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Journal of Shoulder and Elbow Surgery (JSES), Volume 34, issue 3

Improvement in sleep disturbance following arthroscopic rotator cuff repair

D.F. Schodlbauer, C.M. Beleckas

DOI: https://doi.org/10.1016/j.jse.2024.05.043

Background: Approximately 90% of patients express concerns with sleep shortly after developing shoulder-related symptoms. Previous small cohort studies have demonstrated the impact of rotator cuff repair (RCR) on sleep, but none have characterized the observed benefits. The purpose of this study is to evaluate sleep improvement after rotator cuff repair including the speed of sleep recovery, the time at which improvement plateaus, and the longer-term maintenance of improved sleep.

Methods: A retrospective review of our institution's shoulder and elbow repository identified patients who underwent primary arthroscopic rotator cuff repair from 2012 to 2021 and reported sleep disturbance preoperatively. Patients were evaluated using sleep-related questions from the Simple Shoulder Test and American Shoulder and Elbow Surgeons score. Sleep outcomes were compared from a preoperative visit to 3-month, 6-month, 12-month, and most recent follow-ups to evaluate efficacy of treatment, speed of recovery, and improvement plateaus.

Results: Among 677 RCR patients, 95.7% (648/677) reported sleep disturbance preoperatively. A total of 474 met inclusion criteria with median follow-up of 4.1 years (IQR, 2.1-6.1). At most recent follow-up, 81.8% were able to sleep comfortably and 65.7% were able to sleep on the affected side. A plateau in the ability to sleep comfortably was seen at 6 months while no plateau was observed in the ability to sleep on the affected side. More rapid improvement in the ability to sleep comfortably occurred during the first 3 months and from 3-6 months for the ability to sleep on the affected side.

Conclusion: The majority of patients with sleep disturbance who undergo RCR, report significant, rapid, and lasting improvement in the ability to sleep comfortably and the ability to sleep on the affected side.

Level of evidence: Level IV, Case Series, Treatment Study

BACK

Return to sport after arthroscopic xenograft bone block associated with Bankart repair and subscapularis augmentation in competitive contact athletes with recurrent anterior shoulder instability

R. Russo, A. Fontanarosa

DOI: https://doi.org/10.1016/j.jse.2024.05.047

Background: Open Bankart repair and Latarjet stabilization are 2 widely used surgical procedures in the treatment of shoulder instability in contact athletes. This study evaluates the outcomes of bone block arthroscopic procedures, performed with a xenograft, in combination with Bankart repair and selective subscapularis augmentation for contact athletes with recurrent anterior shoulder instability.

Methods: We retrospectively assessed contact athletes who underwent arthroscopic bone block with xenograft and Bankart repair with selective augmentation of the subscapularis for recurrent anterior shoulder instability between January 2017 and December 2021. Shoulders with posterior instability or multidirectional instability were excluded. Recurrence, complications, return to sport, and functional scores (Rowe score, Western Ontario Shoulder Instability index [WOSI] score, American Shoulder and Elbow Surgeons Standardized Shoulder Assessment Form ASES score) were assessed. A computed tomography scan at 2-year follow-up was performed to assess the status of bone block integration, its displacement and restoration of glenoid surface.

Results: Sixteen patients with a mean age of 24 years were included in the study. None of the patients treated with arthroscopic bone block and subscapularis augmentation presented new dislocation episodes. An increase in preoperative scores was observed at the last follow-up; in particular, the ASES, Rowe, and WOSI scores increased from 69 ± 7, 31 ± 9, and 1235 ± 46, respectively, to 96.1 ± 3.2, 94 ± 6, and 119 ± 51. All athletes returned to sporting activity at or near the same level as presurgery. The glenoid bone surface increase from 83% to 116% at the last follow-up.

Conclusion: Bone block treatment with xenograft combined with Bankart repair and arthroscopic subscapularis augmentation procedures has been shown to be effective in treating instability in contact athletes with significant glenoid deficit. All athletes returned to athletic activity at a level similar to the preintervention period.

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Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA), Volume 33, Issue 3

High long-term failure rates after arthroscopic Bankart repair in younger patients with recurrent shoulder dislocations: A plea for early treatment

C. Delgado, E. Calvo

DOI: https://doi.org/10.1002/ksa.12391

Purpose: To determine arthroscopic Bankart repair outcomes and recurrence risk factors at a minimum 5-year follow-up.

Methods: Retrospective assessment of prospectively collected data, single-cohort study of patients who underwent arthroscopic Bankart repair with a minimum 5-year follow-up. Demographical and preoperative instability features were collected. Primary outcome was recurrent instability set as dislocation or subluxation. Secondary outcomes were revision surgery, postoperative instability degree according to Manta criteria, objective and subjective clinical and functional status, assessed by the Rowe, Western Ontario Shoulder Index (WOSI) and Subjective Shoulder Value (SSV) scores. Return to sport and postoperative sports activity at the final follow-up were also recorded.

Results: One-hundred and seventy-two patients, 82% men, average age at surgery 29.5 ± 9.2 years, were included. At a mean follow-up of 8.3 ± 2.6 years, recurrent instability occurred in 53 of 172 patients (30.8%). Revision surgery was required in 23/53 (43.4%) of shoulder with recurrent instability. Recurrence occurred within the first 2 years postoperative in 49% of the shoulders, whereas 51% of recurrences occurred after this period. Recurrence took place after a traumatic event in 25% and 56%, respectively. Recurrence rates were higher in patients who underwent surgery after two or more dislocations ($p = 0.029$). Patients younger at the time of first dislocation, younger at surgery and those with a higher preoperative degree of instability also showed significantly higher rates of recurrence ($p = 0.04$, $p = 0.02$, $p = 0.03$). Postoperative ROWE, WOSI and SSV scores were significantly worse in patients with recurrent instability ($p < 0.001$). Return-to-sports rate was also lower in patients with postoperative recurrence ($p < 0.001$).

Conclusion: The arthroscopic Bankart repair was associated with a high long-term recurrence rate, and its effectiveness decreased over time. The lowest recurrence rates in arthroscopic Bankart repair were achieved in older patients with only one prior instability episode and a lower instability degree.

Level of Evidence: Level IV

BACK

A modified arthroscopic en masse suture bridge repair is effective for delaminated rotator cuff tears

S. Fang, X. Wang

DOI: https://doi.org/10.1002/ksa.12412

Purpose: This study aimed to clarify the characteristics of delaminated rotator cuff tears (RCTs) and evaluate the clinical outcomes of a modified arthroscopic en masse suture bridge repair for delaminated RCTs.

