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Upper extremity

Arthroscopy, Volume 40, Issue 3

The Combined Suture Bridge With Mason-Allen Technique Is Superior to the Conventional Suture Bridge Technique for Arthroscopic Rotator Cuff Repair

Y. Itoigawa, H. Uehara

DOI: https://doi.org/10.1016/j.arthro.2023.07.009

Purpose: To compare clinical results and retear rates between the combined suture bridge with Mason-Allen (SBMA) technique and the conventional suture bridge (SB) technique in patients with full-thickness rotator cuff tears who underwent arthroscopic rotator cuff repair.

Methods: One hundred two patients who underwent arthroscopic rotator cuff repair using the SB technique (n = 50) or SBMA technique (n = 52) for a full-thickness rotator cuff tear and had at least 2 years of follow-up were retrospectively analyzed. Magnetic resonance imaging was performed before surgery and 2 years after to determine preoperative tear size, Goutallier stage, and presence of retear after surgery. Patients were clinically evaluated using the Japanese Orthopaedic Association (JOA) score.

Results: The groups did not significantly differ in terms of follow-up period, age, sex, tear size, Goutallier stage, or number of suture anchors. The retear rate was significantly lower in the SBMA group (7.7% vs 28.0%; $P < .01$). The JOA score was significantly higher at last follow-up than before surgery in both groups ($P < .01$). The JOA score at last follow-up was significantly higher in the SBMA group ($P = .02$).

Conclusion: Arthroscopic rotator cuff repair using the SBMA technique may provide better clinical and anatomical outcomes than the conventional SB technique.

Level of Evidence: Level III, retrospective cohort design; treatment study).

BACK

Significant Increase in Early Reoperation After Latarjet-Bristow Procedure Versus Arthroscopic Bankart Repair for Anterior Shoulder Instability: A Propensity-Score Matched Analysis

R.C. Schmidt, C.N. O'Neill

DOI: https://doi.org/10.1016/j.arthro.2023.07.028

Purpose: To compare the 30-day outcomes, including length of stay, short-term complications, hospital readmission, all-cause reoperation, and death after arthroscopic Bankart (AB) and Latarjet.

Methods: Patients in the National Surgical Quality Improvement Program database who had undergone either AB or Latarjet-Bristow (LB) procedures for anterior shoulder instability from 2012 to 2018 were identified using Current Procedural Terminology codes. Nearest neighbor propensity score matching was used to address any potential demographic differences. The 30-day incidence of postoperative complications were compared, and univariate and multivariate logistic regressions were used to identify risk factors associated with the incidence of post-operative complications.

Results: A total of 7,519 patients were identified, with 6,990 (93.0%) undergoing AB and 529 (7.0%) LB. After propensity score matching, the baseline demographics were not significantly different ($P > .05$). There was no significant difference in rate of total adverse events between the AB and LB cohorts ($P = .06$). There was a significant difference in the rate of return to the operating room between LB (1.9%) when compared to AB (0%) ($P < .001$). Of reoperations, 40% were due to need for revision stabilization (0.8% of all LB cases) and 40% were for irrigation and debridement. There was also a significant difference in operative time (AB = 87 minutes, LB = 131 minutes; $P < .0001$).

Conclusion: Overall 30-day complication rates were low for both groups, with similar rates among AB and LB patients. However, there was a statistically significant increased rate of short-term reoperation or revision stabilization in the LB cohort.

Level of Evidence: Level III, retrospective comparative prognostic trial.

BACK

Non-steroidal Anti-inflammatory Drugs and Cyclooxygenase-2 Inhibitors Do Not Affect Healing After Rotator Cuff Repair: A Systematic Review and Meta-analysis

Y. Sewpaul, R.C.T. Huynh

DOI: https://doi.org/10.1016/j.arthro.2023.10.048

Purpose: To determine whether non-steroidal anti-inflammatory drugs (NSAIDs) and cyclooxygenase-2 (COX-2) inhibitors affect healing rate, functional outcomes, and patient satisfaction after rotator cuff repair.

Methods: Medline, EMBASE, PsychINFO and the Cochrane Library were searched for randomized controlled trials (RCTs) investigating the use of NSAIDs and COX-2 inhibitors after arthroscopic rotator cuff repair. Primary outcomes included healing and retear rate, determined by radiological imaging. Secondary outcomes included shoulder-specific outcome measures and the visual analog scale (VAS). Risk of bias was graded using the Cochrane risk-of-bias v2.0 tool. The GRADE framework was used to assess certainty of findings.

Results: Seven RCTs with a total of 507 patients were included (298 randomized to NSAID/COX-2 vs 209 randomized to control). NSAIDs use did not yield a difference in retear rate (P = .77). NSAIDs were shown to significantly reduce pain in the perioperative period (P = .01); however, no significant difference was present at a minimum of 6 months (P = .11). COX-2 inhibitors did not significantly reduce pain (P = .15). Quantitative analysis of ASES and UCLA scores showed NSAIDs significantly improved functional outcomes versus control (P = .004). COX-2 inhibitors did not significantly improve functional outcomes (P = .15). Two trials were deemed “low” risk of bias, four trials were graded to have “some concerns”, and one trial was graded to have “high” risk of bias. Retear rate and functional PROMs were deemed to have “low” certainty. VAS pain scale was graded to have “moderate” certainty.

Conclusion: This systematic review and meta-analysis indicates that NSAIDs do not affect healing rate after arthroscopic rotator cuff repair, but they do significantly improve postoperative pain and functional outcomes. No significant difference was seen in pain or functional outcomes with the use of COX-2 inhibitors.

Level of Evidence: Level I, meta-analysis of randomized controlled trials.

BACK

Acellular Collagen Matrix Patch Augmentation of Arthroscopic Rotator Cuff Repair Reduces Re-Tear Rates: A Meta-analysis of Randomized Control Trials

E.T. Hurley, B.S. Crook

DOI: https://doi.org/10.1016/j.arthro.2023.09.025

Purpose: To perform a meta-analysis of randomized controlled trials (RCTs) to compare the outcomes of arthroscopic rotator cuff repair (ARCR) with and without acellular collagen matrix patch (ACMP) augmentation.

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

Results: Five RCTs with 307 patients were included. Overall, 11% of patients treated with ACMP augmentation and 34% of patients in the control group had a re-tear (*P* = .0006). The mean Constant score was 90.1 with ACMP augmentation, and 87.3 in controls (*P* = .02). Additionally, there was a significant higher American Shoulder and Elbow Surgeons score with ACMP augmentation (87.7 vs 82.1, *P* = .01).

Conclusion: The RCTs in the literature support the use of ACMP augment as a modality to reduce re-tear rates and improve outcomes after ARCR.

Level of Evidence: Level II, Meta-Analysis of Level II Studies meta-analysis of Level II studies.

BACK

Journal of Shoulder and Elbow Surgery (JSES), Volume 33, issue 3

Modified arthroscopic tenotomy of the extensor capri radialis brevis for refractory lateral epicondylitis: a cohort study

X. Yang, L. Ying

DOI: https://doi.org/10.1016/j.jse.2023.09.036

Background: Different arthroscopic techniques exist for managing the extensor carpi radials brevis (ECRB) when treating refractory lateral epicondylitis. The purpose of this study is to compare the outcomes of a standard arthroscopic débridement with ECRB tendon release to an arthroscopic ECRB tenotomy distal to its insertion without débridement using a retrospective cohort study design.

Methods: This study included patients underwent arthroscopic treatment of lateral epicondylitis during 2 different time periods: 2016-2019 (débridement) and 2019-2021 (modified tenotomy without débridement). Patients were assessed preoperatively and at the last follow-up with Mayo Elbow Performance Score (MEPS), Disabilities of the Arm, Shoulder and Hand (DASH) score, Visual Analog Scale of pain.

Results: A total of 69 patients completed the follow-up (38 in the débridement group and 31 in the tenotomy group). Patients in both groups showed significant improvements were found in MEPS, DASH, and Visual Analog Scale after surgery. Patients in the tenotomy group had higher MEPSs and reported less pain with a minimum 2 year follow-up after surgery. DASH scores between groups were similar at all time periods.

Conclusion: Arthroscopic modified tenotomy of the ECRB without débridement improves function and pain significantly for patients with refractory lateral epicondylitis, which is not inferior to arthroscopic débridement technique.

Level of Evidence: Level III, Retrospective Cohort Comparison, Treatment Study.

BACK

The effect of intravenous tranexamic acid of visual clarity in arthroscopic shoulder surgery compared to epinephrine and a placebo: a double blinded, randomized controlled trial

T. Suter, S. McRae

DOI: https://doi.org/10.1016/j.jse.2023.10.001

Background: The addition of epinephrine in irrigation fluid and the intravenous or local administration of tranexamic acid have independently been reported to decrease bleeding, thereby improving surgeons' visualization during arthroscopic shoulder procedures. No study has compared the effect of intravenous tranexamic acid, epinephrine in the irrigation fluid, or the combination of both tranexamic acid and epinephrine on visual clarity during shoulder arthroscopy with a placebo group. We hypothesized that intravenous tranexamic acid is more effective than epinephrine mixed in the irrigation fluid in improving visualization during shoulder arthroscopy, with no additive effect when both are used.

Methods: Patients aged ≥18 years undergoing shoulder arthroscopy were randomized into one of 4 study arms: (1) saline irrigation fluid (placebo); (2) epinephrine (0.33 mL of 1:1000 per liter) mixed in irrigation fluid (EPI); (3) 1 g intravenous tranexamic acid (TXA); and (4) epinephrine and tranexamic acid combined (TXA + EPI). Visualization was rated intraoperatively on a scale from 0, indicating poor clarity, to 3, indicating excellent clarity, every 15 minutes and overall. The primary outcome measure was the overall rating of visualization. A stepwise linear regression was performed using visualization as the dependent variable and independent variables including presence or absence of epinephrine and tranexamic acid, surgery duration, complexity, mean arterial pressure, increase in pump pressure, and volume of irrigation fluid.

Results: One hundred twenty-eight patients (mean age 56 years) were randomized. Mean visual clarity for the placebo, TXA, EPI, and TXA + EPI groups were 2.0 (±0.6), 2.0 (±0.6), 2.6 (±0.5), and 2.7 (±0.5), respectively ($P < .001$). The presence or absence of epinephrine was the most significant predictor of visual clarity ($P < .001$). Tranexamic acid presence or absence had no effect. No adverse events were recorded in any of the groups.

Conclusion: Intravenous tranexamic acid is not an effective alternative to epinephrine in irrigation fluid to improve visualization during routine arthroscopic shoulder surgeries, and there is no additive effect when both are used.

