



**Issue 119.3 Arthroscopy, July 2024**

**Founder & Managing Director**

R.S. van Onkelen

**Managing Director & Webmaster**

J.A. Lafranca



**Nederlandse Vereniging  
voor Arthroscopie**

**Editor-in-Chief**

M.A.M. Vesseur

**Editors**

I.M. Dorling

D.B.W. Gieling

L.J.W. Vincken

R.H.G.M. De Ree

D.W.P.M. Laane

T.E.E. Schiepers

**Website** [www.4b.4abstracts.nl](http://www.4b.4abstracts.nl)

**Part of** [www.4abstracts.com](http://www.4abstracts.com)

**4B Arthroscopy founders:** D.P. ter Meulen, B. Lubberts

**Contact** [4@erasmusmc.nl](mailto:4@erasmusmc.nl)

**Manual** The titles in the contents are hyperlinks. Use these hyperlinks and the back button underneath every abstract to navigate more easily through the document. All abstracts have a hyperlink to the website of the article. Use this hyperlink to view the article in full-text. Articles can only be accessed in full-text through a personal account or the account of an institution.

[BACK](#)

---

## Content July

### Upper Extremity

Arthroscopy

Volume 40, issue 7

- Low Recurrence of Instability and Satisfying Patient-Reported Outcomes Following Various Surgical Treatments of Reverse Hill–Sachs Lesions in the Setting of Posterior Instability: A Systematic Review

Journal of Shoulder and Elbow Surgery (JSES)

Volume 33, issue 7

- All-endoscopic approach for distal biceps tendon pathology: analysis of long-term outcomes in partial and complete ruptures

Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA)

Volume 32, Issue 7

- No Upper Extremity Abstracts

American Journal of Sports Medicine (AJSM)

Volume 52, Issue 8

- Arthroscopic Bankart Repair With Remplissage in Anterior Shoulder Instability Results in Fewer Redislocations Than Bankart Repair Alone at Medium-term Follow-up of a Randomized Controlled Trial
- Supraspinatus Muscle and Tendon Characteristics 1 Year After Surgical Rotator Cuff Repair Compared With Contralateral Shoulder: Data From the CUT-N-MOVE Trial

Journal of Bone and Joint Surgery (JBJS)

Volume 106, Issue 13+14

- No Upper Extremity Abstracts

Clinical Orthopaedics and Related Research (CORR)

Volume 482, Issue 7

- No Upper Extremity Abstracts

Bone and Joint Journal (BJJ)

Volume 106-B, issue 7

- No Upper Extremity Abstracts

### Lower Extremity

Arthroscopy

Volume 40, issue 7

- Secondary Hip Labral Reconstruction Yields Inferior Minimum 2-Year Functional Outcomes to Primary Reconstruction Despite Comparable Intraoperative Labral Characteristics
- Prior Diagnosis of Opioid-Related Disorder Is Associated With Higher Medical Resource Utilization Following Primary Hip Arthroscopy: A National Database Study
- Suture Tape Augmentation Improves Posterior Stability After Isolated Posterior Cruciate Ligament Reconstruction Using Hamstring Tendon Autograft With Single-Bundle Transtibial Technique
- Inconsistent Return to Sport Despite Improved Outcomes After Re-revision Anterior Cruciate Ligament Reconstruction: An Updated Systematic Review

- Reporting Bias in the Form of Positive Spin Is Highly Prevalent in Abstracts of Systematic Reviews on Primary Repair of the Anterior Cruciate Ligament
- Anterior Cruciate Ligament Repair Augmented With Dynamic Intraligamentary Stabilization Is Equivalent to Hamstring Autograft Reconstruction at Short- and Mid-Term Follow-Up: A Systematic Review
- Functional Return-to-Sport Testing Demonstrates Inconsistency in Predicting Short-Term Outcomes Following Anterior Cruciate Ligament Reconstruction: A Systematic Review

Journal of Shoulder and Elbow Surgery (JSES)

Volume 33, issue 7

- No Lower Extremity Abstracts

Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA)

Volume 32, Issue 7

- Risk factors for prolonged opioid consumption following hip arthroscopy: A secondary analysis of the femoroacetabular Impingement RandomiSed controlled Trial and embedded cohort study

American Journal of Sports Medicine (AJSM)

Volume 52, Issue 8

- ACL Reconstruction Using Quadrupled Semitendinosus Versus Double-Stranded Semitendinosus and Gracilis Autograft: 2-Year Results From a Prospective Randomized Controlled Study
- A High Grade of Postoperative Knee Laxity Is Associated With an Increased Hazard of Revision Surgery: A Cohort Study of 4697 Patients With Primary ACL Reconstruction
- Secondary Meniscectomy Rates and Risk Factors for Failed Repair of Ramp Lesions Performed at the Time of Primary ACL Reconstruction: An Analysis of 1037 Patients From the SANTI Study Group
- 10-Year Survival and Clinical Improvement of Meniscal Allograft Transplantation in Early to Moderate Knee Osteoarthritis
- Short-term Outcomes After Hip Arthroscopic Surgery in Patients Participating in Formal Physical Therapy Versus a Home Exercise Program: A Prospectively Enrolled Cohort Analysis
- Predictors of Clinical Outcomes After Hip Arthroscopy: 10-Year Follow-up Analysis of 1038 Patients
- Long-term Survivorship and Outcomes of Patients Without Dysplasia Undergoing Capsular Repair During Primary Hip Arthroscopy for Femoroacetabular Impingement Syndrome
- Combining an Anterolateral Complex Procedure With Anterior Cruciate Ligament Reconstruction Reduces the Graft Reinjury Rate and Improves Clinical Outcomes: A Systematic Review and Meta-analysis of Randomized Controlled Trials
- Primary Hip Arthroscopy in Patients With Acetabular Dysplasia: A Systematic Review of Published Clinical Outcomes at Minimum 5-Year Follow-up

Journal of Bone and Joint Surgery (JBJS)

Volume 106, Issue 13+14

- No Lower Extremity Abstracts

Clinical Orthopaedics and Related Research (CORR)

Volume 482, Issue 7

- No Lower Extremity Abstracts

[BACK](#)

Bone and Joint Journal (BJJ)

Volume 106-B, issue 7

- No Lower Extremity Abstracts

**Miscellaneous**

Arthroscopy

Volume 40, issue 7

- No Miscellaneous Abstracts

Journal of Shoulder and Elbow Surgery (JSES)

Volume 33, issue 7

- No Miscellaneous Abstracts

Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA)

Volume 32, Issue 7

- No Miscellaneous Abstracts

American Journal of Sports Medicine (AJSM)

Volume 52, Issue 8

- No Miscellaneous Abstracts

Journal of Bone and Joint Surgery (JBJS)

Volume 106, Issue 13+14

- No Miscellaneous Abstracts

Clinical Orthopaedics and Related Research (CORR)

Volume 482, Issue 7

- No Miscellaneous Abstracts

Bone and Joint Journal (BJJ)

Volume 106-B, issue 7

- No Miscellaneous Abstracts

---

## Upper extremity

*Arthroscopy, Volume 40, Issue 7*

### **Low Recurrence of Instability and Satisfying Patient-Reported Outcomes Following Various Surgical Treatments of Reverse Hill–Sachs Lesions in the Setting of Posterior Instability: A Systematic Review**

J.P. van der List, M.A. Glover

DOI: <https://doi.org/10.1016/j.arthro.2023.12.012>

**Purpose:** To systematically review the literature and report the outcomes of various surgical treatments for reverse Hill–Sachs lesions (RHSL) in the setting of posterior shoulder instability.

