outcomes of arthroscopic repair for large to massive irreparable rotator cuff tears with and without the BA. The focus was on postoperative clinical results and retear rates. Mean differences were used to express continuous outcomes, while odds ratios (ORs) were employed for dichotomous outcomes.

Results: Ten studies (733 shoulders, all level 3 evidence) were included. The BA group showed a significant reduction in retear rates (OR = 0.40, 95% confidence interval [CI]: 0.20–0.77, P = 0.007) and comparable postoperative outcomes across various measures: American Shoulder and Elbow Surgeons (ASES) score, visual analogue scale for pain, University of California-Los Angeles shoulder score, active forward flexion motion and active external rotation at the arm-at-side position compared to the PR group. Subgroup analysis of two BA techniques—rerouting and supplementation following supraglenoid tenotomy—showed no significant differences in ASES score for either technique versus PR. However, rerouting significantly lowered retear rates (OR = 0.21, 95% CI: 0.12–0.36, $p < 0.001$), while supplementation showed similar retear rates to PR (OR = 0.87, 95% CI: 0.37–2.02, n.s.).

Conclusions: Arthroscopic partial rotator cuff repair with BA for large to massive irreparable rotator cuff tears is a reliable technique, resulting in improved postoperative outcomes. BA using supplementation following supraglenoid tenotomy showed similar clinical outcomes and range of motion but with lower retear rates compared to the PR group.

Level of Evidence: Level III

BACK

Methodology and development of a machine learning probability calculator: Data heterogeneity limits ability to predict recurrence after arthroscopic Bankart repair

S.H. van Spanning, L.P.E. Verweij

DOI: https://doi.org/10.1002/ksa.12443

Purpose: The aim of this study was to develop and train a machine learning (ML) algorithm to create a clinical decision support tool (i.e., ML-driven probability calculator) to be used in clinical practice to estimate recurrence rates following an arthroscopic Bankart repair (ABR).

Methods: Data from 14 previously published studies were collected. Inclusion criteria were (1) patients treated with ABR without remplissage for traumatic anterior shoulder instability and (2) a minimum of 2 years follow-up. Risk factors associated with recurrence were identified using bivariate logistic regression analysis. Subsequently, four ML algorithms were developed and internally validated. The predictive performance was assessed using discrimination, calibration and the Brier score.

Results: In total, 5591 patients underwent ABR with a recurrence rate of 15.4% (n = 862). Age <35 years, participation in contact and collision sports, bony Bankart lesions and full-thickness rotator cuff tears increased the risk of recurrence (all $p < 0.05$). A single shoulder dislocation (compared to multiple dislocations) lowered the risk of recurrence ($p < 0.05$). Due to the unavailability of certain variables in some patients, a portion of the patient data had to be excluded before pooling the data set to create the algorithm. A total of 797 patients were included providing information on risk factors associated with recurrence. The discrimination (area under the receiver operating curve) ranged between 0.54 and 0.57 for prediction of recurrence.

Conclusions: ML was not able to predict the recurrence following ABR with the current available predictors. Despite a global coordinated effort, the heterogeneity of clinical data limited the predictive capabilities of the algorithm, emphasizing the need for standardized data collection methods in future studies.

Level of Evidence: Level IV, retrospective cohort study.

BACK

Excellent clinical and radiological outcomes after arthroscopic reduction and double row-suture bridge for large-sized greater tuberosity fractures of the humerus

S.H. Ko, J. Oh

DOI: https://doi.org/10.1002/ksa.12506

Purpose: Currently, there is limited information on the clinical outcomes of arthroscopic reduction and double-row suture bridge fixation for large greater tuberosity fractures of the proximal humerus. This study aimed to evaluate the radiological and clinical outcomes of arthroscopic reduction and double-row suture bridge fixation for these fractures, hypothesizing that arthroscopic reduction and double-row suture bridge fixation is a safe, effective and minimally invasive treatment for large greater tuberosity fractures.

