4Arthroscopy
JSES
KSSTA
Arthroscopy
4B journals

Issue 13, Arthroscopy, June 2018

Website www.4b.4abstracts.nl

Part of www.4abstracts.com

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

Contact 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.

Content
June

Upper extremity

Arthroscopy
Volume 34, issue 6

- Arthroscopic Superior Capsular Reconstruction With Acellular Dermal Allograft for the Treatment of Massive Irreparable Rotator Cuff Tears: Short-Term Clinical Outcomes and the Radiographic Parameter of Superior Capsular Distance

Journal of Shoulder and Elbow Surgery (JSES)
Volume 27, Issue 7

- Anatomic landmarks for arthroscopic suprapectoral biceps tenodesis: a cadaveric study
- Early return to baseline range of motion and strength after anterior shoulder instability surgery: a Multicenter Orthopaedic Outcomes Network (MOON) shoulder group cohort study
- Interscalene brachial plexus bolus block versus patient-controlled interscalene indwelling catheter analgesia for the first 48 hours after arthroscopic rotator cuff repair
- Paralabral cysts of the shoulder treated with isolated labral repair: effect on pain and radiologic findings
- Return to sport following arthroscopic Bankart repair: a systematic review

Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA)
Volume 26, Issue 6

- No Upper Extremity abstracts

American Journal of Sports Medicine (AJSM)
Volume 46, Issue 6

- Arthroscopic Surgery or Physical Therapy for Patients With Femoroacetabular Impingement Syndrome: A Randomized Controlled Trial With 2-Year Follow-up
- What Is the Appropriate Reference for Evaluating the Recovery of Supraspinatus Muscle Atrophy After Arthroscopic Rotator Cuff Repair? The Occupation Ratio of the Supraspinatus May Change After Rotator Cuff Repair Without Volumetric Improvement
- Arthroscopic Rotator Cuff Repair With Graft Augmentation of 3-Dimensional Biological Collagen for Moderate to Large Tears: A Randomized Controlled Study

Journal of Bone and Joint Surgery (JBJS)
Volume 100, Issue 9 & 10

- No Upper Extremity abstracts

Clinical Orthopaedics and Related Research (CORR)
Volume 476, Issue 6

- No Upper Extremity abstracts

Bone and Joint Journal (BJJ)
Volume 100, issue 6

- No Upper Extremity abstracts

BACK

Lower extremity

Arthroscopy
Volume 34, issue 6

- Influence of Muscle Fatty Degeneration on Functional Outcomes After Endoscopic Gluteus Medius Repair
- What Is the Risk Posed to the Lateral Femoral Cutaneous Nerve During the Use of the Anterior Portal of Supine Hip Arthroscopy and the Minimally Invasive Anterior Approach for Total Hip Arthroplasty?
- Arthroscopic Treatment of Iliopsoas Snapping in Patients With Radiographic Acetabular Dysplasia Using Iliopsoas Fractional Lengthening and Capsular Plication
- Minimal Clinically Important Difference and Substantial Clinical Benefit After Revision Hip Arthroscopy
- Meniscal Allograft Transplantation: The Effect of Cartilage Status on Survivorship and Clinical Outcome
- Capsulodesis Versus Bone Trough Technique in Lateral Meniscal Allograft Transplantation: Graft Extrusion and Functional Results
- Anterolateral Ligament Injury in Knee Dislocations
- The Influence of Segond Fracture on Outcomes After Anterior Cruciate Ligament Reconstruction
- The Long-Term Outcome After Early and Late Anterior Cruciate Ligament Reconstruction
- Ankle Arthroscopy for Diagnosis of Full-thickness Talar Cartilage Lesions in the Setting of Acute Ankle Fractures

Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA)
Volume 26, Issue 6

- No Lower Extremity abstracts

American Journal of Sports Medicine (AJSM)
Volume 46, Issue 6

- Defining the Learning Curve for Hip Arthroscopy: A Threshold Analysis of the Volume-Outcomes Relationship

Journal of Bone and Joint Surgery (JBJS)
Volume 100, Issue 9 & 10

- An Increased Lateral Femoral Condyle Ratio Is a Risk Factor for Anterior Cruciate Ligament Injury

Clinical Orthopaedics and Related Research (CORR)
Volume 476, Issue 6

- No Lower Extremity abstracts

Bone and Joint Journal (BJJ)
Volume 100, issue 6

- No Lower Extremity abstract

BACK

Upper extremity

Arthroscopy, Volume 34, Issue 6

Arthroscopic Superior Capsular Reconstruction With Acellular Dermal Allograft for the Treatment of Massive Irreparable Rotator Cuff Tears: Short-Term Clinical Outcomes and the Radiographic Parameter of Superior Capsular Distance

William T. Pennington, M.D., Brian A. Bartz, P.A.-C., Joann M. Pauli, P.A.-C., Carol E. Walker, B.A., William Schmidt, B.S.
Arthroscopy, June 2018, Volume 34, Issue 6, Pages 1764–1773
https://doi.org/10.1016/j.arthro.2018.01.009

Purpose
This outcome analysis presents 88 consecutive shoulders presenting with irreparable rotator cuff tears that we treated with arthroscopic superior capsular reconstruction (SCR) using an acellular dermal allograft. We also present the concept of superior capsular distance to quantitatively measure the decreased distance present upon restoration of superior capsular integrity.

Methods
A retrospective review was conducted of patients treated with arthroscopic SCR with a minimum 12-month follow-up. Outcome analysis was performed via an internet-based outcome-tracking system to evaluate visual analog scale (VAS) and American Shoulder and Elbow Surgeons (ASES) scores. Radiographic analysis of anteroposterior radiographs analyzed acromiohumeral interval and superior capsular distance. Digital dynamometric strength and functional range of motion assessments were also obtained. The main inclusion criteria for patients in this analysis was all patients who underwent superior capsular reconstruction during the time period of this report.

Results
Eighty-six patients with an average age of 59.4 years presented with massive rotator cuff tears (Cofield >5 cm). Outcome data revealed improvement in VAS (4.0-1.5), and ASES (52-82) scores at 1 year (P = .005). Radiographic analysis showed increase in acromiohumeral interval (mean 7.1 mm preoperatively to mean 9.7 mm at 1 year) (P = .049) and superior capsular distance (mean 52.9 mm preoperatively to mean 46.2 mm at 1 year) (P = .011). Strength improved significantly (forward flexion/abduction/external rotation of 4.8/4.1/7.7 lb preoperatively to 9.8/9.2/12.3 lb at 1 year) as well as range of motion (forward flexion/abduction of 120°/103° preoperatively to 160°/159° at 1 year) (P = .044/P = .007/P = .02). At follow-up, 90% of patients were satisfied.

Conclusions
This analysis reveals that arthroscopic SCR with acellular dermal allograft has been successful in decreasing pain and improving function in this patient subset. Radiographic analysis has also shown a consistent and lasting decrease in superior capsular distance and increase in acromiohumeral interval, indicating maintenance of superior capsular stability.

Level of Evidence
Level IV, retrospective case series.