**Methods:** Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines were followed. All studies assessing outcomes of surgical treatment of RHSL from inception to January 2023 were identified in PubMed, Embase, and Cochrane Library. Inclusion criteria consisted of studies reporting outcomes, minimum mean 1-year follow-up, and minimum Level IV evidence. Outcomes were assessed using Forest plots with random effects models using R software.

**Results:** A total of 29 studies consisting of 291 patients were included with a mean age of 42 years (range 16-88 years), 87% male gender, and mean follow-up of 4.5 years. The mean size of impacted or affected cartilage was 35%, and time from injury to surgery was mean 15 weeks. Nearly all studies were Level IV evidence, and quality of studies was low. Random effect models were performed, and data are presented as range. A low incidence of instability was noted for all surgical techniques with good patient-reported outcome measures. Most studies reported outcomes of the modified McLaughlin procedure (13 studies, 126 patients) with overall Constant-Murley Score of 65 to 92. Trends were seen towards better Constant-Murley Score and external rotation with a shorter delay between injury, and when arthroscopic and joint preserving treatments were performed.

**Conclusions:** This systematic review showed low rates of instability recurrence, reproducible range of motion, and favorable patient-reported outcome measures were reported following all treatments for RHSLs with posterior instability. There was a significant association between better outcomes and a shorter delay between injury and surgery. The level of evidence is limited, given the small and retrospective studies which can be explained by the rarity of these injuries.

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

**All-endoscopic approach for distal biceps tendon pathology: analysis of long-term outcomes in partial and complete ruptures**

D.N. Bhatia, P. Malviya

DOI: <https://doi.org/10.1016/j.jse.2024.01.020>

**Background:** Distal biceps tendon (DBT) pathology is a spectrum that ranges from tendinopathy to complete retracted ruptures, and surgical treatment is usually performed via open approaches. The purpose of this study was to analyze safety and long-term outcomes of all-endoscopic surgery for entire spectrum of primary DBT pathology. The hypothesis was that at an all-endoscopic technique would result in satisfactory clinical outcomes and a low complication rate.

**Methods:** Consecutive patients who underwent all-endoscopic surgery for primary isolated DBT pathology (bursitis, partial and acute/chronic complete tears) between January 2013 and December 2021 were assessed and analyzed retrospectively. Refractory bursitis and low-grade partial tears underwent endoscopic débridement, and high-grade partial tears and complete ruptures underwent all-endoscopic repair or graft reconstruction. Preoperative and follow-up assessment included functional assessment using Mayo Elbow Performance Score and a Patient-Reported Distal Biceps Score, and radiological assessment was performed using plain biplanar radiographs and sonography. Pre- and postoperative scores for the overall group, and for partial and complete tears, were compared using a paired t test.

**Results:** Overall, 26 male patients underwent an all-endoscopic surgery for DBT tears; the pathology was classified by endoscopic findings into 6 types, and follow-up period ranged from 21 to 125 months (mean 79.4 months). Nine chronic partial tears (35%) included predominantly bursitis (type I, n = 2) and predominantly partial tears (type IIA and B, n = 7). The complete tear group (65%) included isolated short or long head tears (type IIIA and IIIB, n = 2) and complete tendon ruptures (types IV, V, and VIA-C, n = 15). Endoscopic débridement of the bursitis/low-grade tears and repair of the high-grade and complete ruptures resulted in complete resolution of symptoms and significant improvement in both Mayo Elbow Performance Score and Patient-Reported Distal Biceps Score ( $P < .001$ ). Autografts were necessary in 35% (6/17) of complete tears, and no significant difference was found in functional scores in this group as compared to those where primary repairs were possible. There were 2 minor complications (7.6%) that involved transient lateral antebrachial cutaneous nerve neuropraxia. Follow-up sonography and radiographs showed an intact tendon and absence of heterotopic ossification or synostosis.

**Conclusions:** An all-endoscopic approach for treating DBT pathology was safe and reliable and was associated with significant improvement in subjective and functional outcomes in the long-term. The dual-anchor onlay repair technique showed long-term radiologically demonstrable structural integrity of the tendon and was associated with a low minor complication rate and absence of heterotopic ossification.

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

Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA), Volume 32, Issue 7

No Upper Extremity Abstracts

[BACK](#)



**Arthroscopic Bankart Repair With Remplissage in Anterior Shoulder Instability Results in Fewer Redislocations Than Bankart Repair Alone at Medium-term Follow-up of a Randomized Controlled Trial**

J.M. Woodmass, S. McRae

DOI: <https://doi.org/10.1177/03635465241254063>

**Background:** A multicenter, double-blinded randomized controlled trial comparing isolated Bankart repair (NO REMP) to Bankart repair with remplissage (REMP) reported benefits of remplissage in reducing recurrent instability at 2 years postoperative. The ongoing benefits beyond this time point are yet to be explored.

**Purpose:** To (1) compare medium-term (3 to 9 years) outcomes of these previously randomized patients undergoing isolated Bankart repair (NO REMP) or Bankart repair with remplissage (REMP) to manage recurrent anterior glenohumeral instability; (2) examine the failure rate, overall recurrent instability, and reoperation rate.

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

**Methods:** Recruitment and randomization for the original randomized trial occurred between 2011 and 2017. Patients  $\geq 14$  years diagnosed with recurrent traumatic anterior shoulder instability with an engaging Hill-Sachs defect of any size were included. Those with a glenoid defect  $>15\%$  were excluded. In 2020, participants were contacted by telephone and asked standardized questions regarding ensuing instances of subluxation, dislocation, or reoperation on their study shoulder. "Failure" was defined as a redislocation, and "overall recurrent instability" was described as a redislocation or  $\geq 2$  subluxations. Descriptive statistics, relative risk, and Kaplan-Meier survival curve analyses were performed.

**Results:** A total of 108 participants were randomized, of whom 50 in the NO REMP group and 52 in the REMP group were included in the analyses in the original study. The mean number of months from surgery to the final follow-up was 49.3 and 53.8 months for the NO REMP and REMP groups, respectively. Failure rates were 22% (11/50) in the NO REMP group versus 8% (4/52) in the REMP group. Rates of overall recurrent instability were 30% (15/50) in the NO REMP group versus 10% (5/52) in the REMP group. Survival curves were significantly different, favoring REMP in both scenarios.

**Conclusion:** For the treatment of traumatic recurrent anterior shoulder instability with a Hill-Sachs lesion and subcritical glenoid bone loss ( $<15\%$ ), a significantly lower rate of overall postoperative recurrent instability was observed with arthroscopic Bankart repair and remplissage than with isolated Bankart repair at a medium-term follow-up (mean of 4 years). Patients who did not receive a remplissage experienced a failure (redislocated) earlier and had a higher rate of revision/reoperation than those who received a concomitant remplissage.

## Supraspinatus Muscle and Tendon Characteristics 1 Year After Surgical Rotator Cuff Repair Compared With Contralateral Shoulder: Data From the CUT-N-MOVE Trial

B.H. Kjær, R.B. Svensson

DOI: <https://doi.org/10.1177/03635465241255143>

**Background:** It is necessary to better understand the structural characteristics of the supraspinatus tendon and associated muscle after rotator cuff repair and in the event of retear.

**Purpose:** To study structural differences between the repaired and contralateral shoulders 1 year after rotator cuff repair in patients who received either progressive exercise therapy (PR) or usual care (UC) in a randomized controlled trial and to investigate whether there was interaction with tendon retear and limb dominance.