Methods: This retrospective study analysed patients with large greater tuberosity fractures (fracture fragment ≥30 mm in diameter) who underwent arthroscopic reduction and double-row suture bridge fixation and had a follow-up period exceeding 2 years. The anatomic reduction was confirmed by assessing the step-off on radiographs immediately after surgery, and the radiologic union time was recorded. At the final follow-up, range of motion and functional outcome scores were evaluated. Additionally, any surgery-related complications were evaluated.

Results: Fifteen patients with a mean follow-up of 57.7 ± 23.1 months were included in the study. The mean fracture fragment size was 32.5 ± 2.4 mm, with a mean displacement of 5.1 ± 1.6 mm. Immediately postsurgery, 13 of 15 patients (86.7%) had a fracture step-off of <3 mm, with an average union time of 3 months. At the final follow-up, patients demonstrated excellent outcomes, with an average forward flexion of 167 ± 9.7° and external rotation of 70 ± 16.3. Functional outcome scores showed significant improvement compared with preoperative scores ($p < 0.001$). No major surgery-related complications were reported.

Conclusions: Arthroscopic reduction and double-row suture bridge fixation for large-sized greater tuberosity fractures is safe and shows good fracture reduction and excellent clinical outcomes. Therefore, this surgical method can be considered an alternative to open reduction for large greater tuberosity fractures.

Level of Evidence: Level IV

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Arthroscopy, Volume 41, Issue 4

Socioeconomic Factors Including Patient Income, Education Level, and Health Insurance Influence Postoperative Secondary Surgery and Hospitalization Rates Following Hip Arthroscopy

J. Serna, C. Nosrat

DOI: https://doi.org/10.1016/j.arthro.2024.04.032

Purpose: To evaluate a large cross-sectional sample of patients utilizing administrative database records and analyze the effects of income, insurance type, and education level on outcomes after hip arthroscopy, including 2-year revision surgery, conversion to total hip arthroplasty (THA), and 90-day hospitalizations.

Methods: Current Procedural Terminology codes were used to query the PearlDiver Mariner database from October 2015 to January 2020 for patients undergoing hip arthroscopy with a minimum 2-year follow-up. Patients were categorized by mean family income in their zip code of residence (MFIR), health insurance type, and educational attainment in their zip code of residence (EAR). Two-year revision arthroscopy, conversion to THA, and 90-day hospital readmissions or emergency department (ED) visits were analyzed along socioeconomic strata.

Results: Multivariate analysis of 33,326 patients revealed that patients with MFIR between $30,000 and $70,000 had lower odds of 2-year revision arthroscopy (odds ratio [OR], 0.63; P < .001), THA conversion (OR, 0.76; P = .050), and 90-day readmission (OR, 0.53; P = .007) compared to MFIR >$100,000. Compared to patients with commercial insurance, patients with Medicare had lower odds of revision arthroscopy (OR, 0.60; P = .035) and THA conversion (OR, 0.46, P < .001) but greater odds of 90-day readmission (OR, 1.74; P = .007). Patients with Medicaid had higher odds of 90-day ED visits (OR, 1.84; P < .001). Patients with low EAR had higher odds of revision arthroscopy (OR, 1.42; P = .005) and THA conversion (OR, 1.58; P = .002) compared to those with high EAR.

Conclusions: Following hip arthroscopy, patients residing in areas with lower mean family income were less likely to undergo reoperations and readmissions. Medicare patients showed lower reoperation but higher readmission odds, while Medicaid patients showed higher odds of ED visits. Additionally, higher educational attainment in the zip code of residence is protective against future reoperation.

Level of Evidence: Level III, retrospective case series

BACK

Primary and Revision Hip Arthroscopy in Borderline Hip Dysplasia Shows Comparable Outcomes at a Minimum 5-Year Follow-Up

M.J. Vogel, J. Wright-Chisem

DOI: https://doi.org/10.1016/j.arthro.2024.05.005

Purpose: To compare patient-reported outcomes (PROs), achievement of clinically significant outcomes, and reoperation-free survivorship between primary and revision hip arthroscopy (HA) for femoroacetabular impingement syndrome (FAIS) in propensity-matched borderline hip dysplasia (BHD) patients at a minimum 5-year follow-up.

