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Issue 112.3 Arthroscopy, December 2023

Nederlandse Vereniging voor Arthroscopie

Website www.4b.4abstracts.nl

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Upper extremity

Arthroscopy, Volume 39, Issue 12

The Arthroscopic Bristow Procedure Is Superior to the Arthroscopic Latarjet Procedure in Return to Sports but Inferior in Graft Healing: A Comparative Study With 3.4-Year Follow-Up

Q. Song, A. Gao

DOI: https://doi.org/10.1016/j.arthro.2023.05.022

Purpose: To compare clinical and computed tomography outcomes between the arthroscopic Latarjet procedure and the arthroscopic Bristow procedure.

Methods: Patients who underwent arthroscopic Latarjet or Bristow procedures with at least 2 years of follow-up were retrospectively reviewed. Thirty-eight shoulders were included in the Latarjet group, and 34 were included in the Bristow group. Recurrence of dislocation, clinical scores, rate of return to sports (RTS), and computed tomography assessment findings (position of transferred coracoid, graft healing, graft absorption, and glenohumeral degenerative osteoarthritis [OA]) were obtained at final follow-up.

Results: No recurrent dislocation occurred in either group, and no significant differences in clinical scores were found between the 2 procedures, with a mean follow-up period of 3.4 years. The operative time in the Bristow group was significantly shorter than that in the Latarjet group ($P <$ .001). The transferred coracoid had healed in 94.7% of the patients in the Latarjet group and 85.3% in the Bristow group at final follow-up ($P = .01$). No significant difference in graft absorption or the degree of glenohumeral OA was detected between the 2 groups. However, moderate to severe OA only occurred in the Latarjet group at final follow-up (4 of 38 shoulders, 10.5%). The postoperative external rotation angle and level of RTS favored the Latarjet procedure ($P = .030$ and $P = .034$, respectively).

Conclusions: Both the arthroscopic Latarjet and arthroscopic Bristow procedures led to good clinical scores with no new dislocation episodes. The Bristow group showed significantly less graft healing than the Latarjet group. However, the arthroscopic Bristow procedure took less operative time and showed a lower rate of early moderate to severe glenohumeral OA, better range of motion, and a higher rate of RTS.

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

BACK

Patients With Depression and/or Anxiety Having Arthroscopic Rotator Cuff Repair Show Decreased Number of Prescriptions and Number of Psychotherapy Sessions in the Year After Surgery

V. Abed, N.G. Lemaster

DOI: https://doi.org/10.1016/j.arthro.2023.05.032

Purpose: To determine whether the utilization of psychological treatments changes after arthroscopic rotator cuff repair (RCR) for patients with preoperative depression and/or anxiety.

Methods: The Truven Healthcare Marketscan database was used to identify patients who underwent arthroscopic RCR between January 2009 and December 2016. We included all patients with diagnosis codes associated with either depression or anxiety before RCR. Patients were excluded if they did not have complete insurance coverage for 1 year before or after surgery, or if they had arthroscopic RCR in the year before the index surgical procedure. We compared the proportion of patients with preoperative depression or anxiety who filled a prescription and had psychotherapy procedural codes in the year before and the year after arthroscopic RCR.

Results: A total of 170,406 patients who underwent RCR were identified, of which depression and/or anxiety was found in 46,737 patients (43.7% male). Of the 46,737 patients, 19.6% filled a prescription for a depression/anxiety medication at least once in the year before surgery. Of this subset of patients, 41.5% did not fill a prescription for depression or anxiety medication after surgery, whereas 32.6% continued medication use but demonstrated a median 30-day reduction in the number of days' worth of medication. Similarly, 13.1% of patients were attending psychotherapy sessions preoperatively, but 76.6% of those patients either stopped or reduced the amount of psychotherapy sessions in the year following RCR.

Conclusions: The number of prescriptions and psychotherapy sessions decreased in the year after RCR for patients with preoperative diagnoses of depression and/or anxiety.

Level of evidence: Level IV, case series.

BACK

Online Videos Regarding Relevant Postoperative Patient Information and Postoperative Rehabilitation After Arthroscopic Rotator Cuff Repair Provide Poor Information Quality, Accuracy, and Reliability

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DOI: https://doi.org/10.1016/j.arthro.2023.05.031

Purpose: To evaluate the information quality, accuracy, and reliability of YouTube videos regarding relevant postoperative patient information and postoperative rehabilitation after arthroscopic rotator cuff repair.

Methods: By use of The Onion Router (TOR) software and predefined search terms, 102 videos were assessed. Four scoring systems were used to evaluate included videos: (1) *Journal of the American Medical Association* (JAMA) benchmark criteria score; (2) Global Quality Score (GQS); (3) DISCERN score; and (4) a newly developed score, the Rotator Cuff Score (RCS). The RCS (0-30 points) was built based on the latest published evidence and guidelines from the American Academy of Orthopaedic Surgeons. Videos that scored up to 9 points were regarded as poor-quality videos.

Results: Most of the included videos provided poor information quality, accuracy, and reliability. Videos that were uploaded by medically trained professionals showed significantly better results for all scores compared with commercial or personal-testimony videos (JAMA benchmark criteria score, $P < .001$; GQS, $P < .001$; DISCERN score, $P = .001$; and RCS, $P = .001$). Multivariate linear regression showed that the involvement of medically trained professionals was a significant predictor of better results for all scores (JAMA benchmark criteria score, $\beta = 1.496$ [$P < .001$]; GQS, $\beta = 1.105$ [$P < .001$]; DISCERN score, $\beta = 11.234$ [$P < .001$]; and RCS, $\beta = 5.017$ [$P < .001$]). Surprisingly, the like ratio was significantly higher for videos that were uploaded by non–medically trained individuals ($P = .041$).

Conclusions: The average information quality, accuracy, and reliability of YouTube videos regarding relevant postoperative patient information and postoperative rehabilitation after arthroscopic rotator cuff repair are poor. Videos from medically trained professionals provide significantly higher information quality; however, even these videos lack important information for a better understanding of arthroscopic rotator cuff repair.

Clinical Relevance: Because of the lack of a peer-review process, available videos on YouTube regarding relevant postoperative patient information and postoperative rehabilitation after arthroscopic rotator cuff repair are of low quality, accuracy, and reliability. However, patients increasingly visit YouTube to gather medical knowledge. Physicians should enlighten patients about these findings and should be able to provide alternative sources of high-quality information.

BACK

Journal of Shoulder and Elbow Surgery (JSES), Volume 32, issue 12

Arthroscopic Bankart repair with peeling osteotomy of the anterior glenoid rim preserves glenoid morphology

I. Kawashima, Y. Iwahori

DOI: https://doi.org/10.1016/j.jse.2023.05.011

Background: A decrease in the glenoid size after arthroscopic Bankart repair (ABR) was common in shoulders without osseous fragments compared with those with osseous fragments. For cases of chronic recurrent traumatic anterior glenohumeral instability without osseous fragments, we have performed ABR with peeling osteotomy of the anterior glenoid rim (ABRPO) to make an intentional osseous Bankart lesion. The aim of this study was to compare the glenoid morphology after ABRPO with it after simple ABR.

Methods: The medical records of patients who underwent arthroscopic stabilization for chronic recurrent traumatic anterior glenohumeral instability were retrospectively reviewed. Patients with an osseous fragment, with revision surgery and without complete data were excluded. Patients were assigned to 1 of 2 groups: Group A, ABR without peeling osteotomy procedure or Group B, with ABRPO procedure. Computed tomography was performed preoperatively and 1 year after surgery. The size of the glenoid bone loss was investigated by the assumed circle method. The following formula was used to calculate the decreased size of the glenoid: (Δ) = (postoperative size of the glenoid bone loss) − (preoperative size of the glenoid bone loss). The size of the glenoid 1 year after surgery was assessed to determine if it had decreased (Δ > 0%) or not decreased (Δ ≤ 0%) relative to the preoperative size.