BACK

Journal of Shoulder and Elbow Surgery (JSES), Volume 27, Issue 7

Anatomic landmarks for arthroscopic suprapectoral biceps tenodesis: a cadaveric study

Andrew S. Neviaser, MD, Diana C. Patterson, MD, Paul J. Cagle, MD, Bradford O. Parsons, MD, Evan L. Flatow, MD

Journal of Shoulder and Elbow Surgery, Volume 27, Issue 7, Published online: February 27, 2018

https://doi.org/10.1016/j.jse.2018.01.007

Background

Biceps tenodesis reduces the incidence of Popeye deformity occurring with tenotomy, but pain may occur with tenodesis superior to or within the bicipital groove. Arthroscopic suprapectoral tenodesis is an attractive alternative. The purpose of this study was to establish landmarks for arthroscopic suprapectoral tenodesis and determine the appropriate fixation point to optimize muscle tension.

Methods

Twelve fresh cadaveric shoulders were dissected. Urethane polymer was injected into the axillary artery. The position of the anterior branch of the axillary nerve was marked. The transverse humeral ligament was split, exposing the biceps (long head of the biceps [LHB]) from its origin to the pectoralis major tendon (PMT). The intra-articular portion was released. Measurements were taken from the proximal tendon to described landmarks.

Results

The mean length of the intra-articular LHB was 2.53 cm (range, 1.72-3.55 cm). The mean distance from the LHB origin to the inferior lesser tuberosity (LT) was 5.58 cm (range, 4.02-6.87 cm), and that to the superior border of the PMT was 8.46 cm (range, 6.46-10.78 cm). The suprapectoral tenodesis zone (inferior LT to superior PMT) was 2.96 cm (range, 1.54-4.40 cm). In all specimens, a branch of the anterior humeral circumflex arose medial to the LHB and distal to the LT and crossed the suprapectoral zone from medial to lateral at 1.49 ± 0.42 cm proximal to the PMT, approximately at the level of the axillary nerve. The musculocutaneous nerve was on average 3.06 cm (range, 1.86-3.76 cm) from the tenodesis zone.

Conclusion

A branch of the anterior humeral circumflex is a reliable landmark for identifying the mid-suprapectoral zone. The distance from the proximal LHB tendon to this crossing vessel averaged 6.32 cm in female specimens and 8.28 cm in male specimens. These findings allow appropriate tensioning of the LHB during arthroscopic suprapectoral tenodesis.

BACK

Early return to baseline range of motion and strength after anterior shoulder instability surgery: a Multicenter Orthopaedic Outcomes Network (MOON) shoulder group cohort study

Joseph A. Buckwalter V, MD, PhD, Brian R. Wolf, MD, MS, Natalie Glass, PhD, Matt Bollier, MD MOON Shoulder Group, John E. Kuhn, MD, MS, Carolyn M. Hettrich, MD, MPH

Journal of Shoulder and Elbow Surgery, Volume 27, Issue 7, Published online: March 24, 2018

https://doi.org/10.1016/j.jse.2018.02.035

Background

Patients often return to higher-level activities and sports at 4 to 8 months after anterior shoulder stabilization procedures. It is unknown what percentage of patients have regained normal function at this time frame and what factors predict residual deficits, range of motion (ROM), and strength after anterior shoulder instability surgery.

Methods

Ten participating sites throughout the United States enrolled patients in a prospective cohort study including primary, revision, arthroscopic, and open anterior stabilization procedures. Baseline demographic data and patient outcomes questionnaires were collected with initial physical examination, treatment, surgical findings, and surgical repair details. At the 6-month follow-up visit, ROM and strength measurements were collected and compared with preoperative measurements.

Results

There were 348 patients identified who underwent surgical treatment for anterior shoulder instability. Of these, 259 patients (74.0%) returned to baseline, and 89 (26.0%) did not return to baseline shoulder ROM (≥20° loss of ROM) or strength. A higher Beighton score ($P = .01$) and number of dislocations ($P < .01$) were associated with failure to regain baseline ROM and strength at early follow-up. No surgical variables were found to influence return to baseline function, including open vs. arthroscopic surgery, primary vs. revision surgery, and number of suture anchors.

Conclusions

By 4 to 8 months postoperatively, 76% of patients return to baseline ROM, 98% return to baseline strength, and 74% return to both baseline ROM and strength. An increased number of dislocations and generalized joint laxity were associated with failure to return to baseline ROM and strength at early follow-up after anterior shoulder instability surgery.

BACK

Interscalene brachial plexus bolus block versus patient-controlled interscalene indwelling catheter analgesia for the first 48 hours after arthroscopic rotator cuff repair

Jong-Ho Kim, MD1, Hyun Jung Koh, MD1, Dong Kyu Kim, MD, Hyo-Jin Lee, MD, PhD, Ki-Hyun Kwon, MD, Kwang-Yeol Lee, MD, Yang-Soo Kim, MD, PhD

Journal of Shoulder and Elbow Surgery, Volume 27, Issue 7, Published online: March 29, 2018

https://doi.org/10.1016/j.jse.2018.02.048

Background

We sought to compare the efficacy of interscalene brachial plexus bolus blockade (IBPBB) and patient-controlled interscalene indwelling catheter analgesia (PCIA) for postoperative pain management within 48 hours postoperatively in patients undergoing arthroscopic rotator cuff repairs (ARCR).

Methods

Patients undergoing ARCR were randomized into 3 groups by postoperative analgesia method. The IBPBB group received a mixed solution of 16 mL of 0.75% ropivacaine and 4 mL of 2% lidocaine as a bolus postoperatively. The PCIA group received a 10-mL bolus solution of 0.75% ropivacaine (4 mL) and 5% dextrose water (6 mL) just after the operation and continuous infusion of this solution. The control received only meperidine as needed, 12.5 mg, intravenously. Visual analog scale (VAS) pain scores were evaluated for the first 48 hours postoperatively.

Results

For the first 2 hours postoperatively, VAS scores in the IBPBB group were significantly lower than in the PCIA group and control group, but at 12 and 24 hours postoperatively, VAS scores of the IBPBB group were significantly higher than the PCIA group ($P < .05$). At 48 hours postoperatively, there was no significant difference in VAS scores among the 3 groups ($P = .169$). The method of analgesia was the only factor affecting pain scores at 24 hours postoperatively ($P < .05$).

Conclusions

IBPBB provided effective immediate postoperative analgesia until 6 hours postoperatively. Especially until postoperative 2 hours, the VAS pain score was less than 1 point in the IBPBB group; however, there was significant rebound pain at 12 hours after surgery. During the first 24 hours postoperatively, PCIA reduced postoperative pain without rebound pain. Surgeons should choose methods for control of postoperative pain considering the advantages and disadvantages of each analgesic method.

BACK

Paralabral cysts of the shoulder treated with isolated labral repair: effect on pain and radiologic findings

Cecilie P. Schrøder, MD, Kirsten Lundgreen, MD, PhD, Rune Kvakestad, MD

Journal of Shoulder and Elbow Surgery, Volume 27, Issue 7, Published online: February 13, 2018

https://doi.org/10.1016/j.jse.2017.12.022

Background

Paralabral cysts emanating from posterosuperior labral tears may compress the suprascapular nerve and induce neuropathy. This study prospectively assessed patients with labral tears and symptomatic paralabral cysts treated with isolated labral repair. Pain relief, time to cyst resolution, reversibility of muscular edema, atrophy, fatty infiltration, and bone erosion were evaluated.