Methods: Patients with full-thickness RCTs, who underwent arthroscopic suture bridge repair with a minimum 2-year follow-up, were retrospectively reviewed. Patients were categorized into two groups based on the presence of delamination. Delaminated RCTs were treated using a modified en masse suture bridge technique, while nondelaminated RCTs received a conventional suture bridge technique. Preoperative and postoperative Constant scores and American Shoulder and Elbow Surgeons (ASES) scores were determined to evaluate clinical outcomes. Postoperative magnetic resonance imaging (MRI) was carried out to identify the integrity and retear of the repaired rotator cuff.

Results: A total of 172 patients were included in our study cohort, in which 67 (39%) delaminated RCTs were confirmed intraoperatively. The prevalence of delamination was significantly higher in large tears (53/102, 52%) compared to medium tears (14/70, 20%) ($p < 0.001$). No significant differences in age (n.s.) or gender (n.s.) were observed between the two groups. Both groups showed significant improvements in Constant and ASES scores postoperatively (both $p < 0.001$), with no significant differences between the groups (n.s.). The retear rates were 2/67 (3.0%) in the delamination group and 3/105 (2.9%) in the nondelamination group, showing no significant difference (n.s.).

Conclusions: The modified arthroscopic en masse suture bridge technique was effective for repairing delaminated RCTs, yielding favourable clinical outcomes comparable to those of nondelaminated tears.

Level of Evidence: Level IV

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Arthroscopy, Volume 41, Issue 3

Patients Undergoing Postless Hip Arthroscopy Demonstrate Significantly Better Patient-Reported Outcomes and Clinically Significant Outcomes Compared to Conventional Post-Assisted Hip Arthroscopy at Short-Term Follow-Up

M.J. Kraeutler, R.S. Marder

DOI: https://doi.org/10.1016/j.arthro.2024.03.040

Purpose: To prospectively compare the short-term clinical outcomes of patients undergoing hip arthroscopy with versus without the use of a perineal post.

Methods: A prospective, single-surgeon cohort study was performed on a subset of patients undergoing hip arthroscopy between 2020 and 2022. A post-free hip distraction system was used at 1 center at which the senior author operates, and a perineal post was used at another surgical location. An electronic survey of patient-reported outcome measures (PROMs) was completed by each patient at a minimum of 1 year postoperatively. PROMs included a visual analog scale for pain; University of California, Los Angeles (UCLA) Activity Scale; modified Harris Hip Score (mHHS); Hip Outcome Score–Sports-Specific Subscale (HOS-SSS); and a Single Assessment Numeric Evaluation. Postoperative scores and clinically significant outcomes, including the minimal clinically important difference, substantial clinical benefit, and patient acceptable symptom state, for each PROM were compared between groups.

Results: Sixty-nine patients were reached for follow-up (41 post, 28 postless) of 87 patients eligible for the study (79%). No significant differences were found between groups in terms of sex (post: 61% female, postless: 54% female, P = .54), age (post: 34 years, postless: 29 years, P = .11), body mass index (post: 26, postless: 24, P = .23), or follow-up duration (post: 24.4 months, postless: 21.3 months, P = .16). There was a significantly higher visual analog scale (3.1 vs 1.4, P = .01), a significantly lower UCLA Activity Scale score (7.0 vs 8.4, P = .02), and a significantly lower mHHS (73.7 vs 82.2, P = .03) in the post-assisted group. A significantly higher proportion of patients in the postless group achieved a patient acceptable symptom state for the UCLA (89.3% vs 68.3%, P = .04), mHHS (84.6% vs 61.0%, P = .04), and HOS-SSS (84.0% vs 61.0%, P = .048) and a substantial clinical benefit for HOS-SSS (72.0% vs 41.5%, P = .02). One patient (2.6%) in the post group underwent revision hip arthroscopy, and another was indicated for total hip arthroplasty by the time of follow-up.

Conclusions: Postless hip arthroscopy may result in better clinical outcomes compared with post-assisted hip arthroscopy.

Level of Evidence: Level III, retrospective cohort study

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Six-Month Outcomes Correlate With 10-Year Outcomes After Hip Arthroscopy for Femoroacetabular Impingement Syndrome

A.B. Alvero, J.J. Chan

DOI: https://doi.org/10.1016/j.arthro.2024.03.042

Purpose: To identify whether 6-month outcomes after hip arthroscopy for femoroacetabular impingement syndrome (FAIS) correlate with outcomes at minimum 10-year follow-up.

Methods: Patients who underwent primary hip arthroscopy for FAIS from 2012 to 2013 were reviewed and included if they had 6-month and minimum 10-year follow-up. Patient-reported outcome (PRO) measures included the Hip Outcome Score Activities of Daily Living (HOS-ADL) subscale, Hip Outcome Score Sports-Specific (HOS-SS) subscale, modified Harris Hip Score (mHHS), visual analog scale (VAS) for pain, and VAS for satisfaction. We compared 6-month and 10-year outcome scores and analyzed the relations between 6-month and 1-, 2-, 5-, and 10-year outcome scores using Pearson correlation coefficients (r). Six-month scores and clinically significant outcome achievement were then compared with 10-year clinically significant outcome achievement and reoperations, including revision hip arthroscopy and conversion to total hip arthroplasty (THA), using logistic regressions and the Fisher exact test.

Results: This study included 60 patients (60.0% female sex; mean age, 36.0 ± 12.2 years). The mHHS, VAS pain score, and VAS satisfaction score significantly improved from 6-month to 10-year follow-up ($P \leq .021$), whereas the HOS-ADL and HOS-SS did not ($P \geq .072$). There were significant correlations between 6-month and 10-year scores for the HOS-ADL ($r = 0.505$), HOS-SS ($r = 0.592$), and mHHS ($r = 0.362$) ($P \leq .022$ for all), as well as significant correlations between 6-month and 1-, 2-, and 5-year scores ($P \leq .014$ for all). The 6-month HOS-ADL, HOS-SS, and mHHS were all significantly associated with their respective 10-year achievement of the patient acceptable symptom state (PASS) ($P \leq .044$). Furthermore, 6-month HOS-ADL and mHHS were significantly associated with THA conversion ($P \leq .041$). Comparable 6-month and 10-year achievement of the minimal clinically important difference (96.5% vs 97.8%, $P > .999$) and PASS (85.2% vs 87.5%, $P > .999$) for any PRO was observed.

Conclusions: After hip arthroscopy for FAIS, patients' 6-month HOS-ADL and mHHS were significantly associated with their 10-year PROs, PASS achievement, and THA conversion, although correlation strengths decreased with increasing time from surgery.