Results: This study evaluated 39 shoulders divided into 2 groups: 27 shoulders in Group A and 12 shoulders in Group B. In Group A, postoperative glenoid bone loss was significantly greater than preoperative glenoid bone loss (7.8 ± 6.2 vs. 5.5 ± 5.3, respectively, P = .02). In Group B, postoperative glenoid bone loss was significantly lower than preoperative glenoid bone loss (5.6 ± 5.4 vs. 8.7 ± 4.0, respectively, P = .02). The P value for the interaction of group (A or B) × time (preoperative or postoperative) was 0.001. The decreased size of the glenoid was significantly larger in Group A than in Group B (2.1 ± 4.2 vs. −3.1 ± 4.5, respectively, P = .001). The rate of shoulders in which the size of the glenoid decreased 1 year after surgery relative to the preoperative size was significantly higher in Group A than in Group B (63% [17/27] vs. 25% [3/2], respectively, P = .04).

Conclusions: The study showed that ABRPO preserved the glenoid size better than simple ABR without a peeling osteotomy procedure.

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

BACK

Preoperative vitamin D supplementation is a cost-effective intervention in arthroscopic rotator cuff repair

D. Patel, G. Roy

DOI: https://doi.org/10.1016/j.jse.2023.05.007

Background: This study investigates the potential role of preoperative 25(OH)D supplementation as a cost-effective strategy to decrease revision rotator cuff repair (RCR) rates and lower the total health care burden from patients undergoing primary arthroscopic RCR. Previous literature has emphasized the importance of vitamin D on bone health maintenance, soft tissue healing, and outcomes in RCR. Inadequate preoperative vitamin D levels may increase revision RCR rates following primary arthroscopic RCR. Although 25(OH)D deficiency is common in RCR patients, serum screening is not routinely performed.

Methods: A cost-estimation model was developed to determine the cost-effectiveness of both preoperative selective and nonselective 25(OH)D supplementation in RCR patients in order to reduce revision RCR rates. Prevalence and surgical cost data were obtained from published literature through systematic reviews. Cost of serum 25(OH)D assay and supplementation were obtained from public-use data. Mean and lower and upper bounds of 1-year cost savings were calculated for both the selective and nonselective supplementation scenarios.

Results: Preoperative 25(OH)D screening and subsequent selective 25(OH)D supplementation was calculated to result in a mean cost savings of $6,099,341 (range: –$2,993,000 to $15,191,683) per 250,000 primary arthroscopic RCR cases. Nonselective 25(OH)D supplementation of all arthroscopic RCR patients was calculated to result in a mean cost savings of $11,584,742 (range: $2,492,401-$20,677,085) per 250,000 primary arthroscopic RCR cases. Univariate adjustment projects that selective supplementation is a cost-effective strategy in clinical contexts where the cost of revision RCR exceeds $14,824.69 and prevalence of 25(OH)D deficiency exceeds 6.67%. Additionally, nonselective supplementation is a cost-effective strategy in clinical scenarios where revision RCR cost is ≥$4216.06 and prevalence of 25(OH)D deficiency is ≥1.93%.

Conclusions: This cost-predictive model promotes the role of preoperative 25(OH)D supplementation as a cost-effective mechanism to reduce revision RCR rates and lower the overall health care burden from arthroscopic RCR. Nonselective supplementation appears to be more cost-effective than selective supplementation, likely due to the lower cost of 25(OH)D supplementation compared to serum assays.

Level of evidence: Level IV, Economic/Cost Effectiveness Study.

BACK

How many anchors to use in arthroscopic Bankart repairs? A biomechanical study of postage-stamp glenoid fractures

M.H. Lobao, P. Abbasi

DOI: https://doi.org/10.1016/j.jse.2023.05.022

Background: Deciding how many anchors to use in a Bankart repair is challenging because of the desire to enhance stability while avoiding a postage-stamp fracture of the glenoid rim.

Methods: This controlled laboratory study investigated load to fracture of the anterior glenoid rim after drilling holes of varying number and diameter and inserting anchors of 2 different types and sizes, with and without perforation of the medial cortex of the glenoid, creating postage-stamp fractures using a metallic humeral head that was compressed against the anterior glenoid rim. A destructive model with a servohydraulic load frame was used to test 46 synthetic scapulae with compressive strength and elastic modulus similar to that of a human glenoid. Load to fracture of the intact glenoid was compared with groups with a varying number of anchor holes of different diameters, with anchors of different sizes and types, and with anchors perforating or not perforating the glenoid medial cortex. The percentage of force to fracture an intact specimen was used to identify relative risk of fracture: low risk >75%, moderate risk 75%-50%, and high risk <50% of intact load.

Results: The load to fracture of intact glenoids was 1276 ± 42 N. Loads decreased linearly as the number of holes drilled on the glenoid rim increased. Compared with the 1.6-mm group, the 3.0-mm group had significantly lower glenoid rim strength in specimens with 4, 5, and 7 holes (P = .013, .032, and .045, respectively). All-suture anchors in 1.6-mm holes did not alter the glenoid rim strength, and up to 5 anchors were associated with low risk of fracture. Load to fracture was significantly higher with 3.0-mm rigid core bioabsorbable anchors with 4 anchors (1081 ± 6 N) compared with the 4-hole condition (838 ± 107 N; P = .033). Perforating the glenoid medial cortex with five 1.6-mm anchors significantly weakened the glenoid rim to 58% of intact (P = .012). Perforating the medial cortex weakened the glenoid rim to 52% and 42% (P < .001 for both) of intact in the 3.0-mm 4-anchor and 5-anchor constructions, constituting moderate and high risk of fracture, respectively.

Conclusion: Up to five 1.6-mm all-suture anchors and four 3.0-mm bioabsorbable rigid-core anchors were associated with low risk of fracture of the glenoid rim. Smaller diameter all-suture anchors best preserved structural integrity of the glenoid rim, whereas tunnel enlargement and perforation of the glenoid medial cortex were associated with moderate or high risk of a postage-stamp fracture.

Level of evidence: Basic Science Study, Biomechanics.

BACK

Outcomes of primary Latarjet vs. revision Latarjet after prior surgery for anterior shoulder instability: a systematic review and meta-analysis

V. Jegatheesan, D. Patel

DOI: https://doi.org/10.1016/j.jse.2023.07.002

Background: Latarjet has become an increasingly popular treatment option for recurrent anterior shoulder instability. With the reported complication rates for primary Latarjet surgery, there are concerns about the complications of Latarjet as a revision surgery. It remains unclear if poor results after previous surgical management can be improved with revision Latarjet as well as with primary Latarjet. The aim of this systematic review and meta-analysis is to compare the outcomes of primary Latarjet and revision Latarjet for the treatment of anterior shoulder instability.

Methods: A systematic search was performed on 3 databases for studies that compared primary Latarjet with revision Latarjet used after failed arthroscopic stabilization or failed free bone block procedures. From the included studies, demographic data, clinical outcome scores, range of motion measurements, and postoperative complications were obtained.

Results: A total of 11 studies were included for data analysis. Compared with the primary Latarjet cohort, revision Latarjet cohorts had a higher infection rate (1.2% vs. 2.6%; RR 0.46, P = .039). The primary Latarjet group showed a greater rate of return to sport (89.7% vs. 80.5%; RR 1.12, P = .41) and less subjective feeling of instability (12.6% vs. 20.9%; RR 0.60, P = .085) compared with the revision Latarjet group; however, this was not statistically significant. There were no significant differences in complication rates, reoperation, recurrence, and range of motion between primary Latarjet and revision Latarjet groups. Clinical outcome scores such as visual analog scale and Rowe scores were not significantly different between the cohorts.

Conclusion: Based on the current evidence, primary Latarjet presents reduced infection rates but similar clinical outcome measures, overall complication, and range of motion measurements than revision Latarjet performed after failed prior operative treatment.

Level of evidence: Level III, Systematic Review.