Methods: Patients with BHD, characterized by a lateral center-edge angle 18° to 25°, who underwent HA for FAIS with capsular repair by a single surgeon between January 2012 and June 2018 with a minimum 5-year follow-up were identified. Cases of revision HA were propensity-matched 1:2 to cases of primary HA, controlling for age, sex, and body mass index. A 1:2 ratio was chosen to maximize the number of included patients. Collected PROs included Hip Outcome Score–Activities of Daily Living and Sport Subscales, International Hip Outcome Score 12, modified Harris Hip Score, and Visual Analog Scale for Pain. Achievement of minimal clinically important difference, patient acceptable symptom state, and substantial clinical benefit for any measured PRO was compared between groups along with reoperation-free survivorship using Kaplan-Meier analysis.

Results: Thirty-six revision HA hips (34 patients) were propensity-matched to 72 primary HA hips (70 patients). The groups were similar in age (31.5 ± 10.3 years vs 30.5 ± 11.2, P = .669), sex (69.4% female vs 70.8%, P = .656), and body mass index (25.7 ± 4.0 vs 25.5 ± 3.7, P = .849). The revision group showed a greater prevalence of prolonged preoperative pain (50.0% vs 27.8%, P = .032) compared with the primary group. A significant improvement in all PROs was observed for both groups with comparable PROs preoperatively and at the 5-year follow-up between groups (P ≥ .086). The revision and primary groups showed comparable minimal clinically important difference (95.0% vs 95.7%, P ≥ .999), patient acceptable symptom state (80.0% vs 83.6%, P = .757), and substantial clinical benefit (62.5% vs 70.7%, P = .603) achievement for any PRO. Comparable reoperation-free survivorship was observed (P = .151).

Conclusions: Propensity-matched patients with BHD undergoing primary and revision hip arthroscopy for FAIS achieved similar minimum 5-year PROs, clinically significant outcomes, and reoperation-free survivorship.

Level of Evidence: Level III, retrospective comparative case series.

BACK

Staged Hip Arthroscopy With Labral Repair, Femoroplasty, and Capsular Plication Followed by Periacetabular Osteotomy for Hip Dysplasia Results in Improved Outcomes and 100% Survivorship at Minimum 2-Year Follow-Up

R. Gilat, O. Kazi

DOI: https://doi.org/10.1016/j.arthro.2024.05.029

Purpose: To assess patient-reported outcomes (PROs), clinically significant outcomes (CSOs), and survivorship after staged hip arthroscopy with labral repair, femoroplasty, and capsular plication followed by periacetabular osteotomy (PAO) for the management of femoroacetabular impingement syndrome and hip dysplasia (lateral center-edge angle ≤25°).

Methods: A prospectively maintained database was queried to retrospectively identify patients who underwent staged primary hip arthroscopy and PAO between January 2018 and October 2021 and had a minimum 2-year follow-up. PROs collected included Hip Outcome Score Activities of Daily Living/Sports Subscale, international Hip Outcome Tool-12 item questionnaire, and visual analog scale for pain. CSO achievement for minimal clinical important difference and patient acceptable symptom state was determined through cohort-specific thresholds. Rates of reoperation, including, revision hip arthroscopy, and conversion to total hip arthroplasty were evaluated to determine short-term survivorship.