Level of Evidence: Level I, Randomized Controlled Trial, Treatment Study.

BACK

Arthroscopic subpectoral biceps tenodesis provided earlier shoulder function restoration compared with open subpectoral biceps tenodesis during the recovery phase

J. Ahn, J.-H. Kim

DOI: https://doi.org/10.1016/j.jse.2023.07.008

Background: This study compared the clinical outcomes of open subpectoral biceps tenodesis and arthroscopic suprapectoral biceps tenodesis for symptomatic biceps tenosynovitis. Although both techniques have pros and cons, no studies have compared clinical and functional outcomes during the recovery phase. Previous studies show that suprapectoral tenodesis has a higher probability of Popeye deformity and postoperative bicipital pain and stiffness, whereas subpectoral tenodesis has a higher risk of nerve complications and wound infections. This study aimed for clinical comparison between arthroscopic suprapectoral biceps tenodesis and open subpectoral biceps tenodesis.

Methods: This study is a retrospective review of institutional records of patients with biceps tendinitis who underwent open or arthroscopic biceps tenodesis. Surgical indications included biceps tenosynovitis, biceps partial tear, and biceps pulley lesion. Patients with prior shoulder surgery, preoperative shoulder stiffness, or full-thickness tear of rotator cuff were excluded. Tenodesis was considered when the pain recurs within 3 months despite conservative treatment including at least 2 triamcinolone injections on the biceps tendon sheath. Visual analog scale (VAS) score for pain, presence of the night pain, American Shoulder and Elbow Surgeons (ASES) score, Constant score, and range of motion were assessed preoperatively at 3, 6, 12, and 24 months postoperatively and the last follow-up.

Results: A total of 72 patients (33 with arthroscopic suprapectoral biceps tenodeses and 39 with open subpectoral biceps tenodeses) were included in analysis. At postoperative 6 months, lower VAS score (0.4 ± 0.8 vs. 1.7 ± 1.9, $P < .001$), and the presence of the night pain (2 [6%] vs. 14 [36%], $P = .002$), ASES score (89.6 ± 9.2 vs. 81.4 ± 14.6, $P = .006$), and Constant score (89.4 ± 5.6 vs. 82.0 ± 12.5, $P = .003$) compared with the subpectoral group. The mean number of postoperative steroid injections for pain control in the subpectoral group (0.51 ± 0.80) was significantly higher than that in the suprapectoral group (0.18 ± 0.40) ($P = .031$). However, postoperative clinical outcomes were restored similar between the 2 groups at 12 months and the last follow-up.

Discussion: Arthroscopic suprapectoral biceps tenodesis performed statistically better than the subpectoral biceps tenodesis for the VAS, ASES, night pain, and Constant score at postoperative 6 months. However, only night pain and the Constant score showed differences that exceeded minimum clinically important difference during the recovery phase. At postoperative 12 and 24 months, biceps tenodesis provided satisfactory clinical outcomes and pain relief regardless of the fixation technique and suture anchor location.

Level of Evidence: Level III, Retrospective Cohort Comparison, Treatment Study.

BACK

Postoperative results of arthroscopic superior capsule reconstruction using fascia lata: a retrospective study

S. Ohta, Y. Ueda

DOI: https://doi.org/10.1016/j.jse.2023.07.021

Background: Superior capsule reconstruction (SCR) was developed to improve shoulder function and alleviate pain in patients with primary irreparable rotator cuff tears. Although suitable clinical results of SCR have been reported, only a few studies have investigated the clinical outcomes of arthroscopic superior capsule reconstruction (ASCR) using tensor fascia at a minimum follow-up period of 2 years after surgery.

Methods: Among 100 consecutive patients who underwent ASCR since April 2010, this retrospective cohort study included 49 patients with a Hamada classification of ≤3 who were available for at least 2-year follow-up after surgery. The mean follow-up period was 34.5 (24-74) months. We analyzed preoperative and postoperative Japanese Orthopaedic Association (JOA) scores, University of California at Los Angeles (UCLA) shoulder scores, preoperative and postoperative active elevation angles, external and internal rotations with the arms in the anatomical position, manual muscle test (MMT) scores, preoperative and postoperative acromiohumeral distance (AHD), and cuff integrity on postoperative magnetic resonance imaging using the Hasegawa classification. We compared 27 pseudoparalyzed (elevation of <90°) shoulders with 22 nonpseudoparalyzed shoulders. We also evaluated the treatment of patients with subscapularis tendon tears and compared the outcomes of patients with good graft repair and those with graft retear.

Results: The JOA score, UCLA score, active elevation angle, internal and external rotation angles, and muscle strength (MMT) significantly improved at the time of investigation preoperatively and 2 years postoperatively. The mean AHD also improved from 5 ± 2.6 mm preoperatively to 9 ± 2.8 mm postoperatively. No significant difference in graft tear rate was observed between pseudoparalyzed shoulder and nonpseudoparalyzed shoulder groups. The subscapularis tendon was torn in 26 of 49 (53%) patients, and all patients underwent repair. The graft repair group showed a significant improvement in JOA scores, UCLA shoulder scores, joint range of motion, MMT, and AHD postoperatively, but not in internal rotation strength. In contrast, the graft tear group did not show any significant improvement. All patients could return to work, except for those performing heavy labor. Complications included graft tear in five patients, postoperative infection in two patients, and progressive postoperative arthropathic changes in one patient.

Conclusion: Good clinical results of ASCR were obtained using tensor fascia lata at 2 years after surgery, with few complications and low graft tear rates.

Level of Evidence: Level IV, Case Series, Treatment Study.

BACK

Clinical outcomes of medialized single-roiw repair with fascia lata graft augmentation for large and massive rorator cuff tears

T. Kokobu, Y. Mifune

DOI: https://doi.org/10.1016/j.jse.2023.07.020

Background: A high postoperative retear rate after arthroscopic rotator cuff repair (ARCR) of large and massive tears remains a problem. This study evaluated rotator cuff integrity after ARCR with fascia lata graft augmentation for large and massive rotator cuff tears and compared clinical outcomes between patients with intact repairs and retears.

Methods: Forty-five patients with rotator cuff tears who could not undergo primary repair due to tendon retraction underwent arthroscopic medialized single-row repair with fascia lata graft augmentation. The patients' minimum follow-up was 2 (2-9) years. Supraspinatus cuff integrity was evaluated postoperatively by magnetic resonance imaging. We compared the clinical outcomes of patients with intact repairs vs. retears based on the University of California–Los Angeles (UCLA), Constant, and Japanese Orthopaedic Association (JOA) scores. We also evaluated their range of motion (ROM) and muscle strength.

Results: Retears were observed in 11 of 45 patients. UCLA, Constant, and JOA scores significantly improved postoperatively compared to preoperatively in the intact repair (all $P < .001$) and retear (all $P < .036$) groups. The intact repair group had significantly higher Constant (75.6 [mean] ± 9.9 [SD] vs. 69.8 ± 7.9; $P = .026$) and JOA (94.4 ± 6.9 vs. 89.8 ± 5.9; $P = .041$) scores than the retear group. Forward elevation, abduction, and the strengths of abduction and external rotation significantly improved in the intact repair group (all $P < .003$) but not in the retear group (all $P > .05$). The intact repair group had significantly higher postoperative forward flexion (165° ± 15° vs. 154° ± 23°; $P = .036$), abduction (164° ± 17° vs. 151° ± 26°; $P = .029$), and abduction strength (3.5 ± 2.2 kg vs. 2.3 ± 1.2 kg; $P = .017$) than the retear group. In the intact repair group ($n = 34$), Sugaya type I:II ratio differed significantly between postoperative 3 months (2:32) and 24 months (24:10) ($P < .001$). Repaired tendon thickness did not decrease significantly between 3 months (7.1 mm) and 2 years (6.9 mm) ($P = .543$).

Conclusions: ARCR with fascia lata graft augmentation of large and massive rotator cuff tears showed a 24.4% retear rate but significantly improved the clinical scores, ROMs, and muscle strength with excellent cuff integrity in the intact repair group. However, the differences in the Constant and UCLA scores between the intact repair and retear groups were under the minimal clinically important difference, and their clinical significance is uncertain. Our results confirm that ARCR with fascia lata graft augmentation improves patients' postoperative outcomes if the repair site is maintained postoperatively.

Level of Evidence: Level IV, Case Series, Treatment Study.

BACK

Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA), Volume 32, Issue 3

The arthroscopic Latarjet procedure with a posterior guided system and suture-button fixation enables more precise bone block positioning in the axial plane versus anterior screws fixation

N. Gaujac, P.-A. Bouché

DOI: https://doi.org/10.1002/ksa.12063

Purpose: Adequate position of the bone block during arthroscopic Latarjet procedure is critical for an optimal functional outcome. However, this procedure is complex with a long learning curve. Our aim was to compare the bone block position between a dedicated glenoid posterior instrumentation and suture button fixation versus an anterior screw fixation, on a postoperative computed tomography (CT) scan.

Methods: Seventy-nine consecutive patients operated on for an anterior shoulder instability were included in this retrospective study. The same surgeon performed arthroscopically the Latarjet procedure either with an anterior drilling and screw fixation (Group A), or with a specific posterior glenoid guide pin, a posterior drilling, and a suture cortical button fixation (Group B). Evaluations were made by two independent observers. The position was evaluated by CT scan in the axial and sagittal planes. Learning curves with operative time, complications and clinical outcomes were assessed at a minimum of 2 years of follow-up.

Results: Thirty-five patients were included in Group A and 44 in Group B. In Group A, 27 bone blocks were flush (87.1%) and 38 in Group B (92.7%) ($p < 0.01$). In Group A, 72% of the bone block height was below the equator and 76%, in Group B (ns). The mean operating time was 123 ± 32.5 min in Group A and 95 ± 34.1 min in Group B ($p < 0.0001$). At the final follow-up, the mean aggregate Rowe score was respectively 94.6 ± 10.4 and 93.1 ± 9.8 points in Groups A and B. The mean aggregate Walch–Duplay score was respectively 94.2 ± 11.6 and 93.4 ± 10.6 points in Groups A and B. There were 11 complications (31.4%) in Group A and five complications (11.3%) in Group B (ns).

Conclusion: The arthroscopic Latarjet procedure with a posterior drilling guided system and suture-button fixation allows more precise positioning in the axial plane than with anterior drilling and screw fixation. This posterior-guided procedure could reduce intraoperative and short-term complications.

Level of Evidence: Level IV.

