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Arthroscopy, Volume 40, Issue 10

Addition of Preoperative Ultrasound-Guided Suprascapular Nerve Block and Axillary Nerve Block to Parecoxib Is More Effective in Early Postoperative Pain Control After Arthroscopic Rotator Cuff Repair: A Prospective Randomized Controlled Study

Author: Y.-Y. Huang, Y.-T. Ng

DOI: 10.1016/j.arthro.2024.02.031

Purpose: To prospectively compare pain intensity and patient-reported outcomes (PROs) after arthroscopic rotator cuff repair (ARCR) between patients who received ultrasound-guided suprascapular nerve block (SSNB) and axillary nerve block (ANB) as well as preincisional parecoxib and patients who received preincisional parecoxib only.

Methods: Sixty-one patients receiving ARCR between March 2020 and March 2021 were prospectively enrolled. They were randomly assigned to the peripheral nerve block group (group N, n = 30) or control group (group C, n = 31). Two patients in group C were excluded because of miscommunication. All patients were administered 40 mg of parecoxib intravenously prior to induction of anesthesia. SSNB and ANB were performed after general anesthesia in group N, whereas no nerve block was performed in group C. Pain intensity was compared before surgery, as well as immediately, 24 hours, and 2 weeks after surgery. PROs, including the Oxford Shoulder Score, University of California–Los Angeles shoulder score, and Single Assessment Numeric Evaluation score, were compared before and 6 months after surgery.

Results: The numerical rating scale (NRS) score for resting pain was significantly lower in group N (4.9 ± 3.1 vs 7.6 ± 2.5, P < .001) immediately after surgery, but no difference was noted 24 hours after surgery. The resting pain NRS score 2 weeks after surgery was significantly lower in group N (1.4 ± 1.6 vs 2.7 ± 2.7, P = .03), but the scores for movement-evoked pain and night pain were similar. All PROs significantly improved 6 months after surgery in both groups, but there was no difference between the 2 groups.

Conclusions: The addition of preoperative ultrasound-guided SSNB and ANB to parecoxib offered better resting pain control immediately and 2 weeks after ARCR, but there was no benefit for PROs 6 months after surgery.

Level of evidence: Level II, prospective randomized controlled trial

BACK

The Arthroscopic Subscapular Sling Procedure Results in Low Recurrent Anterior Shoulder Instability at 24 Months of Follow-Up

J.A. Klungsøyr, T. Vagstad

DOI: 10.1016/j.arthro.2024.02.032

Purpose: To analyze the results of the subscapular sling procedure developed for anterior shoulder instability in patients with less than 10% anterior glenoid bone loss.

Methods: Patients were treated surgically with the arthroscopic subscapular sling procedure. A semitendinosus graft was used to reconstruct the anterior labrum and to establish a sling suspension around the upper part of the subscapularis tendon. The patients were followed up with radiographs (at 12 and 24 months). Magnetic resonance imaging (MRI) of the shoulder region and clinical examinations were performed at 3, 12, and 24 months. Recurrent dislocation was the primary endpoint. The Western Ontario Shoulder Instability Index (WOSI) and MRI results were secondary outcome measures. An independent physiotherapist assessed residual instability and range of motion.

Results: Fifteen patients were included with a dislocation rate of 0% after 24 months follow-up. There was a significant clinical improvement of the WOSI score from 57% (904) at baseline to 88% (241) at 24 months ($P < .001$). The proportion of patients with an improvement in the WOSI Total score larger than the estimated minimal clinically important difference was 100% both at 12 and 24 months. MRI showed an intact sling in all patients. External rotation was not significantly reduced (52° at baseline vs 47° at 24 months, $P = .211$). Flexion and abduction were significantly improved from 152° to 174° ($P = .001$) and 141° to 170° ($P < .001$) after 24 months. The surgical procedures were completed without any intraoperative complications.

Conclusion: The subscapular sling procedure resulted in low recurrent shoulder instability and improved patient-reported outcome measures at 24 months of follow-up.

Level of Evidence: Level IV, case series

BACK

Concomitant Biceps Tenodesis Does Not Compromise Arthroscopic Rotator Cuff Repair Outcomes

S. Kim, K.T. Deivert

DOI: 10.1016/j.arthro.2024.02.035

Purpose: To compare outcomes of patients who underwent rotator cuff repair (RCR) with concomitant biceps tenodesis with those who underwent an isolated RCR.