Results: Thirty-nine hips met criteria for inclusion, of which 35 hips had minimum 2-year follow-up (89.7% compliance). Mean age was 25 ± 9.1 years, and 91.7% of patients were female. Respective pre- and postoperative radiographic outcomes were alpha angle 59.8° ± 5.9° to 39.7° ± 2.6°, Tönnis angle 14.6° ± 5.6° to –1.0° ± 2.9°, lateral center-edge angle 16.6° ± 5.5° to 36.6° ± 4.6°, and anterior center-edge angle 15.6° ± 9.1° to 36.1° ± 3.8°, with statistically significant differences pre- to postoperatively for all ($P < .001$). Patients demonstrated a significant improvement in all PROs pre- to postoperatively (P0. ≤ .004). Minimal clinical important difference and patient acceptable symptom state achievement rates for any PRO were 93.9% and 78.8%, respectively. There were no revision hip surgeries or conversion to total hip arthroplasty at a mean 2.7 ± 1.0-year follow-up. Four patients (11.1%) underwent hardware removal. One patient (2.8%) experienced a postoperative infection treated with incision and drainage.

Conclusions: Staged hip arthroscopy and PAO for the management of hip dysplasia demonstrated improvement in PROs, high CSO achievement rates, and 100% survivorship at minimum 2-year follow-up.

Level of Evidence: Level IV, retrospective case series.

BACK

BACK

Meniscus Allograft Transplantation in Conjunction With Arthroscopic Biologic Knee Restoration Delays Arthroplasty in Patients Older Than 50 Years

K. Stone, A.W. Walgenbach

DOI: https://doi.org/10.1016/j.arthro.2024.06.008

Purpose: To evaluate the utility of meniscus allografts in combination with other procedures to delay knee arthroplasty in patients older than 50 years previously advised joint arthroplasty.

Methods: A total of 108 meniscus allograft transplants using the arthroscopic 3-tunnel technique between 1997 and 2019 in patients older than 50 years were retrospectively reviewed with a 2-year minimum follow-up period. Inclusion criteria were patients recommended for knee arthroplasty with pain and preservation of some joint space by standing flexion radiographs. Exclusion criteria were lack of joint space, failure to comply with rehabilitation protocol, and failure to complete research questionnaires. International Knee Documentation Committee composite and isolated pain scale were evaluated longitudinally. Time from meniscus allograft transplant to arthroplasty was measured, with failure defined as allograft excision or revision, progression to arthroplasty, or same or increased pain.

Results: Eighty-six of 108 (79.6%) patients met eligibility criteria. Over the follow-up mean 8.55 (range 0.68 to 25.2) years, 42 of 87 (48.2%) grafts progressed to arthroplasty with mean time of 8.64 (median 8.05) years. Concomitant procedures did not have significant impact on survival; however, survival medians were higher among paste graft and chondroplasty and lower among osteotomy groups. At the time of reporting, 41 of 84 (48.8%) patients had intact meniscus transplants, demonstrating significant improvements ($P < .001$) in pain and function as assessed by International Knee Documentation Committee Score. These improvements were sustained 10 years postoperatively, correlated to a mean of 65.8 years of age. At least 50% of patients achieved Minimal Clinically Important Difference through 10 years postoperatively.

Conclusions: Meniscus allografts in combination with other arthroscopic interventions delay knee arthroplasty and improve knee symptoms of pain and function in a population of knee arthroplasty candidates older than 50 years. Influences of concomitant procedures cannot be defined.

Level of Evidence: Level IV, therapeutic case series, retrospective.

BACK

Corticosteroid Injections Within 2 Weeks After Knee Arthroscopy Are Associated With Increased Infection Risk

J. Dubin, H. Salem

DOI: https://doi.org/10.1016/j.arthro.2024.05.034

Purpose: To quantify the risk of 90-day postoperative infection after arthroscopy, stratified by specific time intervals of corticosteroid injections (CSIs) postoperatively (0-2 weeks, 2-4 weeks, 4-6 weeks, and 6-8 weeks), using a large, all-payer database.

Methods: A national, all-payer database was queried. In the primary and secondary analyses, the main outcome was infection at 90 days. Infection was defined by documentation of a septic knee or surgical-site infection according to International Classification of Diseases, Ninth Revision and Tenth Revision codes, and Current Procedural Terminology codes.