BACK

Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA), Volume 31, Issue 12

Long-lasting decreased pain threshold negatively affects functional recovery after arthroscopic rotator cuff repair

H. Ueki, H. Yoshimura

DOI: https://doi.org/10.1007/s00167-023-07632-4

Purpose: The relationship between sensitization and postoperative function in patients undergoing arthroscopic rotator cuff repair (ARCR). The purpose of this study was to evaluate the effect of pre- and postoperative reductions in the pressure pain threshold (PPT) on postoperative clinical outcomes in patients with ARCR and investigate changes in PPT and clinical outcomes resulting from postoperative administration of weak opioids activating the central inhibitory system.

Methods: This retrospective study included patients who underwent primary ARCR, categorized into Group A (excellent/good Constant scores) and B (fair/poor Constant scores). In a complementary study, patients were randomized to the Control or Tramadol groups. Both studies evaluated the PPT, visual analog scale, active range of motion (ROM), Constant score, and retear rates pre-and postoperatively.

Results: In the primary study with 158 patients, those with poor clinical outcomes exhibited significantly lower PPT at the affected shoulder preoperatively at 3 months postoperatively compared to those with good outcomes. The PPT of the affected side was lower than that of the uninvolved side not only at 1 and 3 months but also preoperatively and at 6 months in the poor outcome group. In the secondary study involving 96 patients, weak opioid administration was associated with increased PPT for 3 months, improved ROM at 3 months postoperatively, and reduced postoperative pain 1 year postoperatively.

Conclusion: Patients experiencing poor postoperative clinical outcomes exhibited prolonged lowered PPT. Lowered PPT due to sensitization may adversely affect functional recovery and pain perception. Elevating PPT using weak opioids improved clinical outcomes during the acute perioperative period after ARCR.

Level of evidence: Level III.

BACK

Time required to achieve clinically significant outcomes after arthroscopic superior capsular reconstruction

H. Ben, C.H. Zeng

DOI: https://doi.org/10.1007/s00167-023-07649-9

Purpose: To investigate the time-dependent nature of clinically significant outcomes, including the minimal clinically important difference (MCID), substantial clinical benefit, and Patient Acceptable Symptomatic State (PASS) after arthroscopic superior capsular reconstruction, and the factors contributing to the achievement of early clinically significant outcomes.

Methods: Patients who underwent ASCR between March 2015 and September 2020 with complete preoperative and postoperative 6-month, 1-year, and 2-year patient-reported outcome measures (PROMs) were retrospectively analysed. Threshold values for MCID, substantial clinical benefit, and PASS were obtained from the previous literature for the PROMs. The time required to achieve clinically significant outcomes was calculated using Kaplan–Meier analysis. Multivariate Cox regression was performed to evaluate the variables predictive of an earlier or delayed achievement of MCID.

Results: Fifty-nine patients with a mean age of 64.5 ± 8.7 years old were included. The time of mean achievement of MCID, substantial clinical benefit, and PASS for VAS was 11.2 ± 0.9, 16.3 ± 1.1, and 16.6 ± 0.9 months, respectively. The time of mean achievement of MCID, substantial clinical benefit, and PASS for ASES was 13.2 ± 1.0, 16.8 ± 1.0, and 18.3 ± 0.9 months, respectively. The time of mean achievement of MCID, substantial clinical benefit, and PASS for the Constant score was 11.6 ± 0.9, 15.1 ± 1.0, and 14.7 ± 0.9 months, respectively. The time of mean achievement of MCID, substantial clinical benefit, and PASS for SANE was 14.4 ± 1.0, 16.1 ± 1.0, and 15.5 ± 0.8 months, respectively. Patients with a higher preoperative VAS score achieved an earlier MCID for VAS ($P = 0.014$). However, patients with a higher preoperative ASES and SANE scores achieved delayed MCID for ASES and SANE ($P = 0.026$, and $P < 0.001$, respectively).

Conclusion: Most patients achieved MCIDs around 1 year after arthroscopic superior capsular reconstruction. A higher preoperative VAS score favours faster MCID achievement, while higher preoperative ASES and SANE scores contribute to delayed MCID achievement.

Level of evidence: Level IV.

BACK

Arthroscopic Latarjet yields better union and prevention of instability compared to arthroscopic bony Bankart repair in shoulders with recurrent anterior instability: a systematic review

A. Billaud, L. Baverel

DOI: https://doi.org/10.1007/s00167-023-07655-x

Purpose: To determine whether arthroscopic Latarjet procedure or arthroscopic bony Bankart repair provide better outcomes in terms of rates of recurrent instability, non-union and complications, as well as clinical scores and range of motion.

Methods: An electronic literature search was performed using PubMed, Embase®, and Cochrane databases, applying the following keywords: “Arthroscopic bony Bankart” OR “Arthroscopic osseous Bankart” AND “Arthroscopic Latarjet” OR “Arthroscopic coracoid bone block”.

Results: The systematic search returned 1465 records, of which 29 were included (arthroscopic bony Bankart repair, n = 16; arthroscopic Latarjet, n = 13). 37 datasets were included for data extraction, on 1483 shoulders. Compared to arthroscopic Latarjet, arthroscopic bony Bankart repair had significantly higher instability rates (0.14; CI 0.10–0.18; vs 0.04; CI 0.02–0.06), significantly lower union rates (0.63; CI 0.28–0.91 vs 0.98; CI 0.93–1.00), and significantly lower pain on VAS (0.42; CI 0.17–0.67 vs 1.17; CI 0.96–1.38). There were no significant differences in preoperative glenoid bone loss, follow-up, complication rate, ROWE score, ASES score, external rotation, and anterior forward elevation between arthroscopic Latarjet and arthroscopic bony Bankart repair.

Conclusion: Compared to arthroscopic Latarjet, arthroscopic bony Bankart repair results in significantly (i) higher rates of recurrent instability (14% vs 4%), (ii) lower union rates (63% vs 98%), but (iii) slightly lower pain on VAS (0.45 vs 1.17). There were no differences in complication rates, clinical scores, or postoperative ranges of motion.

Level of evidence: Level IV.

BACK

American Journal of Sports Medicine (AJSM), Volume 51, Issue 114

Influence of Pain Sensitivity on Surgical Outcomes of Arthroscopic Rotator Cuff Repair: A Prospective Cohort Study

L.S. Yaari, S.J. Nicholas

DOI: https://doi.org/10.1177/03635465231208113

Background: The Pain Sensitivity Questionnaire (PSQ) has been found to be a valid tool, and PSQ scores have been shown to be predictive of outcomes after surgery for lumbar stenosis. The effect of pain sensitivity on outcomes of rotator cuff repair (RCR) surgery has not been examined.

Purpose: PSQ scores would be associated with surgical outcomes after arthroscopic RCR surgery.

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

Methods: Patients 18 to 80 years old scheduled for RCR were consecutively enrolled. Patients with glenohumeral arthritis grade ≥2 or RCR revision surgery were excluded. PSQ was completed preoperatively. The Disabilities of the Arm, Shoulder and Hand score and American Shoulder and Elbow Surgeons score were used as patient-reported outcome measurements (PROMs), and visual analog scale pain score was documented as well. Active shoulder external rotation (ER), internal rotation, and anterior forward elevation range of motion (ROM) were recorded. PROMs and ROM measurements were recorded preoperatively and at 3 months, 6 months, and 1 year after surgery. Rotator cuff tear size, type of repair, and concomitant procedures were documented. Patients were classified as having high or normal pain sensitivity based on PSQ scores.

Results: Of 100 enrolled patients, 38 patients were classified as having high pain sensitivity. Patients with high pain sensitivity had worse American Shoulder and Elbow Surgeons and Disabilities of the Arm, Shoulder and Hand scores preoperatively, 6 months postoperatively, and 1 year postoperatively ($P < .01$). From the preoperative assessment to 3 months postoperatively, PROMs improved more in patients with high versus normal pain sensitivity. However, for patients with high pain sensitivity, PROMs plateaued after 3 months but continued to improve for patients with normal pain sensitivity ($P < .01$). Visual analog scale pain scores were higher at all time points for patients with high pain sensitivity ($P < .05$). Preoperatively, patients with high pain sensitivity had restricted active ROM compared with patients who had normal pain sensitivity for anterior forward elevation, ER, and internal rotation ($P = .009$, $P = .012$, and $P = .006$, respectively). By 1 year after surgery, ER ROM was still restricted in patients with high pain sensitivity.