Level of Evidence: Level IV, case series

BACK

Single-Dose Intravenous Tranexamic Acid Does Not Increase Venous Thromboembolic Rate or Complication Rate During Hip Arthroscopy

S.A. Samborski, S.C. Morris

DOI: https://doi.org/10.1016/j.arthro.2024.03.051

Purpose: To determine whether tranexamic acid (TXA) is safe to administer preoperatively in patients undergoing hip arthroscopy by comparing the venous thromboembolic rate and complication rate between patients who did and did not receive TXA preoperatively.

Methods: This was a multicenter consecutive-cohort series of patients who underwent arthroscopic hip surgery between 2014 and 2021. The 2 cohorts comprised patients who did and did not receive TXA preoperatively (single dose of 1-2 g), after a practice change. Data were collected via chart review. Surgical outcomes included days until follow-up, visual analog scale pain score at first follow-up, total operating room (OR) time, number of arthroscopic fluid bags (3 L/bag), and complications and revision operations up to 1 year after surgery. The Mann-Whitney U test was performed for continuous variables, and the $\chi 2$ test, for categorical variables.

Results: A total of 862 patients were identified: 449 (52%) received TXA and 413 (48%) did not. Patient demographic characteristics including age, sex, height, weight, body mass index, smoking status, and procedures performed, as well as number of anchors used (3.5 anchors for no TXA vs 3.7 anchors for TXA) and traction time (38 minutes for no TXA vs 40 minutes for TXA), did not significantly differ between groups. Significantly more patients underwent prior hip arthroscopy in the TXA group (n = 45; primary, n = 404) than in the group that did not receive TXA (n = 25; primary, n = 388) (P = .03). Visual analog scale pain scores at the first follow-up visit (2.61 for no TXA vs 2.62 for TXA, P = .62) and the need for subsequent revision surgery (24 patients with no TXA vs 18 patients with TXA, P = .68) were not significantly different. TXA use was associated with less arthroscopic fluid utilization (5.9 bags of 3 L of fluid for no TXA vs 5.3 bags of 3 L of fluid for TXA, P < .01) and less total OR time (99.5 minutes for no TXA vs 90.0 minutes for TXA, P < .01). There was a higher overall complication rate in the group that did not receive TXA (n = 27) than in the group that did (n = 10) (P = .01). However, if lateral femoral cutaneous nerve neurapraxia was excluded, then no difference in complication rate was observed (P = .24).

Conclusions: There was no difference in the incidence of venous thromboembolic complications between patients who did and did not receive TXA preoperatively. We observed a lower overall complication rate in patients who received TXA preoperatively; however, this normalized between the 2 groups when lateral femoral cutaneous nerve neuritis was excluded. No difference in early pain control or revision surgery rate was observed between groups. Although there was statistically less arthroscopic fluid utilization and less total OR time in the group that received TXA, further studies are needed to clarify whether this is clinically meaningful. Preoperatively administered TXA is a safe adjunct medication in patients undergoing arthroscopic hip surgery.

Level of Evidence: Level III, retrospective multicenter consecutive series.

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Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA), Volume 33, Issue 3

Arthroscopic treatment for femoroacetabular impingement yields favourable patient-reported outcomes and method survivorship at 10-year follow-up

S. Nikou, J. Sturesson

DOI: https://doi.org/10.1002/ksa.12511

Purpose: To compare the outcomes of hip arthroscopy for femoroacetabular impingement syndrome (FAIS) preoperatively and at minimum 10-year follow-up using patient-reported outcome measures (PROMs).

Methods: A total of 128 patients with FAIS were prospectively included. The patients underwent arthroscopic surgery for FAIS between 2011 and 2013 and had a minimum of 10-year follow-up. The International Hip Outcome Tool short version (iHOT-12) was the primary outcome. Secondary outcomes were the Copenhagen Hip and Groin Outcome Score (HAGOS), the European Quality of Life-5 Dimensions Questionnaire (EQ-5D), the European Quality visual analogue scale (EQ VAS), the Hip Sports Activity Scale (HSAS) for physical activity level, the Visual Analogue Scale (VAS) for overall hip function and a single question regarding overall satisfaction with the surgery. The Wilcoxon signed rank test was used to compare pre- and postoperative PROMs.

Results: There was a significant improvement ($p < 0.001$) of iHOT-12, HAGOS subscales, EQ-5D, EQ VAS and VAS for overall hip function. A total of 83% of the patients were satisfied with their surgery. The survivorship of hip arthroscopy, defined as nonconversion to total hip arthroplasty (THA), at the end of the follow-up period was 77%.

Conclusion: Patients undergoing arthroscopic treatment for FAIS reported statistically significant and clinically relevant improved outcomes at 10-year follow-up.

Level of Evidence: Level IV, case series

BACK

A high proportion of patients demonstrate recall bias in the retrospective collection of patient-reported outcomes following hip arthroscopy

A.M. Morgan, J. Triana

DOI: https://doi.org/10.1002/ksa.12550

Purpose: The aim of this study is to assess agreement between retrospectively and prospectively collected patient-reported outcome measures (PROMs) following hip arthroscopy for femoroacetabular impingement syndrome (FAIS).

Methods: Patients undergoing hip arthroscopy from 2021 to 2023 for FAIS completed preoperative PROMs, including the modified Harris Hip Score (mHHS) and the Non-Arthritic Hip Score (NAHS). Post-operatively, patients were surveyed and asked to recall their preoperative hip function. Paired two-sample t tests were used to compare baseline and recalled baseline PROMs and the difference between scores was compared to previously published minimally clinically important difference (MCID) values. Intraclass correlation coefficients (ICCs) were calculated to test the reliability between scores based on a single-rater, two-way mixed-effects model. Multivariable regression, accounting for age, sex and preoperative baseline scores, was used to evaluate the relationship of time elapsed since surgery with recall accuracy.

Results: A total of 116 patients (age: 37.6 ± 11.8 years; 61.2% female) were included. The mean time elapsed for recalled data was 13.1 months (range: 1–27 months). Overall, patients' recalled scores were significantly lower than those prospectively collected (mHHS: 52.9 ± 20.1 vs. 61.5 ± 18.5, $p < 0.0001$; NAHS: 54.7 ± 20.0 vs. 58.8 ± 19.1, $p < 0.0001$). Frequency distribution found 68.1% of recalled mHHS and 61.2% of NAHS scores to have a greater difference (between baseline and recalled scores) than the MCID. The ICC was moderate for both mHHS (ICC = 0.559, 95% confidence interval [CI] = [0.420-0.672], $p < 0.001$) and NAHS (ICC = 0.612, 95% CI = [0.484–0.714], $p < 0.001$). Multivariate regression analysis did not find time elapsed since surgery to be associated with the difference between baseline and recalled mHHS (n.s.) or NAHS (n.s.).