Results: In the multivariable regression, the odds ratio (OR) of postoperative infection at 90 days was greater in the cohorts receiving CSIs within 0 to 2 weeks (OR, 3.31; 95% confidence interval, 1.85-5.92; P < .001) and 2 to 4 weeks (OR, 2.72; 95% confidence interval, 1.57-4.71; P = .003) than in the control group. On comparison of CSIs administered within 0 to 2 weeks and CSIs administered within 2 to 4 weeks, we observed a greater odds of postoperative infection (OR, 2.50) at 90 days after arthroscopy.

Conclusions: CSIs given within 2 weeks after knee arthroscopy increase the risk of postoperative infection the most, whereas CSIs given within 4 weeks increase the risk but to a lesser degree.

Level of Evidence: Level III, retrospective, comparative, prognosis study.

BACK

Adding Dexmedetomidne to Intra-articular Local Anesthetics Results in Prolonged Analgesia After Knee Arthroscopy: A Systematic Review and Meta-analysis

M. Tatsch Terres, M.L. Machado Assis

DOI: https://doi.org/10.1016/j.arthro.2024.06.043

Purpose: To assess the efficacy and safety of dexmedetomidine as an adjuvant to intra-articular (IA) injections of local anesthetics (LA) in adult patients undergoing knee arthroscopy.

Methods: We searched MEDLINE, Embase, and Cochrane Library for randomized controlled trials (RCTs) comparing IA dexmedetomidine plus LA versus LA alone for knee arthroscopy in adults. We used the DerSimonian and Laird random-effects model for all outcomes and conducted a sensitivity analysis with the leave-one-out method, as well as a subgroup analysis for the type of LA. We used R version 4.1.2 for all statistical analyses.

Results: We included 16 RCTs encompassing 799 patients, of whom 49.8% received IA dexmedetomidine. In the pooled analysis, time to first analgesia rescue was prolonged in almost 4 hours with the use of dexmedetomidine (mean difference [MD] 229 minutes; $P < .001$). We found statistically significant differences favoring dexmedetomidine in pain scores at rest and movement throughout the first 2, 6, 12, and 24 hours postoperatively ($P < .001$). Although the MD ranged from –0.3 to –0.9 cm, corresponding to a 3% to 9% reduction in pain scores, this change is not clinically significant compared with the minimal clinically important difference (MCID). Additionally, the intervention group showed a statistically significant reduction in cumulative opioid consumption over 24 hours (MD –4.5 mg; $P < .001$). However, this reduction did not meet the threshold for the MCID. There was no difference between groups on the incidence of hypotension ($P = .190$), bradycardia ($P = .430$), and postoperative nausea and vomiting ($P = .550$).

Conclusions: Adding dexmedetomidine to LA in IA injections for knee arthroscopy significantly extended analgesia duration. Additionally, it lowered pain scores and opioid use, although these effects did not reach the MCID. Furthermore, this addition did not increase the risk of adverse events.

Level of Evidence: Level II, meta-analysis of Level I and II studies.

BACK

Adhesions After Hip Arthroscopy Are Associated With Revision But Show Poorly Defined Criteria for Diagnosis and Operative Management: A Systematic Review

J.A.J. Keogh, I. Keng

DOI: https://doi.org/10.1016/j.arthro.2024.04.008

Purpose: To evaluate the current body of evidence surrounding the diagnosis, management, and clinical outcomes of adhesions that developed after hip arthroscopy (HA).

Methods: A systematic search of the MEDLINE, Embase, Web of Science, and CENTRAL (Cochrane Central Register of Controlled Trials) databases was designed and conducted in accordance with PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) guidelines. Eligible studies included patients with confirmed adhesions after HA that reported one or more of the following: (1) diagnostic procedures and criteria used; (2) indications for and details surrounding surgical management; and (3) clinical outcomes after the operative management of adhesions (e.g., patient-reported outcome measures).