BACK

American Journal of Sports Medicine (AJSM), Volume 52, Issue 3+4

Long-term Effectiveness and Outcome-Determining Factors of Arthroscopic Bankart Repair for Recreational Sports Population: An Assessment of 100 Patients With a Mean Follow-up of 12.7 Years

J.S. Kim, S.C. Kim

DOI: https://doi.org/10.1177/03635465231220838

Background: A limited number of studies have reported the long-term effectiveness of and associated factors for recurrence of anterior shoulder instability after arthroscopic Bankart repair (ABR).

Purpose: To report the long-term clinical outcomes after ABR in a recreational sports population and identify the associated factors that influence the final instability status.

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

Methods: A retrospective study was performed in patients treated with ABR between 2007 and 2013 by a single surgeon. Patient data, magnetic resonance imaging measurements of bone loss and glenoid track, and intra- and perioperative factors were analyzed. After a minimum follow-up of 10 years, patient-reported outcomes including the Western Ontario Shoulder Instability Index score, the Rowe score, the visual analog scale for pain and function, the American Shoulder and Elbow Surgeons score, and sports activity were assessed. The current instability status was classified into 3 groups: stable, apprehensive, and redislocated. These groups were statistically compared with respect to outcomes and associated factors.

Results: A total of 100 patients with a mean age of 22.4 ± 5.5 years and a mean follow-up of 12.7 ± 2.1 years were included. At the final follow-up, 38 patients (38%) showed recurrent symptoms: 19 patients (19%) with subjective apprehension and 19 patients (19%) with redislocation, including 10 patients (10%) with revision surgery. At the final follow-up, the redislocated group showed the lowest patient-reported outcomes and return to sports (both $P < .001$). The apprehensive group also showed a lower Western Ontario Shoulder Instability Index score ($P = .011$), Rowe score ($P = .003$), American Shoulder and Elbow Surgeons score ($P = .027$), and return to sports ($P = .005$) than the stable group. Participation in contact sports ($P = .026$), glenoid bone loss ($P = .005$), size of Hill-Sachs lesion ($P = .009$), and off-track lesions ($P = .016$) were all associated with recurrent symptoms, whereas age <20 years ($P = .012$), participation in contact sports ($P = .003$), and off-track lesions ($P = .042$) were associated with redislocation.

Conclusion: After long-term follow-up in a recreational sports population, ABR demonstrated a 19% rate of subjective apprehension and 19% rate of redislocation, with a gradual decline in clinical outcomes and sports activity over time. Therefore, candidates for ABR should be selected based on consideration of risk factors such as off-track lesions, age <20 years, and participation in contact sports.

BACK

Knotless Bioabsorbable Anchors Placed on the Glenoid Face for Arthroscopic Bankart Repair

S.C. Kim, H.G. Kim

DOI: https://doi.org/10.1177/03635465231221723

Background: Quantitative analysis of the glenoid face knotless-type anchor placement for arthroscopic Bankart repair has not been reported.

Purpose: To evaluate the clinical and radiologic outcomes after arthroscopic Bankart repair using knotless bioabsorbable anchors depending on the anchor location.

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

Methods: A total of 124 patients (113 men and 11 women; age, 25.6 ± 7.5 years; follow-up time, 46.5 ± 18.2 months [range, 6.2-75.5 months]) who underwent arthroscopic Bankart repair with the bioabsorbable knotless anchor between 2017 and 2021 were included in this study. Among them, 118 patients were observed for >2 years (mean, 48.2 ± 16.8 months [range, 24-75.5 months]) and were analyzed for final clinical and radiologic outcomes. Using postoperative 6-month magnetic resonance imaging, remnant glenoid (%) and labral height were measured. Shoulder range of motion (ROM), radiographic osteoarthritic change, dislocation, apprehension test, and return to sports were recorded. Three groups were established based on the remnant glenoid, which represented the percentage of the exposed glenoid anteroposterior diameter to the original diameter using the best-fit circle method—group A: lower quartile; group B: interquartile; and group C: upper quartile—and variables were analyzed.

Results: Overall, the remnant glenoid was 57% ± 6.4% (range, 41.5%-75%) after the surgery. Osteoarthritic change, dislocations, and positive apprehension tests were observed in 5 (4.2%), 4 (3.4%), and 12 (10.2%) patients, respectively. A total of 34 (28.8%) and 64 (54.2%) patients could return to sports without and with restrictions, respectively. Comparing groups A, B, and C, postoperative labral height (7 ± 1, 7 ± 2, and 7 ± 1 mm; P = .623), final osteoarthritic change (1, 4, and 0; P = .440), positive apprehension tests (5, 5, and 2; P = .387), and return to sports (complete/restricted/unable, 6/18/5, 19/29/11, 9/17/4; P = .769) were not different. All ROM were similar across the groups (all P > .054), except for external rotation (ER) at postoperative 6 months (41.3°± 12.8°; 50.2°± 18.5°; and 49.8°± 15.2°; P = .050). However, ER after 1 year was similar across the groups (all P > .544). In further analysis, patients with positive apprehension tests had lower labral height compared with others (5 [4-6] mm and 7 [6-8] mm; P < .001).

Conclusion: In arthroscopic Bankart repair, the placement of knotless bioabsorbable anchors on the glenoid face, combined with the remplissage procedure or rotator interval closure, resulted in a low recurrence rate and moderate return to sports. However, most patients had some restrictions in returning to sports. Moreover, this technique was not associated with postoperative arthritis and shoulder stiffness, including ER deficit, which was not affected by the position of the anchor on the glenoid face for a minimum 2-year follow-up.

BACK

Differences in Clinical Outcomes Between Patients With Retear After Supraspinatus Tendon Repair and Those With Intact Repair at 5-Year Follow-up

W.P. Yau

DOI: https://doi.org/10.1177/03635465241227643

Background: It is well known that rotator cuff repair is associated with an overall retear rate of 21% to 26%. However, a cuff retear may not necessarily be associated with poor clinical outcomes.

Purpose: There would be no difference in clinical outcomes between patients with a cuff retear and those with an intact repair at a midterm follow-up of 5 years.

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

Methods: A retrospective study was conducted involving patients who received arthroscopic complete repair of the supraspinatus tendon between January 2009 and December 2017. Patients who did not have a postoperative magnetic resonance imaging (MRI) scan or who had a follow-up of <5 years were excluded. Clinical outcomes, including the visual analog scale (VAS) score, American Shoulder and Elbow Surgeons (ASES) score, and active forward flexion (FF) of the involved shoulder were assessed at the 2-year and 5-year follow-up points.

Results: The study group included 105 patients with a mean follow-up of 85 months. MRI scans were performed at a mean of 20 months. Fourteen full-thickness cuff retears and 91 intact repairs were identified using postoperative MRI scans. Significant improvement in VAS score, ASES score, and FF were found between the preoperative assessment and the 2 designated follow-up points (2 years and 5 years) in both the cuff retear and the intact repair groups ($P < .001$). The VAS and ASES scores at the 2-year follow-up for the intact repair group were 1.8 ± 2.0 and 80.7 ± 18.1, respectively. The corresponding values for the retear group were 2.3 ± 2.2 and 71.9 ± 19.5, respectively. No significant difference was found between the 2 groups in the VAS and ASES scores at the 2-year follow-up. However, patients with an intact repair had a better VAS score (1.4 ± 1.8; $P = .049$) and ASES score (81.7 ± 17; $P = .019$) than those with a cuff retear at the 5-year assessment (3.0 ± 2.8 and 67.1 ± 22.9, respectively). In the intact repair group, 91% of patients achieved the minimal clinically important difference for the 5-year VAS score, compared with 54% in the cuff retear group ($P < .001$). The corresponding values for the 5-year ASES score were 80% and 54%, respectively ($P = .044$). FF measurements at the 5-year follow-up in patients with intact repair and those with a cuff retear were 161°± 23° and 144°± 37°, respectively ($P = .059$). Continuous improvement in VAS score and FF between the 2-year and 5-year follow-up was observed in the intact repair group ($P = .005$ and $P = .04$, respectively).

Conclusion: The patients with an intact repair had better VAS and ASES scores compared with those who had a cuff retear at a midterm follow-up of 5 years. Between the 2-year and the 5-year follow-up, some further improvement was observed in the VAS score and FF in the intact repair group.

BACK

Subacromial Balloon Placement Demonstrates No Advantage Over Debridement in the Treatment of Massive Irreparable Rotator Cuff Tears: A Dual-Armed Systematic Review and Meta-analysis of Over 1000 Patients

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DOI: https://doi.org/10.1177/03635465231168127

Background: In recent years, the placement of a subacromial balloon (SAB) spacer has emerged as a treatment option for massive irreparable rotator cuff tears (MIRCTs); however, there is significant controversy regarding its utility in comparison with other surgical interventions.

Purpose: To compare outcomes after SAB spacer placement versus arthroscopic debridement for MIRCTs.

Study Design: Dual-armed systematic review and meta-analysis (level IV evidence).

Methods: A literature search of PubMed (MEDLINE), Scopus, and CINAHL Complete databases for articles published before May 7, 2022, was conducted to identify patients with MIRCTs undergoing the 2 procedures. For the SAB arm, 14 of 449 studies were considered eligible for inclusion, while 14 of 272 studies were considered eligible for inclusion in the debridement arm.

Results: In total, 528 patients were eligible for inclusion in the SAB arm and 479 patients in the debridement arm, and 69.9% of patients undergoing SAB placement also underwent concomitant debridement. Decreases in the visual analog scale (VAS) pain score and increases in the Constant score were found to be significantly larger after debridement (–0.7 points [$P < .001$] and +5.5 points [$P < .001$], respectively), although the Patient Acceptable Symptom State for the VAS was not achieved after either procedure. Both SAB placement and debridement significantly improved range of motion in forward flexion/forward elevation, internal and external rotation, and abduction ($P < .001$). Rates of general complication were higher after debridement versus SAB placement (5.2% ± 5.6% vs 3.5% ± 6.3%, respectively; $P < .001$); however, there were no significant differences between SAB placement and debridement in rates of persistent symptoms requiring a reintervention (3.3% ± 6.2% vs 3.8% ± 7.3%, respectively; $P = .252$) or reoperation rates (5.1% ± 7.6% vs 4.8% ± 8.4%, respectively; $P = .552$). The mean time to conversion to reverse total shoulder arthroplasty was 11.0 versus 25.4 months, respectively, for the SAB versus debridement arm.

Conclusion: While SAB placement was associated with acceptable postoperative outcomes in the treatment of MIRCTs, there was no clear benefit over debridement alone. Shorter operative times coupled with better postoperative outcomes and longer times to conversion to reverse total shoulder arthroplasty rendered debridement a more attractive option. While there may be a role for SAB placement in poor surgical candidates, there is burgeoning evidence to support debridement alone without SAB placement for the treatment of MIRCTs.