Methods: Exclusion criteria included previous ipsilateral shoulder surgery, irreparable rotator cuff tears, rotator cuff arthropathy, calcific tendinitis, adhesive capsulitis requiring a capsular release, or advanced osteoarthritis of the glenohumeral joint. Patients were indicated for biceps tenodesis if they had any degree of tendon tearing, moderate-to-severe tenosynovitis, instability, or a significant degenerative SLAP tear. Primary outcome measures included American Shoulder and Elbow Surgeons score, Simple Shoulder Test, EuroQoL 5-Dimension 5-Level visual analog scale, EuroQoL 5-Dimension 5-Level, and a site-specific questionnaire, which focused on surgical expectations, satisfaction, and complications. Multivariate analysis of variance to analyze descriptive statistics and determine significant differences between the patient groups for subjective and objective outcome measures were performed.

Results: There were no significant differences for pain/visual analog scale (0.34 ± 0.09 vs 0.47 ± 0.09, P = .31), American Shoulder and Elbow Surgeons score (96.69 ± 0.87 vs 94.44 ± 0.91, P = .07), and Simple Shoulder Test (11.42 ± 0.17 vs 10.95 ± 0.18, P = .06) between the RCR with concomitant biceps tenodesis and isolated RCR at a minimum of 2 years' postoperatively. This is despite the RCR with concomitant biceps tenodesis group having significantly larger rotator cuff tears (4.25 ± 0.30 cm2 vs 2.80 ± 0.32 cm2, P = .001) than the isolated RCR group.

Conclusion: This study revealed that concomitant biceps tenodesis does not compromise outcomes when compared with an isolated RCR at 2-year follow-up, despite this group having larger rotator cuff tears.

Level of Evidence: Level III, retrospective case study

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Journal of Shoulder and Elbow Surgery (JSES), Volume 33, issue 10

The impact of bone marrow stimulation on arthroscopic rotator cuff repair for small to large rotator cuff tears: a randomized controlled trial

K.-B. Hong, T.-H. Lee

DOI: 10.1016/j.jse.2024.03.048

Background: Bone marrow stimulation (BMS), a procedure involving the creation of multiple channels in the greater tuberosity, is often performed alongside arthroscopic rotator cuff repair (ARCR). This study evaluated the effect of BMS on clinical and structural outcomes following ARCR.

Methods: This study involved 204 patients with small, medium, and large full-thickness rotator cuff tears. In all, 103 patients who underwent BMS and ARCR made up the BMS group, while the 101 patients who only had ARCR made up the control group with randomization. Clinical and functional outcomes were assessed before and at 3 months, 6 months, 1 year, and 2 years after surgery, using parameters such as range of motion, functional scores (American Shoulder and Elbow Surgeons and Constant score), and clinical scores (Visual Analogue Scale). Tendon integrity was also examined postoperatively via ultrasound at 6 months and 2 years.

Results: There were no significant differences between the two groups concerning range of motion, functional scores (American Shoulder and Elbow Surgeons score and Constant score), and clinical score (Visual Analogue Scale) during the 2-year postsurgery period (all $P > .05$). Similarly, the rotator cuff retear rate, as assessed using ultrasonographic tendon integrity checks over 2 years postsurgery, did not significantly vary between the groups (all $P > .05$).

Conclusion: There were no significant disparities in functional scores and clinical outcomes between the BMS and control groups. Further, no significant differences were observed in tendon integrity postsurgery. Therefore, the inclusion or exclusion of BMS is not anticipated to influence the postoperative outcome in ARCR for patients with small, medium, or large rotator cuff tears.

Level of Evidence: Level II, Randomized Controlled Trial

BACK

Clinical outcomes in prospective versus retrospective studies on arthroscopic Bankart repair: a systematic review

K.A. Rodriguez, E.T. Hurley

DOI: 10.1016/j.jse.2024.03.033

Background: The majority of the current literature on arthroscopic Bankart repair is retrospective, and discrepancies exist regarding clinical outcomes including recurrent instability and return to play among studies of different levels of evidence.

Purpose: The purpose of this study is to perform a systematic review of the literature to compare the outcomes of prospective and retrospective studies on arthroscopic Bankart repair.

