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Bone and Joint Journal (BJJ)
Volume 100, Issue 2

- No Lower Extremity arthroscopic abstracts available

BACK

Upper extremity

Arthroscopy, Volume 34, Issue 2, p349-648

Increased Shoulder Arthroscopy Time Is Associated With Overnight Hospital Stay and Surgical Site Infection

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Purpose
The purpose of this study was to characterize the rates of short-term postoperative complications, readmissions, and overnight hospital stays as a function of shoulder arthroscopy procedure time. A secondary aim of this current study was to identify baseline patient risk factors for adverse outcomes.

Methods
This study used the American College of Surgeons National Surgical Quality Improvement Program registry from 2012 to 2015. Shoulder arthroscopy cases were categorized based on operative time, either <45 minutes, between 45 and 90 minutes, or >90 minutes. The rates of 30-day postoperative complications, readmissions, and overnight hospital stays were compared with bivariate and multivariate analysis.

Results
In total, 33,095 shoulder arthroscopy procedures were identified. Of these, 7,027 (21.2%) were <45 minutes, 16,610 (50.2%) were between 45 and 90 minutes, and 9,458 (28.6%) were >90 minutes. Multivariate analysis identified increased the risk of superficial surgical site infections (SSIs) for procedures lasting between 45 and 90 minutes (odds ratio [OR] = 3.63; P = .036) and for procedures >90 minutes (OR = 4.40; P = .019), compared with procedures <45 minutes. Furthermore, there was an increased risk of overnight hospital stay for patients who had a shoulder arthroscopy lasting between 45 and 90 minutes (OR = 1.33) and >90 minutes (OR = 2.14), compared with procedures <45 minutes. A body mass index >30 kg/m2 was an independent predictor of both overnight hospital stay and superficial SSI (P = .020). Age >60, female gender, American Society of Anesthesiologists class ≥3, and a history of diabetes mellitus, hypertension, or chronic obstructive pulmonary disease were additional predictors of overnight hospital stay (P < .001 for all comparisons, unless otherwise noted).

Conclusions
Increased shoulder arthroscopy procedure time is associated with adverse short-term outcomes, particularly superficial SSI and overnight hospital stay. This information may be useful for patient counseling and postoperative risk stratification, as operative time is an easily measured surrogate for surgical complexity or difficulty.

Level of Evidence
Retrospective cohort study, Level III.

BACK

Subpectoral Biceps Tenodesis for Treatment of Isolated Type II SLAP Lesions in a Young and Active Population

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https://doi.org/10.1016/j.arthro.2017.07.021

Purpose
The purpose of this study was to evaluate outcomes following open subpectoral biceps tenodesis for the treatment of isolated type II SLAP lesions in patients 45 years of age or younger and evaluate the rate of return to sport.

Methods
All patients included in the study were at least 2 years out from open subpectoral biceps tenodesis for treatment of an isolated type II SLAP lesion and were treated between December 2007 and March 2015. All patients older than 45, those who had prior surgery on the index shoulder, and those who had any concomitant reconstructive shoulder procedures were excluded. American Shoulder and Elbow Surgeons (ASES), Quick Disabilities of the Arm, Shoulder and Hand (QuickDASH), Single Assessment Numeric Evaluation (SANE), and Short-Form 12 Physical Component Summary (SF-12 PCS) scores were collected pre- and postoperatively along with postoperative patient satisfaction. Patient return to sport was evaluated by questionnaire.

Results
Twenty patients with a mean age of 38 years (range 21-45) were included, of which 16 were available for follow-up. There was significant improvement in median pre- to postoperative outcome scores (ASES, 66-94 points, P = .001; QuickDASH, 31-8, P = .003; SANE, 60-92, P = .001, SF-12 PCS, 41-52 points, P = .002), with a median patient satisfaction of 8.5 points (range 1-10) at a mean follow-up of 3.4 years (range, 2.0-6.3 years). At final follow-up, all patients had returned to sport, with 73% of patients indicating a return to their previous or comparable level of sports. Subgroup analysis showed 80% of overhead athletes returned to the same or a comparable level postoperatively.