BACK

Journal of Bone and Joint Surgery (JBJS), Volume 106, Issue 7+8

No Upper Extremity Abstracts

BACK

Clinical Orthopaedics and Related Research (CORR), Volume 482, Issue 3

No Upper Extremity Abstracts

BACK

Bone and Joint Journal (BJJ), Volume 106-B, issue 4

No Upper Extremity Abstracts

BACK

Lower Extremity

Arthroscopy, Volume 40, Issue 3

Five-Year Outcomes of Primary Hip Arthroscopy for Femoroacetabular Impingement Syndrome Among Female Patients: Higher Body Mass Index Is Associated With Reduced Clinically Significant Outcomes

D.S. Shankar, A.S. Bi

DOI: https://doi.org/10.1016/j.arthro.2023.06.035

Purpose: To evaluate the impact of age, body mass index (BMI), and symptom duration on 5-year clinical outcomes among females following primary hip arthroscopy for femoroacetabular impingement syndrome (FAIS).

Methods: We conducted a retrospective review of a prospectively collected database of hip arthroscopy patients with a minimum 5-year follow-up. Patients were stratified by age (<30, 30-45, ≥45 years), BMI (<25.0, 25.0-29.9, ≥30.0), and preoperative symptom duration (<1 vs ≥1 year). Patient-reported outcomes were assessed using the modified Harris Hip Score (mHHS) and Non-Arthritic Hip Score (NAHS). Pre- to postoperative improvement in mHHS and NAHS was compared between groups using the Mann-Whitney *U* test or Kruskal-Wallis test. Hip survivorship rates and minimum clinically important difference (MCID) achievement rates were compared with Fisher exact test. Predictors of outcomes were identified using multivariable linear and logistic regression. *P* values <.05 were considered significant.

Results: In total, 103 patients were included in the analysis with a mean age of 42.0 ± 12.6 years (range, 16-75) and mean BMI of 24.9 ± 4.8 (range, 17.2-38.9). Most patients had symptoms of duration ≥1 year (60.2%). Six patients (5.8%) had arthroscopic revisions, and 2 patients (1.9%) converted to total hip arthroplasty by 5-year follow-up. Patients with BMI ≥30.0 had significantly lower postoperative mHHS (*P* = .03) and NAHS (*P* = .04) than those with BMI <25.0. Higher BMI was associated with reduced improvement in mHHS (β = –1.14, *P* = .02) and NAHS (β = –1.34, *P* < .001) and lower odds of achieving the mHHS MCID (odds ratio [OR] = 0.82, *P* = .02) and NAHS MCID (OR = 0.88, *P* = .04). Older age was predictive of reduced improvement in NAHS (β = –0.31, *P* = .046). Symptom duration ≥1 year was predictive of higher odds of achieving the NAHS MCID (OR = 3.98, *P* = .02).

Conclusion: Female patients across a wide range of ages, BMIs, and symptom durations experience satisfactory 5-year outcomes following primary hip arthroscopy, but higher BMI is associated with reduced improvement in patient-reported outcomes.

Level of Evidence: Level III, retrospective comparative prognostic trial.

BACK

No Difference in Patient-Reported Outcomes for Periacetabular Osteotomy and Hip Arthroscopy With Capsular Plication in the Setting of Borderline Hip Dysplasia: A Propensity-Matched Multicenter Study With Minimum 5-Year Follow-Up

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DOI: https://doi.org/10.1016/j.arthro.2023.06.045

Purpose: To compare minimum 5-year patient-reported outcome measures after hip arthroscopy (HA) and periacetabular osteotomy (PAO) for borderline hip dysplasia.

Methods: Hips with a lateral center-edge angle (LCEA) between 18° and less than 25° that underwent either PAO or HA were selected from 2 institutions. The exclusion criteria were as follows: LCEA less than 18°, Tönnis osteoarthritis grade greater than 1, prior hip surgical procedures, active inflammatory disease, Workers' Compensation, and concomitant surgery. Patients underwent propensity matching based on age, sex, body mass index, and Tönnis osteoarthritis grade. Patient-reported outcome measures included the modified Harris Hip Score, as well as calculation of the minimal clinically important difference, patient acceptable symptom state, and maximum outcome improvement satisfaction threshold. Preoperative radiographic predictors included comparison of the Femoro-epiphyseal Acetabular Roof index and ligamentum teres lesions.

Results: A total of 28 PAO patients underwent propensity matching to 49 HA patients. The 2 groups were similar in terms of mean age, sex, preoperative body mass index, and LCEA. The PAO group had a longer mean follow-up period (95.8 months vs 81.3 months, $P = .001$). The mean Femoro-epiphyseal Acetabular Roof index was significantly lower preoperatively in the HA group ($P < .001$). The 2 groups showed similar and significant improvements in the mean modified Harris Hip Score from preoperatively to latest follow-up ($P < .001$). The relative risk of subsequent surgery in the PAO group was 3.49 ($P = .024$), mostly attributed to hardware removal (25%). The revision rate was 3.6% in the PAO group and 8.2% in the HA group ($P = .65$). One patient in the PAO group required revision HA for intra-articular adhesions. Three of the patients requiring revision in the HA group underwent PAO because of persistent pain, and one underwent revision HA alone. Conversion to total hip arthroplasty was required in 1 patient in the HA group and no patients in the PAO group.

Conclusion: Both PAO and HA with capsular plication provide borderline hip dysplasia patients with clinically significant improvements and low revision rates at a minimum of 5 years postoperatively.

Level of Evidence: Level III, retrospective, comparative therapeutic trial.

BACK

Dancers Show Significant Improvement in Outcomes and Favorable Return-to-Dance Rates After Primary Hip Arthroscopy With Femoral Head Cartilage Status Being a Predictor of Secondary Surgical Procedures at Mid-Term Follow-Up

D.R. Maldonado, M.S. Lee

DOI: https://doi.org/10.1016/j.arthro.2023.07.027

Purpose: To report minimum 5-year follow-up patient-reported outcome measurement (PROM) scores and return-to-dance rates in dancers who underwent primary hip arthroscopy and to identify predictors of secondary surgical procedures.

Methods: Prospectively collected data from patients who underwent hip arthroscopy between May 2010 and June 2016 were retrospectively reviewed. Patients were included if they participated in dance at any level 1 year prior to surgery and had preoperative and minimum 5-year follow-up scores consisting of the modified Harris Hip Score, Nonarthritic Hip Score, Hip Outcome Score–Sports Specific Subscale, and visual analog scale pain score. The exclusion criteria were previous hip conditions, previous ipsilateral hip surgery, Tönnis grade greater than 1, or lateral center-edge angle less than 18°. The minimal clinically important difference (MCID) was reported. Dancers who discontinued dance for reasons other than pain in the operative hip were excluded from the return-to-dance analysis. A logistic regression model was used to identify predictors of secondary surgical procedures.

Results: Fifty-one hips (48 female dancers) were included. The average age and average follow-up period were 29.8 ± 17.2 years and 79.1 ± 23.2 months, respectively. Improvement in all PROM scores ($P < .001$) was reported. Achievement rates of the MCID for the modified Harris Hip Score, Nonarthritic Hip Score, and visual analog scale pain score were 83.3%, 85.7%, and 85.7%, respectively. Revision hip arthroscopy was performed in 5 dancers (9.8%). Conversion to total hip arthroplasty was performed in 4 dancers (7.8%). The return-to-dance rate was 78.6%, with 57.6% returning to the preinjury performance level or a higher level. Higher femoral head Outerbridge grade was identified as a predictor of secondary surgical procedures ($P = .045$; odds ratio, 6.752 [95% confidence interval, 1.043-43.688]).

Conclusion: After primary hip arthroscopy, dancers experienced significant improvement in all PROM scores collected and achieved the MCID at a high rate at minimum 5-year follow-up. The return-to-dance rate in dancers who did not discontinue dance because of lifestyle transitions was 78.6%, with 57.6% returning to the preinjury performance level or a higher level. Higher femoral head Outerbridge grade was found to be a predictor of secondary surgical procedures.

Level of Evidence: Level IV, case series.

BACK

Endoscopic Tendon Release for Iliopsoas Impingement After Total Hip Arthroplasty—Excellent Clinical Outcomes and Low Failure Rates at Short-Term Follow-Up

M. Finsterwald, F. Mancino

DOI: https://doi.org/10.1016/j.arthro.2023.07.040

Purpose: To investigate the clinical effectiveness of endoscopic iliopsoas tendon release (IPR) at the lesser trochanter (LT) in patients with iliopsoas impingement (IPI) after total hip arthroplasty (THA).

Methods: Between November 2017 and March 2021, a consecutive series of 36 patients were treated with endoscopic IPR for diagnosed IPI. Patients included had acetabular cup position confirmed by functional imaging (OPS, Corin, Pymble, NSW), typical clinical symptoms of IPI, and a positive response to diagnostic injection. Clinical assessment included validated patient-reported outcome measures (PROMs) along with hip flexion strength and active range of motion at different time marks up to 2-year follow-up, as well as surgical complications.

Results: Overall, 36 consecutive patients (11 males) with a mean age of 62 ± 12 years were included. All patients had failed nonoperative management. Dynamic computed tomography assessment was available in 89% of the patients, edge loading was reported in 10%, and variable cup overhang was reported in 50%. Clinically, PROMs were significantly improved at every time mark when compared with preoperative values ($P < .001$), showing the biggest improvement within the first 4 weeks after surgery. At the 6-month follow-up, peak isometric hip flexion strength on the operated side was 20% lower than the contralateral side ($P < .001$). Failure rate of the procedure was 2.8% (1 case). Linear regression showed no association between cup overhang and clinical outcomes.

Conclusion: Endoscopic IPR at the LT is a safe and reproducible technique associated with significant and immediate improvement in pain, functional outcomes, and high patient satisfaction. With minimal short-term weakness, no complications, and only a single revision, even in cases with cup malposition and/or edge loading, we believe that endoscopic IPR can be considered as one of the first-line operative options in patients with symptomatic IPI, irrespective of component position.

Level of Evidence: Level IV, case series.

BACK

Patients Undergoing Revision Hip Arthroscopy Demonstrate Comparable Survivability and Improvement but Worse Postoperative Outcomes Compared to Patients Undergoing Primary Hip Arthroscopy: A Propensity Matched Study at Five-Year Follow-Up

R. Chapman, N. Horner

DOI: https://doi.org/10.1016/j.arthro.2023.07.047

Purpose: To compare mid-term clinical outcomes between patients undergoing primary hip arthroscopy (HA) versus revision hip arthroscopy (RHA) for femoroacetabular impingement syndrome (FAIS).