Conclusion: Pain sensitivity is an important factor influencing RCR outcomes. Patients with high pain sensitivity undergoing RCR showed less improvement in active ROM and worse PROMs after surgery compared with patients who had normal pain sensitivity. Preoperative PSQ may predict postoperative improvements.

BACK

Outcomes After Rotator Cuff Repair With Transverse Scapular Ligament Release in Patients With Severe Fatty Degeneration of the Infraspinatus

S.Y. Lee, D.M. Kang

DOI: https://doi.org/10.1177/03635465231208207

Background: In some large to massive rotator cuff tears (RCTs), fatty degeneration (FD) is more severe in the infraspinatus than the supraspinatus muscle, and in such cases, suprascapular neuropathy is highly suspected. Nerve release at the suprascapular notch might alleviate this problem.

Purpose: To evaluate the effects of the transverse scapular ligament (TSL) release in patients with large to massive RCTs with more severe FD of the infraspinatus than the supraspinatus.

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

Methods: Between September 2017 and January 2022, arthroscopic TSL release with rotator cuff repair was performed in patients with large to massive RCTs and more severe FD of the infraspinatus muscle than the supraspinatus muscle (TSL group). Cuff integrity, FD, and atrophy of cuff muscles were evaluated using preoperative and 1-year postoperative magnetic resonance imaging. In addition, results were compared with those of patients who did not undergo TSL release during arthroscopic large to massive rotator cuff repair (NTSL group).

Results: A total of 103 patients—20 in the TSL group and 83 in the NTSL group—were included. Group preoperative characteristics, including tear size and supraspinatus FD, were not significantly different, but infraspinatus FD (TSL vs NTSL; grade, 0-4, 0/0/5/10/5 vs 1/33/42/4/3) and atrophy (grade, 1-3. 3/9/8 vs 56/20/7) differed significantly ($P < .001$). Healing failure occurred in 13 of 20 (65%) patients in the TSL group and 30 of 83 (36%) patients in the NTSL group, which was a statistically significant difference ($P = .019$). Postoperatively, infraspinatus FD and atrophy were more severe in the TSL group than in the NTSL group ($P < .001$), and supraspinatus FD was more severe in the TSL group ($P = .029$). Seven patients in the TSL group achieved healing, but FD and atrophy of the supraspinatus and the infraspinatus showed no improvement in this group (all, $P > .05$).

Conclusion: In patients with more FD in the infraspinatus than the supraspinatus muscle, TSL release appeared to have no benefit for cuff healing or FD reversal in cuff muscles. The possibility of suprascapular nerve entrapment remains in patients with more FD in the infraspinatus than the supraspinatus, and this potential nerve problem is not properly addressed by TSL release alone.

BACK

Correlation of Glenoid Concavity With Surgical Failure After Arthroscopic Stabilization for Recurrent Anterior Shoulder Instability

I. Park, S.-J. Shin

DOI: https://doi.org/10.1177/03635465231203152

Background: Glenoid concavity compression by rotator cuff muscle contraction is one of the key mechanisms in the stability of the glenohumeral joint.

Purpose: The purpose of this study was to evaluate the effects of glenoid concavity, as represented by the bony shoulder stability ratio (BSSR) and other factors, including glenoid bone defect size, on the surgical failure of arthroscopic stabilization procedures for recurrent anterior shoulder instability. The authors also aimed to determine the critical value of BSSR. It was hypothesized that both glenoid concavity and glenoid bone defect size would be correlated with surgical failure, with glenoid concavity having a stronger correlation.

Study Design: Case-control study; Level of evidence, 3.

Methods: A total of 120 patients who underwent arthroscopic stabilization procedures for recurrent anterior shoulder instability were included. Patients with bony Bankart lesions were excluded to eliminate the postoperative effects of bony fragment restoration on the glenoid concavity. For each patient, variable factors including BSSR, glenoid bone defect size, presence of off-track Hill-Sachs lesions, and age at first dislocation were recorded. Chi-square analysis and Student t test were performed to analyze the effect of each variable on surgical failure. Multivariate logistic regression analysis was used to determine the combined effect of >2 variables on surgical failure. The critical value of BSSR was analyzed using a receiver operating characteristic curve.

Results: Nine patients (7.5%) had recurrent instability requiring revision surgery. BSSR (patients with recurrence, 18.6% ± 19.4%; patients without recurrence, 41.8% ± 10.5%; P = .01), glenoid bone defect size (17.5% ± 3.6% vs 11.7% ± 7.0%; P = .02), age at the time of first dislocation (18.8 ± 3.9 years vs 22.0 ± 6.5 years; P = .04), and number of suture anchors used (4.1 ± 0.3 vs 5.8 ± 1.6; P < .001) showed significant differences between patients with and without surgical failure. Multivariate logistic regression analysis revealed surgical failure to be correlated with BSSR (odds ratio, 0.849; P = .02) and the number of suture anchors used (odds ratio, 0.070; P = .03). The critical value of BSSR was 29.3% (area under the curve, 0.84; 95% CI, 0.67-1.00; P < .001; sensitivity, 78%; specificity, 93%).

Conclusion: Glenoid concavity is strongly correlated with surgical failure after arthroscopic stabilization procedures for anterior shoulder instability. The value of BSSR reflects shoulder instability caused by glenoid bone morphology more accurately than glenoid bone defect size.

BACK

Concomitant Biceps Tenodesis Does Not Portend Inferior Outcomes After Anterior Glenohumeral Stabilization

C.K. Green, J.P. Scanaliato

DOI: https://doi.org/10.1177/03635465231209731

Background: Military patients are known to suffer disproportionately high rates of glenohumeral instability as well as superior labrum anterior to posterior (SLAP) tears. Additionally, a concomitant SLAP tear is frequently observed in patients with anterior shoulder instability. Even though biceps tenodesis has been demonstrated to produce superior outcomes to SLAP repair in military patients with isolated SLAP lesions, no existing studies have reported on outcomes after simultaneous tenodesis and anterior labral repair in patients with co-existing abnormalities.

Purpose: To evaluate outcomes after simultaneous arthroscopic-assisted subpectoral biceps tenodesis and anterior labral repair in military patients younger than 40 years. We also sought to compare these outcomes with those after repair of an isolated anterior labral tear.

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

Methods: This study is a retrospective analysis of all military patients younger than 40 years from a single base who underwent arthroscopic anterior glenohumeral stabilization with or without concomitant biceps tenodesis between January 2010 and December 2019. Patients with glenoid bone loss of >13.5% were not eligible for inclusion. Outcome measures including the visual analog scale (VAS) for pain, the Single Assessment Numeric Evaluation (SANE), the American Shoulder and Elbow Surgeons (ASES) shoulder score, the Rowe instability score, and range of motion were administered preoperatively and postoperatively, and scores were compared between groups.

Results: A total of 82 patients met inclusion criteria for the study. All patients were active-duty service members at the time of surgery. The mean follow-up was 87.75 ± 27.05 months in the repair + tenodesis group and 94.07 ± 28.72 months in the isolated repair group ($P = .3085$). Patients who underwent repair + tenodesis had significantly worse preoperative VAS pain (6.85 ± 1.86 vs 5.02 ± 2.07, respectively; $P < .001$), ASES (51.78 ± 11.89 vs 62.43 ± 12.35, respectively; $P = .0002$), and Rowe (26.75 ± 7.81 vs 37.26 ± 14.91, respectively; $P = .0002$) scores than patients who underwent isolated repair. Both groups experienced significant improvements in outcome scores postoperatively ($P < .0001$ for all), and there were no statistically significant differences in postoperative outcome scores or range of motion between groups. There were no differences in the percentage of patients who achieved the minimal clinically important difference, substantial clinical benefit, and patient acceptable symptom state for the VAS pain, SANE, ASES, and Rowe scores between groups. Overall, 37 of the 40 (92.50%) patients in the repair + tenodesis group and 40 of the 42 (95.24%) patients in the isolated repair group returned to unrestricted active-duty military service ($P = .6045$). In addition, 38 (95.00%) patients in the repair + tenodesis group and 40 (95.24%) patients in the isolated repair group returned to preinjury levels of sporting activity ($P = .9600$). There were no significant differences in the number of failures, revision surgical procedures, or patients discharged from the military between groups ($P = .9421$, $P = .9400$, and $P = .6045$, respectively).