Methods

Forty-seven patients with symptomatic posterosuperior paralabral cysts were treated with isolated labral repair. Magnetic resonance imaging (MRI) was repeated 6 and 12 weeks postoperatively or until cyst resolution. In a subgroup of 15 patients, MRI was performed the day before the operation, the first postoperative day, and at 2 weeks.

Results

Median cyst size was 6.8 cm^3 (range, 2.1-88.9; standard deviation [SD], 18.3 cm^3). Preoperatively, 20 patients (43%) presented clinical muscle atrophy and radiologic edema on MRI, 8 had fatty infiltration, and 3 presented bony scapular erosion caused by cyst compression. Median time to cyst resolution and regression of muscular edema was 11 weeks (range, 3-20; SD, 8.8 weeks) and 14 weeks (range, 3-52; SD 10.6 weeks), respectively. Preoperative fatty infiltration grade I and II of the supraspinatus and infraspinatus muscles was reduced in two patients. Bony erosions remodeled after cyst resolution. Mean pain ratings (1-10 scale) improved from 7.7 (SD, 1.8) to 1.3 (SD, 1.3; 95% confidence interval of difference, 5.5-6.8; $P < .001$).

Conclusion

Labral repair leads to significant pain relief with cyst resolution within 2 to 3 months in most patients. Secondary muscle pathology (ie, edema, atrophy and fatty infiltration) may be partially or completely reversed. Bony erosion caused by cyst compression may be remodeled after cyst resolution.

BACK

Return to sport following arthroscopic Bankart repair: a systematic review

Muzammil Memon, MD, Jeffrey Kay, MD, Edwin R. Cadet, MD, Shayan Shahsavar, BSc, Nicole Simunovic, MSc, Olufemi R. Ayeni, MD, PhD, FRCSC

Journal of Shoulder and Elbow Surgery, Volume 27, Issue 7, Published online: April 02, 2018

https://doi.org/10.1016/j.jse.2018.02.044

Hypothesis and background

The purpose of this systematic review was to determine the return-to-sport rate following arthroscopic Bankart repair, and it was hypothesized that patients would experience a high rate of return to sport.

Methods

The MEDLINE, Embase, and PubMed databases were searched by 2 reviewers, and the titles, abstracts, and full texts were screened independently. The inclusion criteria were English-language studies investigating arthroscopic Bankart repair in patients of all ages participating in sports at all levels with reported return-to-sport outcomes. A meta-analysis of proportions was used to combine the rate of return to sport using a random-effects model.

Results

Overall, 34 studies met the inclusion criteria, with a mean follow-up time of 46 months (range, 3-138 months). The pooled rate of return to participation in any sport was 81% (95% confidence interval [CI], 74%-87%). In addition, the pooled rate of return to the preinjury level was 66% (95% CI, 57%-74%) (n = 1441). Moreover, the pooled rate of return to a competitive level of sport was 82% (95% CI, 79%-88%) (n = 273), while the pooled rate of return to the preinjury level of competitive sports was 88% (95% CI, 66%-99%).

Conclusion

Arthroscopic Bankart repair yields a high rate of return to sport, in addition to significant alleviation of pain and improved functional outcomes in the majority of patients. However, approximately one-third of athletes do not return to their preinjury level of sports.

BACK

American Journal of Sports Medicine (AJSM), Volume 46, Issue 6

Arthroscopic Surgery or Physical Therapy for Patients With Femoroacetabular Impingement Syndrome: A Randomized Controlled Trial With 2-Year Follow-up

Nancy S. Mansell, DPT*, Daniel I. Rhon, DSc†‡§, John Meyer, DPT‖, John M. Slevin, MS¶, Bryant G. Marchant, MD¶

First Published February 14, 2018; pp. 1306–1314

http://journals.sagepub.com/doi/full/10.1177/0363546517751912

Background:
Arthroscopic hip surgery has risen 18-fold in the past decade; however, there is a dearth of clinical trials comparing surgery with nonoperative management.

Purpose:
To determine the comparative effectiveness of surgery and physical therapy for femoroacetabular impingement syndrome.

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

Methods:
Patients were recruited from a large military hospital after referral to the orthopaedic surgery clinic and were eligible for surgery. Of 104 eligible patients, 80 elected to participate, and the majority were active-duty service members (91.3%). No patients withdrew because of adverse events. The authors randomly selected patients to undergo either arthroscopic hip surgery (surgery group) or physical therapy (rehabilitation group). Patients in the rehabilitation group began a 12-session supervised clinic program within 3 weeks, and patients in the surgery group were scheduled for the next available surgery at a mean of 4 months after enrollment. Patient-reported outcomes of pain, disability, and perception of improvement over a 2-year period were collected. The primary outcome was the Hip Outcome Score (HOS; range, 0-100 [lower scores indicating greater disability]; 2 subscales: activities of daily living and sport). Secondary measures included the International Hip Outcome Tool (iHOT-33), Global Rating of Change (GRC), and return to work at 2 years. The primary analysis was on patients within their original randomization group.

Results:
Statistically significant improvements were seen in both groups on the HOS and iHOT-33, but the mean difference was not significant between the groups at 2 years (HOS activities of daily living, 3.8 [95% CI, –6.0 to 13.6]; HOS sport, 1.8 [95% CI, –11.2 to 14.7]; iHOT-33, 6.3 [95% CI, –6.1 to 18.7]). The median GRC across all patients was that they “felt about the same” (GRC = 0). Two patients assigned to the surgery group did not undergo surgery, and 28 patients in the rehabilitation group ended up undergoing surgery. A sensitivity analysis of “actual surgery” to “no surgery” did not change the outcome. Twenty (33.3%) patients who underwent surgery and 4 (33.3%) who did not undergo surgery were medically separated from military service at 2 years.

Conclusion:
There was no significant difference between the groups at 2 years. Most patients perceived little to no change in status at 2 years, and one-third of military patients were not medically fit for duty at 2 years. Limitations include a single hospital, a single surgeon, and a high rate of crossover.

BACK

What Is the Appropriate Reference for Evaluating the Recovery of Supraspinatus Muscle Atrophy After Arthroscopic Rotator Cuff Repair? The Occupation Ratio of the Supraspinatus May Change After Rotator Cuff Repair Without Volumetric Improvement

Tsuyoshi Sasaki, MD*, Hitoshi Shitara, MD, PhD*†, Atsushi Yamamoto, MD, PhD*, Noritaka Hamano, MD*, Tsuyoshi Ichinose, MD, PhD*, Daisuke Shimoyama, MD‡, Tsutomu Kobayashi, MD, PhD§, Toshihisa Osawa, MD, PhD‖, Yoshito Tsushima, MD, PhD¶, Kenji Takagishi, MD, PhD‡, Hirotaka Chikuda, MD, PhD*

First Published March 20, 2018; pp. 1416–1423

http://journals.sagepub.com/doi/full/10.1177/0363546518758313

Background:
Supraspinatus muscle atrophy is typically assessed by the occupation ratio of the cross-sectional area of the muscle belly to the supraspinatus fossa at the medial border of the coracoid process in a slice along the oblique-sagittal plane on MRI. Previous studies have shown that the occupation ratio of the supraspinatus changed soon after rotator cuff repair compared with before surgery. However, no studies have examined the perioperative change in the muscle volume assessed with 3-dimensional measurement.