Conclusion: There are significant differences between retrospective and prospectively collected PROMs in patients undergoing hip arthroscopy that are not predicted by time to recall. These findings should impact the interpretation of the existing literature, support the routine collection of prospective data and inform patient counsel regarding their perceived post-operative outcomes.

Level of Evidence: Level IV

BACK

Anterolateral and accessory anterolateral portals are safe to avoid subcutaneous nerve injury during subtalar arthroscopy—Definition of safe zones for standard lateral portals

L. Hirtler, V. Bussek

DOI: https://doi.org/10.1002/ksa.12463

Purpose: Injury to the superficial peroneal nerve (SPN) or the sural nerve (SN) is a common complication in subtalar arthroscopy. The purpose of this anatomical study was to evaluate the distance to surrounding subcutaneous nerves in the vicinity of three standard arthroscopic portals for subtalar joint arthroscopy and through actual portal placement for arthroscopic procedures, in order to define anatomical safe zones.

Methods: Forty paired fresh-frozen foot-and-ankle specimens were used. Subtalar arthroscopy using a three-portal technique (anterolateral [AL], posterolateral [PL] and accessory anterolateral [AAL] portals) was performed. After completion of subtalar arthroscopy, the portals were marked, and all surrounding subcutaneous nerves, that is, the branches of the SPN and SN, were dissected. The distance of the nearest nerve at the level of the respective portal was measured and potential injury was recorded.

Results: The nearest nerve at the level of the AL portal was the intermediate dorsal cutaneous nerve at a mean of 15.4 ± 5.1 mm medial to the portal. The nearest nerve at the level of the AAL portal was the lateral dorsal cutaneous nerve at a mean of 17.7 ± 4.8 mm, being lateral to the portal. The nearest nerve at the level of the PL portal was the SN at a mean of 6.7 ± 4.7 mm anterior to the portal. Based on the measurements, safe zones were defined.

Conclusions: Placement of the AL and AAL portals in subtalar arthroscopy is saved using standard anatomical landmarks and a thorough surgical technique. At the level of the PL portal, the SN is the most endangered structure in subtalar arthroscopy. Surgeons should be aware of the proximity of the SN to the PL portal and take the utmost care during portal placement and instrument insertion to avoid iatrogenic injury. The risk of nerve damage during portal placement may be reduced when positioning the portals in the defined safe zones.

Level of Evidence: n/a

BACK

American Journal of Sports Medicine (AJSM), Volume 53, Issue 3

Successful Medial Meniscal Repair Reduces Knee Pain 10 Years After Anterior Cruciate Ligament Reconstruction: Exploring the Consequences of Subsequent Surgery With Causal Mediation Analysis in the MOON Cohort

Sheean AJ, Jin Y, Amendola A, et al.

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Background: Medial meniscal repair performed at the time of primary anterior cruciate ligament reconstruction (ACLR) has been shown to be significantly associated with subsequent surgery, and subsequent surgery has been associated with increased Knee injury and Osteoarthritis Outcome Score (KOOS) pain score and decreased patient satisfaction.

Purpose/hypothesis: The purpose was to determine if medial meniscal repair decreases KOOS pain 10 years after ACLR and to assess the consequences of subsequent surgery on the development of KOOS pain. The authors hypothesized that medial meniscal repair performed at the time of primary ACLR decreases the likelihood of developing KOOS pain. It was further hypothesized that surgery performed subsequent to medial meniscal repair and primary ACLR increases KOOS pain 10 years after ACLR.

Study Design: Cohort study; Level of evidence, 2.

Methods: Our inclusion criteria were all patients undergoing unilateral primary ACLR from 2002 to 2008 who were enrolled in the Multicenter Orthopaedic Outcomes Network without a history of medial or lateral meniscal surgery and contralateral ACLR. Causal mediation analysis using R software (Version 4.2.3) was employed to compare 2 effects on the development of significant knee pain, as represented by a KOOS pain score <80, at 10-year follow-up: (1) medial meniscal repair for longitudinal tears >10 mm in medial-to-lateral length and (2) medial meniscal excision at baseline of ACLR. A directed acyclic graph was constructed to provide a qualitative representation of the influence of known confounders that have been shown to affect the outcome of interest. Missing data were multiply imputed using multivariate imputation by chained equations. All tests were 2-sided, assuming a type I error rate of .05.

Results: In total, 2387 participants (1074 female [45%]; 1313 male [55%]) were included in the final analysis. In 1502 (62.9%) cases, there was no medial meniscal tear reported. Of the 885 cases with medial meniscal tears, no treatment was performed in 109 (12.4%), meniscal excision was performed in 396 (44.7%), and meniscal repair was performed in 380 (42.9%). An overall 1825 of 2387 (76.5%) patients reported KOOS pain at 10-year follow-up: 252 (13.8%) had KOOS pain <80 and 1573 had ≥80. In the KOOS pain <80 group, 75 (29.8%) had subsequent surgery. In the KOOS pain ≥80 group, 223 (14.2%) had subsequent surgery. The step-by-step approach to causal mediation analysis demonstrated that a medial meniscal procedure (ie, no treatment for the tear, repair, or excision) significantly affected the likelihood of subsequent surgery ($\chi 2 = 28.9$; $P < .001$) and subsequent surgery significantly increased the likelihood of KOOS pain <80 ($\chi 2 = 17.3$; $P < .001$). However, the direct effect of a successful medial meniscal repair without subsequent surgery decreased the likelihood of KOOS pain <80 by 7.1% when compared with medial meniscal excision (95% CI, –13.3% to −1%; $P = .024$). When subsequent surgery was performed after medial meniscal repair and ACLR, the likelihood of KOOS pain <80 increased by 2.9% (95% CI, 1.1%-5.3%; $P < .001$.)

Conclusion: Successful medial meniscal repair performed at the time of primary ACLR decreased clinically significant knee pain 10 years postoperatively. However, the mediating effect

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of subsequent surgery was significant and diminished the overall contribution of medial meniscal repair in decreasing the likelihood of KOOS pain. Continued efforts should be made to decrease the likelihood of subsequent surgery after medial meniscal repair performed at the time of primary ACLR.

BACK

Primary Anterior Cruciate Ligament Reconstruction in Level 1 Athletes: Factors Associated With Return to Play, Reinjury, and Knee Function at 5 Years of Follow-up

McAleese T, Welch N, King E, et al.

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Background: Favorable outcomes after anterior cruciate ligament (ACL) reconstruction (ACLR) are often gauged by successful return to play (RTP), a low incidence of subsequent ACL injury, and positive patient-reported outcomes. Level 1 sports place the highest demands on the knee by requiring frequent pivoting, changes in direction, and jumping.