Conclusion: The findings of this study indicate that simultaneous biceps tenodesis and labral repair was a viable treatment option for the management of concomitant SLAP and anterior labral lesions in young, active military patients younger than 40 years.

BACK

Journal of Bone and Joint Surgery (JBJS), Volume 105, Issue 23+24

No Upper Extremity Abstracts

BACK

Clinical Orthopaedics and Related Research (CORR), Volume 481, Issue 12

No Upper Extremity Abstracts

BACK

Bone and Joint Journal (BJJ), Volume 105-B, issue 12

No Upper Extremity Abstracts

BACK

Lower Extremity

Arthroscopy, Volume 39, Issue 12

Transmuscular Quadratus Lumborum Block Does Not Provide Significant Benefit for Primary Hip Arthroscopy with Pericapsular Infiltration: A Randomized Control Trial

U.O. Umeh, D.J. Kaplan

DOI: https://doi.org/10.1016/j.arthro.2023.03.025

Purpose: To prospectively evaluate the effectiveness of the transmuscular quadratus lumborum block (TQLB) with pericapsular injection (PCI) versus PCI alone in patients undergoing hip arthroscopy for treatment of femoroacetabular impingement (FAI) in terms of perioperative pain control, as well as postoperative function in the postoperative anesthesia unit (PACU) setting.

Methods: Patients undergoing hip arthroscopy for FAI were prospectively randomized to receive 30 mL of 0.5% bupivacaine in a TQLB (n = 52) with PCI versus PCI alone (n = 51). The PCI included 20 mL of 0.25% bupivacaine given by the surgeon. All analyzed patients received general anesthesia. The primary outcome was postoperative pain scores assessed via the numerical rating scale (NRS) at 30 minutes postoperatively and immediately prior to discharge. Secondary outcomes were opioid utilization, expressed as morphine milligram equivalents (MMEs), PACU recovery time, quadriceps strength (assessed after completion of PACU phase 1 criteria), and adverse events (nausea/vomiting).

Results: Average age, body mass index, and preoperative pain assessment were not significantly different between groups. There were no differences in NRS pain scores preoperatively, 30 minutes postoperatively, or immediately prior to discharge between groups (P > .05). Intraoperative opioid consumption was significantly lower in the TQLB group (MME: 16.8 ± 7.9) compared to controls (MME 20.6 ± 8.0; P = .009). However, there was no difference in the total opioid consumption (P > .05). There was no significant difference in total PACU length of stay (minutes) between the treatment (133.0 ± 48) and control groups (123.5 ± 47; P > .05). Quadriceps weakness was not significantly different between groups (P = .2). There was no difference in the number of patients that experienced nausea or vomiting between the TQLB group and control group (13% vs 16%; P = .99). Neither group had any reported serious adverse events.

Conclusions: TQLB and PCI do not improve postoperative pain scores or total opioid consumption compared to PCI alone. TQLB may decrease the amount of intraoperative opiate usage.

Level of evidence: Level I, randomized controlled trial.

BACK

Timing From Symptom Onset to Hip Arthroscopy Does Not Affect Patient-Reported Outcome Measures for the Treatment of Femoroacetabular Impingement in Adolescent Patients

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DOI: https://doi.org/10.1016/j.arthro.2023.03.028

Purpose: To evaluate symptom duration and its relationship to patient-reported outcomes (PROs) and survivorship after hip arthroscopy in adolescents.

Methods: Patients ≤18 at time of primary hip arthroscopy for femoroacetabular impingement (FAI) between January 2011 and September 2018 were included. Exclusion criteria consisted of history of previous ipsilateral hip surgery, presence of osteoarthritis or dysplasia on preoperative radiographs, previous hip fracture, or history of slipped capital femoral epiphysis or Legg-Calve-Perthes disease. Minimum 2-year PROs (modified Harris Hip Score, Hip Outcome Score [HOS]–Activities of Daily Living, HOS–Sport Scale, Short Forms 12 [SF-12]), minimum clinically significant difference (MCID) and patient-acceptable symptom state (PASS) rates, and revision surgery rates were compared based on symptom duration.

Results: Two-year minimal follow-up was obtained for 111 patients (134 hips) (80%), including 74 females and 37 males with a mean age of 16.4 ± 1.1 (range 13.0-18.0). The mean symptom duration was 17.2 ± 15.2 months (range 43 days to 6.0 years). Ten patients (11 hips), 6 females (7 hips) and 4 males, required revision surgery at an average of 2.3 ± 1.0 years (range 0.9-4.3 years). At a mean follow-up of 4.8 ± 2.2 years (range 2-10 years), there were statistically significant improvements in all PROs ($P < .05$ for all). Symptom duration showed no significant correlation to post-operative scores (correlation coefficient range −0.162 to −0.078, $P > .05$ for all). Symptom duration ≤12 months versus >12 months or as a continuous variable was not a predictor for requiring revision surgery or achieving MCID/PASS (95% confidence interval crosses 1 for all).

Conclusions: In an adolescent cohort of symptomatic FAI patients who underwent hip arthroscopy, there is no difference in PRO measures when analyzing symptom duration by arbitrary time intervals or as a continuous variable.

Level of evidence: Level IV, case series.

BACK

Single Bundle Anterior Cruciate Ligament With Anterolateral Ligament Reconstruction Yields Similar Clinical and Radiographic Results at Minimum 2-Year Follow-Up Versus Double Bundle Anterior Cruciate Ligament Reconstruction: A Prospective Randomized Controlled Trial

S.-S. Lee, K.B. Kwon

DOI: https://doi.org/10.1016/j.arthro.2023.04.022

Purpose: To compare the clinical, radiographic, and second-look arthroscopic outcomes between double-bundle (DB) anterior cruciate ligament (ACL) reconstruction (DB group) and combined single-bundle (SB) ACL and anterolateral ligament (ALL) reconstruction (SB + ALL group) by a prospective randomized controlled trial.

Methods: From May 2019 to June 2020, 84 patients were enrolled in this study. Among them, 10 were lost to follow-up. Thirty-six and 38 patients were successfully allocated to the DB (mean follow up 27.3 ± 4.2 months) and SB + ALL groups (27.2 ± 4.5 months), respectively. The preoperative and postoperative Lachman test, pivot shift test, anterior translation on stress radiographs, KT-2000 arthrometer, Lysholm score, International Knee Documentation Committee score, and Tegner activity score were evaluated and compared. Graft continuity was evaluated using postoperative magnetic resonance imaging (MRI) (32 and 36 patients underwent MRI in the DB and SB + ALL groups at 7.4 ± 3.2 and 7.5 ± 2.9 months after surgery, respectively), and second-look examinations (second-look examination and tibial screw removal were performed concomitantly when patients (1) had tibial screw-related irritation or (2) needed the screws removed, 28 and 23 patients underwent examinations in the DB and SB + ALL groups at 24.0 ± 6.8 and 24.9 ± 8.1 months after surgery, respectively). All measurements were compared between the groups.

Results: Postoperative clinical outcomes significantly improved in both groups. (All variables showed $P < .001$) No statistically different outcomes were found between the 2 groups. Additionally, postoperative graft continuity on MRI and second-look examinations were not different between the 2 groups.

Conclusions: The DB and SB + ALL groups showed similar postoperative clinical, radiographic, and second-look arthroscopic outcomes. Both groups showed excellent postoperative stability and clinical outcomes compared with the preoperative measurements.

Level of evidence: Level II, randomized controlled trial.