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

**Methods:** Patients with surgically repaired traumatic full-thickness rotator cuff tears involving the supraspinatus tendon were included. After surgery, they were randomized to PR or UC (active from postoperative week 2 or 6, respectively). The subacromial structures (acromiohumeral distance, supraspinatus tendon thickness, and vascularity) and the supraspinatus muscle thickness were examined with ultrasound at the 1-year follow-up.

**Results:** A total of 79 patients were included. The characteristics of the 2 intervention groups (PR and UC) were comparable, including the Western Ontario Rotator Cuff Index score and number of retears. The authors found significantly thinner supraspinatus tendon (PR,  $P < .001$ ; UC,  $P = .003$ ) and reduced acromiohumeral distance (PR,  $P = .023$ ; UC,  $P = .025$ ) in the repaired versus the contralateral shoulders in both intervention groups. For neovascularization, there was no interlimb difference in either of the groups or between groups (PR vs UC). In patients with intact tendons, there was no interlimb difference in the muscle thickness, but in patients with tendon retear the muscle was significantly thinner on the repaired side ( $P = .024$  and  $P < .001$ , respectively). When the dominant supraspinatus tendon was repaired (both groups), it was significantly thinner than the nondominant healthy tendon, but this difference was not seen when the nondominant supraspinatus tendon was repaired ( $P = .006$ ).

**Conclusion:** One year after rotator cuff surgery, the repaired supraspinatus tendon was significantly thinner and the corresponding acromiohumeral distance was reduced. In patients with retear, the supraspinatus muscle was significantly thinner on the repaired side and early initiation of tendon-loading exercises did not affect these findings.

Journal of Bone and Joint Surgery (JBJS), Volume 106, Issue 13+14

No Upper Extremity Abstracts

[BACK](#)

Clinical Orthopaedics and Related Research (CORR), Volume 482, Issue 7

No Upper Extremity Abstracts

[BACK](#)

Bone and Joint Journal (BJJ), Volume 106-B, issue 7

No Upper Extremity Abstracts

[BACK](#)

---

## Lower Extremity

Arthroscopy, Volume 40, Issue 7

### **Low Recurrence of Instability and Satisfying Patient-Reported Outcomes Following Various Surgical Treatments of Reverse Hill–Sachs Lesions in the Setting of Posterior Instability: A Systematic Review**

J.P. van der List, M.A. Glover

DOI: <https://doi.org/10.1016/j.arthro.2023.12.012>

**Purpose:** To systematically review the literature and report the outcomes of various surgical treatments for reverse Hill–Sachs lesions (RHSL) in the setting of posterior shoulder instability.

**Methods:** Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines were followed. All studies assessing outcomes of surgical treatment of RHSL from inception to January 2023 were identified in PubMed, Embase, and Cochrane Library. Inclusion criteria consisted of studies reporting outcomes, minimum mean 1-year follow-up, and minimum Level IV evidence. Outcomes were assessed using Forest plots with random effects models using R software.

**Results:** A total of 29 studies consisting of 291 patients were included with a mean age of 42 years (range 16-88 years), 87% male gender, and mean follow-up of 4.5 years. The mean size of impacted or affected cartilage was 35%, and time from injury to surgery was mean 15 weeks. Nearly all studies were Level IV evidence, and quality of studies was low. Random effect models were performed, and data are presented as range. A low incidence of instability was noted for all surgical techniques with good patient-reported outcome measures. Most studies reported outcomes of the modified McLaughlin procedure (13 studies, 126 patients) with overall Constant-Murley Score of 65 to 92. Trends were seen towards better Constant-Murley Score and external rotation with a shorter delay between injury, and when arthroscopic and joint preserving treatments were performed.

**Conclusions:** This systematic review showed low rates of instability recurrence, reproducible range of motion, and favorable patient-reported outcome measures were reported following all treatments for RHSLs with posterior instability. There was a significant association between better outcomes and a shorter delay between injury and surgery. The level of evidence is limited, given the small and retrospective studies which can be explained by the rarity of these injuries.

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

## Secondary Hip Labral Reconstruction Yields Inferior Minimum 2-Year Functional Outcomes to Primary Reconstruction Despite Comparable Intraoperative Labral Characteristics

R.Y. Matthew, M. Kurapatti

DOI: <https://doi.org/10.1016/j.arthro.2023.11.034>

**Purpose:** To compare intraoperative labral characteristics and minimum 2-year functional outcomes of allograft labral reconstruction in primary versus revision hip arthroscopy across multiple orthopaedic centers.

**Methods:** A retrospective multicenter hip arthroscopy registry was queried for patients with completed labral reconstruction surgeries from January 2014 to March 2023 with completed 2-year international Hip Outcome Tool-12 (iHOT-12) reports. Age, sex, and major intraoperative variables also were collected. Patients were placed in cohorts based on whether their arthroscopic allograft labral reconstruction was a primary procedure or secondary procedure (reconstruction following failed hip arthroscopy). One-way analysis of variance was performed on continuous variables.  $\chi^2$  test was performed on categorical variables. Achievement of minimal clinically important difference (MCID), Patient Acceptable Symptom State (PASS), and Substantial Clinical Benefit (SCB) also was assessed.

**Results:** In total, 77 patients met the inclusion and exclusion criteria and had complete information. The primary reconstruction group (n = 50) was significantly older than the secondary reconstruction group (n = 27) ( $47.5 \pm 10.5$  vs  $39.1 \pm 8.8$  years;  $P = .001$ ). In both cohorts, most patients had labral bruising, advanced labral degeneration, and/or grade III complexity of labral tearing. There was no difference in any recorded intraoperative findings ( $P = .160$ ,  $P = .783$ ,  $P = .357$ , respectively). Each cohort experienced significant improvement in iHOT-12 scores ( $P < .0001$ ). However, patients undergoing secondary labral reconstruction reported inferior iHOT-12 scores ( $60.1 \pm 29.2$  vs  $74.8 \pm 27.0$ ;  $P = .030$ ). Patients undergoing primary reconstruction were more likely to reach MCID, PASS, and nearly normal SCB (92 vs 66.7%,  $P = .024$ ; 68.0 vs 40.7%,  $P = .021$ ; 76.0 vs 48.1%,  $P = .014$ , respectively).

**Conclusions:** Primary and secondary allograft labral reconstruction show clinical improvement, but primary reconstruction demonstrates better outcomes and greater percentage of patients reaching MCID, PASS, and nearly normal SCB than reconstruction in the revision setting.

**Level of Evidence:** Level III, retrospective comparative prognostic case-control study.

## **Prior Diagnosis of Opioid-Related Disorder Is Associated With Higher Medical Resource Utilization Following Primary Hip Arthroscopy: A National Database Study**

P.F. Monahan, S. Surucu

DOI: <https://doi.org/10.1016/j.arthro.2023.12.008>

**Purpose:** To compare adverse events, medical resource utilization, prescribing patterns, and revision surgery rates of patients with opioid-related disorders (ORDs) undergoing primary hip arthroscopy against a propensity-matched group with no opioid-related disorders (NORDs).

**Methods:** The TriNetX database was queried between January 2015 and December 2020 using International Classification of Diseases, 10th Revision and Current Procedural Terminology codes to identify patients undergoing primary hip arthroscopy between ages 18 and 70 years. The ORD cohort was propensity matched in a 1:1 ratio to NORD patients based on age, sex, alcohol-related disorders, heart disease, hypertension, metabolic disorders, anxiety disorders, major depressive disorder, diabetes mellitus, and antidepressant prescriptions. Postoperative rates of adverse events and medical resources were compared within 90 days of procedure, prescriptions were compared within 1 year, and revision surgery was compared within 2 years.