Purpose/hypothesis: To analyze the outcomes of primary ACLR in level 1 athletes and identify pre- and intraoperative factors associated with RTP, ipsilateral ACL reinjury, contralateral ACL injury, and International Knee Documentation Committee (IKDC) score at 5 years postoperatively.

Study Design: Cohort study; Level of evidence, 2.

Methods: A consecutive cohort of 1432 patients who underwent primary ACLR by 2 orthopaedic surgeons were prospectively evaluated. The RTP rate, incidence of ipsilateral/contralateral ACL injury, and IKDC score were analyzed at 5 years. Comparative analysis of clinical variables was performed between those who achieved favorable outcomes and those who did not. Outcomes at 5 and 2 years were also compared.

Results: The mean age was 24.3 ± 7.3 years (males: 75%, females: 25%). Gaelic football was the predominant sport (40%), followed by soccer (19%). The RTP rate was 87.4%, with 59.8% of athletes still playing at an equivalent or higher level at 5 years. The incidence of ipsilateral reinjury for athletes who resumed level 1 sport was 4.3% for bone–patellar tendon–bone (BPTB) autografts with screw fixation and 19.7% for hamstring tendon (HT) autografts with EndoButton and screw fixation. The incidence of contralateral ACL injury was 13.7%. The mean IKDC score at 5 years (86.6 ± 10.9) was comparable to that at 2 years (86.8 ± 10.1). Patients were more likely to RTP with each year of decreasing age (OR, 1.06; $P < .001$), with a higher preoperative Marx score (OR, 1.08; $P < .001$) or a higher 5-year IKDC score (OR, 1.06; $P < .001$). The risk of ipsilateral ACL reinjury increased each year of decreasing age (OR, 1.11; $P < .001$) or when an HT autograft was used (OR, 5.56; $P < .001$). Younger age was also associated with contralateral ACL injury (OR, 1.1; $P < .001$). Female sex, older age, concomitant meniscal/chondral injuries, and lower preoperative Anterior Cruciate Ligament Return to Sport after Injury scores were associated with lower IKDC scores at 5 years.

Conclusion: Most patients could return to level 1 sports, although their performance level was impacted. Those who returned to sport maintained their performance level over the 5 years. The ipsilateral reinjury rate for BPTB autografts with screws was significantly lower than that for HT autografts with EndoButton and screw fixation. Most ACL reinjuries occurred between 2 and 5 years of follow-up. Younger patients had an increased risk of a subsequent ACL injury to either knee, regardless of graft type. IKDC scores were lower in female patients, older patients, and those with concomitant meniscal/cartilage injuries.

BACK

fMRI Activation in Sensorimotor Regions at 6 Weeks After Anterior Cruciate Ligament Reconstruction

Culiver AM, Grooms DR, Caccese JB, Hayes SM, Schmitt LC, Oñate JA.

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Background: Brain activity during knee movements is altered throughout the sensorimotor network after anterior cruciate ligament reconstruction (ACLR). Patients at 2 to 5 years after surgery appear to require greater neural activity to perform basic knee movement patterns, but it is unclear if brain activity differences within sensorimotor regions are present early after surgery. It is also unknown whether uninvolved knee movements elicit similar or unique activity compared with involved knee movements.

Purpose/hypothesis: To examine brain activity in sensorimotor regions during involved and uninvolved knee movements in patients at 6 weeks after ACLR compared with control participants.

Study Design: Cohort study; Level of evidence, 2.

Methods: A total of 15 patients who underwent ACLR (mean age, 21.9 ± 4.3 years [range, 17-29 years]; 8 female) and 15 control participants performed 30-second blocks of repeated knee flexion and extension, followed by 30 seconds of rest, during functional magnetic resonance imaging. Regions of interest included the right and left primary motor cortex (M1), right and left primary somatosensory cortex (S1), supplementary motor area (SMA), precuneus, and lingual gyrus. Activity from task-relevant voxels (move > rest) was extracted, and generalized estimating equations evaluated the main effect of group and group-by-limb interaction. Effect sizes were calculated using the Cohen d.

Results: Reduced brain activity during knee flexion and extension was observed in the ACLR group in the ipsilateral M1 and S1, contralateral S1, SMA, and precuneus during movements of the involved and uninvolved knees. There were no group-by-limb interaction effects, indicating no significant differences between the involved knee and uninvolved knee in the ACLR group. Medium to large effect sizes were identified for between-group differences in all regions.

Conclusion: At 6 weeks after ACLR, patients exhibited bilateral reductions in brain activity during knee movements in multiple sensorimotor regions. These identified regions are associated with motor planning, motor execution, somatosensory function, and sensorimotor integration. These data indicate that ACLR affected sensorimotor brain activity in both limbs during the early postoperative phase of rehabilitation.

BACK

Revision Anterior Cruciate Ligament Reconstruction: Surgeon-Reported Causes of Failure From the Norwegian Knee Ligament Register

Vindfeld S, Persson A, Lindanger L, Fenstad AM, Visnes H, Inderhaug E.

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Background: Failed anterior cruciate ligament reconstruction (ACLR) leads to reduced quality of life and sometimes the need for repeat surgery. The reason for failure can be multifactorial and difficult to determine. Reports on failure leading to revision are few with limited generalizability. Also, no studies have investigated the reasons for early (<2 years) versus late (≥2 years) revision.

Purpose/hypothesis: To describe patients undergoing revision surgery, the surgeon's reported cause of failure, and the risk of undergoing early versus late revision surgery.

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

Methods: Primary ACLR cases without concomitant ligament injuries or surgery, registered in the Norwegian Knee Ligament Register from 2004 throughout 2023, were eligible. Descriptive analyses were conducted on intraoperative findings and procedures, time from injury to surgery, activity at the time of injury, revision surgery, surgeon-reported cause of revision, and reporting method. The Kaplan-Meier method was used to calculate revision rates. A multivariable Cox regression model, adjusted for confounders, was used to calculate the hazard ratio of early and late revision surgery.

Results: A total of 30,035 primary ACLR cases were analyzed, of which 1599 resulted in revision surgery. The overall revision rate was 7.1% at 15 years. Female patients were younger at the time of both primary and revision surgery (23.8 and 22.5 years, respectively) compared with male patients (28.2 and 22.2 years, respectively). Age at the time of primary surgery was significantly lower for patients who underwent revision (20.4 years) compared with those who did not undergo revision (26.5 years). Male sex, lower age, hamstring tendon graft, and no cartilage injury at the time of primary reconstruction were all associated with a higher risk of early revision. Lower age, hamstring tendon graft, and no meniscal injury were associated with a higher risk of late revision. New trauma (38.1%) was found to be the most common cause of failure leading to revision.