BACK

Combined Anterior Cruciate Ligament and Anterolateral Ligament Reconstruction Decreases Passive Anterior Tibial Subluxation Compared With Isolated Anterior Cruciate Ligament Reconstruction Despite Similar Rotational Stability and Clinical Outcomes

H.Y. Yang, J.H. Cheon

DOI: https://doi.org/10.1016/j.arthro.2023.04.010

Purpose: To analyze the effect of augmenting a hamstring autograft anterior cruciate ligament reconstruction (ACLR) with an anterolateral ligament reconstruction (ALLR) on a primary outcome of passive anterior tibial subluxation (PATS) and a secondary outcome of the clinical outcomes.

Methods: ACL-injured patients who underwent primary ACLR between March 2014 and February 2020 at our center were enrolled. Patients who underwent combined procedures (ACLR + ALLR) were matched in a 1:1 propensity ratio to patients who underwent ACLR only. We evaluated PATS, knee stability (side-to-side laxity difference, pivot-shift test), and patient-reported outcome measures (PROMs) after the procedure and documented complications.

Results: From an initial cohort of 252 patients with a minimum follow-up period of 2 years (48.4 ± 16.6 months), 35 matched pairs were included, and 17 patients (48.6%) in each group underwent second-look arthroscopy. The combined ACLR + ALLR group showed significantly better improvement of PATS in the lateral compartments than the isolated ACLR group ($P = .034$). There were no significant differences between the groups regarding knee stability (side-to-side laxity difference, pivot-shift test), PROMs, complications, and second-look arthroscopic findings (all $P > .05$). Moreover, the proportions of patients who achieved the minimal clinically important difference in PROMs were not different between groups.

Conclusions: The combined ACLR + ALLR procedure was associated with a mean improvement in anterior tibial subluxation for the lateral compartment that was 1.2 mm better than an isolated ACLR procedure, despite its lack of clinical significance.

Level of evidence: Level III, cohort study.

BACK

Over 50% of Studies Report Low-Back Pain Is Associated With Worse Outcomes After Hip Arthroscopy When Compared With a Control Group: A Systematic Review

M.S. Lee, R.J. Mahatme

DOI: https://doi.org/10.1016/j.arthro.2023.05.004

Purpose: To review outcomes of patients with low-back pathology undergoing primary hip arthroscopy for the treatment of femoroacetabular impingement (FAI) syndrome.

Methods: The PubMed, Cochrane Trials, and Scopus databases were queried in June 2022 to conduct this systematic review using the following terms: ("hip" OR "femoroacetabular impingement") AND ("arthroscopy" OR "arthroscopic") AND ("spine" OR "lumbar" OR "sacral" OR "hip-spine" OR "back") AND ("outcomes"). Articles were included if they reported on patient-reported outcomes (PROs) and/or clinical benefit of patients undergoing hip arthroscopy with concomitant low-back pathology. The review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) criteria. Case reports, opinion articles, review articles, and technique articles were excluded from this study. Forest plots were created to analyze preoperative and postoperative outcomes among patients with low-back pathology.

Results: Fourteen studies were included in the review. There were 750 hips with low-back pathology and FAI (hip-spine syndrome) and 1,800 hips with only FAI (no hip-spine syndrome). All 14 studies reported PROs. In 4 studies in the group with hip-spine syndrome and 8 studies in the group with FAI without low-back pathology, the respective cohorts were reported to achieve the minimal clinically important difference in at least 1 PRO at a rate of 80%. Eight studies reported that patients with low-back pathology were associated with inferior outcomes or clinical benefit compared with patients without low-back pathology.

Conclusions: Patients undergoing primary hip arthroscopy with concomitant low-back pathology can expect favorable outcomes, but outcomes are superior in patients undergoing hip arthroscopy for FAI alone compared with FAI with concomitant low-back pathology.

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

BACK

Journal of Shoulder and Elbow Surgery (JSES), Volume 32, issue 12

No Lower Extremity Abstracts

BACK

Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA), Volume 31, Issue 12

Single-incision bone bridge lateral meniscus allograft transplantation: preserving neurovascular safety with promising results for posterior horn distortion and graft maturation

J. Lee, D.W. Lee

DOI: https://doi.org/10.1007/s00167-023-07641-3

Purpose: This study aimed to investigate the graft maturation and safety of single-incision bone bridge lateral meniscus allograft transplantation (LMAT).

Methods: This study involved 35 patients who underwent LMAT between 2019 and 2020. All patients completed at least 2 years of follow-up (median 34 months; range 24–43) and underwent preoperative magnetic resonance imaging (MRI) to assess the trajectory safety of the leading suture passer and all-inside suture instrument (Fast-Fix). Graft status was evaluated according to the Stoller classification.

Results: Based on preoperative MRI measurements, the expected trajectory of the leading suture passer did not transect the common peroneal nerve (CPN), with the closest distance between the expected trajectory and CPN being 1.4 mm and the average distance being 6.8 ± 3.2 mm. The average distance from the lateral meniscal posterior horn (LMPH) to the popliteal neurovascular bundle (PNVB) was 7.4 ± 2.6 mm and the nearest was 4.8 mm. The expected trajectory of the all-inside suturing instrument did not transect the PNVB when the distance was at least 12 mm, from the most lateral margin of the posterior cruciate ligament (PCL). Grade 3 signal intensity in the posterior third of the allograft on MRI was observed in 6 of 35 (17.1%) patients. Amongst the grade 3 signal intensities in the posterior one-third of the allografts, 3 of the 35 (8.5%) LMATs had a distorted contour.

Conclusion: The single-incision bone bridge LMAT technique introduced in this study is a convenient approach that preserves neurovascular safety and provides good results for the distortion of the posterior horn of the allograft and graft maturation. The safety zone for the penetrating devices during the procedure extended from 12 mm laterally to the most lateral margin of the PCL to the medial margin of the popliteal hiatus.

Level of evidence: Level IV.

BACK

The apex of the deep cartilage is a stable landmark to position the femoral tunnel during remnant-preserving anterior cruciate ligament reconstruction

K. Zhang, Q. Meng

DOI: https://doi.org/10.1007/s00167-023-07656-w

Purpose: The aim of this retrospective cohort study was to investigate whether the apex of the deep cartilage (ADC) could help surgeons position the femoral tunnel accurately in remnant-preserving anterior cruciate ligament (ACL) reconstruction (ACLR).

Methods: In the current retrospective cohort study, a total of 134 patients who underwent ACLR between 2016 and 2020 were included. The femoral tunnel position was located using ADC as the landmark. The patients were divided into two groups: the remnant-preserving group (RP group, n = 68) underwent remnant-preserving ACLR, and the nonremnant group (NRP group, n = 66) underwent traditional ACLR with remnant removal. Postoperatively, the femoral tunnel position was evaluated on 3D-CT. The length from the ADC to the shallow cartilage margin (L) and to the centre of the femoral tunnel (l) and the length from the centre of the femoral tunnel to a low cartilage ratio in the direction from high to low (H) were measured.

Results: The l/L values of the RP and NRP groups were both 0.4 ± 0.1 after rounding (n.s.), and the H values were 9.3 ± 1.6 mm and 9.3 ± 1.7 mm, respectively (n.s.). There was no significant difference in l/L or H between the two groups. The estimation plot also showed high consistency of H and l/L of the two groups. The inter- and intraobserver reliability of l, L, l/L, and H were almost perfect.

Conclusions: The apex of the deep cartilage is a good landmark for positioning the femoral tunnel in remnant-preserving ACL reconstruction.

Level of evidence: Level III.

BACK

Arthroscopic all-inside ligament repair has similar or superior clinical outcomes compared to open repair for chronic ankle instability without concomitant intra-articular pathology at 5 years follow-up

M. Guelfi, R. Baalbaki

DOI: https://doi.org/10.1007/s00167-023-07621-7

Purpose: Open ligament repair is widely considered the gold standard treatment for chronic ankle instability. Nevertheless, arthroscopic treatment of ankle instability has gained popularity becoming the preferred technique for many surgeons. This study aimed to compare the clinical outcomes of all-inside arthroscopic versus open lateral ligament repair for chronic ankle instability at 5 years follow-up.