Results: Nineteen studies involving a total of 4,145 patients (4,211 hips; 38% female sex) were included in this review. The quality of evidence was found to be fair for both comparative studies (mean, 17; range, 13-21) and noncomparative studies (mean, 10; range, 5-12) according to the Methodological Index for Non-randomized Studies (MINORS) instrument, with the level of evidence ranging from IIB to IV. Adhesions were often diagnosed intraoperatively at the time of revision surgery (10 of 19 studies, 53%), with only 3 studies specifying the criteria used to adjudicate adhesions. The most common indication for operative management (i.e., release or lysis of adhesions) was persistent pain (9 of 19, 47%), but this was often grossly stated for revision HA rather than being specific to adhesions. Patient-reported outcome measures were the most reported postoperative outcomes (9 of 19, 47%) and generally showed significant improvement from preoperative assessment across the short-term follow-up period (range, 24.5-38.1 months). There was a paucity of objective measures of clinical improvement (3 of 19, 16%) and of mid- and long-term follow-up (i.e., 5-7 years and ≥10 years, respectively).

Conclusions: Despite the growing body of evidence suggesting that adhesions are highly contributory to revision HA, there is ambiguity in the diagnostic approach and indications for operative management of adhesions. Additionally, although the operative management of adhesions after HA has shown satisfactory clinical outcomes in the short term, there is a paucity of research elucidating the mid- to long-term outcomes, as well as minimal use of objective assessment of clinical improvement (e.g., biomechanics).

Level of Evidence: Level IV, systematic review of Level II to IV studies.

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Journal of Shoulder and Elbow Surgery (JSES), Volume 34, issue 4

No Lower Extremity Abstracts

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Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA), Volume 33, Issue 4

High satisfaction and low conversion rate to total hip arthroplasty after hip arthroscopy for femoroacetabular impingement syndrome and risk factors affecting survival at long-term follow-up

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Purpose: Studies evaluating the long-term survival rate, patient satisfaction, and conversion to total hip arthroplasty (THA) are limited. The aim of this study was to evaluate satisfaction and hip survival at a minimum 10-year follow-up in patients following hip arthroscopy for femoroacetabular impingement syndrome (FAIS).

Methods: A total of 164 patients underwent hip arthroscopy for FAIS between 2007 and 2012; of these, 76 (49 men and 27 women; mean age, 40.7 ± 11.2 years; range, 15–69 years) patients could be clinically examined or reached by phone or email and included in the study. Prospectively collected data of these patients who followed for a minimum of 10 years were retrospectively analysed. Patients who had previous trauma or surgery on the hip or were younger than 15 years were excluded. Of the 76 patients, 37 (48.7%) had mixed type, where 29 (38.2%) had cam and 10 (13.2%) had pincer type FAIS. Patient demographics, Tonnis grade for osteoarthritis and intraoperative findings were reviewed. Outcome measures of interest included reoperations (re-arthroscopy, conversion to THA), patient satisfaction, ability to return to sports, the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), modified Harris Hip Score (mHHS) and some possible factors associated with conversion to THA.

Results: The mean follow-up was 12.4 ± 1.8 (10–16 years). Twenty-one per cent required conversion to THA, with a mean time requiring THA of 4.8 ± 1.7 years (2–8 years). Mean age of the patients requiring THA was 47.8 ± 8.2 years. Two (2.6%) patients required re-arthroscopy. Fifty-eight (76.3%) patients did not undergo any revision surgery or other treatments. Forty-seven (61.8%) patients were completely satisfied with the results, where 5 (6.6%) patients were very satisfied and 4 (5.3%) patients were satisfied. Overall satisfaction rate was 73.7%. Mean postoperative mHHS score was 76.5 ± 15.5 and the mean WOMAC score was 84.0 ± 16.0. Return-to-sports rate was 85%, and the return to the old sport level was 67.1%. Age over 40 years ($p = 0.004$), a Tonnis Grade >1 ($p < 0.001$) and a full-thickness acetabular chondral lesion ($p = 0.001$) were identified as factors for failure and conversion to THA.