Conclusions
This study suggests that young patients around their 30s participating in sport at a recreational level may benefit from open subpectoral biceps tenodesis for a primary isolated SLAP II tear and would experience excellent outcomes, high satisfaction, and a high rate of return to sport.

Level of Evidence
Level IV, therapeutic case study.

BACK

Evaluation of Risk to the Suprascapular Nerve During Arthroscopic SLAP Repair: Is a Posterior Portal Safer?

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Purpose
The purpose of this study was to compare the risk of glenoid perforation during SLAP repair for suture anchors placed through an anterolateral portal versus a posterolateral portal of Wilmington.

Methods
Ten bilateral cadaveric shoulders were randomized to suture anchor placement through an anterolateral portal on one shoulder and a posterolateral portal on the contralateral shoulder. Anchors were placed into anterior, posterior, and far posterior positions on the glenoid rim (1 o'clock, 11 o'clock, and 10 o'clock positions for right shoulders). The shoulder was then dissected, and the distance from the suture anchor tip to the nerve was measured if perforation occurred. The maximum load and failure mechanism of each anchor was assessed with a materials testing system machine.

Results
Only 2 of 20 anchors placed in the posterosuperior glenoid through the posterolateral portal perforated compared with 16 of 20 of the anchors placed through the anterolateral portal ($P < .05$). The mean distance from the perforated anchor tip to the suprascapular nerve was 2.5 ± 1.4 mm for the anterolateral portal and 4.4 ± 0.6 mm for the posterolateral portal ($P = .18$). We did not observe a significant difference in biomechanical strength ($P > .05$).

Conclusions
There is a high rate of glenoid perforation in close proximity to the suprascapular nerve when placing anchors in the posterosuperior glenoid through an anterolateral portal. Use of the posterolateral portal results in a much lower incidence of glenoid perforation for anchors placed in the posterosuperior glenoid, but there is a higher risk of glenoid perforation for an anchor placed in the anterosuperior glenoid from the posterolateral portal.

Clinical Relevance
There is a higher risk of injury to the suprascapular nerve when suture anchors are placed in the posterosuperior glenoid through an anterolateral portal compared with a posterolateral portal for SLAP repair.

BACK

Elbow Arthroscopy: 30-Day Postoperative Complication Profile and Associated Risk Factors

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https://doi.org/10.1016/j.arthro.2017.08.286

Purpose
To analyze (1) the incidence and type of complications after elbow arthroscopy, (2) the incidence of returning to the operating room (OR) after elbow arthroscopy, and (3) patient and risk factors for complications across a national surgical outcome database.

Methods
Patients who underwent elbow arthroscopy from January 2005 through December 2014 were identified in the American College of Surgeons National Surgical Quality Improvement Program database by use of Current Procedural Terminology codes. Basic patient demographic data and medical comorbidities were recorded. Postoperative adverse events and a return to the OR occurring within 30 days after the index procedure were identified, and patient and procedural risk factors were investigated.

Results
Five hundred thirty elbow arthroscopy cases were available for analysis. The aggregate rate of 30-day adverse events was 2.83%, whereas the rate of any patient having an adverse event was 1.89%. The most common adverse event was deep infection (0.57%). Univariate analyses showed that renal disease, preoperative steroid use, higher American Society of Anesthesiologists (ASA) class, and preoperative diagnosis were associated with the occurrence of an adverse event. Multivariate analyses showed that increasing ASA class, specifically ASA class 3 and class 4, was an independent predictor of a postoperative adverse event. Furthermore, 0.94% of cases required a return to the OR. Univariate analyses showed that preoperative steroid use and diagnosis of trauma were associated with a return to the OR. These findings were confirmed by multivariate analyses.

Conclusions
Overall, the incidence of 30-day postoperative adverse events (1.89%) and need to return to the OR (0.94%) is low. Increased ASA class is an independent risk factor for the occurrence of a postoperative adverse event; preoperative steroid use and diagnoses relating to a traumatic or inflammatory cause are predictive of the need to return to the OR. These results can assist surgeons in patient selection, preoperative optimization, and preoperative risk stratification.

Level of Evidence
Level IV, case series.