**Results:** A total of 809 ORD patients were propensity matched in a 1:1 ratio to NORD patients. Postoperative adverse events were similar between groups ( $P = .693$ ). Rates of revision arthroscopy were also similar for both ORD (9.3%) and NORD (8.0%) cohorts (odds ratio [OR], 1.17; 95% confidence interval [CI], 0.83-1.66;  $P = .377$ ). ORD patients received care from the emergency department, inpatient admission, outpatient visit, and physical therapy evaluations at higher rates. The ORD cohort received a greater amount of new opioid (OR, 2.66; 95% CI, 2.17-3.26;  $P < .0001$ ) and antidepressant prescriptions (OR, 1.58; 95% CI, 1.26-1.97;  $P < .0001$ ) compared to NORD patients within 1 year of surgery.

**Conclusions:** ORD patients demonstrated similar rates of adverse events and revision surgery when compared to a propensity-matched group of NORD patients undergoing primary hip arthroscopy. However, ORD patients experienced increased rates of emergency department visits and hospitalizations and were prescribed higher rates of opioid and antidepressant prescriptions.

**Level of Evidence:** Level III, cohort study.



## **Suture Tape Augmentation Improves Posterior Stability After Isolated Posterior Cruciate Ligament Reconstruction Using Hamstring Tendon Autograft With Single-Bundle Transtibial Technique**

H. Zhang, J. Wang

DOI: <https://doi.org/10.1016/j.arthro.2023.12.007>

**Purpose:** To assess whether posterior cruciate ligament reconstruction (PCLR) with suture tape augmentation can yield more stability after isolated PCLR.

**Methods:** A prospective database was retrospectively reviewed to identify patients who underwent primary isolated PCLR (control group) or isolated PCLR with suture tape augmentation (study group) from January 2016 to September 2020. We analyzed subjective International Knee Documentation Committee (IKDC), Lysholm, and Tegner knee scores; posterior drawer test findings; posterior stress radiographs; and return-to-sports activity rates. The minimal clinically important difference (MCID) was used to evaluate clinical relevance (subjective IKDC, Lysholm, and Tegner scores).

**Results:** A total of 59 patients were included in this analysis (28 in control group and 31 in study group). The average length of follow-up was similar between the study and control groups (48.6 months vs 47.9 months,  $P = .800$ ). Knee function was significantly improved in the study group in terms of subjective IKDC scores ( $85.1 \pm 6.4$  in study group vs  $79.8 \pm 6.4$  in control group,  $P = .002$ ), Lysholm scores ( $86.3 \pm 7.4$  vs  $80.8 \pm 7.4$ ,  $P = .005$ ), and Tegner scores ( $7.0 \pm 1.4$  vs  $5.6 \pm 1.7$ ,  $P = .006$ ). However, the differences between the control and study groups were less than the MCID for the subjective IKDC score and Lysholm score. In the control and study groups, 21.4% of patients (6 of 28) and 48.4% of patients (15 of 31), respectively, returned to their preinjury sports activity levels ( $P = .031$ ). At last follow-up, the mean side-to-side difference in posterior laxity was significantly improved in the study group compared with the control group ( $1.52 \pm 0.70$  mm in study group vs  $3.17 \pm 2.01$  mm in control group,  $P < .01$ ).

**Conclusions:** Primary isolated PCLR with suture tape augmentation provides better posterior stability than PCLR without suture tape augmentation at a minimum of 2 years' follow-up. No differences between the groups were observed in the percentage of patients who met or exceeded the MCID for the subjective IKDC and Lysholm scores.

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

## **Inconsistent Return to Sport Despite Improved Outcomes After Re-revision Anterior Cruciate Ligament Reconstruction: An Updated Systematic Review**

C.P. Olson, A. Mabrouk

DOI: <https://doi.org/10.1016/j.arthro.2023.12.001>

**Purpose:** To systematically review the literature evaluating patient-reported outcomes and return to sport after re-revision anterior cruciate ligament reconstruction (ACLR) procedures. The secondary objectives were 2-fold: to identify the risk factors that lead to revision ACLR failure and to assess the secondary knee structure injuries after the initial revision ACLR.

**Methods:** A systematic review of the literature was performed using the MEDLINE/PubMed and Cochrane databases. The inclusion criteria were outcomes of re-revision ACLR, minimum of 2 years' follow-up, human studies, and English language. Basic science articles, epidemiologic studies, editorials, surgical technique articles, surveys, cadaveric studies, and animal studies were excluded.

**Results:** Fifteen studies met the inclusion criteria and were considered for review. There were 6 Level III and 9 Level IV studies that included 399 patients undergoing re-revision ACLR. The rate of concomitant meniscal lesions at the time of re-revision ranged from 35% to 90%. The prevalence of concomitant cartilaginous lesions at the time of re-revision ranged from 13.6% to 90%. Compared with preoperative scores, patient-reported outcomes overall improved after re-revision ACLR, with mean preoperative Lysholm scores ranging from 38.4 to 73.15 that improved to postoperative scores ranging from 68 to 87.8. However, return to sport at preinjury levels was inconsistent, with rates ranging from 12.5% to 80%.

**Conclusions:** Re-revision ACLR was found to restore knee stability and improve functional outcomes. Despite this improvement, there was a low rate of return to sport at the preinjury level. Functional outcomes were also inferior when compared with primary ACLR. In addition, concomitant knee pathologies were found to rise in prevalence compared with revision and primary ACLR cases.

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

## Reporting Bias in the Form of Positive Spin Is Highly Prevalent in Abstracts of Systematic Reviews on Primary Repair of the Anterior Cruciate Ligament

N.M. Hwang, J.T. Samuel

DOI: <https://doi.org/10.1016/j.arthro.2023.12.018>

**Purpose:** To analyze reporting bias in the form of spin present in systematic reviews and meta-analyses on the topic of primary anterior cruciate ligament (ACL) repair.

**Methods:** The Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines were followed throughout this study. Peer-reviewed systematic reviews were collected from 3 databases (PubMed, Scopus, and SPORTDiscus), and their abstracts were assessed for the 15 most common types of spin. Articles were excluded if they were not published in English, had no evidence, were retracted, were published without an abstract, did not have full text available, or included cadaveric or nonhuman subjects. Full text quality was assessed using AMSTAR 2 (A Measurement Tool to Assess Systematic Reviews Version 2). Fisher exact tests were used to examine associations between the different types of spin and other study characteristics such as AMSTAR 2 confidence rating, study design, and level of evidence.

**Results:** Spin was present in the abstracts of 13 of 15 articles (86.7%). There were significant associations between PRISMA adherence and lower incidences of spin types 3, 6, and 8 ( $P = .029$  for each). A critically low AMSTAR 2 confidence rating was significantly associated with an increased incidence of spin type 9 ( $P = .01$ ), and a higher AMSTAR 2 score was significantly associated with decreased spin type 4 and type 5 ( $P = .039$  and  $P = .048$ , respectively). A more recent year of publication was correlated with a lower incidence of spin type 14 ( $P = .044$ ).

**Conclusions:** Spin is present in most systematic reviews and meta-analyses regarding primary repair of the ACL, with two-thirds of abstracts spinning evidence in favor of ACL repair. Standardized guidelines including the PRISMA guidelines and the AMSTAR 2 assessment tool were negatively correlated with spin. More recently published articles were found to contain significantly less spin, as were articles published in journals with higher Clarivate Impact Factors and Scopus CiteScores.