Methods: A retrospective cohort study was conducted on 1,862 patients who underwent hip arthroscopy for FAIS from January 2012 to April 2017. Patients who underwent RHA were propensity matched in a 1:4 ratio by age, sex, body mass index (BMI), and exercise status to patients who underwent primary HA. Preoperative and postoperative radiographs were assessed. Patient-reported outcomes before and at 5 years after surgery, including the Hip Outcome Score Activities of Daily Living subscale (HOS-ADL) and Sports subscale (HOS-SS), modified Harris Hip Score (mHHS), international Hip Outcome Tool (iHOT-12), and Visual Analog Scale (VAS) for Pain and Satisfaction, were compared between groups. Minimally clinically important difference and patient-acceptable symptomatic state (PASS) achievement rates were compared using previously published thresholds.

Results: Fifty-one patients who underwent RHA (35 female, 16 male; age 36.2 ± 10.2 years; BMI 26.5 ± 5.9) were followed up for 63.9 ± 9.2 months and then propensity matched in a 1:4 ratio by sex, age, and BMI to 204 control patients who underwent primary HA. At midterm follow-up, patients in the RHA cohort had significantly lower scores for HOS-SS (RHA 64.9 ± 32.5 vs HA 75.3 ± 26.2, $P = .044$), mHHS (RHA 72.2 ± 22.4 vs HA 80.1 ± 18.1, $P = .039$), and iHOT-12 (RHA 61.4 ± 29.3 vs HA 71 ± 27.6, $P = .043$) compared to primary HA patients. Rates of achieving PASS were significantly decreased for HOS-SS (RHA 38.3% vs HA 55.4%, $P = .039$) and iHOT-12 (RHA 41.9% vs HA 59.9%, $P = .035$) in the RHA cohort. There were no significant differences in rates of conversion to THA or subsequent reoperation on the index hip between groups.

Conclusion: Patients undergoing revision hip arthroscopy demonstrate comparable survivability and magnitude of improvement but may experience worse overall outcome scores and meet thresholds for clinically significant outcomes less often when compared to primary hip arthroscopy patients.

Level of Evidence: Level III; retrospective comparative study.

BACK

A Superolateral Cam Lesion Location Increases Odds of Total Hip Arthroplasty 5 Years After Hip Arthroscopy

M. Buldo-Licciardi, D.S. Shankar

DOI: https://doi.org/10.1016/j.arthro.2023.08.004

Purpose: To determine if radiographic cam location is associated with hip survivorship and postoperative patient-reported outcomes (PROs) at 5-year follow-up.

Methods: We conducted a review of prospectively collected data of patients with cam lesions who underwent hip arthroscopy for femoroacetabular impingement syndrome. Cam lesions were categorized into 3 locations: superolateral, anterolateral, or anterior. Conversion to total hip arthroplasty (THA), revision rates, and reoperation rates were assessed. Patient-reported outcome measures, including modified Harris Hip Scores (mHHS) and Non-Arthritic Hip Scores (NAHS), were collected preoperatively and at 5-year follow-up.

Results: Of the 156-patients, 125 met the final criteria (80.1%). Mean age was 41.1 ± 12.7 years. Seventy-one patients (56.8%) had superolateral cam lesions, 41 (32.8%) had anterolateral lesions, and 13 (10.4%) had anterior lesions. Revision rates within 5 years were 7.7% for anterior, 24.4% for anterolateral, and 14.1% for superolateral lesions; conversions to THAs were 15.4% for anterior), 7.3% for anterolateral, and 8.5% for superolateral. Reoperations were 23.1% for anterior, 29.3% for anterolateral, and 21.1% for superolateral. The superolateral cohort was younger than the anterior and anterolateral cohorts (anterior, 46.6 ± 12.2 years; anterolateral, 44.7 ± 12.2 years; superolateral, 38.1 ± 12.3 years; $P = .006$). Multivariable analysis showed the anterolateral group was significantly predictive of lower odds of undergoing THA compared to the superolateral group (odds ratio, 0.01; 95% CI, <0.01-0.72; $P = .03$). There were no differences in the 5-year improvement in mHHS (anterior, 32.4; anterolateral, 36.8; superolateral, 33.0; $P = .29$) or NAHS (anterior, 34.8; anterolateral, 39.0; superolateral, 37.3; $P = .65$).

Conclusion: A superolateral cam lesion increases the odds of conversion to THA within 5 years of hip arthroscopy compared to those with anterolateral lesions on multivariable analysis. Those with superolateral lesions were significantly younger compared to those with anterior or anterolateral lesions. Cam lesion location did not affect improvement in PROs at 5-year follow-up.

Level of Evidence: Level III, retrospective comparative prognostic trial.

BACK

Global Acetabular Retroversion Is Not Associated With Differences in Outcomes After Primary Hip Arthroscopy Among Patients With Femoroacetabular Impingement Syndrome: A Matched Cohort Study With Minimum 5-Year Follow-Up

I. Savage-Elliott, D.S. Shankar

DOI: https://doi.org/10.1016/j.arthro.2023.08.005

Purpose: To compare hip survivorship and patient-reported outcome measures (PROMs) after primary hip arthroscopy at 5-year follow-up between patients with femoroacetabular impingement syndrome (FAIS) with radiographic signs of global acetabular retroversion and those without.

Methods: A retrospective matched-cohort study was conducted using a single-surgeon hip arthroscopy database. Patients were included if they underwent primary hip arthroscopy for treatment of FAIS, had preoperative hip x-rays, and had a minimum 5-year follow-up. Global retroversion was defined as the presence of ischial spine sign, posterior wall sign, and crossover sign on anteroposterior view. Patients with FAIS with global retroversion were matched 1:1 on age, sex, and body mass index to FAIS controls. The modified Harris Hip Score (mHHS) and Non-Arthritic Hip Score (NAHS) were administered preoperatively and at follow-up. Hip survivorship and PROMs were compared between the 2 groups using the paired *t* test, Wilcoxon signed rank test, and/or Cochran-Mantel-Haenszel test as appropriate.*P* values <.05 were considered significant.

Results: Thirty-eight patients with global retroversion (mean age 40.6 ± 10.8 years, 60.5% female) were matched to 38 controls (mean age 41.3 ± 13.6 years, 60.5% female). Reoperation rates were the same in both groups (5.3%). On average, both groups reported significant pre- to postoperative improvement in mHHS ($P < .001$) and NAHS ($P < .001$), and there was no significant intergroup differences in the change in mHHS ($P = .86$) or NAHS ($P = .90$). Achievement rates for the patient acceptable symptom state on the mHHS were higher among males compared to females ($P = .04$) in both the global retroversion group (93.3% vs 73.9%) and the control group (93.3% vs 73.9%).

Conclusion: Patients with FAIS with and without global acetabular retroversion had no significant difference in outcomes after primary hip arthroscopy at a minimum 5-year minimum follow-up.

Level of Evidence: Level III, retrospective comparative prognostic trial.

BACK

Suture-Augmented Anterior Cruciate Ligament Repair for Proximal Avulsion or High-Grade Partial Tears Shows Similar Side-to-Side Difference and No Clinical Differences at Two Years Versus Conventional Anterior Cruciate Ligament Reconstruction for Mid-Substance Tears or Poor Anterior Cruciate Ligament Tissue Quality

W.A. Douoguih, N.A. Apseloff

DOI: https://doi.org/10.1016/j.arthro.2023.07.011

Purpose: To compare objective and subjective clinical outcomes between suture-augmented anterior cruciate ligament (ACL) repair (SAACLR) and conventional ACL reconstruction (CACLR) with minimum 2-year follow-up.

Methods: In this nonrandomized, prospective study, 30 patients underwent SAACLR for proximal ACL avulsion or high-grade partial ACL tear (Sherman grade 1 or 2) and 30 patients underwent CACLR for proximal one-third/distal two-thirds junction tears and mid-substance tears (Sherman grade 3 or 4) tear types by 1 surgeon between 2018 and 2020. Failure was defined as ACL reinjury. Outcome measures were KT-1000 for side-to-side knee laxity evaluation, Visual Analog Scale for pain, International Knee Documentation Committee (IKDC) Subjective Knee Evaluation Form, Knee Injury and Osteoarthritis Severity Score (KOOS), Tegner Activity Scale, Western Ontario and McMaster Universities Osteoarthritis Index, Lysholm Knee Scoring Scale, and Single Assessment Numeric Evaluation. Minimal clinically important difference (MCID) was calculated for IKDC and KOOS subscores.

Results: Three failures (10%) occurred in the SAACLR group, with no failures in the CACLR group (P = .24). A total of 23 (85%) SAACLR patients and 27 (90%) CACLR patients had patient-reported outcomes and physical examination at minimum 2 years. Two-year KT-1000 testing with 20 lbs showed less than 1 mm side-to-side difference between the groups. No significant differences in the percentage of patients meeting the MCID were found between the SAACLR and CACLR groups at 2 years: IKDC, 10.81 (82%) versus 10.54 (93%) (P = .48); KOOS Pain, 11.55 (73%) versus 10.58 (78%) (P = .94); KOOS Symptoms, 8.15 (77%) versus 10.32 (74%) (P = 1.0); KOOS Activities of Daily Living, 12.19 (59%) versus 12.28 (70%) (P = .60); 18.99 (71%) versus 16.77 (86%) (P = .42). Significantly higher IKDC scores were observed with SAACLR versus CACLR at 3 months (P = .01) and 6 months (P = .02), and significantly higher Lysholm scale, Tegner Activity Scale, and all KOOS subscale scores were observed at 6 months.

Conclusion: At 2 years after surgery, KT-1000 testing showed less than 1 mm side-to-side difference and no differences were observed between the groups in the percentage of patients who met or exceeded the MCID. Significantly higher early patient-reported outcome scores were found with SAACLR versus CACLR. The rerupture rate between the groups was not significantly different.

Level of Evidence: Level II, Prospective cohort study.

BACK

Arthroscopic Treatment Is a Safe and Effective Alternative to Open Treatment for Acute Septic Arthritis of the Native Knee: A Systematic Review

R.N. Puzzitiello, A. Agarwalla

DOI: https://doi.org/10.1016/j.arthro.2023.05.038

Purpose: To compare complication rates, reoperation rates, and subjective outcomes after arthroscopic and open irrigation and debridement for treatment of native knee septic arthritis.