Methods: A search was performed using the PubMed/Medline database for all studies that reported clinical outcomes on Bankart repair for anterior shoulder instability. The search term "Bankart repair" was used, with all results being analyzed via strict inclusion and exclusion criteria. Three independent investigators extracted data and scored each included study based on the 10 criteria of the Modified Coleman Methodology Score out of 100. A $\chi 2$ test was performed to assess if recurrent instability, revision, return to play, and complications are independent of prospective and retrospective studies.

Results: A total of 193 studies were included in the analysis, with 53 prospective studies and 140 retrospective in design. These studies encompassed a total of 13,979 patients and 14,019 surgical procedures for Bankart repair for shoulder instability. The rate of redislocation in the prospective studies was 8.0% vs. 5.9% in retrospective studies ($P < .001$). The rate of recurrent subluxation in the prospective studies was 3.4% vs. 2.4% in retrospective studies ($P = .004$). The rate of revision was higher in retrospective studies at 4.9% vs. 3.9% in prospective studies ($P = .013$). There was no significant difference in terms of overall rate to return to play between prospective and retrospective studies (90% and 91%, respectively; $P = .548$). The overall rate of non-instability complications in the prospective cohort was 0.27% vs. 0.78% in the retrospective studies ($P = .002$).

Conclusion: The overall rates of recurrent dislocations-subluxations are higher in prospective studies than retrospective studies. However, rates of revision were reportedly higher in retrospective studies. Complications after arthroscopic Bankart repair are rare in both prospective and retrospective studies, and there was no difference in rates of return to play

Level of Evidence: Level IV, systematic review

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American Journal of Sports Medicine (AJSM), Volume 52, Issue 12

Effects of Melatonin on Sleep Quality and Patient-Reported Outcomes After Arthroscopic Rotator Cuff Surgery: A Prospective Randomized Controlled Trial

Perez AR, Destiné H, Patel NK, et al.

DOI: 10.1177/03635465241272076

Background: Sleep disturbance is a significant symptom associated with both rotator cuff tears and arthroscopic rotator cuff repair. Melatonin has been shown to be safe and effective in managing multiple sleep disorders, including secondary sleep disorders, with relatively minor adverse effects and lack of addictive potential.

Purpose: To investigate the effects of oral melatonin on postoperative sleep quality after arthroscopic rotator cuff repair.

Study Design: Randomized controlled trial; Level of evidence, 1.

Methods: This was a prospective randomized clinical trial evaluating patients undergoing arthroscopic rotator cuff repair. Exclusion criteria included history of alcohol abuse, current antidepressant or sedative use, revision rotator cuff repair, severe glenohumeral arthritis, and concurrent adhesive capsulitis. Patients were randomly assigned in a 1:1 ratio to 1 of 2 groups: 5-mg dose of melatonin 1 hour before bedtime or standard sleep hygiene (≥6 hours per night, avoiding caffeine and naps in the evening). Patients in the melatonin group took their assigned melatonin dose for 6 weeks beginning the day of surgery. Patient-reported outcome assessments, including the Pittsburgh Sleep Quality Index (PSQI), the American Shoulder and Elbow Surgeons Standardized Shoulder Assessment Form (ASES), and the Single Assessment Numeric Evaluation (SANE), and pain medication charts were collected preoperatively as well as at 2 weeks, 6 weeks, 3 months, 4 months, and 6 months postoperatively. Numeric variables were analyzed using paired and unpaired t tests, with significance set at $P < .05$.

Results: Eighty patients were included for final analysis (40 in the control group, 40 in the melatonin group). Patient characteristics such as age, sex, race, body mass index, and laterality did not differ significantly ($P \geq .05$). Preoperative ASES, SANE, and PSQI scores did not differ between groups ($P \geq .055$). PSQI scores were significantly lower (better quality sleep) in the melatonin group at the 6-week postoperative period ($P = .036$). There was a positive correlation between how patients rated the intensity of their pain and the PSQI at the 6-week postoperative period (0.566). The PSQI question regarding sleep quality was found to be significantly lower in the melatonin group at the 3-month, 4-month, and 6-month postoperative periods ($P = .015$, $P = .041$, and $P \leq .05$, respectively). SANE scores were significantly lower in the melatonin group ($P = .011$) at 6 weeks and then higher in the melatonin group ($P = .017$) at 6 months. ASES scores were significantly higher in the melatonin group at 4 and 6 months ($P = .022$ and $P = .020$, respectively). Lastly, patients who were randomized into the melatonin group were found to use significantly less narcotic medication at the 4-month postoperative period ($P = .046$).