**Level of Evidence:** Level V, systematic review of Level III-V studies.

## **Anterior Cruciate Ligament Repair Augmented With Dynamic Intraligamentary Stabilization Is Equivalent to Hamstring Autograft Reconstruction at Short- and Mid-Term Follow-Up: A Systematic Review**

L. Ambrosio, D. Franco

DOI: <https://doi.org/10.1016/j.arthro.2023.12.011>

**Purpose:** To compare clinical outcomes, knee stability and complications, failure, and revision rates after anterior cruciate ligament repair (ACLR) with dynamic intraligamentary stabilization (DIS) versus anterior cruciate ligament reconstruction (ACLR) with hamstring autograft for primary ACL ruptures at short and mid-term follow-up.

**Methods:** A Preferred Reporting Items for Systematic Reviews and Meta-Analyses–compliant systematic review of PubMed/MEDLINE and Scopus was performed. Studies that evaluated patients undergoing ACLR with DIS or ACLR with hamstring autograft were considered for inclusion. Studies were excluded if patients were affected by concomitant meniscal, ligamentous, or chondral injuries needing surgical treatment, because of their potential confounding effect on postoperative outcomes. The Risk of Bias-2 tool was used to assess the risk of bias in the included studies. The quality of available evidence was rated according to Grading of Recommendations Assessment, Development, and Evaluation recommendations. The study protocol was registered in the PROSPERO database (ID: CRD42023394558).

**Results:** Five randomized controlled trials comparing the outcomes of ACLR with DIS versus ACLR with hamstring autograft met the inclusion criteria. No major differences in terms of patient-reported outcomes (International Knee Documentation Committee subjective form, Lysholm score, Tegner activity scale, Knee injury and Osteoarthritis Outcome Score, visual analog scale satisfaction) or rates of complications, revisions, and failures were found in included studies at all time points. Repair showed greater International Knee Documentation Committee subjective form scores at 5 years in one study, whereas ACLR displayed significantly increased knee stability at 6 months and 5 years in 2 different studies, although the clinical relevance of these differences is doubtful.

**Conclusions:** The results of this study suggest that ACLR with DIS is not inferior to ACLR with hamstring autograft in terms of rates of clinical outcomes, knee stability, risk of failure, complications, and revision surgery. Therefore, ACLR with DIS may be a viable alternative to ACLR with hamstring autograft in selected patients.

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

## **Functional Return-to-Sport Testing Demonstrates Inconsistency in Predicting Short-Term Outcomes Following Anterior Cruciate Ligament Reconstruction: A Systematic Review**

V.S. Gill, S.V. Tummala

DOI: <https://doi.org/10.1016/j.arthro.2023.12.032>

**Purpose:** To systematically review the relationship between functional testing at the time of return to sport (RTS) and short-term outcomes, such as second anterior cruciate ligament (ACL) tear and return to a preinjury level of sport, among athletes who underwent anterior cruciate ligament reconstruction (ACLR).

**Methods:** A systematic literature search was performed in MEDLINE, EMBASE, Scopus, and Web of Science to identify studies examining athletes who underwent functional RTS testing and were followed for at least 12 months following ACLR. Studies were screened by 2 reviewers. A standardized template was used to extract information regarding study characteristics, ACLR information, functional test results, and risk factors associated with retear or reduced RTS.

**Results:** Of the 937 studies identified, 22 met the inclusion criteria. The average time between ACLR and RTS testing was 8.5 months. Single leg hop for distance performance had no association with retear risk in any study and no association with RTS rates in most studies. Quadriceps strength had conflicting results in relation to retear risk, whereas it had no relationship with RTS rates. Rates of reinjury and RTS were similar between patients who passed and did not pass combined hop and strength batteries. Asymmetric knee extension and hip moments, along with increased knee valgus and knee flexion angles, demonstrated increased risk of retear.

**Conclusions:** Individual hop and strength tests that are often used in RTS protocols following ACLR may have limited and inconsistent value in predicting ACL reinjury and reduced RTS when used in isolation. Combined hop and strength test batteries also demonstrate low sensitivity and negative predictive value, highlighting conflicting evidence to suggest RTS testing algorithm superiority.

**Level of Evidence:** Level IV, systematic review of Level I-IV studies.

Journal of Shoulder and Elbow Surgery (JSES), Volume 33, issue 7

No Lower Extremity Abstracts

[BACK](#)

**Risk factors for prolonged opioid consumption following hip arthroscopy: A secondary analysis of the femoroacetabular Impingement RandomiSed controlled Trial and embedded cohort study**

Y. Bourgeault-Gagnon, H.A. Khalik

DOI: <https://doi.org/10.1002/ksa.12204>

**Purpose:** The purpose of the study was to identify prognostic risk factors for prolonged opioid use at 2 and 6 weeks after hip arthroscopy using data from the Femoroacetabular Impingement RandomiSed controlled Trial and its external validation cohort study.

**Methods:** Opioids were prescribed for postoperative pain management at the surgeon's discretion, with a majority being prescribed a combination of oxycodone and paracetamol (5/325 mg). Prolonged opioid use was defined as the ongoing use of any dosage of opioids reported at either 2 or 6 weeks after surgery to treat femoroacetabular impingement, as recorded in the patient's study medication log. Multivariable logistic regressions were performed to evaluate patient and surgical characteristics, such as preoperative opioid use, type of surgical procedure and intraoperative cartilage state that may be associated with prolonged opioid use at either 2 and 6 weeks postoperatively.

**Results:** A total of 265 and 231 patients were included for analysis at 2 and 6 weeks postoperatively, respectively. The median age of participants was 35 years (interquartile range [IQR]: 27–42) and 33% were female. At 2 weeks postoperatively, female sex (odds ratio [OR]: 2.56; 95% confidence interval: [CI] 1.34–4.98,  $p = 0.005$ ), higher body mass index (BMI) (OR: 1.10; 95% CI: 1.02–1.18,  $p = 0.009$ ), active tobacco use (OR: 4.06; 95% CI: 1.90–8.97,  $p < 0.001$ ), preoperative opioid use (OR: 10.1; 95% CI: 3.25–39.1,  $p < 0.001$ ) and an Outerbridge classification of  $\geq 3$  (OR: 2.33; 95% CI: 1.25–4.43,  $p = 0.009$ ) were significantly associated with prolonged opioid use. At 6 weeks postoperatively, only preoperative opioid use was significantly associated with prolonged opioid consumption (OR: 10.6; 95% CI: 3.60–32.6,  $p < 0.001$ ).

**Conclusion:** Preoperative opioid use was significantly associated with continued opioid use at 2 and 6 weeks postoperatively. Specific patient factors including female sex, higher BMI, active tobacco use and more severe cartilage damage should be considered in developing targeted strategies to limit opioid use after surgery.

**Level of Evidence:** Level III.

**ACL Reconstruction Using Quadrupled Semitendinosus Versus Double-Stranded Semitendinosus and Gracilis Autograft: 2-Year Results From a Prospective Randomized Controlled Study**

I.F. Mo, T. Harlem

DOI: <https://doi.org/10.1177/03635465241254048>

**Background:** A disadvantage of using hamstring tendon autograft consisting of the semitendinosus and gracilis tendons for anterior cruciate ligament reconstruction is pain from tendon harvesting and persistent hamstring weakness. In the tendon-sparing all-inside technique, a quadrupled semitendinosus graft and adjustable-loop cortical fixation are suggested to give less postoperative flexion deficits while displaying overall similar clinical results to the traditional hamstring technique. However, there are a limited number of high-quality studies comparing these techniques with inconsistent results.