Methods: Following The Preferred Reporting Items for Systematic Reviews and Meta-analyses guidelines, a systematic review of the Embase, Cochrane, and PubMed databases was performed. Comparative studies reporting clinical outcomes after arthroscopic versus open treatment for septic arthritis of the native knee in human adults were included. Excluded were case series with <10 patients, inclusion of patients <18 years old, studies on non-native joints, abstract-only publications, and studies without stratification of the involved joint. Two reviewers in duplicate independently performed search and data extraction. The quality of the included studies was assessed with the Methodological Index for Non-Randomized Studies instrument. The mean score among the included studies was 18.2 (range 16-23).

Results: Eleven studies were included, comprising 2,343 knees treated arthroscopically, and 1,595 treated with arthrotomy. Studies reported no differences in erythrocyte sedimentation rate, C-reactive protein, peripheral white blood cells, or symptom chronicity between groups. Nine studies (81.8%) attempted to control for potentially confounding variables in their analyses, and 4 studies (36.4%) reported significant differences in patient characteristics. Reoperation rates ranged from 0% to 50% for arthroscopy and 6% to 71% for arthrotomy. Complication rates ranged from 0% to 39.4% arthroscopically and 0% to 49% for arthrotomy. Superior patient-reported outcomes were achieved after arthroscopy in 2 studies that analyzed subjective outcomes.

Conclusion: Arthroscopic management of native knee septic arthritis is a safe and effective alternative to open treatment and is associated with comparable complication rates, reoperation rates, hospitalization lengths, readmission rates, and superior patient-reported outcomes compared with open irrigation and debridement.

Level of Evidence: Level IV, systematic review of Level I, III, and IV studies.

BACK

Randomized Controlled Trials Comparing Bone-Patellar Tendon-Bone Versus Hamstring Tendon Autografts in Anterior Cruciate Ligament Reconstruction Surgery Are Statistically Fragile: A Systematic Review

K.W. Lawrence, J.O. Okewunmi

DOI: https://doi.org/10.1016/j.arthro.2023.07.039

Purpose: To assess the statistical fragility of recently published randomized controlled trials (RCTs) comparing the use of hamstring tendon autograft with bone–patellar tendon–bone autograft for anterior cruciate ligament (ACL) reconstruction.

Methods: The PubMed, Embase, and MEDLINE databases were queried for RCTs published since 2010 comparing autograft type (bone–patellar tendon–bone vs hamstring tendon) in ACL reconstruction surgery. The fragility index (FI) and reverse FI (rFI) were determined for significant and nonsignificant outcomes, respectively, as the number of outcome reversals required to change statistical significance. The fragility quotient (FQ) and reverse FQ, representing fragility as a proportion of the study population, were calculated by dividing the FI and rFI, respectively, by the sample size.

Results: We identified 19 RCTs reporting 55 total dichotomous outcomes. The median FI of the 55 total outcomes was 5 (interquartile range [IQR], 4-7), meaning a median of 5 outcome event reversals would alter the outcomes' significance. Five outcomes were reported as statistically significant with a median FI of 4 (IQR, 2-6), meaning a median of 4 outcome event reversals would change outcomes to be nonsignificant. Fifty outcomes were reported as nonsignificant with a median rFI of 5 (IQR, 4-7), meaning a median of 5 outcome event reversals would change outcomes to be significant. The FQ and reverse FQ for significant and nonsignificant outcomes were 0.025 (IQR, 0.018-0.045) and 0.082 (IQR, 0.041-0.106), respectively. For 61.8% of outcomes, patients lost to follow-up exceeded the corresponding FI or rFI.

Conclusion: There is substantial statistical fragility in recent RCTs on autograft choice in ACL reconstruction surgery given that altering a few outcome events is sufficient to reverse study findings. For over half of outcomes, maintaining patients lost to follow-up may have been sufficient to reverse study conclusions.

Level of Evidence: We recommend co-reporting FIs and *P* values to provide a more comprehensive representation of a study's conclusions when conducting an RCT.

BACK

Fragile Statistical Findings in Randomized Controlled Trials Evaluating Autograft Versus Allograft Use in Anterior Cruciate Ligament Reconstruction: A Systematic Review

M. Megafu, E. Megafu

DOI: https://doi.org/10.1016/j.arthro.2023.07.055

Purpose: To analyze the statistical stability of randomized controlled trials (RCTs) evaluating the surgical management of autografts versus allografts in the anterior cruciate ligament reconstruction (ACLR) literature and calculate the fragility index (FI) and fragility quotient and explore a subgroup analysis by calculating the proportion of outcome events where the FI was less than the number of patients lost to follow-up.

Methods: Using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines, we conducted a systematic search in the PubMed and Cochrane databases to identify RCTs published between 2000 and 2022 that investigated the use of autografts versus allografts in ACLR literature and reported dichotomous data. The fragility index of each dichotomous variable was calculated through the reversal of a single outcome event until significance was reversed. The fragility quotient was calculated by dividing each fragility index by the study sample size. The interquartile range also was calculated.

Results: Of the 4407 articles screened, 23 met the search criteria, with 11 RCTs evaluating ALCR using autografts and allografts included for analysis. Two hundred and 18 outcome events with 32 significant ($P < .05$) outcomes and 186 nonsignificant ($P \geq .05$) outcomes were identified. The overall fragility index and fragility quotient for all 218 outcomes were 6 subjects (interquartile range 5-8) and 0.058 (interquartile range 0.039-0.077). Fragility analysis of statistically significant outcomes and nonsignificant outcomes had a fragility index of 3.5 (interquartile range 1-5.5) and 6 (interquartile range 5-8), respectively. All of the studies reported a loss to follow-up where 45.5% (5) reported a loss to follow-up greater or equal to 6.

Conclusion: The RCTs in the ACLR peer-reviewed literature evaluating autograft versus allograft use are vulnerable to a small number of outcome event reversals and exemplify significant statistical fragility in statistically significant findings.

Level of Evidence: Level I, systematic review of Level I studies.

BACK

Journal of Shoulder and Elbow Surgery (JSES), Volume 33, issue 3

No Lower Extremity Abstracts

BACK

Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA), Volume 32, Issue 3

No Lower Extremity Abstracts

BACK

American Journal of Sports Medicine (AJSM), Volume 52, Issue 3+4

The Effect of Pelvic Incidence on Outcomes After Hip Arthroscopy for Femoroacetabular Impingement and Acetabular Labral Tears

K.A. Torabian, N.J. Cherian

DOI: https://doi.org/10.1177/03635465231219261

Background: In the setting of femoroacetabular impingement (FAI), decompression osteoplasties reconcile deleterious loading patterns caused by cam and pincer lesions. However, native variations of spinopelvic sagittal alignment may continue to perpetuate detrimental effects on the labrum, chondrolabral junction, and articular cartilage after hip arthroscopy.

Purpose: To evaluate the effect of pelvic incidence (PI) on postoperative outcomes after hip arthroscopy for acetabular labral tears in the setting of FAI.

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

Methods: A retrospective query of prospectively collected data identified patients ≥18 years of age who underwent primary hip arthroscopy for FAI and acetabular labral tears between February 2014 and January 2022, with 3-, 6-, 12-, and 24-month follow-ups. Measurements for PI, pelvic tilt (PT), sacral slope (SS), and acetabular version were obtained via advanced diagnostic imaging. Patients were stratified into low-PI (<45°), moderate-PI (45°≤ PI ≤ 60°), and high-PI (>60°) cohorts. Patient-reported outcome measures (PROMs), clinically meaningful outcomes (ie, minimal clinically important difference, Patient Acceptable Symptom State, substantial clinical benefit, and maximal outcome improvement), visual analog scale (VAS) pain scores, and patient satisfaction were compared across cohorts.

Results: A total of 74 patients met eligibility criteria and were stratified into low-PI (n = 28), moderate-PI (n = 31), and high-PI (n = 15) cohorts. Correspondingly, patients with high PI displayed significantly greater values for PT (P = .001), SS (P < .001), acetabular version (P < .001), and acetabular inclination (P = .049). By the 12- and 24-month follow-ups, the high-PI cohort was found to have significantly inferior PROMs, VAS pain scores, rates of clinically meaningful outcome achievement, and satisfaction relative to patients with moderate and/or low PI. No significant differences were found between cohorts regarding rates of revision arthroscopy, subsequent spine surgery, or conversion to total hip arthroplasty.

Conclusion: After hip arthroscopy, patients with a high PI (>60°) exhibited inferior PROMs, rates of achieving clinically meaningful thresholds, and satisfaction at 12 and 24 months relative to patients with low or moderate PI. Conversely, the outcomes of patients with low PI (<45°) were found to match the trajectory of those with a neutral spinopelvic alignment (45°≤ PI ≤ 60°). These findings highlight the importance of analyzing spinopelvic parameters preoperatively to prognosticate outcomes before hip arthroscopy for acetabular labral tears and FAI.

BACK

A New Arthroscopic Classification for Chondrolabral Disease in Patients Undergoing Surgery for Developmental Dysplasia of the Hip

S.-H. Lee, D. Alarcon Perico

DOI: https://doi.org/10.1177/03635465231221507

Background: Current classification systems for intra-articular pathology intraoperatively have been described for patients with femoroacetabular impingement rather than dysplasia.

Purpose: To (1) describe intra-articular findings in dysplastic hips undergoing combined hip arthroscopy and periacetabular osteotomy (PAO); (2) propose a new chondrolabral classification system for dysplastic hips based on these findings; and (3) correlate patient-reported outcome measures (PROM) with the newly proposed classification.

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

Methods: A total of 46 hips underwent combined hip arthroscopy and PAO at our institution between September 2013 and December 2014, irrespective of symptoms or radiographic findings. PROMs were evaluated preoperatively and at 2 years postoperatively. At the time of hip arthroscopy, the chondrolabral junction was classified as normal without tear (1 hip, type 1); hypertrophic labrum without chondrolabral disruption (19 hips, type 2); chondrolabral disruption on the articular side, not extending into the capsular side (16 hips, type 3A); chondrolabral disruption extending through the capsular side (3 hips, type 3B); and exposed acetabular subchondral bone (7 hips, type 4).

Results: There was a significant difference in postoperative modified Harris Hip Score (mHHS) ($P = .020$), Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) pain scores ($P = .037$), and WOMAC total scores ($P = .049$) between chondrolabral junction types. Post hoc analyses demonstrated significant differences between type 2 (84.9 ± 12.9) and type 3A (67.8 ± 20.7; $P = .198$), and between type 2 and type 4 (59.3 ± 24.3; $P = .011$) in postoperative mHHS scores; and between type 2 (83.9 ± 12.9) and type 3A (68.9 ± 23.7; $P = .045$) in postoperative WOMAC total scores. In multivariate analysis, chondrolabral type 3 or type 4, age >35 years, and previous surgery were significantly correlated with worse mHHS scores at 2 years.