Conclusion: Hip arthroscopy for FAIS resulted in high satisfaction of patients who did not eventually require THA. Higher rates of conversion to THA were seen in older patients, patients treated with higher Tonnis grade and full-thickness acetabular chondral lesions.

Level of Evidence: Level IV, case series.

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American Journal of Sports Medicine (AJSM), Volume 53, Issue 5

The Chance to Become an Elite Athlete After Pediatric And Adolescent Anterior Cruciate Ligament Reconstruction

Thorolfsson B, Winkler PW, Piussi R, et al.

DOI: https://doi.org/10.1177/03635465251320415

Background: An anterior cruciate ligament (ACL) injury is a severe condition that may affect the career of young athletes. There is limited evidence on the rate and level of return to sport (RTS) after pediatric and adolescent ACL reconstruction.

Purpose/hypothesis: To evaluate clinical outcomes, the level and rate of RTS, and predictive factors for RTS after pediatric and adolescent ACL reconstruction.

Study Design: Cohort study; Level of evidence, 3.

Methods: Patients aged between 10 and 18 years at the time of primary ACL reconstruction were screened for eligibility. Based on age at the time of ACL reconstruction, patients were divided into the pediatric (female: 11-13 years; male: 11-15 years) and adolescent (female: 14-18 years; male: 16-18 years) groups. Patient-specific, injury-related, and treatment-specific data, as well as subscores of the Knee injury and Osteoarthritis Outcome Score (KOOS) at baseline and 1-, 2-, 5-, and 10-year follow-up, were obtained. A survey consisting of 3 patient-specific and 30 knee-related questions was developed by experts in the management of ACL injuries and was sent to all patients to determine sport-specific variables and RTS rates.

Results: Overall, 1392 patients (total response rate: 24%) were included in this study. There were 81 pediatric patients (mean age at ACL reconstruction, 13.7 ± 1.4 years) and 1311 adolescent patients (mean age at ACL reconstruction, 16.5 ± 1.2 years). Significant improvements in KOOS subscores were observed after both pediatric and adolescent ACL reconstruction at each follow-up time point. After ACL reconstruction, 74% of pediatric patients and 68% of adolescent patients returned to their previous type of sport (P = .23). Moreover, 31% of pediatric patients and 23% of adolescent patients became elite athletes (highest national level of junior sport or higher) after ACL reconstruction (P = .13). A cartilage injury at the time of ACL reconstruction was found to lower the odds of pediatric and adolescent patients returning to their previous type of sport (odds ratio, 0.60; P = .001). A second ACL injury occurred in 25% and 31% of pediatric and adolescent patients, respectively (P = .29).

Conclusion: Long-lasting clinical improvements and high RTS rates can be expected after pediatric and adolescent ACL reconstruction. Moreover, young athletes still have the chance to compete at an elite level of sport after ACL reconstruction.

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Complications, Reoperations, and Readmissions After Common Arthroscopic Sports Medicine Procedures of the Knee: An Analysis of the ABOS Part II Oral Examination Case List Database

Bragg JT, McIntyre JA, Puzzitiello RN, Salzler MJ.

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Background: Arthroscopic knee surgeries are among the most commonly performed orthopaedic surgeries, yet complications of these procedures are relatively understudied.

Purpose/hypothesis: To determine the rate of complications, reoperations, and readmissions for arthroscopic knee surgeries by procedure, patient characteristics, and physician fellowship training status using a large national database.

Study Design: Cross-sectional study; Level of evidence, 3.

Methods: Data were collected from the American Board of Orthopaedic Surgery (ABOS) database for early-career orthopaedic surgeons taking the ABOS Part II Oral Examination between 2003 and 2022. We queried the type and frequency of complications, unexpected 90-day reoperations, and readmissions for patients undergoing sports medicine knee arthroscopy. Chi-square test and analysis of variance were used to determine the effect of fellowship training status, geographic region of practice, patient age, and patient sex on outcomes of interest.