**Purpose:** To investigate differences between the all-inside (quadrupled semitendinosus) and traditional hamstring (double-stranded semitendinosus and gracilis) technique regarding (1) self-reported function, (2) hamstring strength, and (3) knee laxity.

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

**Methods:** A total of 98 patients were randomized to either the all-inside or the traditional hamstring technique. Perioperatively, duration of surgery and graft size were obtained. The International Knee Documentation Committee 2000 Subjective Knee Form score, Knee injury and Osteoarthritis Outcome Score, Tegner Activity Scale score, knee laxity (KT-1000 arthrometer side-to-side difference and pivot shift), range of motion, isokinetic knee strength, and hop test score were collected preoperatively and 2 years postoperatively. Return-to-sport readiness was evaluated 9 months postoperatively.

**Results:** A total of 89 patients completed 2-year follow-up, 45 patients with the all-inside technique and 44 patients with the traditional hamstring technique. There were no significant differences between groups in any of the outcome measures 2 years after surgery, but there was a tendency in the all-inside group toward having increased anterior translation (mean, 3.6 mm vs 2.7 mm), a higher number of revision surgeries (5 patients vs 2 patients), and more patients having +1 and +2 pivot-shift values (29 vs 18 patients) when compared with the traditional group.

**Conclusion:** The all-inside technique yields equivalent results to the traditional hamstring technique 2 years after surgery and should be considered a reliable technique to use for ACL reconstruction. Sparing the gracilis tendon does not lead to less persistent hamstring weakness. Long-term follow-up is needed to further determine whether the tendency of increased anterior translation seen at 2 years postoperatively will lead to a higher risk of graft failure.



## **A High Grade of Postoperative Knee Laxity Is Associated With an Increased Hazard of Revision Surgery: A Cohort Study of 4697 Patients With Primary ACL Reconstruction**

R. Cristiani, M. Forssblad

DOI: <https://doi.org/10.1177/03635465241253840>

**Background:** There is still debate regarding the association between arthrometric knee laxity measurements and subjective knee outcome and revision surgery after primary anterior cruciate ligament reconstruction (ACLR).

**Purpose:** To assess whether arthrometric knee laxity (measured with the KT-1000 arthrometer) 6 months after primary ACLR was associated with the 1-, 2-, and 5-year subjective knee outcomes or revision ACLR at a 5-year follow-up.

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

**Methods:** Patients who underwent primary ACLR with a hamstring tendon autograft at the authors' institution between January 1, 2005, and December 31, 2017, with no concomitant ligamentous injuries, were identified. Anterior knee laxity (KT-1000 arthrometer, 134 N) was assessed 6 months postoperatively. The Knee injury and Osteoarthritis Outcome Score (KOOS) was collected preoperatively and 1, 2, and 5 years postoperatively. Patients who underwent revision ACLR at any institution in the country within 5 years of primary surgery were identified through the Swedish National Knee Ligament Registry.

**Results:** A total of 4697 patients (54.3% male) with available KT-1000 arthrometer measurements were included (normal: side-to-side [STS]  $\leq 2$  mm, 3015 [64.2%]; nearly normal: STS 3-5 mm, 1446 [30.8%]; abnormal: STS  $> 5$  mm, 236 [5.0%]). The only significant difference in subjective knee outcome between the groups was for the KOOS Symptoms subscale at the 1-year follow-up (STS  $\leq 2$  mm,  $79.9 \pm 16.2$ ; STS 3-5 mm,  $82.5 \pm 14.8$ ; STS  $> 5$  mm,  $85.1 \pm 14.2$ ;  $P < .001$ ). No other significant differences between the groups were found preoperatively or at 1, 2, or 5 years postoperatively for any of the KOOS subscales. The hazard for revision ACLR within 5 years of the primary surgery was significantly higher for the groups with an STS of 3 to 5 mm (6.6%; 95/1446) (hazard ratio [HR], 1.42; 95% CI, 1.07-1.87;  $P = .01$ ) and an STS  $> 5$  mm (11.4%; 27/236) (HR, 2.61; 95% CI, 1.69-4.03;  $P < .001$ ) compared with the group with an STS  $\leq 2$  mm (3.8%; 116/3015).

**Conclusion:** A high grade of postoperative knee laxity (STS 3-5 mm and STS  $> 5$  mm) 6 months after primary ACLR was associated with an increased hazard of revision ACLR within 5 years, but it was not associated with an inferior subjective knee outcome.

## **Secondary Meniscectomy Rates and Risk Factors for Failed Repair of Ramp Lesions Performed at the Time of Primary ACL Reconstruction: An Analysis of 1037 Patients From the SANTI Study Group**

C. Pioger, M. Ayata

DOI: <https://doi.org/10.1177/03635465241253841>

**Background:** Studies evaluating secondary meniscectomy rates and risk factors for failure of ramp repair are sparse and limited by small numbers and heterogeneity.

**Purpose:** The purposes were to determine the secondary meniscectomy rate for failure of ramp repair performed using a posteromedial portal suture hook at the time of anterior cruciate ligament reconstruction (ACLR) and to identify risk factors for secondary meniscectomy. It was hypothesized that patients who underwent ACLR combined with a lateral extra-articular procedure (LEAP) would experience significantly lower rates of secondary meniscectomy compared with those undergoing isolated ACLR.

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

**Methods:** Patients undergoing primary ACLR and ramp repair between 2013 and 2020 were included in the study. Final follow-up for each patient was defined by his or her last appointment recorded in a prospective database (with a study end date of March 2023). The database and medical records were used to determine whether patients had undergone secondary meniscectomy for failure of ramp repair. Survivorship of ramp repair (using secondary meniscectomy as an endpoint) was determined using the Kaplan-Meier method. Multivariate analysis was used to investigate possible risk factors.

**Results:** A total of 1037 patients were included in the study. The secondary meniscectomy rate after ramp repair was 7.7% at a mean final follow-up of 72.4 months. Patients without combined ACLR + LEAP were >2-fold more likely to undergo a secondary medial meniscectomy compared with those with combined ACLR + LEAP (hazard ratio, 2.455; 95% CI, 1.457-4.135; P = .0007). Age, sex, preoperative Tegner score, and time between injury and surgery were not significant risk factors for failure.

**Conclusion:** The rate of secondary meniscectomy after ramp repair performed through a posteromedial portal at the time of primary ACLR was low. Patients who underwent isolated ACLR (rather than ACLR + LEAP) were >2-fold more likely to undergo a secondary medial meniscectomy for failure of ramp repair. Additional risk factors for failure of ramp repair were not identified.

## 10-Year Survival and Clinical Improvement of Meniscal Allograft Transplantation in Early to Moderate Knee Osteoarthritis

I. Romandini , A. Grassi

DOI: <https://doi.org/10.1177/03635465241253849>

**Background:** Meniscal allograft transplantation (MAT) is a viable option for patients experiencing unicompartmental knee pain after total or subtotal meniscectomy. Nonetheless, caution is recommended when suggesting this procedure in the presence of knee osteoarthritis (OA) because of the higher risk of poor survival and outcomes.

**Purpose:** The purpose was to document the long-term survival of MAT performed as a salvage procedure in patients with knee OA. The hypothesis was that MAT would significantly reduce pain and increase the function of the affected joint at a long-term follow-up compared with the preoperative condition, with a low number of failures and knee replacement surgeries.

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

**Methods:** A total of 47 patients (37 men and 10 women) with symptomatic knee OA (Kellgren-Lawrence grades 2 or 3) treated with MAT were evaluated at baseline, 5 years, and a minimum 10-year final follow-up ( $11.1 \pm 1$  years) using the Lysholm score, the visual analog scale for pain, the Knee injury and Osteoarthritis Outcome Score subscales, and the Tegner score. A total of 44 patients had undergone previous surgeries. Patient satisfaction, revision surgeries, and failures were also recorded.