BACK

Arthroscopic Wafer Procedure Versus Ulnar Shortening Osteotomy as a Surgical Treatment for Idiopathic Ulnar Impaction Syndrome

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Purpose
To compare clinical and radiologic outcomes and complication rates of the arthroscopic wafer procedure (AWP) and ulnar shortening osteotomy (USO) for idiopathic ulnar impaction syndrome (UIS).

Methods
From May 2009 to June 2014, 42 patients who were aged 45 years or older with idiopathic UIS underwent either the AWP or USO under the following identical surgical indications: (1) less than 4 mm of positive ulnar variance, (2) Palmer classification 2C or 2D lesion of the triangular fibrocartilage complex, (3) stable distal radioulnar joint (DRUJ) and/or lunotriquetral joint, and (4) no evidence of osteoarthritis of the DRUJ or ulnocarpal joint. The patient assignment was not randomized. Were used a visual analog scale for ulnar wrist pain; grip strength; range of motion; the Mayo Wrist Score (MWS); and the Disabilities of the Arm, Shoulder and Hand (DASH) score at 3, 6, 12, and 24 months after surgery to compare clinical outcomes. Ulnar variance, cystic changes of the lunate and triquetrum, and DRUJ arthritis on radiographs and operation-related complications were compared.

Results
This study evaluated 19 patients after the AWP and 23 patients after USO. At 3 months, the AWP produced significantly better outcomes than USO regarding grip strength (79.6% ± 14.3% vs 62.7% ± 12.6%, $P < .001$), MWS (81.8 ± 7.9 points vs 71.3 ± 14.2 points, $P = .005$), and DASH score (19.4 ± 8.4 vs 31.5 ± 14.0, $P = .001$); clinical outcomes were similar at 6, 12, and 24 months. The complication rates were 34.8% for USO and 10.5% for the AWP; complications included DRUJ arthritis (n = 4), implant irritation (n = 6), and refracture after implant removal (n = 2) in the USO group and secondary surgery (n = 1) and tendinopathy (n = 1) in the AWP group.

Conclusions
The AWP and USO for idiopathic UIS with subtle positive ulnar variance achieved similar clinical and radiologic outcomes at 2 years after surgery. However, compared with USO, the AWP showed lower complication rates and better grip strength, MWS values, and DASH scores at 3 months after surgery.

Level of Evidence
Level III, comparative trial.

BACK

Arthroscopic Management of Septic Arthritis of the Native Shoulder: A Systematic Review

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https://doi.org/10.1016/j.arthro.2017.07.038

Purpose
To investigate arthroscopic management of native shoulder joint septic arthritis—specifically, indications, patient outcomes, and complications.

Methods
PubMed, MEDLINE, and Embase were used to search the literature, and data abstraction was performed independently and in duplicate. The Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) checklist guided reporting and data abstraction. The quality of all included studies was assessed with the Methodological Index for Non-randomized Studies (MINORS) criteria. The results are presented in a narrative summary fashion using descriptive statistics including means, proportions, ranges, κ values, and intraclass correlation coefficient values.

Results
Overall, 27 studies (19 case reports and 8 case series) were identified, including 115 patients (121 shoulders). The mean follow-up period was 29.1 months (range, 1-199 months). The indications for shoulder arthroscopy owing to infection included pain; limited range of motion; swelling, erythema, and tenderness; fever; elevated leukocyte count, erythrocyte sedimentation rate, and/or C-reactive protein level; synovial aspirate findings; and/or imaging findings. Overall, 46 patients (40%) achieved infection eradication and functional improvement after a single arthroscopic procedure. However, 43 patients (37%) had ongoing symptoms or complications, including 32 (30%) who required revision arthroscopic procedures, 7 (6%) who underwent open arthrotomy for septic arthritis management, 2 (2%) in whom avascular necrosis of the humeral head developed, 1 (1%) in whom adhesive capsulitis developed, and 1 (1%) in whom an irregular profile of the humeral epiphysis developed on plain radiographs.

Conclusions
Arthroscopic management of native shoulder septic arthritis can yield alleviation of pain and a return to full range of motion, daily activities, and sports. However, there is a high reoperation rate, which may correlate with poor patient prognostic factors. This systematic review did not show the superiority of either arthroscopic surgery or open arthrotomy for the management of shoulder septic arthritis.