Purpose:
To compare the volume of the supraspinatus muscle before and soon after surgery by using 3-dimensional imaging and to elucidate whether the changes in the occupation ratio represent corresponding changes in the muscle volume.

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

Methods:
Thirty shoulders of patients who underwent arthroscopic rotator cuff repair were evaluated. T2-weighted images were obtained before surgery and 2 weeks after surgery. After the muscle and its tendon borders were plotted, the supraspinatus and its tendon were segmented with interactive thresholding in all slices. The 3-dimensional images were then reconstructed and the volumes calculated. Changes in the muscle volume and the occupation ratio were evaluated via 3-dimensional and 2-dimensional image assessments. The 3-dimensional and 2-dimensional findings before and after surgery were compared by use of paired t tests.

Results:
The mean muscle volume did not change significantly at a time point soon after surgery in any group. In patients with little medial retraction (n = 7) or isolated detachment at the superior facet (n = 17), no significant differences were noted in the occupation ratio after surgery compared with before surgery. In contrast, in patients with moderate medial retraction (n = 23) or extended tearing in the transverse direction (n = 13), the occupation ratio increased significantly.

Conclusion:
Although the muscle volume did not change soon after surgery compared with the preoperative values, in patients with moderate medial retraction or extended tearing in the transverse direction, the occupation ratio increased, probably due to lateral traction of the supraspinatus muscle. We recommend that MRI findings obtained soon after surgery be used as the time-zero reference for evaluating the postoperative changes in the supraspinatus.

BACK

Arthroscopic Rotator Cuff Repair With Graft Augmentation of 3-Dimensional Biological Collagen for Moderate to Large Tears: A Randomized Controlled Study

You-Zhi Cai, MD*†, Chi Zhang, MD*†‡, Ri-Long Jin, MD*, Tong Shen, MD§, Peng-Cheng Gu, MD*, Xiang-Jin Lin, MD*‡, Jian-De Chen, MD‖

First Published March 13, 2018; pp. 1424–1431

http://journals.sagepub.com/doi/full/10.1177/0363546518756978

Background: Due to the highly organized tissue and avascular nature of the rotator cuff, rotator cuff tears have limited ability to heal after the tendon is reinserted directly on the greater tubercle of the humerus. Consequently, retears are among the most common complications after rotator cuff repair. Augmentation of rotator cuff repairs with patches has been an active area of research in recent years to reduce retear rate.

Hypothesis: Graft augmentation with 3D collagen could prevent retears of the repaired tendon and improve tendon-bone healing in moderate to large rotator cuff tears

Study Design: Randomized controlled study; Level of evidence, 2.

Methods: A prospective, randomized controlled study was performed in a consecutive series of 112 patients age 50 to 85 years who underwent rotator cuff repair with the suture-bridge technique (58 patients, control group) or the suture-bridge technique augmented with 3-dimensional (3D) collagen (54 patients, study group). All patients were followed for 28.2 months (range, 24-36 months). Visual analog scale score for pain, University of California Los Angeles (UCLA) shoulder score, and Constant score were determined. Magnetic resonance imaging was performed pre- and postoperatively (at a minimum of 24 months) to evaluate the integrity of the rotator cuff and the retear rate of the repaired tendon. Three patients in each group had biopsies at nearly 24 months after surgery with histological assessment and transmission electron microscopy.

Results: A total of 104 patients completed the final follow-up. At the 12-month follow-up, the UCLA shoulder score was 28.1 ± 1.9 in the study group, which was significantly better than that in the control group (26.9 ± 2.1, P = .002). The Constant score was also significantly better in the study group (87.1 ± 3.2) than in the control group (84.9 ± 4.2, P = .003). However, at the final follow-up, no significant differences were found in the UCLA shoulder scores (29.4 ± 1.9 in the control group and 30.0 ± 1.6 in the study group, P = .052) or Constant scores (89.9 ± 3.2 in the control group and 90.8 ± 3.5 in the study group, P = .18). In terms of structural integrity, more patients in the study group had a favorable type I retear grade (18/51) than in the control group (10/53) (P = .06). The postoperative retear rate was 34.0% in the control group and 13.7% in the study group, thus indicating a significantly lower retear rate in the study group (P = .02). Biopsy specimens of the tendon-bone interface in 6 patients revealed more bone formation and more aligned fibers with larger diameters in the study group than in the control group. No intraoperative or postoperative complications were noted in either group.

Conclusion: 3D collagen augmentation could provide effective treatment of moderate to large rotator cuff tears, providing substantial functional improvement, and could reduce the retear rate. This technique could also promote new tendon-bone formation, thus exerting a prominent effect on tendon-bone healing.

BACK

Lower Extremity

Arthroscopy, Volume 34, Issue 6

Influence of Muscle Fatty Degeneration on Functional Outcomes After Endoscopic Gluteus Medius Repair

Mathieu Thaunat, M.D., Gilles Clowez, M.D., Antoine Desseaux, M.D., Colin G. Murphy, M.D., Mouhcine Sbiyaa, M.D., Eric Noël, M.D., Bertrand Sonnery-Cottet, M.D.

Arthroscopy, June 2018, Volume 34, Issue 6, Pages 1816–1824

https://doi.org/10.1016/j.arthro.2018.01.005

Purpose
To report the early outcomes of endoscopic repair of tears of the gluteus medius tendon and to determine whether the fatty degeneration had an influence on clinical results.

Methods
Between October 2012 and June 2014, data were prospectively collected and retrospectively reviewed for all patients who underwent endoscopic gluteus medius repair. Patients were assessed pre- and postoperatively using the modified Harris hip score, the nonarthritic hip score, and visual analog scale for pain. The gluteus minimus and the 3 distinct parts of the gluteus medius (anterior, middle, and posterior) were assigned a grade of fatty degeneration on preoperative magnetic resonance imaging scans.

Results
Twenty-two hips (in 20 patients) were assessed with the mean follow-up of 31.7 months (range: 24 to 47 months). There were 15 partial-thickness and 7 full-thickness tears. No patient was lost to follow-up. The mean age at the time of surgery was 66 years (range: 45 to 82 years). Of the 20 magnetic resonance imaging–assessed hips included in the study, 14 had fatty degeneration of the gluteus medius (partial-thickness tears: n = 8, full-thickness tears: n = 6). The mean gluteus medius fatty degeneration index was 1.57 (range: 0.33 to 3.33). Postoperative improvement was seen in modified Harris hip score (33.7 points vs 80.2 points, P = .0001), nonarthritic hip score (47.7 points vs 76.8 points, P = .0001), and in the visual analog scale for pain (7.2 vs 3.2, P < .05). Increasing preoperative fatty degeneration index of the gluteus medius correlated with decreased postoperative functional hip score values (regression coefficient, 0.5839; P < .0001). Tear characteristics (partial or full-thickness) did not correlate with fatty degeneration or muscular atrophy and did not affect postoperative outcomes.