Conclusion: In the current study, representing one of the largest cohorts to date investigating failed primary ACLR leading to revision, the overall 15-year revision rate was estimated as 7.1%. Patients receiving hamstring tendon grafts were at a particular risk for early revision during the first 2 years after primary reconstruction. New trauma was the most common reported cause of failure leading to revision ACLR.

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Quantifying Muscle Volume Deficits Among 38 Lower Extremity Muscles in Collegiate Football Athletes After Anterior Cruciate Ligament Reconstruction

Ito N, Martin JA, Joachim MR, et al.

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Background: Quadriceps dysfunction is ubiquitous after anterior cruciate ligament (ACL) reconstruction (ACLR). Addressing quadriceps dysfunction is crucial to improve function, reduce the reinjury risk, and maintain long-term knee health. While deficits specific to the quadriceps are well documented, less is known about the effect of an ACL injury on other lower extremity muscle groups.

Purpose/hypothesis: The purpose of this exploratory analysis was to quantify and rank lower extremity muscle volume deficits using magnetic resonance imaging in collegiate football athletes after ACLR. It was hypothesized that the quadriceps muscles would present with the greatest deficits and that compensatory hypertrophy of muscles at adjacent joints such as the hip and ankle would be observed.

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

Methods: This study is a secondary analysis from an ongoing multicenter prospective cohort study involving Division I collegiate football athletes. Athletes who underwent primary unilateral ACLR (1 [3%] allograft, 2 [7%] quadriceps tendon autograft, 22 [73%] bone–patellar tendon–bone autograft, 5 [17%] hamstring tendon autograft) and magnetic resonance imaging were included. Muscle volumes (mL·kg–1·m–1) were quantified bilaterally from 38 lower extremity muscles using machine learning technology. Paired-samples t tests were performed between limbs for each muscle, which were then ranked and visualized in a forest plot based on standardized mean differences (surgical – nonsurgical limb).

Results: A total of 30 athletes (mean time from surgery, 27.9 ± 19.0 months) were included. The largest muscle volume deficits in the surgical limb were seen in the 3 uniarticular quadriceps muscles, followed by the biarticular triceps surae muscles. The rectus femoris and soleus did not show significant differences between limbs. Conversely, the fibularis muscle group had a greater muscle volume in the surgical limb compared with the nonsurgical limb. Most other muscle groups did not present significant differences between limbs.

Conclusion: Persistent quadriceps atrophy in a cohort of high-level athletes over 2 years after ACLR was highlighted in this study. Deficits in the gastrocnemius muscles, but not in the soleus, were also identified. This comprehensive approach examining various lower extremity muscles revealed latent muscle volume deficits present after ACLR.

BACK

Midterm to Long-term Follow-up After Limited Saucerization of a Discoid Lateral Meniscus: Radiological and Functional Outcomes With Age-Dependent Variations

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Background: A discoid lateral meniscus (DLM) is the most common meniscus variant and is commonly treated with arthroscopic saucerization. There are mixed data regarding long-term results after surgery, especially in terms of radiological parameters.

Purpose/hypothesis: The aim was to evaluate the functional and radiological results of patients who underwent arthroscopic saucerization for a symptomatic DLM. It was hypothesized that successful outcomes can be achieved by avoiding excessive resection while reshaping only to an extent that prevents mechanical symptoms.

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

Methods: This study retrospectively analyzed pediatric and adult patients who had a symptomatic discoid meniscus between 2000 and 2018, who underwent arthroscopic saucerization with at least 10 mm of peripheral length, and who had at least 5 years of follow-up. Radiological parameters were measured on both preoperative and follow-up radiographs. Patient-reported outcome measure scores were recorded at follow-up.

Results: The study included 57 knees of 53 patients (mean age, 27.6 years [range, 6-65 years]). The mean follow-up duration was 12.1 years (range, 5.0-23.1 years). There were 31 knees in the pediatric group and 26 knees in the adult group. No significant difference was found between the groups or between preoperative and follow-up values for the femorotibial angle ($P > .05$). When the preoperative and follow-up Kellgren-Lawrence grades were compared, no change was observed in the pediatric group ($P = .125$), while grades were shown to progress in the adult group ($P < .001$). The mean Lysholm score was 94.61 ± 7.61 and 84.23 ± 14.90 for the pediatric and adult groups, respectively ($P = .001$). Overall, 2 patients underwent arthroscopic surgery because of a symptomatic recurrence of symptoms, and 2 patients underwent arthroplasty because of osteoarthritis. The 10-year survival rate was 90.6%.

Conclusion: Limited saucerization of a DLM helped to preserve coronal-plane knee joint alignment. Functional and radiological results were superior in the pediatric patients. Even when alignment was more varus in older patients, preoperative and follow-up femorotibial angles were not statistically significant. This outcome may be used to guide treatment in appropriately selected cases.

BACK

Outcomes of Open Arthrotomy and Arthroscopic Surgery for Primary Synovial Chondromatosis of the Hip: A Comparative Study With Propensity Score Matching

Soul Kim H, Ok CH, Chang JS, Kim JW, Kim C-H.

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Background: Despite the widespread use of arthroscopic surgery for hip synovial chondromatosis, its postoperative outcomes remain uncertain. A head-to-head comparison between open arthrotomy and arthroscopic surgery is lacking.

Purpose/hypothesis: To compare the treatment outcomes of open arthrotomy, particularly with surgical dislocation, and arthroscopic surgery for hip synovial chondromatosis.

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

Methods: All patients who were surgically treated for symptomatic synovial chondromatosis in a tertiary university referral hospital between April 1996 and February 2023 were investigated via 1:1 propensity score matching to compare open arthrotomy and arthroscopic surgery. The primary outcome was chondromatosis recurrence. Secondary outcomes were patient-reported outcome scores, reoperations, and complications.

Results: A total of 73 patients were enrolled, and after matching, 28 patients in each group were investigated. The mean age and mean follow-up period were 40.5 ± 13.7 years and 4.0 ± 3.1 years, respectively. Clinical and radiological recurrence rates did not differ between groups (clinical recurrence: 7.1% for open arthrotomy vs 25.0% for arthroscopic surgery [P = .143]; radiological recurrence: 14.3% for open arthrotomy vs 32.1% for arthroscopic surgery [P = .205]). However, all patient-reported outcomes at final follow-up were in favor of open arthrotomy compared with arthroscopic surgery (visual analog scale for pain: 1.6 for open arthrotomy vs 3.1 for arthroscopic surgery [P = .002]; quality of life scale: 80.4 for open arthrotomy vs 65.4 for arthroscopic surgery [P < .001]; and modified Harris Hip Score: 84.4 for open arthrotomy vs 75.9 for arthroscopic surgery [P = .001]). The symptom dissatisfaction rate at final follow-up was significantly higher with arthroscopic surgery than with open arthrotomy (35.7% vs 7.1%, respectively; P = .020). There was no difference in reoperation and complication rates between the 2 groups.