Conclusion: Melatonin use after arthroscopic rotator cuff repair led to improved sleep quality (PSQI) in the early postoperative period as well as improved functional outcomes (ASES and SANE scores) and decreased narcotic use in the later postoperative period. Patients with significant sleep disturbances associated with rotator cuff repairs may benefit from the use of melatonin.

BACK

High Rate of Return to Sport in Contact and Collision Athletes After Arthroscopic Latarjet With Cortical Button Fixation

Greco V, Descamps J, Catalan N-M, Chelli M, Joyce CD, Boileau P.

DOI: 10.1177/03635465241274797

Background: Contact and collision athletes face a higher risk of recurrent anterior shoulder instability after surgical stabilization. The Latarjet procedure is often preferred given the high incidence of bony lesions. However, this stabilizing procedure, performed either open or arthroscopically, is met with concerns regarding complications and revision surgery rates.

Purpose: To evaluate the return to sport (RTS) and assess complication and instability recurrence rates in contact/collision athletes undergoing the arthroscopic Latarjet procedure using a guided technique with suture buttons for coracoid fixations.

Study Design: Case series; Level of evidence, 4.

Methods: A retrospective analysis was conducted on contact/collision athletes who underwent the arthroscopic Latarjet procedure for recurrent anterior shoulder instability between January 2011 and March 2018. All patients were operated on arthroscopically using glenoid and coracoid guides and suture button fixation of the transferred coracoid. RTS was defined as the patient being able to participate in his or her activity without any restriction postoperatively. Two independent observers assessed patients using postoperative computed tomography (CT) scans to evaluate coracoid positioning and healing. A multivariate analysis was performed to identify predictive factors associated with persistent apprehension. A group comparison was performed to assess RTS failure risk factors.

Results: In 136 contact/collision athletes (mean age, 25 ± 7 years), 93% were satisfied, and 98% achieved shoulder stability at a mean follow-up of 60 months (range, 24-117 months). No suture button–related complications or neurovascular issues were reported. Overall, 82% (112/136) returned to contact/collision sports. The mean time to RTS was 5.3 ± 1.2 months (range, 3-7.3 months). In a CT study performed 2 weeks after surgery, 87% (118/136) of bone grafts were positioned below the equator and 93% (126/136) were flush to the glenoid surface. At the 6-month postoperative CT examination, complete bone block healing was achieved in 84% (114/136). On clinical examination at the latest follow-up, 36 patients (26%) reported some anterior apprehension on testing. On multivariate analysis, patients with severe humeral bone defects (medium to large Hill-Sachs lesions, Calandra grade 2 or 3) had a higher risk of postoperative persistent apprehension. On group comparison, a visual analog scale score >3 and persistent anterior apprehension were found to be associated with failure of RTS.

Conclusion: The arthroscopic Latarjet procedure with suture button fixation allowed 82% of athletes with recurrent anterior shoulder instability to return to contact or collision sports. Patients with severe humeral bone defects have a higher risk of persistent anterior apprehension and decreased RTS. The arthroscopic-guided procedure with suture button fixation is safe; accurate, with a high rate of anatomic graft positioning and healing; and reliable, with a low recurrence rate.

BACK

Bone Marrow Stimulation for Arthroscopic Rotator Cuff Repair: A Meta-analysis of Randomized Controlled Trials

Hurley ET, Crook BS, Danilkowicz RM, et al.

DOI: 10.1177/03635465231213873

Background: Bone marrow stimulation (BMS) has been proposed to augment healing at the time of arthroscopic rotator cuff repair (ARCR) by creating several bone marrow vents in the footprint of the rotator cuff, allowing mesenchymal stem cells, platelets, and growth factors to cover the area as a “crimson duvet.”

Purpose: To perform a meta-analysis of randomized controlled trials (RCTs) to compare the outcomes after BMS and a control for those undergoing ARCR.

Study Design: Meta-analysis; Level of evidence, 1.

Methods: A literature search of 3 databases was performed based on the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. RCTs comparing BMS and a control for ARCR were included. Clinical outcomes were compared, and a P value <.05 was considered to be statistically significant.

Results: A total of 7 RCTs with 576 patients were included. Overall, 18.8% of patients treated with BMS and 21.0% of patients treated with a control had a retear (I^2 = 43%; P = .61). With BMS, the mean Constant score was 88.2, and with the control, the mean Constant score was 86.7 (P = .12). Additionally, there was no significant difference in the American Shoulder and Elbow Surgeons score (94.3 vs 93.2, respectively; P = .31) or visual analog scale score (0.9 vs 0.9, respectively; P = .89).