Conclusions
Endoscopic surgical repair can be an effective treatment of gluteus medius tears in the short term. Fatty degeneration of the gluteus medius and minimus has a negative impact on clinical outcomes of endoscopic gluteus medius repair.

Level of Evidence
Level IV, therapeutic case series (no control group).

BACK

What Is the Risk Posed to the Lateral Femoral Cutaneous Nerve During the Use of the Anterior Portal of Supine Hip Arthroscopy and the Minimally Invasive Anterior Approach for Total Hip Arthroplasty?

Jonathan D. Bartlett, B.A.(Hons), John E. Lawrence, M.A., M.B., B.Chir., M.R.C.S., Vikas Khanduja, M.B.B.S., M.A., M.Sc., F.R.C.S.(Tr&Orth)

Arthroscopy, June 2018, Volume 34, Issue 6, Pages 1833–1840

https://doi.org/10.1016/j.arthro.2018.01.012

Purpose
To determine: (1) What is the proximity of the lateral femoral cutaneous nerve (LFCN) to the anterior portal (AP) used in supine hip arthroscopy? (2) What is the proximity of the LCFN to the incision in the minimally invasive anterior approach (MIAA) for total hip arthroplasty? (3) What effect does lateralizing the AP have on the likelihood of nerve injury? (4) What branching patterns are observable in the LFCN?

Methods
Forty-five hemipelves were dissected. The LFCN was identified and its path dissected. The positions of the nerve in relation to the AP and the MIAA incision were measured.

Results
The AP intersected with 38% of nerves. In the remainder, the LFCN was located 5.7 ± 4.5 mm from the portal's edge. In addition, 44% of nerves crossed the incision of the MIAA. Of those that did not, the average minimum distance from the incision was 14.4 ± 7.0 mm. We found a significant reduction in risk if the AP is moved medially by 5 mm or laterally by 15 mm ($P = .0054$ and $P = .0002$). The LFCN showed considerable variation with 4 branching variants.

Conclusions
These results show that the LFCN is at high risk during supine hip arthroscopy and the MIAA, emphasizing the need for meticulous dissection. We suggest that relocation of the AP 5 mm medially or 15 mm laterally will reduce the risk to the LFCN.

Clinical Relevance
These findings should aid surgeons in minimizing the risk to the LCFN during hip arthroscopy and the minimally invasive anterior approach to the hip.

BACK

Arthroscopic Treatment of Iliopsoas Snapping in Patients With Radiographic Acetabular Dysplasia Using Iliopsoas Fractional Lengthening and Capsular Plication

David E. Hartigan, M.D., Itay Perets, M.D., Mary R. Close, B.S., John P. Walsh, M.A., Edwin O. Chaharbakhshi, B.S., Mitchell R. Mohr, B.S., Benjamin G. Domb, M.D.

Arthroscopy, June 2018, Volume 34, Issue 6, Pages 1841–1850

https://doi.org/10.1016/j.arthro.2018.01.027

Purpose
The purpose of this study was to evaluate the greater than 2-year patient-reported outcomes (PROs) and patient satisfaction of patients who were treated with hip arthroscopy for snapping iliopsoas tendons that were painful with concomitant acetabular dysplasia and who underwent iliopsoas lengthening for symptomatic iliopsoas tendon snapping with concomitant capsular plication and treatment of hip impingement. Secondary measures included observation of the change in the Tönnis grade at greater than 2 years' follow-up.

Methods
Between July 2009 and December 2011, data on patients with a lateral center-edge angle (LCEA) of less than 25° (range, 19°-24°) who underwent hip arthroscopy with central-compartment iliopsoas fractional lengthening and capsular plication were prospectively collected and retrospectively reviewed. Interportal capsular repair was performed using between 2 and 5 simple sutures. Patients also underwent procedures to treat hip impingement pathology. All patients had preoperative and minimum 2-year postoperative PRO measures: modified Harris Hip Score, Hip Outcome Score–Activities of Daily Living subscale, Hip Outcome Score–Sports-Specific subscale, and Non-arthritic Hip Score. The visual analog scale score and patient satisfaction with surgery (from 0 to 10) were also collected. Radiographs were analyzed preoperatively and at latest follow-up to assess progression of the Tönnis grade.

Results
We analyzed 32 patients who met the inclusion criteria (30 female and 2 male patients; mean age, 25 years). The mean LCEA and anterior center-edge angle were 21.6° and 25.5°, respectively. Four patients required revision arthroscopy for labral retears. Among the 28 patients who did not undergo revision surgery, the modified Harris Hip Score, Hip Outcome Score–Activities of Daily Living subscale, Hip Outcome Score–Sports-Specific subscale, and Non-arthritic Hip Score improved from 68.7 to 83.5, from 64.9 to 86.6, from 71.6 to 86.7, and from 52.6 to 75.8, respectively ($P < .001$). The visual analog scale score improved from 5.6 preoperatively to 1.9 at latest follow-up ($P < .001$). The mean patient satisfaction rating was 8.0. There was no radiographic progression of the Tönnis grade at final follow-up.

Conclusions
This study showed that patients with an LCEA of less than 25° and associated painful iliopsoas snapping can be treated by addressing concomitant pathology and performing central-compartment fractional lengthening of the iliopsoas tendon with concomitant capsular plication and have high satisfaction, improvement in PROs, and improved pain scores, without significant progression of osteoarthritis.

Level of Evidence
Level IV, case series.

BACK

Minimal Clinically Important Difference and Substantial Clinical Benefit After Revision Hip Arthroscopy

Benedict U. Nwachukwu, M.D., M.B.A., Brenda Chang, M.S., M.P.H., Ben-Zion Rotter, B.A., Bryan T. Kelly, M.D., Anil S. Ranawat, M.D., Danyal H. Nawabi, M.D., F.R.C.S.

Arthroscopy, June 2018, Volume 34, Issue 6, Pages 1862–1868

https://doi.org/10.1016/j.arthro.2018.01.050

Purpose
To define minimal clinically important difference (MCID) and substantial clinical benefit (SCB) in revision hip arthroscopy.

Methods
The modified Harris Hip Score (mHHS), the Hip Outcome Score (HOS), and the international Hip Outcome Tool (iHOT-33) were administered to revision hip arthroscopy patients. At 1 year postoperatively, patients graded their hip function based on anchor responses. SCB was defined as both a net change and an absolute value. Receiver operating characteristic analysis with area under the curve was used to confirm psychometric values. A distribution-based method was used for MCID.

Results
Forty-nine patients were included with a mean age of 29.7 (±8.6) years. The most common indication for revision hip arthroscopy was residual femoroacetabular impingement (FAI; N = 34; 69.4%) followed by capsular management (N = 8; 16.3%). At 1-year follow-up, 34 patients reported feeling improved. Outcome score change corresponding to MCID and SCB net change for the mHHS, HOS Activities of Daily Living (ADL), HOS Sports, and iHOT-33 was 7.9/23.1, 7.9/16.2, 13.1/25.0, and 12.8/25.5, respectively. A higher proportion of patients with residual FAI achieved MCID compared with patients with other diagnoses. On the preoperative HOS ADL, HOS Sports, and iHOT-33, patients scoring below 67.7 (0.78), 55.6 (0.81), and 35.7 (0.73) were significantly more likely to achieve SCB postoperatively. Thirty-four patients (73.9%) were classified as receiving physical function improvement, and on the HOS Sports, MCID was achieved by 65% whereas 43% met the SCB criteria.