Conclusion: This new chondrolabral classification is proposed to describe intra-articular pathology seen during combined hip arthroscopy and PAO, specifically in dysplastic hips. More advanced chondrolabral disease was associated with worse PROMs at 2 years.

BACK

A Prospective Randomized Controlled Trial Investigating Quadriceps Versus Hamstring Tendon Autograft in Anterior Cruciate Ligament Reconstruction

J.R. Ebert, N.D. Calvert

DOI: https://doi.org/10.1177/03635465231222279

Background: Numerous graft options are available when undertaking anterior cruciate ligament (ACL) reconstruction (ACLR), although a lack of high-quality evidence exists comparing quadriceps (QT) and hamstring (HT) autografts.

Purpose: To investigate patient outcomes in patients undergoing HT versus QT ACLR.

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

Methods: After recruitment and randomization, 112 patients (HT = 55; QT = 57) underwent ACLR. Patients were assessed pre- and postoperatively (6 weeks and 3, 6, 12, and 24 months), with a range of patient-reported outcome measures (PROMs), graft laxity (KT-1000 arthrometer; primary outcome variable), active knee flexion and extension range of motion (ROM), peak isokinetic knee extensor and flexor strength, and a 6-hop performance battery. Limb symmetry indices (LSIs) were calculated for strength and hop measures. Secondary procedures, ACL retears, and contralateral ACL tears were reported.

Results: All PROMs and knee ROM measures significantly improved ($P < .0001$), and no other group differences ($P > .05$) were observed—apart from the Anterior Cruciate Ligament Return to Sport after Injury (ACL-RSI) score, which was significantly better in the HT group at 3 ($P = .008$), 6 ($P = .010$), and 12 ($P = .014$) months. No significant changes were observed in side-to-side laxity from 6 to 24 months ($P = .105$), and no group differences were observed ($P = .487$) at 6 (HT mean, 1.2; QT mean, 1.3), 12 (HT mean, 1.1; QT mean, 1.3), and 24 (HT mean, 1.1; QT mean, 1.2) months. While the HT group demonstrated significantly greater ($P < .05$) quadriceps strength LSIs at 6 and 12 months, the QT group showed significantly greater ($P < .05$) hamstring strength LSIs at 6, 12, and 24 months. The HT group showed significantly greater ($P < .05$) LSIs for the single horizontal (6 months), lateral (6 and 12 months), and medial (6 months) hop tests for distance. Up until 24 months, 1 patient (QT at 22 months) had a retear, with 2 contralateral ACL tears (QT at 19 months; HT at 23 months). Secondary procedures included 5 in the HT group (manipulation under anesthesia, notch debridement, meniscal repair, and knee arthroscopy for scar tissue) and 6 in the QT group (notch debridement, meniscal repair, knee arthroscopy for scar tissue, tibial tubercle transfer, and osteochondral autologous transplantation).

Conclusion: Apart from the ACL-RSI, the 2 autograft groups compared well for PROMs, knee ROM, and laxity. However, greater hamstring strength LSIs were observed for the QT cohort, with greater quadriceps strength (and hop test) LSIs in the HT cohort. The longer-term review will continue to evaluate return to sports and later-stage reinjury between the 2 graft constructs.

BACK

Risk of Revision and Reoperation After Quadriceps Tendon Autograft ACL Reconstruction Compared With Patellar Tendon and Hamstring Autografts in a US Cohort of 21,973 Patients

J.S. Yang, H.A. Prentice

DOI: https://doi.org/10.1177/03635465231222267

Background: The use of quadriceps tendon (QT) autografts has increased in the past 10 years. However, there remains a dearth of large studies examining the effects of graft selection on anterior cruciate ligament reconstruction (ACLR) that includes QT grafts.

Purpose: To evaluate the risk of subsequent surgical outcomes, including revision and reoperation, for a large cohort of patients with primary ACLR according to autograft selection.

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

Methods: Data from a US health care system ACLR registry were used to conduct a cohort study. Primary isolated autograft ACLRs were identified (2012-2021). The exposure of interest was autograft type: QT, bone–patellar tendon–bone (BPTB), and hamstring tendon (HT). Multivariable Cox regression models were used to evaluate the risk of aseptic revision (defined as a subsequent surgery where removal and replacement of the original graft for noninfectious reasons was required) and risk of aseptic reoperation (defined as any subsequent surgery for noninfectious reasons where the graft was left intact) according to autograft selection.

Results: The study sample comprised 21,973 ACLRs performed by 290 surgeons at 53 hospitals. QT, BPTB, and HT autografts were used in 1103 (5.0%), 9519 (43.3%), and 11,351 (51.7%) ACLRs, respectively. In adjusted models, no significant differences were observed in revision risk (hazard ratio [HR], 1.06; 95% CI, 0.60-1.89; P = .837) or reoperation risk (HR, 1.00; 95% CI, 0.70-1.43; P = .993) within 4 years of follow-up when comparing QT ACLR with BPTB ACLR. Additionally, no differences in 4-year revision (HR, 0.62; 95% CI, 0.34-1.12; P = .111) or reoperation (HR, 1.24; 95% CI, 0.85-1.80; P = .262) risks were observed when comparing QT ACLR with HT ACLR. HT ACLRs were noted to have a higher risk of revision (HR, 1.52; 95% CI, 1.25-1.84; P < .001) compared with BPTB ACLRs but a lower risk of reoperation (HR, 0.86; 95% CI, 0.75-0.98; P = .024).

Conclusion: In this large multicenter study using data from an ACLR registry, the authors found no difference in the risk of revision or reoperation when QT was compared with BPTB or HT autograft with the numbers available, but they did find a 1.5 times higher risk of revision when HT autograft was compared with BPTB autograft. Surgeons may use this information when choosing the appropriate graft for ACLR in their patients.

BACK

Evaluation of Open Versus Arthroscopic Anterior Talofibular Ligament Reconstruction for Chronic Lateral Ankle Instability With Talar and Subtalar Cartilage MRI T2 Mapping: A 3-Year Prospective Study

Y. Hu, Q. Li

DOI: https://doi.org/10.1177/03635465231222931

Background: Previous studies have examined patients with chronic lateral ankle instability (CLAI) undergoing open and arthroscopic anterior talofibular ligament (ATFL) reconstruction, reporting equivalent clinical results between the 2 procedures. However, data on the magnetic resonance imaging (MRI) outcomes on cartilage health after the 2 procedures are limited.

Purpose: To compare the cartilage MRI T2 values of the talar and subtalar joints between patients with CLAI undergoing open and arthroscopic ATFL reconstruction.

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

Methods: A prospective study was conducted on patients who underwent open or arthroscopic ATFL reconstruction between January 2018 and December 2019, with a mean follow-up duration of 3 years. MRI scans and American Orthopaedic Foot & Ankle Society (AOFAS) and Tegner score estimations were completed by patients ≤1 week before surgery, as a baseline measurement, and at a 3-year follow-up. A total of 21 healthy volunteers were included who underwent MRI at baseline. Cartilage health was evaluated using MRI T2 mapping. The talar and subtalar cartilage regions were segmented into 14 subregions.

Results: At baseline, patients with CLAI had substantially higher T2 values in the medial anterior, medial center, medial posterior, and lateral center regions on the talus compared with the healthy controls ($P = .009$, .003, .001, and .025, respectively). Remarkable increases in T2 values in the lateral posterior region on the talus were observed from baseline to follow-up in the open group ($P = .007$). Furthermore, T2 values were considerably higher in the medial center, medial posterior, lateral posterior, and lateral posterior calcaneal facets of the posterior subtalar joint at follow-up in the arthroscopic group compared with the baseline values ($P = .025$, .002, .006, and .044, respectively). No obvious differences in ΔT2 values were noted between the 2 groups at follow-up. The AOFAS and Tegner scores remarkably improved from baseline to follow-up for the 2 groups (open: 3.25 ± 0.58 vs 5.13 ± 0.81, $P < .001$; arthroscopic: 3.11 ± 0.90 vs 5.11 ± 1.08, $P < .001$), with no considerable difference between them.

Conclusion: The elevated T2 values of cartilage could not be fully recovered after open or arthroscopic ATFL reconstruction. Both arthroscopic and open ATFL reconstruction displayed similar effects on cartilage health concerning ΔT2, but the arthroscopic group demonstrated more degenerative cartilage subregions than the open group.

BACK

Meniscal Repair Outcome in 3829 Patients With a Minimum Follow-up From 2 Years Up to 5 Years: A Meta-analysis on the Overall Failure Rate and Factors Influencing Failure

C. Schweizer, C. Hanreich

DOI: https://doi.org/10.1177/03635465231158385

Background: The importance of meniscal repair is widely accepted because of the association of loss of meniscal tissue with the development of early-onset knee arthritis. Many factors influencing the results of meniscal repair have been reported, but results remain controversial.

Purpose: This meta-analysis determines the pooled meniscal repair failure rate of studies with a minimum follow-up of 2 years up to 5 years, with a mean follow-up of 43 months. Moreover, selected failure-influencing factors are analyzed.

Study Design: Systematic review and meta-analysis; Level of evidence, 4.

Methods: PubMed and Scopus were searched for studies published between January 2000 and November 2021 reporting on meniscal repair outcome with a minimum follow-up of 24 months. The overall pooled failure rate and pooled failure rates for possible predictors were calculated. Random-effect models were used to pool failure rates, and effect estimates in the form of odds ratios with 95% CIs were established.

Results: The initial literature search identified 6519 studies. A total of 51 studies met the inclusion criteria. In total, 3931 menisci were included with an overall failure rate of 14.8%. Subgroup analysis revealed a significantly lower failure rate for meniscal repair with concomitant anterior cruciate ligament (ACL) reconstruction compared with knees without any reported injury to the ACL (8.5% vs 14%; P = .043). The pooled failure rate for lateral meniscal repair was significantly lower than that for medial meniscal repair (6.1% vs 10.8%; P = .031). Pooled failure rates of all-inside and inside-out repair were not significantly different (11.9% vs 10.6%; P > .05).

Conclusion: This meta-analysis on close to 4000 patients demonstrates an overall meniscal repair failure rate of 14.8% at a minimum follow-up from 2 years up to 5 years. Meniscal repair remains a procedure with a high failure rate, especially within the first 2 postoperative years. This review and meta-analysis also identified clinically relevant factors associated with favorable outcomes such as concomitant ACL reconstruction or repair of the lateral meniscus. All-inside meniscal repair with the latest-generation devices yields failure rates of <10%. The failure mechanism and the time of failure is poorly documented; further studies are needed for a better understanding of the retear mechanism.