Conclusion: The level 1 evidence in the literature did not support BMS as a modality to improve retear rates or clinical outcomes after ARCR.

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Bone and Joint Journal (BJJ), Volume 106, issue 10

Preoperative patient-reported outcome measures predict minimal clinically important difference and patient-acceptable symptomatic state following arthroscopic Bankart repair

Yi Long 1, Zhen-Ze Zheng 1, Xin-Hao Li 1, De-Dong Cui 1, Xing-Hao Deng 1, Jiang Guo 2, Rui Yang 1

DOI: 10.1302/0301-620x.106b10.bjj-2024-0395.r1

Aims: The aims of this study were to validate the minimal clinically important difference (MCID) and patient-acceptable symptom state (PASS) thresholds for Western Ontario Shoulder Instability Index (WOSI), Rowe score, American Shoulder and Elbow Surgeons (ASES), and visual analogue scale (VAS) scores following arthroscopic Bankart repair, and to identify preoperative threshold values of these scores that could predict the achievement of MCID and PASS.

Methods: A retrospective review was conducted on 131 consecutive patients with anterior shoulder instability who underwent arthroscopic Bankart repair between January 2020 and January 2023. Inclusion criteria required at least one episode of shoulder instability and a minimum follow-up period of 12 months. Preoperative and one-year postoperative scores were assessed. MCID and PASS were estimated using distribution-based and anchor-based methods, respectively. Receiver operating characteristic curve analysis determined preoperative patient-reported outcome measure thresholds predictive of achieving MCID and PASS.

Results: MCID thresholds were determined as 169.6, 6.8, 7.2, and 1.1 for WOSI, Rowe, ASES, and VAS, respectively. PASS thresholds were calculated as ≤ 480, ≥ 80, ≥ 87, and ≤ 1 for WOSI, Rowe, ASES, and VAS, respectively. Preoperative thresholds of ≥ 760 (WOSI) and ≤ 50 (Rowe) predicted achieving MCID for WOSI score ($p < 0.001$). Preoperative thresholds of ≤ 60 (ASES) and ≥ 2 (VAS) predicted achieving MCID for VAS score ($p < 0.001$). A preoperative threshold of ≥ 40 (Rowe) predicted achieving PASS for Rowe score ($p = 0.005$). Preoperative thresholds of ≥ 50 (ASES; $p = 0.002$) and ≤ 2 (VAS; $p < 0.001$) predicted achieving PASS for the ASES score. Preoperative thresholds of ≥ 43 (ASES; $p = 0.046$) and ≤ 4 (VAS; $p = 0.024$) predicted achieving PASS for the VAS.

Conclusion: This study defined MCID and PASS values for WOSI, Rowe, ASES, and VAS scores in patients undergoing arthroscopic Bankart repair. Higher preoperative functional scores may reduce the likelihood of achieving MCID but increase the likelihood of achieving the PASS. These findings provide valuable guidance for surgeons to counsel patients realistically regarding their expectations.

BACK

Characterization of articular lesions associated with glenohumeral instability using arthroscopy

Gonzalo Luengo-Alonso 1, Maria Valencia 1, Natalia Martinez-Catalan 1, Cristina Delgado 1, Emilio Calvo 1

DOI: 10.1302/0301-620x.106b10.bjj-2024-0262.r1

Aims: The prevalence of osteoarthritis (OA) associated with instability of the shoulder ranges between 4% and 60%. Articular cartilage is, however, routinely assessed in these patients using radiographs or scans (2D or 3D), with little opportunity to record early signs of cartilage damage. The aim of this study was to assess the prevalence and localization of chondral lesions and synovial damage in patients undergoing arthroscopic surgery for instablility of the shoulder, in order to classify them and to identify risk factors for the development of glenohumeral OA.

Methods: A total of 140 shoulders in 140 patients with a mean age of 28.5 years (15 to 55), who underwent arthroscopic treatment for recurrent glenohumeral instability, were included. The prevalence and distribution of chondral lesions and synovial damage were analyzed and graded into stages according to the division of the humeral head and glenoid into quadrants. The following factors that might affect the prevalence and severity of chondral damage were recorded: sex, dominance, age, age at the time of the first dislocation, number of dislocations, time between the first dislocation and surgery, preoperative sporting activity, Beighton score, type of instability, and joint laxity.