Conclusions
MCID values ranged from 7.9 on the mHHS and the HOS ADL to 13.1 on the HOS Sports. SCB net change ranged from 16.2 on the HOS ADL to 25.2 on the iHOT-33, whereas absolute SCB ranged from 82.4 on the iHOT-33 to 84.7 on the mHHS. Residual FAI and capsular management were the most common indications for revision surgery with patients who underwent surgery for the former found to be most likely to achieve clinically significant improvement.

Level of Evidence
Level IV, case series.

BACK

Meniscal Allograft Transplantation: The Effect of Cartilage Status on Survivorship and Clinical Outcome

Ahmed Mahmoud, B.Ph.Ty., James Young, F.R.C.S.(Orth), Joanne Bullock-Saxton, B.Ph.Ty., Peter Myers, F.R.A.C.S.

Arthroscopy, June 2018, Volume 34, Issue 6, Pages 1871–1876.e1

https://doi.org/10.1016/j.arthro.2018.01.010

Purpose
To evaluate the survivorship of meniscal allograft transplantations (MATs), their clinical outcomes, and to compare the effect of perioperative cartilage status on survivorship.

Method
A consecutive series of MATs with a minimum postsurgical time of 4 years were included from a prospectively collected database from 2001 to 2015. Mechanical failure was defined as transplant removal or knee arthroplasty. The effect of peri-operative cartilage status on survivorship was analyzed using a Kaplan-Meier analysis. Also, pre- and postoperative outcome scores were evaluated. The clinical outcome tools used were the Lysholm Knee Scoring Scale, Tegner Activity Level Scale, Oxford Knee Score (OKS) and International Knee Documentation Committee (IKDC) subjective knee form.

Results
The mean (±SD) postsurgical follow-up (n = 45 MATs, 43 knees) was 8.6 ± 3.4 years. Among the 45 MATs, 31 had an Outerbridge Cartilage Score (OCS) of 3 to 4. Eight transplants (17.7%) failed at an average of 6.1 ± 4.4 years postoperatively, and all occurred in patients with an OCS of 3 to 4. Functional outcomes showed significant improvement in the Lysholm by 17.7 points (95% confidence interval [CI], 8.5-26.9, P < .001), OKS by 8 (CI, 0.81-15.11, P = .031), and IKDC scores by 15.6 (CI, 6-25.2, P = .001). However, the Tegner score improvement by 0.6 was not statistically significant (CI, 0.3545-1.6212, P = .2). In a subanalysis, the OCS 3-4 group had a significant improvement in all the clinical outcomes except the Tegner score. In the OCS 0-2 group, the Lysholm and Tegner significantly improved, whereas the improvement in the OKS and IKDC was not significant.

Conclusions
MAT is a viable and effective surgical option for the painful meniscus-deficient knee, with good survivorship and functional outcomes in the medium to long term. Mechanical failure is associated with advanced OCS. Patients with minimal cartilage damage have improved MAT survivorship but both groups benefit clinically.

Level of Evidence
Level IV, case series.

BACK

Capsulodesis Versus Bone Trough Technique in Lateral Meniscal Allograft Transplantation: Graft Extrusion and Functional Results

Angel Masferrer-Pino, M.D., Joan C. Monllau, M.D., Ph.D., Maximiliano Ibáñez, M.D., Juan I. Erquicia, M.D., Xavier Pelfort, M.D., Ph.D., Pablo E. Gelber, M.D., Ph.D.

Arthroscopy, June 2018, Volume 34, Issue 6, Pages 1879–1888

https://doi.org/10.1016/j.arthro.2018.01.017

Purpose
To compare the radiographic results (in terms of graft extrusion) and the functional results of lateral meniscus allograft transplantations (MAT) performed with a bony fixation technique or with a soft tissue fixation technique after capsulodesis.

Methods
A prospective series of 29 consecutive lateral MAT was analyzed. The inclusion criterion for MAT was lateral joint line pain due to a previous meniscectomy. Malalignment, patients who had an Ahlback grade greater than II, and patients with a body mass index over 30 were considered as the exclusion criterion to prevent confounding results. Fifteen of the grafts were fixed with a bony fixation technique (group A). The remaining 14 cases (group B) were fixed with sutures through bone tunnels after lateral capsular fixation (capsulodesis). All patients were studied with magnetic resonance imaging to determine the degree of meniscal extrusion at an average of 18 months of surgery (range, 12-48 months). Meniscal extrusion was measured on coronal magnetic resonance imaging. To standardize the results, the percentage of meniscus extruded for each group was also calculated and compared. The functional results were analyzed by means of standard knee scores (Lysholm, Tegner, and visual analog scale).

Results
If we consider the first 4 cases of group B as the learning curve of the new technique, we observe that group A had 8 cases (53.3%) of major extrusion, whereas group B had 1 case (7.1%) ($P = .02$). When comparing the degree of meniscal extrusion with the type of fixation employed, an even lower percentage of extruded menisci was found in group B ($P = .01$). The final follow-up Lysholm score in group A was 94.33 ± 5.96 ($P < .001$) and 91.43 ± 6.19 ($P < .001$) in group B. The median follow-up Tegner score significantly improved from 4 (range, 2-5) to 7 (range, 6-9) in group A ($P < .001$) and from 4 (range, 3-5) to 7 (range, 6-8) in group B ($P < .001$). The average visual analog scale score dropped down 5.87 and 7.29 points in groups A and B, respectively ($P < .001$). The Knee Injury and Osteoarthritis Outcome Score improved from 51.98 ± 2.84 to 90.88 ± 7.53 in group A ($P < .001$) and from 50.44 ± 2.32 to 92.01 ± 6.71 in group B ($P < .001$). Patient satisfaction with regard to the procedure stood at a mean of 3.6 ± 0.2 points out of a maximum of 4 in group A and 3.8 ± 0.4 in group B. There were no complications in this series.

Conclusions
The capsulodesis technique in lateral MAT proved not to be statistically different at decreasing the degree of meniscal extrusion with respect to the bone-bridge fixation. If the first 4 cases using the new capsulodesis technique had not included in the results, the capsulodesis technique would have effectively presented better results relative to the degree of meniscal extrusion compared with the bone-bridge fixation technique. In addition, the functional results were similar.

Level of Evidence
Level II, prospective comparative study.

BACK

Anterolateral Ligament Injury in Knee Dislocations

Yousef Marwan, B.Med.Sc., B.M.B.Ch., Shubhang Kulkarni, M.B.B.S., F.R.C.R., Abdullah Addar, M.B.B.S., Nizar Algarni, M.B.B.S., M.Sc., Iskandar Tamimi, M.D., Mathieu Boily, M.D., F.R.C.P.C., Paul A. Martineau, M.D.C.M., F.R.C.S.C.

Arthroscopy, June 2018, Volume 34, Issue 6, Pages 1891–1897

https://doi.org/10.1016/j.arthro.2018.01.020

Purpose
The purpose of this study is to describe the prevalence and associated factors of anterolateral ligament (ALL) injury in knee dislocation (KD).