BACK

Autograft Demonstrates Superior Outcomes for Revision Anterior Cruciate Ligament Reconstruction When Compared With Allograft: A Systematic Review

J.W. Belk, C.P. Littlefield

DOI: https://doi.org/10.1177/03635465231152232

Background: Multiple studies have compared outcomes among patients undergoing revision anterior cruciate ligament reconstruction (ACLR) with autograft versus allograft, but these data are inconsistently reported and long-term outcomes depending on graft type are yet to be determined.

Purpose: To perform a systematic review of clinical outcomes after revision ACLR (rACLR) with autograft versus allograft.

Study Design: Systematic review; Level of evidence, 4.

Methods: A systematic review of the literature was performed by searching PubMed, the Cochrane Library, and Embase to identify studies that compared the outcomes of patients undergoing rACLR with autograft versus allograft. The search phrase used was autograft allograft revision anterior cruciate ligament reconstruction. Graft rerupture rates, return-to-sports rates, anteroposterior laxity, and patient-reported outcome scores (subjective International Knee Documentation Committee, Tegner, Lysholm, and Knee injury and Osteoarthritis Outcome Score) were evaluated.

Results: Eleven studies met inclusion criteria, including 3011 patients undergoing rACLR with autograft (mean age, 28.9 years) and 1238 patients undergoing rACLR with allograft (mean age, 28.0 years). Mean follow-up was 57.3 months. The most common autograft and allograft types were bone–patellar tendon–bone grafts. Overall, 6.2% of patients undergoing rACLR experienced graft retear, including 4.7% in the autograft group and 10.2% in the allograft group ($P < .0001$). Among studies that reported return-to-sports rates, 66.2% of patients with an autograft returned to sports as opposed to 45.3% of patients with an allograft ($P = .01$). Two studies found significantly greater postoperative knee laxity in the allograft group as compared with the autograft group ($P < .05$). Among all patient-reported outcomes, 1 study found 1 significant difference between groups: patients with an autograft had a significantly higher postoperative Lysholm score when compared with patients with an allograft.

Conclusion: Patients undergoing revision ACLR with an autograft can be expected to experience lower rates of graft retear, higher rates of return to sports, and less postoperative anteroposterior knee laxity when compared with patients undergoing revision ACLR with an allograft.

BACK

Incidence of Convergence Between Distally and Anteriorly Oriented ALL Femoral Tunnels and ACL Femoral Tunnels in Combined ACL and ALL Reconstruction: 3-Dimensional Computed Tomography Analysis of 227 Patients

D.K. Suh, M.W. Kang

DOI: https://doi.org/10.1177/03635465241227223

Background: Adjusting the direction of the anterolateral ligament (ALL) femoral tunnel is suggested to avoid tunnel convergence during anterior cruciate ligament (ACL) reconstruction. Yet, there has been no in vivo clinical study reporting the effect of changing the direction of the ALL tunnel on the incidence of convergence with the ACL tunnel.

Purpose: To report the incidence of convergence between the ACL femoral tunnel and a distally and anteriorly directed ALL femoral tunnel and to determine a safe distal angle and anterior angle.

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

Methods: A total of 227 patients undergoing concomitant ALL and anatomic single-bundle ACL reconstruction between January 2020 and December 2022 were retrospectively reviewed. The tunnel convergence rate, angular orientation of the tunnels, and distance between tunnels were obtained using postoperative computed tomography. The patients were grouped based on the direction of the ALL tunnel (transverse vs distal anterior) and the presence of tunnel convergence (convergence vs no convergence).

Results: The overall tunnel convergence rate was 53.3% (121/227 patients). Tunnel convergence was observed less frequently in the distal anterior group (33.7%) than in the transverse group (65.2%) ($P < .001$). The no convergence group showed an ALL tunnel oriented more distally (20.2°± 11.1°) and anteriorly (19.5°± 10.2°) compared with the convergence group (8.7°± 6.5° and 6.9°± 5.3°, respectively) ($P = .005$ and $P = .008$, respectively). There were no cases of tunnel convergence for ALL tunnels >24.3° distally and >25.5° anteriorly. There was no difference in the angle of the ACL femoral tunnel between all groups.

Conclusion: A distally and anteriorly directed ALL femoral tunnel reduced the incidence of convergence with the ACL femoral tunnel. A distal angle >24.3° and an anterior angle >25.5° of an ALL tunnel are suggested to safely avoid convergence with the ACL tunnel.

BACK

The Promising 2-Year Performance of the Patient-Reported Outcomes Measurement Information System in Primary Hip Arthroscopy for Femoroacetabular Impingement Syndrome

M.J. Vogel MJ, J. Wright-Chisem

DOI: https://doi.org/10.1177/03635465241227181

Background: Minimal clinically important difference (MCID) and patient acceptable symptom state (PASS) thresholds have been previously defined for the Patient-Reported Outcomes Measurement Information System (PROMIS) at 1-year follow-up in patients undergoing hip arthroscopy for femoroacetabular impingement syndrome; however, the MCID and PASS thresholds are yet to be defined for the PROMIS at 2-year follow-up.

Purpose: (1) To establish MCID and PASS thresholds for the PROMIS Pain Interference (PROMIS-PI) and PROMIS Physical Function (PROMIS-PF) at 2-year follow-up and (2) to correlate PROMIS scores with hip-specific patient-reported outcome measure (PROM) scores.

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

Methods: Patients undergoing primary hip arthroscopy for femoroacetabular impingement syndrome between August and November 2020 with preoperative and minimum 2-year postoperative data were identified. Collected scores included those for the PROMIS-PI, PROMIS-PF, Hip Outcome Score–Activities of Daily Living (HOS-ADL), Hip Outcome Score–Sports Subscale (HOS-SS), International Hip Outcome Tool–12 (iHOT-12), and visual analog scale (VAS) for pain. MCID thresholds were calculated using the distribution-based method and PASS thresholds using the anchor-based method. Pearson correlation coefficients were used to compare scores between PROMs.

Results: A total of 65 patients met the criteria for inclusion (72.3% female; mean age, 36.9 ± 13.5 years; mean body mass index, 26.2 ± 6.0). The mean follow-up was 25.3 ± 3.3 months. Significant preoperative to postoperative improvements were observed for all PROMs ($P < .001$). MCID thresholds and achievement rates were as follows: HOS-ADL, 10.1 and 75%, respectively; HOS-SS, 13.8 and 79%, respectively; iHOT-12, 14.0 and 67%, respectively; VAS pain, –13.8 and 78%, respectively; PROMIS-PI, –4.7 and 65%, respectively; and PROMIS-PF, 5.8 and 60%, respectively. PASS thresholds and achievement rates were as follows: HOS-ADL, 78.7 and 67%, respectively; HOS-SS, 76.4 and 62%, respectively; iHOT-12, 67.4 and 60%, respectively; VAS pain, 25.5 and 61%, respectively; PROMIS-PI, 57.0 and 65%, respectively; and PROMIS-PF, 45.6 and 58%, respectively. PROMIS-PI scores correlated most strongly with HOS-ADL ($r = −0.836$), HOS-SS ($r = −0.767$), and iHOT-12 ($r = −0.719$) scores and exhibited at least moderate correlations ($r \geq −0.595$) with the other PROM scores. PROMIS-PF demonstrated moderate correlations with all the other PROM scores ($r \geq −0.586$). Strong correlations were seen between the hip-specific PROM scores ($r \geq −0.745$).

Conclusion: This study defined 2-year MCID and PASS thresholds for the PROMIS-PI and PROMIS-PF and demonstrated moderate to strong correlations between PROMIS scores and hip-specific PROM scores.

BACK

A Systematic Review of Adverse Events and Complications After Isolated Posterior Medial Meniscus Root Repairs

G.R. Jackson GR, A.A. Warrier

DOI: https://doi.org/10.1177/03635465231157758

Background: Medial meniscus posterior root (MMPR) tears are recognized as a substantial cause of disability and morbidity. However, meniscus root repair, regardless of technique, is not without potential complications.

Purpose: To evaluate the reported incidence of complications and adverse events after isolated MMPR repair.

Study Design: Systematic review; Level of evidence, 4.

Methods: A systematic review was conducted according to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines using Embase, PubMed, and Scopus databases with the following search terms combined with Boolean operators: “meniscus,”“root,” and “repair.” Inclusion criteria consisted of level 1 to 4 human clinical studies in English or English-language translation reporting complications and adverse events after isolated posterior medial meniscus root repairs. The overall incidence of specific complications was estimated from the pooled sample of the included studies.

Results: Eleven studies with a total pooled sample of 442 patients were identified. The mean patient age was 58.1 years, while the mean final follow-up time was 37.2 months (range, 12-84.8 months). The overall incidence of complications was 9.7% (n = 43/442), with the most commonly reported complication being progressive degenerative changes within the knee (10.4%; n = 25/240; n = 5 studies). A total of 1.25% (n = 3/240) of patients who experienced degenerative changes required conversion to total knee arthroplasty. Repair failures were reported in 3.1% (n = 10/327; n = 8 studies) of patients.

Conclusion: Repairing MMPR tears is critical in preventing accelerated progression of knee osteoarthritis in patients without significant knee osteoarthritis preoperatively. While this repair is still recommended and necessary in appropriate patients, this review found that the incidence of complications after isolated posterior medial meniscus root repair was 9.7%, primarily involving the presence of progressive degeneration, while repair failure was reported in 3% of patients.

BACK

Journal of Bone and Joint Surgery (JBJS), Volume 106, Issue 7+8

No Lower Extremity Abstracts

BACK

Clinical Orthopaedics and Related Research (CORR), Volume 482, Issue 3

No Lower Extremity Abstracts

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Bone and Joint Journal (BJJ), Volume 106-B, issue 4

No Lower Extremity Abstracts

BACK

Miscellaneous

Arthroscopy, Volume 40, Issue 3

No Miscellaneous Abstracts

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Journal of Shoulder and Elbow Surgery (JSES), Volume 33, issue 3

No Miscellaneous Abstracts

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Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA), Volume 32, Issue 3

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American Journal of Sports Medicine (AJSM), Volume 52, Issue 3+4

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Journal of Bone and Joint Surgery (JBJS), Volume 106, Issue 7+8

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Clinical Orthopaedics and Related Research (CORR), Volume 482, Issue 3

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Bone and Joint Journal (BJJ), Volume 106-B, issue 4

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