Results: Of 138,823 knee arthroscopic procedures, 10,450 complications were self-reported, making for an overall complication rate of 7.53%. Unexpected 90-day reoperation and readmission rates were calculated to be 1.16% and 0.91%, respectively. Posterior cruciate ligament reconstruction had the highest complication rate (26.38%). Sports medicine fellowship–trained physicians had a significantly higher rate of complications ($P < .001$) compared with their non–sports medicine fellowship–trained peers (8.43% and 7.06%, respectively). Female patients had a higher complication rate (7.72%) than males (7.40%) ($P = .02$). Patients aged 20 to 29 had the highest rate of complications and reoperations (10.29% and 1.56%, respectively), whereas patients aged 70 to 79 had the highest rate of readmission (1.47%). Geographic regions of practice had significantly different complication and reoperation rates ($P < .01$). The rate of deep venous thrombus was 0.57%, and the rate of pulmonary embolism was 0.12%. Forty-two patients died, for an overall 0.03% mortality rate.

Conclusion: The overall rate of self-reported complications was 7.53%, and the 90-day rate of unexpected reoperation and unexpected readmission was 1.16% and 0.91%, respectively. Patient sex, patient age, sports medicine fellowship training status, and geographic region of practice all affected rates of complications, reoperations, and readmissions. Knee arthroscopy carries many risks of which patients should be aware before undergoing these procedures.

BACK

Analyzing the Association of the Area Deprivation Index on Patient-Reported Outcomes in Patients Undergoing Hip Arthroscopy

Cruse JJ, Shaikh HJF, Brodell JD, et al.

DOI: https://doi.org/10.1177/03635465251316432

Background: Hip arthroscopy is a valuable tool through which intra- and extra-articular hip pathologies may be addressed, with the goal of improving pain and function while preventing osteoarthritis progression. Little data are available regarding the effect of social determinants of health on hip arthroscopy outcomes.

Purpose/hypothesis: To determine if a patient's lived environment is associated with better or worse postoperative outcomes using the area deprivation index (ADI).

Study Design: Cohort study; Level of evidence, 3.

Methods: Patients undergoing hip arthroscopy between January 1, 2015, and June 30, 2022, at a single institution were identified using Current Procedural Terminology codes. Patients' zip codes were utilized to identify ADI measures. Patients were divided into quartiles of ADI, and the most deprived (ADIHigh) and least deprived (ADILow) quartiles were compared. Pre- and postoperative Patient-Reported Outcomes Measurement Information System (PROMIS) scores for the Pain Interference (PI), Physical Function (PF), and Depression domains were obtained. For the PF and PI domains, the minimal clinically important difference (MCID) was defined using an anchor-based approach using previously established cutoffs. For the Depression domain, the MCID was defined using a distribution-based approach and calculated as one-half of the standard deviation of the preoperative PROMIS score. Multivariable logistic regression models were estimated to characterize the association of the ADI with MCID attainment along PROMIS domains.

Results: A total of 170 patients were included in the analysis of the ADIHigh (n = 85) and ADILow (n = 85) cohorts. Age, body mass index, smoking status, and race did not significantly vary between groups. No significant differences in MCID attainment were observed at any time point in the PF, PI, or Depression domains. However, the ADIHigh cohort had higher mean PI (worse) scores compared with the ADILow cohort at the preoperative, 1-year, and final follow-up (mean, 2.52 years) time points. In multivariable logistic regression analyses, ADI was not associated with the odds of MCID attainment.

Conclusion: For patients undergoing hip arthroscopy, increased social disadvantage measured by the ADI was not associated with the odds of MCID attainment in any PROMIS domain. This information provides guidance for care providers, researchers, and policymakers to seek and identify other mechanisms that may affect outcomes after hip arthroscopy.

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Bone and Joint Journal (BJJ), Volume 107, issue 4

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Miscellaneous

Arthroscopy, Volume 41, Issue 4

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