Methods
A retrospective review of charts and radiological images was done for patients who underwent multiligamentous knee reconstruction surgery for KD in the authors' institution from May 2008 to December 2016. The inclusion criteria were both genders, skeletally mature, and first dislocation. Previous anterior cruciate ligament injury or surgery were the exclusion criteria. Magnetic resonance imaging was used to describe the ALL injury. The association of ALL injury with other variables related to the injury and the patient's background features was examined.

Results
Forty-eight patients (49 knees) were included. The mean age of the patients was 32.3 ± 10.6 years. High-energy trauma was the mechanism of dislocation in 28 (57.1%) knees. Thirty-one knees (63.3%) were classified as KD type IV. Forty-five (91.8%) knees had a complete ALL injury, and 3 (6.1%) knees had incomplete ALL injury. Forty (81.6%) knees had a complete ALL injury at the proximal fibers of the ALL, while 23 (46.9%) knees had complete distal ALL injury. None of the 46 (93.9%) knees with lateral collateral ligament injury had normal proximal ALL fibers ($P = .012$). Injury to the distal fibers of the ALL, as well as overall ALL injury, was not associated with any other variables ($P > .05$). Moreover, all patients with associated tibial plateau fractures (9; 18.4%) had abnormality of the proximal fibers of the ALL ($P = .033$).

Conclusions
ALL injury is highly prevalent among dislocated knees. Most of the injuries are of high grade and involve the proximal, suprameniscal, fibers of the ligament.

Level of Evidence
Level IV, retrospective case series with no comparison group.

BACK

The Influence of Segond Fracture on Outcomes After Anterior Cruciate Ligament Reconstruction

Kyoung Ho Yoon, M.D., Jung Suk Kim, M.D., Soo Yeon Park, M.D., Sang Eon Park, M.D.

Arthroscopy, June 2018, Volume 34, Issue 6, Pages 1900–1906

https://doi.org/10.1016/j.arthro.2018.01.023

Purpose
To determine the prevalence of Segond fractures using computed tomography (CT) and to investigate the effects of Segond fractures on the outcomes of primary anterior cruciate ligament (ACL) reconstruction for isolated ACL injuries.

Methods
Between January 2010 and July 2015, we retrospectively evaluated 383 patients who underwent primary ACL reconstruction, who underwent CT scans immediately after surgery, and who were available at 2 years of follow-up. The absence or presence of a Segond fracture was confirmed using CT. The following parameters were evaluated in all patients at the 2-year follow-up visit: clinical scores (International Knee Documentation Committee subjective score, Lysholm score, and Tegner activity score) and knee joint stability (anterior drawer test, Lachman test, pivot-shift test, and side-to-side difference in anterior tibial translation on Telos stress radiographs).

Results
Among 383 patients with primary ACL tears, a Segond fracture was confirmed in 8.9% (n = 34) using 3-dimensional CT. We placed 349 patients into the group with ACL tears without Segond fractures (group A) and the other 34 into the group with ACL tears with Segond fractures (group B). Between the 2 groups, there were no significant differences in the postoperative International Knee Documentation Committee subjective score (P = .97), Lysholm score (P = .17), or Tegner activity score (P = .95). No significant differences in the anterior drawer test (P = .28), Lachman test (P = .45), pivot-shift test (P = .14), and side-to-side difference in anterior tibial translation on Telos stress radiographs (P = .93) between the 2 groups were found preoperatively and postoperatively.

Conclusions
The presence of a Segond fracture did not affect knee joint stability in patients with ACL tears. Moreover, the 2 groups did not show significant differences in clinical scores or knee joint stability after undergoing ACL reconstruction.

Level of Evidence
Level III, retrospective comparative study.

BACK

The Long-Term Outcome After Early and Late Anterior Cruciate Ligament Reconstruction

Ioannis Karikis, M.D., Martina Åhlén, M.D., Ph.D., Ninni Sernert, R.P.T., Ph.D., Lars Ejerhed, M.D., Ph.D., Lars Rostgård-Christensen, M.D., Jüri Kartus, M.D., Ph.D.

Arthroscopy, June 2018, Volume 34, Issue 6, Pages 1907–1917

https://doi.org/10.1016/j.arthro.2018.01.026

Purpose
To compare long-term clinical and radiographic outcomes in patients undergoing either early (group A) or late (group B) surgery after anterior cruciate ligament (ACL) injury.

Methods
ACL reconstruction using hamstring tendon autografts was performed in 30 patients in group A (median age, 23 years; range, 17-49 years) and 31 patients in group B (median age, 27 years; range, 17-38 years). The patients in group A were operated on within 5 months (median, 3 months; range, 2-5 months) of injury, whereas those in group B were operated on more than 24 months (median, 30 months; range, 24-48 months) after injury. The follow-up period was 10 years (median, 117 months [range, 77-222 months] in group A and 129 months [range, 77-206 months] in group B; P = .44). Multiple objective clinical evaluation tests and patient-reported outcome measures were obtained preoperatively and at follow-up. At follow-up, radiographic assessments of knee osteoarthritis (OA) bilaterally were performed.

Results
The frequency of meniscectomy at the index operation was significantly lower in group A (20%) than in group B (52%) (P = .01). There were no significant differences between the groups in terms of Tegner and Lysholm scores and laxity tests both preoperatively and at follow-up. Both groups improved over time in terms of Tegner and Lysholm scores (P < .05). At follow-up, significantly more medial-compartment OA in the index knee was found in group B than in group A (P = .037) according to the Ahlbäck classification system. The index knee showed significantly more OA than the contralateral knee in both groups (P < .01).

Conclusions
Patients who underwent early ACL reconstruction required significantly fewer meniscectomies at the index operation than patients who underwent late reconstruction and showed significantly less OA on the medial side of the knee 10 years after reconstruction. However, no significant differences were found between the groups in terms of clinical assessments.

Level of Evidence
Level III, retrospective comparative study.

BACK

Ankle Arthroscopy for Diagnosis of Full-thickness Talar Cartilage Lesions in the Setting of Acute Ankle Fractures

Rachael J. Da Cunha, M.D., F.R.C.S.C., Sydney C. Karnovsky, B.A., William Schairer, M.D., Mark C. Drakos, M.D.

Arthroscopy, June 2018, Volume 34, Issue 6, Pages 1950–1957

https://doi.org/10.1016/j.arthro.2017.12.003

Purpose
To delineate the prevalence of chondral lesions, in particular full-thickness talar dome lesions, with concurrent arthroscopy in acute ankle fracture open reduction–internal fixation (ORIF) and evaluate the impact on clinical outcomes.

Methods
We conducted a retrospective chart review of prospectively collected registry data at our institution from 2012 to 2016. Consecutive patients who underwent acute ankle fracture ORIF with concurrent arthroscopy were identified. Charts were reviewed to determine the prevalence and grade of chondral lesions, fracture type, and associated factors. Clinical outcomes with a minimum of 1 year of follow-up were assessed using the Foot and Ankle Outcome Score.