Methods: Ninety consecutive patients were surgically treated for chronic ankle instability without concomitant intra-articular pathology observed on MRI: 41 patients [median age 28 (range 15–54) years] underwent an open lateral ligament repair (OLR); 49 patients [median age 30 (range 19–47) years] underwent an all-inside arthroscopic ligament repair (ALR). Functional outcomes using the Foot Functional Index (FFI), the American Orthopaedic Foot and Ankle Society (AOFAS) Hindfoot Score, and the Foot and Ankle Ability Measure-Sports Subscale (FAAM-SS) were assessed preoperatively and at the latest follow-up. At the latest follow-up, the satisfaction rate and complications were also recorded.

Results: The mean follow-up was 58 ± 17.6 (range 47–81) months. In both groups FFI, AOFAS and FAAM-SS score significantly improved compared to preoperative values ($p < 0.001$). There was no statistically significant difference in postoperative outcomes between groups in the AOFAS (n.s) and FAAM-SS (n.s), but the FFI results were significantly better in the ALR group ($p < 0.05$). No major complications were reported in either group.

Conclusion: Open and arthroscopic ligament repair to treat chronic ankle instability without concomitant intra-articular pathology produced excellent comparable clinical outcomes at 5 years follow-up. The complications were minimal in both study groups with no significant differences in AOFAS and FAAM-SS scores. However, arthroscopic repair showed significantly better results on the FFI. Therefore, when treating chronic lateral ankle instability, surgeons should consider arthroscopic ligament repair.

Level of evidence: Level III.

BACK

Avulsion fracture is associated with more pain after anatomic repair procedure for ATFL injury at the talar side

S. Xiong, X. Xie

DOI: https://doi.org/10.1007/s00167-023-07658-8

Purpose: To evaluate the clinical outcomes of anatomic repair procedure for chronic anterior talofibular ligament (ATFL) injury at the talar side, and to compare the outcomes between patients with and without concomitant avulsion fractures. It was hypothesized that anatomic repair procedure could produce similarly satisfactory outcomes for those two groups.

Methods: Thirty-nine consecutive patients with chronic ATFL injuries at the talar side who underwent anatomic repair procedure at the department of sports medicine at Peking University Third Hospital between 2013 and 2018, were retrospectively evaluated. The pain visual analogue scale (VAS), American Orthopaedic Foot & Ankle Society (AOFAS) score, Tegner score, and Foot & Ankle Outcome Score (FAOS) were recorded as the primary outcomes. Time to return to sports (RTS), surgical satisfaction, deficiency of ankle range of motion (ROM), recurrent sprain, and postoperative complications were recorded as the secondary outcomes. Outcomes were compared between patients with (Group A, 16 cases) and without (Group B, 23 cases) concomitant avulsion fractures.

Results: The mean follow-up time was 79.4 ± 17.0 and 76.6 ± 18.5 months for Group A and B, respectively. VAS, AOFAS, Tegner, FAOS, and all subscale scores of FAOS were significantly improved in both groups at the final follow up. Patients in group A had inferior postoperative VAS, AOFAS, FAOS, and pain score of FAOS compared to group B (1.1 ± 1.1 vs. 0.4 ± 0.5, 89.1 ± 10.1 vs. 95.2 ± 5.2, 87.2 ± 7.2 vs. 91.5 ± 4.1, and 88.4 ± 11.3 vs. 96.7 ± 3.5, respectively).The mean time to RTS, rate of satisfaction and recurrent sprain had no significant differences between group A and B (6.1 ± 2.8, 93.8%, and 18.8% vs. 5.2 ± 2.2, 100.0%, and 13.0%, respectively), and the rate of ROM deficiency was significantly higher in group A (37.5 vs. 8.7%). Avulsion fracture was identified as an independent risk factor for inferior pain score of FAOS.

Conclusion: Anatomic repair procedure for chronic ATFL injuries at the talar side produces favourable results for patients with and without avulsion fractures at 5 to 10 years follow-up, however, avulsion fracture is associated with more pain.

Level of evidence: Level III.

BACK

American Journal of Sports Medicine (AJSM), Volume 51, Issue 114

Endoscopic Tendon Compression Bridge Technique for Repair of Partial-Thickness Gluteus Medius Tears With Concomitant Arthroscopy for Labral Tears: Minimum 2-Year Outcomes With Benchmark Control Group

O.N. Prabhavalkar, A.D. Carbone

DOI: https://doi.org/10.1177/03635465231204314

Background: The transtendinous technique has been used to treat partial-thickness gluteus medius tears in the setting of concomitant arthroscopy for labral tears. The tendon compression bridge technique for gluteus medius repair has been developed as an alternative method, providing several advantages; however, comparative studies between the 2 techniques are lacking in the literature.

Purpose: (1) To evaluate the short-term patient-reported outcomes (PROs) of the tendon compression bridge technique and (2) to compare these findings with short-term PROs of the transtendinous technique.

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

Methods: Data were prospectively collected on patients who were followed for a minimum of 2 years after an endoscopic tendon compression bridge procedure for gluteus medius repair in the setting of concomitant hip arthroscopy for labral tears. The following PROs were collected preoperatively and postoperatively: modified Harris Hip Score, Nonarthritic Hip Score, Hip Outcome Score–Sports Specific Subscale, visual analog scale score for pain, and the International Hip Outcome Tool. Clinical outcomes were assessed using the Patient Acceptable Symptom State, minimal clinically important difference, and maximum outcome improvement satisfaction threshold. Patients were propensity matched 1:1 to a cohort that underwent gluteus medius repair using the endoscopic transtendinous technique with concomitant hip arthroscopy.

Results: A total of 48 hips (48 patients) that met inclusion criteria (age, 53.3 ± 9.8 years; 92% female; body mass index, 26.7 ± 4.6), with a mean follow-up of 38.5 ± 15.7 months, were matched to 48 hips (46 patients) that underwent gluteus medius repair using the transtendinous technique. Both groups demonstrated significant improvement from preoperative scores to latest follow-up ($P < .05$). Mean magnitude of improvement and latest follow-up scores were not significantly different between the tendon compression bridge group and the transtendinous group, and the groups demonstrated similar favorable rates of achieving Minimal Clinically Important Difference (79% vs 79%, respectively), Patient Acceptable Symptom State (73% vs 73%, respectively), and Maximum Outcome Improvement Satisfaction threshold (65% vs 58%, respectively) for modified Harris Hip Score ($P > .05$). Patient satisfaction between groups was similar (8.1 ± 2.2 vs 7.7 ± 2.7, respectively) ($P = .475$).

Conclusion: At minimum 2-year follow-up, the endoscopic tendon compression bridge technique for partial-thickness gluteus medius tears, when performed with concomitant hip arthroscopy, was associated with significant improvement in functional outcomes. These postoperative results were comparable with those of a matched cohort that underwent the endoscopic transtendinous technique for partial-thickness gluteus medius tears, suggesting that the tendon compression bridge technique for gluteus medius repair is an effective treatment option for partial-thickness gluteus medius tears.

BACK

Defining Thresholds and Predictors for Achieving the Patient Acceptable Symptom State for Patient-Reported Outcome Measures After Revision Hip Arthroscopy

D.R. Maldonado, T. George

DOI: https://doi.org/10.1177/03635465231209320

Background: The Patient Acceptable Symptom State (PASS) after primary hip arthroscopy has been determined; nonetheless, the PASS still needs to be defined for revision hip arthroscopy.

Purpose: To define minimum 2-year follow-up PASS thresholds for the modified Harris Hip Score (mHHS), Nonarthritic Hip Score (NAHS), Hip Outcome Score–Sports Specific Subscale (HOS-SSS), visual analog scale (VAS) for pain, and International Hip Outcome Tool-12 (iHOT-12) after revision hip arthroscopy, and to identify predictors of achieving the PASS.