**Results:** A statistically significant improvement was observed in all clinical scores from the baseline assessment to the final follow-up. The Lysholm score improved significantly from  $46.4 \pm 17.2$  at the preoperative assessment to  $77.7 \pm 20.4$  at the intermediate follow-up ( $P < .001$ ), with a significant decrease at the final follow-up ( $71 \pm 23.3$ ;  $P = .018$ ). A similar trend was reported for the visual analog scale for pain, Knee injury and Osteoarthritis Outcome Score, and Tegner score, with no complete recovery to the previous sports activity level. A total of 33 patients required concurrent procedures, such as anterior cruciate ligament reconstructions, osteotomies, and cartilage procedures. Five patients underwent reoperation and were considered surgical failures, while 15 patients presented a clinical condition of  $<65$  of the Lysholm score and were considered clinical failures. Among these, 4 patients were considered both surgical and clinical failures.

**Conclusion:** MAT surgery has proven to be a valid option for improving pain and function even in OA joints (Kellgren-Lawrence grades 2 or 3), yielding satisfactory results despite a worsening clinical outcome in the long-term follow-up. Therefore, based on the data from this study, orthopaedic surgeons may consider recommending MAT as a salvage procedure even in knees affected by early to moderate OA, while advising patients that the need for combined interventions could potentially reduce graft survival.

## Short-term Outcomes After Hip Arthroscopic Surgery in Patients Participating in Formal Physical Therapy Versus a Home Exercise Program: A Prospectively Enrolled Cohort Analysis

T.E. Hobson , A.K. Metz

DOI: <https://doi.org/10.1177/03635465241252981>

**Background:** Physical therapy is frequently utilized in the postoperative care of femoroacetabular impingement syndrome (FAIS). There has been limited research into the efficacy of a structured home exercise program (HEP) compared with formal physical therapy (FPT) in this patient population.

**Purpose:** The purpose was to evaluate the short-term outcomes of patients utilizing FPT versus an HEP after hip arthroscopic surgery for FAIS. It was hypothesized that both groups would show similar improvements regarding outcome scores, which would improve significantly compared with their preoperative scores.

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

**Methods:** Patients undergoing hip arthroscopic surgery for FAIS at a single center between October 2020 and October 2021 were prospectively enrolled. Patients were allowed to self-select FPT or an HEP and were administered a survey preoperatively and at 1 month, 3 months, 6 months, and 12 months postoperatively. The survey included the Single Assessment Numeric Evaluation, visual analog scale for pain, 12-item International Hip Outcome Tool, Patient-Reported Outcomes Measurement Information System Physical Function, and patient satisfaction with physical therapy and overall care. Statistical analysis was conducted between the 2 groups and within groups to compare preoperative and postoperative scores.

**Results:** The patients' mean age was  $32.6 \pm 10.4$  years, with 47.2% being female and 57.4% choosing the HEP. At 12 months postoperatively, no significant differences were reported between the FPT and HEP groups regarding the Single Assessment Numeric Evaluation score ( $P = .795$ ), visual analog scale for pain score ( $P > .05$ ), Patient-Reported Outcomes Measurement Information System Physical Function T-score ( $P = .699$ ), 12-item International Hip Outcome Tool score ( $P = .582$ ), and patient satisfaction ( $P > .05$ ). Outcome scores at 12 months postoperatively were significantly improved from the preoperative scores across all measures in both groups ( $P < .001$ ).

**Conclusion:** There were no significant differences regarding patient outcomes between FPT and the HEP at 1-year follow-up after hip arthroscopic surgery for FAIS when patients selected their own treatment, with both groups demonstrating significant improvements in their outcome scores from their preoperative values. These findings suggest that a structured HEP may be a viable alternative to FPT after hip arthroscopic surgery in patients who prefer a self-directed rehabilitation program.

## **Predictors of Clinical Outcomes After Hip Arthroscopy: 10-Year Follow-up Analysis of 1038 Patients**

B.G. Domb, O.N. Prabhavalkar

DOI: <https://doi.org/10.1177/03635465241254076>

**Background:** Although hip arthroscopy has been shown to have beneficial outcomes, there is a paucity of literature examining predictive factors of 10-year clinical outcomes.

**Purpose:** (1) To identify predictive factors of 10-year outcomes of hip arthroscopy and (2) to compare these factors with those found in 2-year and 5-year studies.

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

**Methods:** Data were prospectively collected and retrospectively reviewed on all patients undergoing hip arthroscopy between February 2008 and June 2012. Patients were included if they had a minimum 10-year follow-up on 2 patient-reported outcome measures: Nonarthritic Hip Score (NAHS) and modified Harris Hip Score. Exclusion criteria included previous ipsilateral hip conditions. Using bivariate and multivariate analyses, that authors analyzed the effects of 37 pre- and intraoperative variables on the NAHS, modified Harris Hip Score, and conversion to total hip arthroplasty.

**Results:** Of the 883 patients who met the inclusion criteria, 734 (83.1%) had follow-up data. The mean follow-up time was 124.4 months (range, 120.0-153.1 months). Six variables were significant predictors of NAHS in both multivariate and bivariate analyses: revision status, body mass index (BMI), duration of symptoms, preoperative NAHS, age at onset of symptoms, and need for acetabular microfracture. Positive predictors of 10-year survivorship included acute injury and gluteus medius repair, while negative predictors included revision arthroscopy, Tönnis grade, acetabular inclination, iliopsoas fractional lengthening, and notchplasty

**Conclusion:** Multiple predictive factors including age, BMI, revision status, and preoperative outcome scores were identified for long-term survivorship and functional outcomes. These may prove useful to clinicians in refining indications and guiding patients on expected outcomes of hip arthroscopy.

## Long-term Survivorship and Outcomes of Patients Without Dysplasia Undergoing Capsular Repair During Primary Hip Arthroscopy for Femoroacetabular Impingement Syndrome

B.G. Domb, M.S. Lee

DOI: <https://doi.org/10.1177/03635465241248603>

**Background:** There is a paucity of literature evaluating long-term outcomes and survivorship of patients undergoing primary hip arthroscopy with capsular repair for femoroacetabular impingement syndrome (FAIS).

**Purpose:** To report 10-year survivorship and patient-reported outcomes (PROs) after primary hip arthroscopy with capsular repair for FAIS and evaluate the effect of capsular repair in patients at the highest risk for conversion to arthroplasty.

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

**Methods:** Data were prospectively collected and retrospectively reviewed on all patients undergoing primary hip arthroscopy with capsular repair between October 2008 and February 2011. Patients with a minimum 10-year follow-up on the modified Harris Hip Score (mHHS), Nonarthritic Hip Score (NAHS), and visual analog scale for pain (VAS) scores were selected. The preoperative and minimum 10-year follow-up Hip Outcome Score—Sports Specific Subscale (HOS-SSS) scores were also reported, if available. Patients with ipsilateral hip surgery, worker's compensation, Tönnis osteoarthritis grade >1, and hip dysplasia (lateral center-edge angle <25°) were excluded. Survivorship, PROs, and clinical benefit—minimal clinically important difference (MCID) and Patient Acceptable Symptom State (PASS)—were reported. An additional propensity-matched subanalysis was performed on patients at the highest risk for conversion to arthroplasty, comparing patients undergoing capsular repair to patients with unrepaired capsules.