Results
The study included 116 consecutive patients undergoing acute ankle fracture ORIF with concurrent arthroscopy. A chondral lesion was identified in 78% (90 of 116). A full-thickness talar dome chondral lesion was identified in 43% of these patients (39 of 90). Patient age was a significant predictor, with patients younger than 30 years being less likely to have a chondral injury than those aged 30 years or older (59% vs 85%, P = .0077). Of the patients who sustained a dislocation at the time of injury, 100% had a chondral lesion (P = .039). Patients with complete syndesmosis disruption and instability were also more likely to have a chondral lesion (96% vs 73%, P = .013). Patients with chondral lesions had statistically significantly worse clinical outcomes than those without them (Foot and Ankle Outcome Score, 81.2 vs 92.1; P = .009).

Conclusions
Ankle arthroscopy performed concomitantly with ankle ORIF is a useful tool in diagnosing chondral injuries. Chondral lesions are common with ankle fractures. An ankle with a dislocation at presentation or a syndesmotic injury may be more likely to present with a chondral lesion and should thus prompt evaluation. The presence of a talar chondral injury may be associated with a negative impact on clinical outcomes.

Level of Evidence
Level IV, therapeutic case series.

BACK

American Journal of Sports Medicine (AJSM), Volume 46, Issue 6

Defining the Learning Curve for Hip Arthroscopy: A Threshold Analysis of the Volume-Outcomes Relationship

Nabil Mehta, BSE*, Peter Chamberlin, BFA*, Robert G. Marx, MD, MSC, FRCSC*, Chisa Hidaka, MD*, Yile Ge, MS*, Danyal H. Nawabi, MD*, Stephen Lyman, PhD*†

First Published January 16, 2018; pp. 1284–1293

http://journals.sagepub.com/doi/full/10.1177/0363546517749219

Background: Hip arthroscopy has emerged as a successful option for the treatment of femoroacetabular impingement and related hip disorders, but the procedure is technically challenging.

Purpose: To define the learning curve through which surgeons become proficient at hip arthroscopy.

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

Methods: The authors identified hip arthroscopy procedures performed by surgeons through a New York State database (Statewide Planning and Research Cooperative System) and followed those cases for additional hip surgery (total hip arthroplasty, hip resurfacing, or ipsilateral hip arthroscopy) within 5 years of the original procedure. Career volume for each case was calculated as the number of hip arthroscopy procedures that the surgeon had performed. Volume strata were identified via the stratum-specific likelihood ratio method. A Cox proportional hazards model was used to measure the effect of surgeon career volume on risk of additional hip surgery, adjusting for the following patient characteristics: age, sex, race/ethnicity, insurance type, and concurrent diagnosis of hip osteoarthritis.

Results: Among 8041 hip arthroscopies performed by 251 surgeons, 989 (12.3%) cases underwent additional hip surgery within 5 years. Four strata of surgeon career volume associated with distinct frequencies of reoperation were identified: cases in the lowest stratum (0-97) had the highest frequency of additional surgery (15.4%). Frequencies declined for cases in the medium (98-388), high (389-518), and highest (≥519) strata (13.8%, 10.1%, and 2.6%, respectively). There was an increased risk of subsequent surgery in each stratum when compared with the highest stratum (hazard ratio [95% CI]: low volume, 3.22 [2.29-4.54]; medium, 3.40 [2.41-4.82]; high, 2.81 [1.86-4.25]; $P < .0001$ for all). Patients with a diagnosis of hip osteoarthritis had increased risk of subsequent hip arthroplasty or resurfacing (2.46 [2.09-2.89], $P < .0001$) . Risk also increased with age: 30 to 39 vs ≤29 years (5.12 [3.29-8.00], $P < .0001$), 40 to 49 vs ≤29 years (11.30 [7.43-17.190], $P < .0001$), ≥50 vs ≤29 years (18.39 [12.10-27.96], $P < .0001$). Increased age and osteoarthritis were not risk factors for revision hip arthroscopy.

Conclusion:
The learning curve for hip arthroscopy was unexpectedly demanding. Cases performed by surgeons with career volumes ≥519 had significantly lower risk of subsequent hip surgery than those performed by lower-volume surgeons.

BACK

Journal of Bone and Joint Surgery (JBJS), Volume 100, Issue 9 & 10

An Increased Lateral Femoral Condyle Ratio Is a Risk Factor for Anterior Cruciate Ligament Injury

Pfeiffer, Thomas, R., MD[1,2]; Burnham, Jeremy, M., MD[1]; Hughes, Jonathan, D., MD[1]; Kanakamedala, Ajay, C., BA[1]; Herbst, Elmar, MD[1,3]; Popchak, Adam, MS, DPT, SCS[1]; Shafizadeh, Sven, MD[2]; Irrgang, James, J., PT, PhD, ATC[1]; Debski, Richard, E., PhD[1]; Musahl, Volker, MD[1,a]

JBJS: May 16, 2018 - Volume 100 - Issue 10 - p 857–864

https://journals.lww.com/jbjsjournal/Abstract/2018/05160/An_Increased_Lateral_Femoral_Condyle_Ratio_Is_a.7.aspx

Background:
The purpose of this study was to examine the relationship between distal femoral morphology and anterior cruciate ligament (ACL) injury, ACL reconstruction (ACLR) failure, and contralateral ACL injury. It was hypothesized that increased posterior femoral condylar depth, quantified as the lateral femoral condyle ratio, would correlate with increased risk of primary ACL injuries, ACLR failures, and contralateral ACL injuries.

Methods:
The charts of consecutive patients who underwent arthroscopic knee surgery at an academic medical center from 2012 to 2016 with minimum follow-up of 24 months were retrospectively reviewed. Patients were stratified into 4 groups: (1) a control group of patients with no ACL injury, (2) patients with primary ACL injury, (3) patients with failed ACLR, and (4) patients with previous ACL injury and subsequent contralateral ACL injury. With use of lateral radiographs, the ratio of posterior femoral condylar depth to total condylar length was defined as the lateral femoral condyle ratio. Differences between study groups were identified with use of analysis-of-variance (ANOVA) and post-hoc testing with significance set at $p < 0.05$. Receiver operating characteristic (ROC) curve analysis was performed to determine the optimal cutoff for detecting increased risk of ACL injury.

Results:
Two hundred patients met the inclusion criteria. The mean lateral femoral condyle ratios (and standard deviations) were 61.2% ± 2.4% in the control group, 64.2% ± 3.8% in the primary ACL injury group, 64.4% ± 3.6% in the failed ACLR group, and 66.9% ± 4.3% in the contralateral ACL injury group. Patients who had a primary ACL injury, failed ACLR, or contralateral ACL injury had significantly higher ratios compared with the control group ($p < 0.008$). ROC curve analysis demonstrated that a lateral femoral condyle ratio of >63% was associated with an increased risk for ACL injury, with a sensitivity of 77% and a specificity of 72%.

Conclusions:
The data from this study show that increased posterior femoral condylar depth, quantified as the lateral femoral condyle ratio, is associated with an increased risk of ACL injury, including primary and contralateral ACL injuries. The data from this study may help clinicians to identify patients at a greater risk of ACL injury.

Level of Evidence:
Prognostic Level III. See Instructions for Authors for a complete description of levels of evidence.

BACK