Study Design: Case-control study; Level of evidence, 3.

Methods: Data were prospectively collected and retrospectively reviewed for all patients who underwent revision hip arthroscopy between April 2017 and July 2020. Patients were included if they had baseline and minimum 2-year follow-up scores for the mHHS, NAHS, HOS-SSS, VAS for pain, and iHOT-12. PASS was calculated using the anchor-based method. Receiver operating characteristic curve analysis was used to determine the thresholds for the PASS. A multivariate logistic regression was used to identify predictors for achieving the PASS.

Results: A total of 318 patients who underwent revision hip arthroscopy met the inclusion criteria. Of those patients, 292 (91.8%) had baseline and minimum 2-year follow-up. Of this group, 68 patients (72.1% female and 27.9% male; mean age, 32.9 years) answered the PASS anchor question. Achievement PASS rates were 58.8%, 41.2%, 52.9%, 60.3%, and 52.9% for the mHHS, NAHS, HOS-SSS, VAS, and iHOT-12, respectively. The area under the curve (AUC) values for the PASS for mHHS, NAHS, HOS-SSS, VAS, and iHOT-12 were 0.912, 0.888, 0.857, 0.903, and 0.871, respectively, indicating excellent discrimination. The PASS for the mHHS was 76 (sensitivity, 0.809; specificity, 0.905), for the NAHS was 86.3 (sensitivity, 0.660; specificity, 1), for the HOS-SSS was 64.3 (sensitivity, 0.745; specificity, 0.905), for the VAS was 3 (sensitivity, 0.830; specificity, 0.905), and for the iHOT-12 was 64.3 (sensitivity, 0.745; specificity, 0.905). Body mass index (BMI) was identified as a significant predictor of achieving PASS for the NAHS (OR, 0.967; 95% CI, 0.940-0.996; P = .027), as patients with a BMI ≤25.4 had 1.03 times higher odds ratio of achieving PASS for the NAHS.

Conclusion: After revision hip arthroscopy, the minimum 2-year follow-up PASS thresholds for the mHHS, NAHS, HOS-SSS, VAS for pain, and iHOT-12 were 76, 86.3, 64.3, 3, and 64.3, respectively. The odds ratio of achieving PASS for the NAHS was 1.03 times higher for patients with a BMI ≤25.4.

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Journal of Bone and Joint Surgery (JBJS), Volume 105, Issue 23+24

No Lower Extremity Abstracts

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Clinical Orthopaedics and Related Research (CORR), Volume 481, Issue 12

No Lower Extremity Abstracts

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Bone and Joint Journal (BJJ), Volume 105-B, issue 12

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Arthroscopy, Volume 39, Issue 12

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Journal of Shoulder and Elbow Surgery (JSES), Volume 32, issue 12

Surgeon idiosyncrasy is a key driver of cost in arthroscopic rotator cuff repair: a time-driven activity-based costing analysis

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DOI: https://doi.org/10.1016/j.jse.2023.05.008

Background: Delivering high-value orthopedic care requires optimizing value, defined as health outcomes achieved per dollar spent. Published literature is stippled with inaccurate proxies for cost, including negotiated reimbursement rates, fees paid, or listed prices. Time-driven activity-based costing (TDABC) offers a more robust and accurate approach to calculating cost, including shoulder care. In the present study, we sought to determine the drivers of total cost in arthroscopic rotator cuff repair (aRCR) using TDABC.

Methods: Consecutive patients undergoing aRCR at multiple sites associated with a large urban health care system between January 2019 and September 2021 were identified. Total cost was determined using TDABC methodology. The episode of care was defined by 3 phases: preoperative, intraoperative, and postoperative care. Patient, procedure, rotator cuff tear morphology, and surgeon characteristics were collected. Bivariate analysis was performed across all characteristics between high-cost (top decile) and all other aRCRs. Multivariable linear regression was used to identify the key cost drivers.

Results: In total, 625 aRCRs performed by 24 orthopedic surgeons and 572 aRCRs performed by 13 orthopedic surgeons were included in the bivariate and multivariable linear regression analyses, respectively. By TDABC analysis, total aRCR cost varied 6-fold (5.9×) from least to most costly. Intraoperative costs accounted for 91% of average total cost, followed by preoperative costs and postoperative costs (6% and 3%, respectively). Biologic adjuncts (regression coefficient [RC] 0.54, 95% confidence interval [CI] 0.49-0.58, $P < .001$) and surgeon idiosyncrasy (RC of highest-cost surgeon 0.50, 95% CI 0.26-0.73, $P < .001$) were the major cost drivers in aRCR. Patient age, comorbidities, number of rotator cuff tendons torn, and revision surgery were not significantly associated with total cost. The amount of tendon retraction (RC 0.0012, 95% CI 0.000020-0.0024, $P = .046$), average Goutallier grade (RC 0.029, 95% CI 0.0086-0.049, $P = .005$), and the number of anchors used (RC 0.039, 95% CI 0.032-0.046, $P < .001$) were also significantly associated with cost, but with far smaller effect sizes.

Discussion and Conclusion: Episode of care costs vary nearly 6-fold in aRCR and are almost exclusively dictated by the intraoperative phase. Tear morphology and repair technique contribute to cost, although the largest cost drivers of aRCR are the use of biologic adjuncts and surgeon idiosyncrasy, defined as something a surgeon does or does not do that impacts total cost and is not controlled for in the current analysis. Future work should seek to better delineate what these surgeon idiosyncrasies may represent.

Level of evidence: Level IV, Economic Study.

BACK

Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA), Volume 31, Issue 12

A spaced retraining schedule with 2-day interval improves the acquisition and retention of simulation-based basic arthroscopic skills

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DOI: https://doi.org/10.1007/s00167-023-07618-2

Purpose: To compare the effect of three differently spaced retraining schedules (1-day, 2-day, and 1-week intervals) on the acquisition of basic arthroscopic skills and skill retention after 3 months.

Methods: Thirty orthopaedic residents without arthroscopic experience were enrolled in a double-blind, randomised, parallel-controlled trial. Spaced retaining schedules were divided into massed training and retraining phases. Participants were required to obtain perfect scores in all tasks on the simulator in the massed training phase, followed by a pretest to evaluate the training effect. During the retraining phase, participants were randomly assigned to Groups A (1-day interval), B (2-day interval) or C (1-week interval). A posttest was used to evaluate the effect of different retraining patterns. Follow-up evaluations were conducted at 1 week, 1 month and 3 months after the completion of spaced retraining schedules to measure skill retention. One-way ANOVA and paired-sample t tests were used for statistical analysis.

Results: Significant between-group differences in diagnostic arthroscopy (137.0 ± 24.8 vs. 140.1 ± 21.3 vs. 175.3 ± 27.4 s, $P(A-C) = 0.005$, $P(B-C) = 0.010$) and loose body removal (193.1 ± 33.9 vs. 182.0 ± 32.1 vs. 228.7 ± 42.9 s, $P(B-C) = 0.025$) completion times were observed. No significant differences were found in other posttest metrics. An assessment of skill retention after the 3-month follow-up (Evaluation 3) showed significant differences in diagnostic arthroscopy completion time (202.5 ± 53.3 vs. 172.0 ± 27.2 vs. 225.5 ± 42.1 s, $P(B-C) = 0.026$). No significant differences were found in other Evaluation 3 metrics.

Conclusion: The 2-day retraining schedule was the most effective for the acquisition and retention of basic arthroscopic skills and could be integrated into arthroscopic skills curricula. After a 3-month follow-up, residents who followed this schedule showed better skill retention than those who followed the 1-week interval schedule.

Level of evidence: Level I.

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American Journal of Sports Medicine (AJSM), Volume 51, Issue 114

No Miscellaneous Abstracts

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Journal of Bone and Joint Surgery (JBJS), Volume 105, Issue 23+24

No Miscellaneous Abstracts

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Clinical Orthopaedics and Related Research (CORR), Volume 481, Issue 12

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Bone and Joint Journal (BJJ), Volume 105-B, issue 12

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