**Results:** A total of 145 (n = 130 patients) out of 180 eligible hips (n = 165 patients) had a minimum 10-year follow-up (80.6%). Also, 126 hips (86.9%) belonged to women, and 19 hips (13.1%) belonged to men. The mean patient age was 30.3 ± 12.9 years. The survivorship rate was 91% at the 10-year follow-up. The cohort experienced significant improvements (P < .001) in the mHHS, NAHS, HOS-SSS, and VAS for pain scores. Moreover, the cohort achieved high rates of the PASS for the mHHS (89.8%), high rates of the MCID for the mHHS (82.4%), and high rates of the MCID for VAS for pain (80.6%) scores. In the propensity-matched subanalysis performed on patients with the highest risk for arthroplasty, 29 hips with capsular repair were matched to 81 hips with unrepaired capsules. While both groups experienced significant improvements in all PROs (P < .05), the group without capsule repair trended toward a higher conversion to arthroplasty rate when compared with the repair group. In addition, an odds ratio was calculated for the likelihood of converting to arthroplasty after having an unrepaired capsule compared with capsular repair (2.54 [95% CI, 0.873-7.37]; P = .087).

**Conclusion:** Patients undergoing primary hip arthroscopy with capsular repair experienced a high survivorship rate of 91% at a minimum 10-year follow-up. Patients who did not convert to arthroplasty saw favorable improvements in PROs and achieved high clinical benefit rates. In addition, among those patients at the highest risk for conversion to arthroplasty, a trend toward greater survivorship was observed with capsular repair.

## **Combining an Anterolateral Complex Procedure With Anterior Cruciate Ligament Reconstruction Reduces the Graft Reinjury Rate and Improves Clinical Outcomes: A Systematic Review and Meta-analysis of Randomized Controlled Trials**

F. Bosco, F. Giustra

DOI: <https://doi.org/10.1177/03635465231198494>

**Background:** Anterior cruciate ligament (ACL) reconstruction (ACLR) is a well-established surgical procedure, but it may not always restore complete rotational knee stability. Interest is increasing in anterolateral complex (ALC) procedures, lateral extra-articular tenodesis (LET) and anterolateral ligament reconstruction (ALLR), in association with ACLR to overcome this problem. The better ALC procedure, LET or ALLR, remains controversial to date.

**Purpose:** To analyze the patient-reported outcome measures and ACL reinjury rate after ACLR with an ALC procedure compared with after isolated ACLR, as well as to analyze the clinical results and graft failure rate of the LET group versus the ALLR group.

**Study Design:** Systematic review and meta-analysis; Level of evidence, 2.

**Methods:** A PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flowchart was used to conduct a comprehensive search of 5 databases: Scopus, MEDLINE, Embase, PubMed, and the Cochrane Database of Systematic Reviews. Only randomized controlled trials were included. Eligible articles were classified according to the levels of evidence of the Oxford Centre for Evidence-Based Medicine. A methodological quality assessment of randomized controlled trials was performed using the Risk of Bias 2 tool. The present systematic review and meta-analysis was registered on PROSPERO.

**Results:** A total of 14 clinical trials were included in the final analysis, with 1830 patients. Isolated ACLR or a combined procedure with LET or ALLR was performed, with several characteristics described, including the surgical technique, additional torn knee structures and their management, graft failure, complications, clinical outcomes, clinical and instrumental examinations to assess knee stability, and postoperative protocols. Regarding clinical outcomes, pivot-shift tests and reduced graft failure, a significant difference was found in the superiority of the combined ACLR associated with the ALC procedure compared with an isolated ACLR ( $P < .05$ ). No statistically significant difference was found between the 2 ALC procedures.

**Conclusion:** This systematic review and meta-analysis reported on the importance of combined ACLR and ALC procedures in patients with a high-grade rotational laxity, as both procedures, LET or ALLR, without superiority of one over the other, are associated with improved pivot-shift tests, patient-reported outcome measures, and reduced graft failure rates.

## Primary Hip Arthroscopy in Patients With Acetabular Dysplasia: A Systematic Review of Published Clinical Outcomes at Minimum 5-Year Follow-up

A.M. Boos, C.V. Nagelli

DOI: <https://doi.org/10.1177/03635465231197177>

**Background:** Hip arthroscopy in patients with borderline hip dysplasia has satisfactory outcomes at short-term follow-up; however, the data on midterm outcomes are inconsistent, and failure rates are high in some studies, limiting understanding of the role and utility of hip arthroscopy in this patient cohort.

**Purpose:** To provide an up-to-date, evidence-based review of the clinical outcomes of primary hip arthroscopy in patients with frank or borderline hip dysplasia at  $\geq 5$ -year follow-up and report the failure rate and progression to total hip arthroplasty in this cohort.

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

**Methods:** A comprehensive literature search was performed according to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. Studies were included if they evaluated outcomes of primary hip arthroscopy in patients with lateral center-edge angle (LCEA)  $< 25^\circ$  at  $\geq 5$ -year follow-up. Risk of bias assessment was performed using the methodological index for non-randomized studies scoring system. Level of evidence was determined using criteria from the Oxford Centre for Evidence-Based Medicine.

**Results:** Nine studies were included in this review. Patients with LCEA  $< 25^\circ$  demonstrated satisfactory clinical outcomes, high patient satisfaction, and significant postoperative improvements in patient-reported outcomes (PROs) at follow-up ranging from a  $\geq 5$  to 10 years. Studies comparing patients with dysplasia to those without did not demonstrate significant differences in preoperative, postoperative, or delta PROs or in failure, reoperation, or revision rates. There was no overall significant correlation between outcomes and LCEA stratification.

**Conclusion:** Hip arthroscopy in carefully selected patients with LCEA  $< 25^\circ$  can be successful at mid- to long-term follow-up and may provide clinical outcomes and failure rates comparable with patients with normal LCEA, understanding that this is a singular, 2-dimensional radiographic measure that does not differentiate instability from impingement or combinations thereof, warranting future studies delineating these differences. These findings suggest that hip dysplasia may not be an absolute contraindication for isolated hip arthroscopy and may serve as a viable intervention with consideration of staged future periacetabular osteotomy (PAO). Importantly, this review does not suggest that hip arthroscopy alters the natural history of dysplasia; therefore, patients with dysplasia should be counseled on the potential utility of PAO by appropriate hip preservation specialists.



Journal of Bone and Joint Surgery (JBJS), Volume 106, Issue 13+14

No Lower Extremity Abstracts

[BACK](#)

Clinical Orthopaedics and Related Research (CORR), Volume 482, Issue 7

No Lower Extremity Abstracts

[BACK](#)

Bone and Joint Journal (BJJ), Volume 106-B, issue 7

No Lower Extremity Abstracts

[BACK](#)

---

## Miscellaneous

Arthroscopy, Volume 40, Issue 7

No Miscellaneous Abstracts

Journal of Shoulder and Elbow Surgery (JSES), Volume 33, issue 7

No Miscellaneous Abstracts

[BACK](#)

Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA), Volume 32, Issue 7

No Miscellaneous Abstracts

[BACK](#)

American Journal of Sports Medicine (AJSM), Volume 52, Issue 8

No Miscellaneous Abstracts

[BACK](#)

Journal of Bone and Joint Surgery (JBJS), Volume 106, Issue 13+14

No Miscellaneous Abstracts

[BACK](#)



Clinical Orthopaedics and Related Research (CORR), Volume 482, Issue 7

No Miscellaneous Abstracts

[BACK](#)

Bone and Joint Journal (BJJ), Volume 106-B, issue 7

No Miscellaneous Abstracts

[BACK](#)