Conclusion: For treating primary synovial chondromatosis, particularly when it is distributed across both the central and peripheral zones, arthroscopic surgery should be chosen with caution, and open arthrotomy with surgical dislocation should be actively considered.

BACK

A Quantitative Fatty Infiltration Evaluation of the Supraspinatus Muscle: Enhanced Clinical Relevance and Improved Diagnostic Value on Predicting Retear Compared With the Goutallier Classification

Xie J, Zhou M, Guo Z, Zhu Y, Jiang C.

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Background: Preoperative assessment of fatty degeneration is important for managing rotator cuff tears. The Goutallier classification is semiquantitative and observer dependent. Discrepancies among surgeons can be prominent. A quantitative method may improve accuracy and reliability in evaluating the exact percentage of fatty infiltration (Fat%).

Purpose/hypothesis: This study aimed to investigate the correlation between the new quantitative method and the Goutallier classification in assessing fatty infiltration (FI) of the supraspinatus muscle and to explore the use of this method in predicting retear after rotator cuff repair. It was hypothesized that the new method would significantly correlate with the Goutallier classification and be more sensitive to retear.

Study Design: Cohort study (diagnosis); Level of evidence; 3.

Methods: This study included 105 patients who underwent arthroscopic rotator cuff repair for large to massive tears. All patients underwent routine preoperative and 1-year postoperative magnetic resonance imaging and were divided into 2 groups according to tendon healing. Preoperative quantitative Fat% of the supraspinatus muscle was evaluated based on the signal intensity (SI) of the T1-weighted sequence. The Fat% was calculated using the following equation: SIsupraspinatus = SIfat× Fat% + SImuscle× (1 – Fat%). The correlation between the Fat% and the Goutallier grade was determined. Univariate and multivariate analyses were performed to identify the independent risk factors for retear.

Results: The mean preoperative Fat% of the supraspinatus muscle was 23.77 ± 15.96. A significant correlation was found between the Fat% and the Goutallier grade of the supraspinatus muscle (R = 0.655; P < .001). The overall retear rate was 21.9%; however, functional status significantly improved regardless of cuff healing. Multivariate analysis identified the Fat% (P = .005) and the modified Patte classification (P = .003) as independent risk factors of retear. The receiver operating characteristic curves showed that the cutoff value of Fat% for predicting retear was 33.2%. Fat% >33.2% possessed superior diagnostic accuracy (79.0%), Youden index (0.513), and positive and negative predictive values (51.6% and 90.5%, respectively) compared with the Goutallier grades.

Conclusion: Although the quantitative method for assessing Fat% of the supraspinatus muscle significantly correlated with the Goutallier classification, the quantitative method is more clinically relevant to retear. Fat% of the supraspinatus muscle >33.2% possessed higher diagnostic value than the Goutallier grades in predicting retear.

BACK

Clinical Outcomes of Fully Arthroscopic Versus Arthroscopically Assisted Latissimus Dorsi Transfer for Irreparable Subscapularis Tear

Kim BT, Miranda LA, Baek CH, et al.

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Background: Untreated chronic subscapularis (SSC) tears pose a challenging problem to treat owing to the resultant tendon retraction, atrophy, fatty infiltration, and changes in humeral head position, which complicate surgical options. Anterior latissimus dorsi (LD) transfer has shown effective results in treating these tears without glenohumeral arthritis.

Purpose/hypothesis: This study introduces and evaluates fully arthroscopic and arthroscopically assisted anterior LD transfer techniques for reconstructing irreparable SSC tears. The authors hypothesize that both methods will yield promising and comparable clinical outcomes.

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

Methods: This retrospective study reviewed patients who underwent anterior LD tendon transfer between February 2014 and April 2022. Indications for surgery included persistent shoulder pain and functional limitations unresponsive to nonoperative treatment, irreparable SSC tears (Lafosse grade ≥4), significant fatty infiltration (Goutallier grade ≥3), and minimal glenohumeral arthritis (Hamada stage <3). Patients were excluded if they had <2 years of follow-up or if data were lost. For comparison, the study divided patients into 2 groups based on the surgical methods: fully arthroscopic LD tendon transfer and arthroscopically assisted LD tendon transfer. Clinical assessments included pain levels (visual analog scale), Constant score, Subjective Shoulder Value score, and range of motion. Radiologic measurement and complications were assessed.

Results: The study included 34 patients (mean ± SD age, 62.4 ± 7.5 years; follow-up, 35.4 ± 15.9 months). Significant improvements were observed in all patient-reported outcomes (pre- to posttest visual analog scale, 7.5 ± 1.2 to 1.2 ± 1.6; Constant score, 28.3 ± 6.0 to 68.8 ± 15.8; Subjective Shoulder Value, 23.2 ± 8.7 to 65.3 ± 22.0; all $P < .001$), range of motion in all directions, and internal rotation strength. Fully arthroscopic (n = 18) and arthroscopically assisted (n = 16) LD tendon transfers produced comparable clinical outcomes. Complications included 3 retears, 3 infections, and 5 cases of arthritis progression.

Conclusion: Fully arthroscopic and arthroscopically assisted anterior LD transfers significantly reduce pain, enhance range of motion, and strengthen internal rotation in patients with irreparable SSC tears, with no significant differences in complications. These techniques offer comparable clinical outcomes, providing different options for surgeons.

BACK

Isolated ACL Reconstruction Versus Combined ACL and Anterolateral Ligament Reconstruction: Functional Outcomes, Return to Sport, and Survivorship: An Updated Meta-analysis of Comparative Studies

Mercurio M, Cofano E, Gasparini G, et al.

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Background: Failure, persistent knee instability, and reinjury rates after anterior cruciate ligament (ACL) reconstruction are still concerns. Biomechanical investigations have highlighted the role of the anterolateral ligament (ALL) as a crucial knee stabilizer, and clinical outcomes after combined ACL and ALL reconstruction appear to indicate the success of the procedure.

Purpose/hypothesis: To compare the functional outcomes, return-to-sport (RTS) rate, and complications between combined ACL and ALL reconstruction and isolated ACL reconstruction.

Study Design: Meta-analysis; Level of evidence, 4.

Methods: The PubMed/MEDLINE, Scopus, and Cochrane Central databases were used to search keywords, and a total of 16 studies were included. The data extracted for quantitative analysis included the Tegner activity scale score, Lysholm knee score, International Knee Documentation Committee (IKDC) score, laxity measured using the KT-1000 knee arthrometer, number and types of complications, RTS rate, and survival rate. Random- and fixed-effects models were used for the meta-analysis of pooled mean differences and odds ratios.