Results: A total of 133 patients (95%) had synovial or chondral lesions. At the time of surgery, shoulders were graded as having mild, moderate, and severe OA in 55 (39.2%), 72 (51.4%), and six (4.2%) patients, respectively. A Hill-Sachs lesion and fibrillation affecting the anteroinferior glenoid cartilage were the most common findings. There was a significant positive correlation between the the severity of the development of glenohumeral OA and the patient's age, their age at the time of the first dislocation, and the number of dislocations ($p = 0.004$, $p = 0.011$, and $p = 0.031$, respectively).

Conclusion: Synovial inflammation and chondral damage associated with instability of the shoulder are more prevalent than previously reported. The classification using quadrants gives surgeons more information about the chondral damage, and could explain the pattern of development of glenohumeral OA after stabilization of the shoulder. As the number of dislocations showed a positive correlation with the development of OA, this might be an argument for early stabilization.

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Lower Extremity

Arthroscopy, Volume 40, Issue 10

Capsular Repair, Labral Repair, and Femoroplasty With Postless Traction Are Increasingly Performed for the Arthroscopic Treatment of Femoroacetabular Impingement Syndrome

L. Bartlett, S. Tharakan

DOI: 10.1016/j.arthro.2024.01.025

Purpose: To provide an updated assessment of hip arthroscopy use by using an institutional database that is specific to the treatment of femoroacetabular impingement syndrome (FAIS).

Methods: All patients undergoing hip arthroscopy for the treatment of FAIS were retrospectively identified between the years 2014 and 2022 via Current Procedural Terminology coding in a multi-institutional, single health system database. A longitudinal analysis was performed to identify trends in the use of arthroscopic techniques including capsular and labral treatment, osteoplasty, and traction set-up.

Results: During the study, 789 arthroscopic hip procedures in 733 patients were analyzed (56 staged bilateral). Between 2016 and 2022, the number of hip arthroscopies performed each year increased by 1,490% ($R^2 = 0.87$, $P = .001$). Capsular repair ($R^2 = 0.92$, $P < .001$), labral repair ($R^2 = 0.75$, $P = .002$), and femoroplasty ($R^2 = 0.70$, $P = .004$) were performed in an increasing proportion of cases over our study period whereas labral debridement ($R^2 = –0.84$, $P < .001$) became less used. Postless traction systems were employed in 84% (663/789) of hip arthroscopies overall, were used in at least 70% of hip arthroscopies each year, and did not undergo any significant changes in use ($R^2 = 0.02$, $P = .73$).

Conclusion: Capsular repair, labral repair, and femoroplasty were increasingly performed for the arthroscopic treatment of FAIS whereas the use of labral debridement decreased significantly over our study period. Postless traction systems were used in the majority of cases each year.

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Journal of Shoulder and Elbow Surgery (JSES), Volume 33, issue 10

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Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA), Volume 32, Issue 10

Females show worse functional outcome and quality of life compared to males 2 years after meniscus surgery: Data analysis from the German Arthroscopy Registry

C. Mai, P. Mai

DOI: 10.1002/ksa.12285

Purpose: The purpose of this study was to investigate the impact of sex on knee function, activity and quality of life following meniscus surgery using data from the German Arthroscopy Registry.

Methods: This is a retrospective cohort study with data collected between 2017 and 2022. Patient-reported outcome measures (PROMs), namely Knee Injury and Osteoarthritis Outcome Score (KOOS), EuroQol Visual Analogue Scale (EQ Scale), and Marx Activity Rating Scale (MARS), were collected preoperatively and at 6, 12 and 24 months postoperatively. Data were analysed to examine differences between male and female patients regarding PROMs, pre-existing conditions, meniscus lesion types and surgical treatments.

Results: A total of 1106 female (36.6%) and 1945 male patients (63.7%) were included. Males were significantly younger than females and had a higher body mass index. Overall, there were four times more medial meniscus lesions (MMLs) (77.5%) than lateral meniscus lesions (LMLs) (27.9%). Degenerative LMLs were more frequent in females, while traumatic LMLs were more common in males. Frequencies of traumatic and degenerative MMLs were similar among males and females. Males had higher absolute KOOS irrespective of treatment or meniscus lesion type. Meniscus repair resulted in similar improvements in ΔKOOS for both sexes, while meniscus resection exhibited higher absolute KOOS for males at each time point. Males generally had higher EQ Scale and MARS than females.