Level of Evidence
Level IV, systematic review of Level IV studies.

Journal of Shoulder and Elbow Surgery (JSES), Volume 27, issue 2

Factors influencing direct clinical costs of outpatient arthroscopic rotator cuff repair surgery

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Background
Very limited information exists about factors affecting direct clinical costs of rotator cuff repair surgery. The purpose of this study was to determine the direct cost of outpatient arthroscopic rotator cuff repair surgery using a unique value-driven outcomes tool and to identify patient- and treatment-related variables affecting cost.

Methods
Cost data were derived for arthroscopic rotator cuff repairs performed by 3 surgeons from March 2014 to June 2015 using the value-driven outcomes tool. Costs included overall total direct cost, which included facility utilization costs, medication costs, supply costs, and other ancillary costs. Univariate and multivariate regressions were performed to determine the effect of various patient-related and surgical-related factors on costs.

Results
There were 170 arthroscopic rotator cuff repairs performed during the study period. Multivariate analysis showed significant correlations between higher total direct cost and the presence of a subscapularis repair being performed ($P = .015$) and total number of anchors used ($P < .0001$). Higher body mass index, severe systemic illness, 1 of the 3 surgeons, biceps tenodesis using an anchor, and total sum of anchors were correlated with higher facility utilization costs ($P < .04$). Severe systemic illness, addition of a subscapularis repair, 1 of the 3 surgeons, and additional subacromial decompression were correlated with higher pharmacy costs ($P < .006$). The addition of a subscapularis repair, total sum of anchors, and severe muscle changes to the supraspinatus were correlated with higher supply costs ($P < .015$).

Conclusions
From a direct cost perspective, implementation of strategies to reduce overall costs should focus on reducing overall anchor quantity or price.

BACK

Radiologic and clinical evaluation of a bioabsorbable collagen implant to treat partial-thickness tears: a prospective multicenter study

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Journal of Shoulder and Elbow Surgery, Volume 27, Issue 2, Published online: November 20, 2017

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Background
Treatment of partial-thickness cuff tears remains controversial. Although conservative therapy may treat symptoms, these defects do not spontaneously heal and conversion to a full-thickness lesion with subsequent repair may alter the tendon footprint. The ability to induce new tissue formation and limit tear progression in intermediate- and high-grade partial-thickness tears without surgical repair may represent a significant advancement in the treatment paradigm for these lesions.

Methods
We prospectively enrolled 33 patients with chronic, degenerative, intermediate-grade (n = 12) or high-grade (n = 21) partial-thickness tears (11 articular, 10 bursal, 4 intrasubstance, and 8 hybrid) of the supraspinatus tendon in a multicenter study. Following arthroscopic subacromial decompression without repair, a bioinductive implant was attached over the bursal surface of the tendon. Clinical outcomes were assessed using American Shoulder and Elbow Surgeons and Constant-Murley scores preoperatively and at 3 and 12 months postoperatively. Magnetic resonance imaging was performed to assess postoperative tendon healing and thickness at the original tear site.

Results
At 1-year follow-up, clinical scores improved significantly ($P < .0001$) and the mean tendon thickness increased by 2.0 mm ($P < .0001$). Magnetic resonance imaging evidence of complete healing was found in 8 patients and a considerable reduction in defect size was shown in 23, whereas 1 lesion remained stable. In 1 noncompliant patient with a high-grade articular lesion, progression to a full-thickness tear occurred while shoveling snow 1 month after surgery. No serious adverse events related to the implant were reported.

Conclusions
Arthroscopic implantation of a bioinductive collagen scaffold is a safe and effective treatment for intermediate- to high-grade partial-thickness rotator cuff tears of the supraspinatus tendon.

Hourglass-like constriction of the suprascapular nerve: a contraindication for minimally invasive surgery

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Background
Suprascapular nerve (SSN) entrapment is usually ascribed to static or dynamic compression. When no cause of compression is found, SSN entrapment is defined as idiopathic. Focal hourglass-like constriction (H-LC) of the SSN that results in muscle paralysis represents an unusual condition that may be misinterpreted and erroneously diagnosed as SSN entrapment or as neuralgic amyotrophy.