Results: A total of 2329 patients were identified, 1116 of whom underwent combined ACL and ALL reconstruction and 1213 of whom underwent isolated ACL reconstruction. The mean ages were 25.4 ± 7.2 years and 26.5 ± 7.8 years for the combined ACL and ALL reconstruction and isolated ACL reconstruction groups, respectively. The mean follow-ups were 40.3 ± 21.4 months and 42.5 ± 21.6 months, respectively. Comparable Tegner activity scale (P = .16), Lysholm knee (P = .13), and IKDC (P = .83) scores were found between groups. Significantly greater postoperative knee laxity was found in the isolated ACL reconstruction group (mean difference, –0.44; 95% CI, –0.85 to −0.04; P = .03). The combined ACL and ALL reconstruction group showed a significantly lower rate of graft failure (odds ratio [OR], 0.37; 95% CI, 0.18-0.77; P = .008), a higher RTS rate (OR, 1.41; 95% CI, 1.11-1.80; P = .005), and a higher survival rate (OR, 2.94; 95% CI, 1.97-4.37; P < .001).

Conclusion: Compared with isolated ACL reconstruction, combined ACL and ALL reconstruction yielded comparable functional outcomes but significantly less residual knee laxity and a lower graft failure rate. Patients who underwent combined ACL and ALL reconstruction also had higher RTS and survival rates.

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Journal of Bone and Joint Surgery (JBJS), Volume 107, Issue 5

No Lower Extremity Abstracts

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Clinical Orthopaedics and Related Research (CORR), Volume 483, Issue 3

No Lower Extremity Abstracts

BACK

Bone and Joint Journal (BJJ), Volume 107, issue 3

No Lower Extremity Abstracts

BACK

Miscellaneous

Arthroscopy, Volume 41, Issue 3

Arthroscopic Shaver-based Harvest of Minced Cartilage Results in Reduced Chondrocyte Viability and Reduced Quality of Cartilaginous Repair Tissue Compared With Open Harvest and Conventional Fragmentation

J. Frings, A. Baranowsky

DOI: https://doi.org/10.1016/j.arthro.2024.05.020

Purpose: To characterize and compare the quality of regenerative cartilage tissue (ReCT) after conventional minced cartilage (CMC) and arthroscopic minced cartilage (AMC), in terms of cell viability, gene expression, and matrix synthesis and to investigate the influence of different shaver types.

Methods: Chondral tissue was harvested from the knees of 8 porcine donors. Porcine specimens were euthanized one day before harvest. AMC was created with 2 shaver blades in 2 operating modes (oscillating vs forward) and compared with a scalpel-fragmented CMC control. Before histologic analysis, 50% of the tissue was digested to prevent dedifferentiation of chondrocytes to fibroblasts. Cells were cultured and analyzed for cell viability, gene expression of cartilage-specific markers (aggrecan [ACAN], collagen type II, alpha1 [COL2A1], collagen type I, alpha1 [COL1A1], fibronectin-1 [FN1]), and matrix synthesis (Alcian-blue).

Results: AMC tissue contained fewer viable chondrocytes (41%-54% vs 91%; P = .001-.048) compared with CMC. After culture, CMC showed greater expressions of ACAN (27 virtual copy numbers [VCN]/housekeeping gene) and COL2A1 (30 VCN) compared with AMC (ACAN 2-9 VCN, COL2A1 2-7 VCN, P = .001-.039). AMC presented greater expressions of COL1A1 (9-21 VCN) and FN1 (12-17 VCN) than CMC (1 and 6 VCN, P = .001-.050). The signal intensity of the cartilage matrix formed by CMC (86/mm2) was greater than by AMC (7-10 mm2, P = .001-.032).

Conclusions: CMC contained high numbers of viable chondrocytes, resulting in high-quality, hyaline-like ReCT. In contrast, AMC showed impaired chondrocyte quantity and viability, showing greater expressions of fibroblast markers and a decreased formation of mature cartilage matrix in porcine samples. The high chondrogenic potential of CMC to form hyaline-like ReCT was not confirmed for AMC.

Level of Evidence: not stated

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Journal of Shoulder and Elbow Surgery (JSES), Volume 34, issue 3

No Miscellaneous Abstracts

BACK

Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA), Volume 33, Issue 3

Self-defined former smokers consume the highest opioid quantities following knee and shoulder arthroscopy

H.A. Khalik, A. Shanmugaraj

DOI: https://doi.org/10.1002/ksa.12403

Purpose: To identify risk factors associated with increased postoperative opioid consumption and inferior pain outcomes following knee and shoulder arthroscopy.

Methods: Using the data set from the NonOpioid Prescriptions after Arthroscopic Surgery in Canada (NO PAin) trial, eight prognostic factors were chosen a priori to evaluate their effect on opioid consumption and patient-reported pain following arthroscopic knee and shoulder surgery. The primary outcome was the number of oral morphine equivalents (OMEs) consumed at 2 and 6 weeks postoperatively. The secondary outcome was patient-reported postoperative pain using the Visual Analogue Scale (VAS) at 2 and 6 weeks postoperatively. A multivariable linear regression was used to analyse these outcomes with eight prognostic factors as independent variables.

Results: Tobacco usage was significantly associated with higher opioid usage at 2 ($p < 0.001$) and 6 weeks ($p = 0.02$) postoperatively. Former tobacco users had a higher 2-week ($p = 0.002$) and cumulative OME ($p = 0.002$) consumption compared to current and nonsmokers. Patients with a higher number of comorbidities ($p = 0.006$) and those who were employed ($p = 0.006$) reported higher pain scores at 6 weeks. Patients in the 'not employed/other' category had significantly lower pain scores at 6 weeks postoperatively ($p = 0.046$).

Conclusion: Former smoking status was significantly associated with increased post-operative opioid consumption following knee and shoulder arthroscopy at 2 and 6 weeks postoperatively. Increased pain was found to be significantly associated with employment status and an increasing number of comorbidities at 6 weeks postoperatively. These findings can aid clinicians in identifying and mitigating increased opioid utilization as well as worse pain outcomes in high-risk patient populations.

Level of Evidence: Level III, cohort study

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American Journal of Sports Medicine (AJSM), Volume 53, Issue 3

No Miscellaneous Abstracts

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Journal of Bone and Joint Surgery (JBJS), Volume 107, Issue 5

No Miscellaneous Abstracts

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Clinical Orthopaedics and Related Research (CORR), Volume 483, Issue 3

No Miscellaneous Abstracts

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Bone and Joint Journal (BJJ), Volume 107, issue 3

No Miscellaneous Abstracts

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