Conclusion: Greater improvements in knee function, activity and quality of life were observed in males. While MMLs appear to be comparable among sexes, the nature of LML differed significantly. These results may help surgeons to refine patient selection for specific treatments to improve overall clinical outcomes.

Level of evidence: Level III

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American Journal of Sports Medicine (AJSM), Volume 52, Issue 12

A Prospective, Randomized, Double-Blind Clinical Trial to Investigate the Efficacy of Autologous Bone Marrow Aspirate Concentrate During Arthroscopic Meniscectomy in Patients With Early Knee Osteoarthritis

Yanke AB, Yazdi AA, Weissman AC, et al.

DOI: 10.1177/03635465241275647

Background: Despite being recognized as a safe procedure with minimal reported complications, injecting autologous bone marrow aspirate concentrate (BMAC) as an adjuvant to arthroscopic partial meniscectomy (APM) for symptomatic patients with meniscal tears and concomitant knee osteoarthritis (OA) has not been studied in randomized controlled trials.

Purpose: To compare patient-reported outcome measure (PROM) scores and radiographic outcomes in symptomatic patients with meniscal tears and concomitant mild knee OA who underwent APM with and without an autologous BMAC injection administered at the time of surgery.

Study Design: Randomized controlled trial; Level of evidence, 1.

Methods: Enrolled patients aged ≥18 years determined to have a symptomatic meniscal tear with concomitant mild knee OA suitable for APM and meeting inclusion and exclusion criteria were randomized into 2 groups: BMAC and control (no BMAC). The primary endpoint of the study was the International Knee Documentation Committee (IKDC) score at 1 year postoperatively. Secondary endpoints included radiographic outcomes (Kellgren-Lawrence grade) at 1 year postoperatively and various PROM scores, including those for the IKDC, Knee injury and Osteoarthritis Outcome Score (KOOS), visual analog scale, and Veterans RAND 12-Item Health Survey, at 3 months, 6 months, 1 year, and 2 years after meniscectomy.

Results: Of the 95 enrolled patients, 83 (87.4%) were included for final analysis. No significant differences were found between the groups with regard to patient characteristics, intraoperative variables, concomitant procedures, preoperative PROM scores, or preoperative radiographic findings. At 1 year postoperatively, the BMAC group failed to demonstrate significantly better IKDC scores ($P = .687$) or radiographic outcomes ($P > .05$ for all radiographic measures) compared with the control group. Secondary PROM scores also did not significantly differ between the groups ($P > .05$ for all PROMs). However, there were higher achievement rates of the minimal clinically important difference for the KOOS Sport (100.0% vs 80.0%, respectively; $P = .023$) and KOOS Symptoms (92.3% vs 68.0%, respectively; $P = .038$) at 1 year postoperatively in the BMAC group than in the control group. All PROMs, excluding the VR-12 mental score, showed significant improvements compared with baseline at all postoperative time points for both the BMAC and control groups.

Conclusion: The addition of an autologous BMAC injection during APM did not result in significant changes in IKDC scores or radiographic outcomes at the 1-year postoperative mark. Secondary PROM scores were generally comparable between the 2 groups, but there was higher minimal clinically important difference achievement for the KOOS Sport and KOOS Symptoms at 1 year postoperatively in the BMAC group. In patients with symptoms consistent with a meniscal tear who had concomitant mild OA, the addition of BMAC to arthroscopic debridement did not affect the outcome.

BACK

Arthroscopic Centralization of the Medial Meniscus Reduces Load on a Posterior Root Repair Under Dynamic Varus Loading: A Biomechanical Investigation

Deichsel A, Peez C, Raschke MJ, et al.

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Background: In addition to the integrity of the meniscal hoop function, both the anterior and posterior meniscus roots as well as the meniscotibial and meniscofemoral ligaments are crucial in restraining meniscal extrusion. However, the interaction and load sharing between the roots and these peripheral attachments (PAs) are not known.

Purpose: To investigate the influence of an insufficiency of the PAs on the forces acting on a posterior medial meniscus root repair (PMMRR) in both neutral and varus alignment and to explore whether meniscal centralization reduces these forces.

Study Design: Controlled laboratory study.

Methods: In 8 fresh-frozen human cadaveric knees, an arthroscopic transosseous root repair (step 1) was performed after sectioning the posterior root of the medial meniscus. The pull-out suture was connected to a load cell to allow measurement of the forces acting on the root repair. A medial closing-wedge distal femoral osteotomy was performed to change the mechanical axis from neutral to 5° of varus alignment. The meniscus was completely released from its PAs (step 2), followed by transosseous arthroscopic centralization (step 3). Each step was tested in both neutral and varus alignment. The specimens were subjected to nondestructive dynamic varus loading under axial compression of 300 N in 0°, 15°, 30°, 45°, and 60° flexion. The changes in force acting on the PMMRR were statistically analyzed using a mixed linear model.

Results: Axial loading in neutral alignment led to an increase of the force of root repair of 3.1 ± 3.1 N (in 0° flexion) to 6.3 ± 4.4 N (in 60° flexion). In varus alignment, forces increased significantly from 30° (3.5 N; 95% CI, 1.1-5.8 N; P = .01) to 60° (7.1 N; 95% CI, 2.7-11.5 N; P = .007) flexion, in comparison with neutral alignment. Cutting of the PAs in neutral alignment led to a significant increase of root repair forces in all flexion angles, from 7.0 N (95% CI, 1.0-13.0 N; P = .02) to 9.1 N (95% CI, 4.1-14.1 N; P = .003), in comparison with the intact state. Varus alignment significantly increased the forces in the cut states from 4.8 N (95% CI, 1.0-8.5 N; P = .02) to 11.1 N (95% CI, 4.2-18.0 N; P = .006) from 30° to 60° flexion, in comparison with the neutral alignment. Arthroscopic centralization led to restoration of the native forces in both neutral and varus alignment, with no significant differences between the centralized and intact states.

Conclusion: An insufficiency of the PAs of the medial meniscus, as well as varus alignment, led to increased forces acting on a PMMRR. These forces were reduced via an arthroscopic meniscal centralization.

BACK

Relationship Between Neighborhood-Level Socioeconomic Status and Functional Outcomes After Hip Arthroscopy

Lee JS, Rachala RR, Gillinov SM, et al.

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Background: Despite the growing volume of neighborhood-level health disparity research, there remains a paucity of prospective studies investigating the relationship between Area Deprivation Index (ADI) and functional outcomes for patients undergoing hip arthroscopy.

Purpose: To investigate the relationship between neighborhood-level socioeconomic status and functional outcomes after hip arthroscopy.

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

Methods: A retrospective analysis of prospectively collected data was performed on patients aged ≥18 years with minimum 1-year follow-up who underwent hip arthroscopy for the treatment of symptomatic labral tears. The study population was divided into ADILow and ADIHigh cohorts according to ADI score: a validated measurement of neighborhood-level socioeconomic status standardized to yield a score between 1 and 100. Patient-reported outcome measures (PROMs) included the modified Harris Hip Score, Nonarthritic Hip Score, Hip Outcome Score–Activities of Daily Living, Hip Outcome Score–Sports-Specific Subscale, 33-item International Hip Outcome Tool, visual analog scale for pain, and patient satisfaction.

Results: A total of 228 patients met inclusion criteria and were included in the final analysis. After patients were stratified by ADI score (mean ± SD), the ADILow cohort (n = 113; 5.8 ± 3.0; range, 1-12) and ADIHigh cohort (n = 115; 28.0 ± 14.5; range, 13-97) had no differences in baseline patient demographics. The ADIHigh cohort had significantly worse preoperative baseline scores for all 5 PROMs; however, these differences were not present by 1-year follow-up. Furthermore, the 2 cohorts achieved similar rates of the minimal clinically important difference for all 5 PROMs and the Patient Acceptable Symptom State for 4 PROMs. When controlling for patient demographics, patients with higher ADI scores had greater odds of achieving the minimal clinically important difference for all PROMs except the 33-item International Hip Outcome Tool.

Conclusion: Although hip arthroscopy patients experiencing a greater neighborhood-level socioeconomic disadvantage exhibited significantly lower preoperative baseline PROM scores, this disparity resolved at 1-year follow-up. In fact, when adjusting for patient characteristics including ADI score, more disadvantaged patients achieved greater odds of achieving the minimal clinically important difference. The present study is merely a first step toward understanding health inequities among patients seeking orthopaedic care. Further development of clinical guidelines and health policy research is necessary to advance care for patients from disadvantaged communities.

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