Methods
With the aim of finding clinical and surgical clues that could differentiate the traditional form of idiopathic SSN entrapment from the rare H-LC, a series of 6 cases of SSN palsy caused by H-LC is presented.

Results
All but 1 supraspinatus muscle recovered M5 muscle strength. The Constant shoulder score was excellent in 3 patients, good in 1, fair in 1, and poor in 1.

Discussion
If a diagnosis is not made in time, H-LC may evolve from mild to severe nerve torsion that may require a shift in surgical procedure from epineurotomy and external neurolysis to focal resection and suture. If an incorrect therapy is chosen, the chance of recovery might be definitively compromised with the persistence of muscle palsy. Conversely, when SSN palsy persists despite notch decompression, especially when it is performed with a limited open approach or arthroscopically, concerns about the real etiology and location of nerve compression responsible for the nerve palsy may arise.

Conclusion
When approaching SSN pathology, H-LC should be considered as a potential cause of nerve palsy, as it may represent a contraindication for a limited open approach or arthroscopic decompression.

Lower Extremity

Arthroscopy, Volume 34, Issue 2, p349-648

Bilateral Hip Arthroscopy: Direct Comparison of Primary Acetabular Labral Repair and Primary Acetabular Labral Reconstruction

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Purpose
Directly compare primary acetabular labral repair versus primary acetabular labral reconstruction using a self-controlled cohort study design.

Methods
Patients who underwent primary labral repair in one hip and primary labral reconstruction using iliotibial band allograft in the other hip by a single surgeon between August 2009 and November 2014 were identified. One patient with inflammatory arthritis was excluded. Patient-reported outcome data included change in Modified Harris Hip Score (MHHS), Lower Extremity Functional Scale (LEFS), average pain using a 10-point visual analog scale (VAS), and patient satisfaction (1: very dissatisfied, 10: very satisfied). Failure was defined as subsequent intra-articular hip surgery. Data were analyzed using McNemar's and Wilcoxon Signed Rank tests.

Results
Overall, 29 patients (58 hips) were included in the analysis. There were 23 females and 6 males. The average age at time of surgery was 32.6 years (range: 14.9-51.6 years). Follow-up was obtained from all 29 patients (100%) at a mean of 56 months (range = 27-85 months) postoperative for repaired hips and 40 months (range = 22-61 months) postoperative for reconstructed hips. No labral reconstruction hips failed, and 9 (31%) labral repair hips failed ($P < .01$). Among those that did not fail treatment, there was no difference in MHHS change (32.2 ± 15.4 vs 29.6 ± 15.4; $P = .63$), LEFS change (26.6 ± 16.5 vs 23.9 ± 17.8; $P = .61$), VAS pain change (−3.2 ± 2.4 vs −3.6 ± 2.1; $P = .47$), or satisfaction (8.6 ± 2.0 vs 8.7 ± 2.4; $P = .59$) between the repair and reconstruction groups, respectively.

Conclusions
In this cohort of patients, hips that underwent primary labral repair were more likely to fail treatment than hips that underwent labral reconstruction (31% vs 0%, respectively). Among hips that did not fail treatment, patient-reported outcome scores were similar between groups. Excellent clinical results can be obtained with both forms of labral-preserving treatment but were more predictably observed with primary labral reconstruction in this cohort.

Level of Evidence
Level III, retrospective comparative study.

BACK

Hip Dysplasia: Prevalence, Associated Findings, and Procedures From Large Multicenter Arthroscopy Study Group

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Arthroscopy, February 2018, Volume 34, Issue 2, Pages 444–453

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Purpose
To report observational findings of patients with acetabular dysplasia undergoing hip arthroscopy.

Methods
We performed a comparative case series of multicenter registry patients from January 2014 to April 2016 meeting the inclusion criteria of isolated hip arthroscopy, a documented lateral center-edge angle (LCEA), and completion of preoperative patient-reported outcome measures. A retrospective analysis compared range of motion, intra-articular pathology, and procedures of patients with dysplasia (LCEA ≤25°) and patients without dysplasia (LCEA >25°).

Results
Of 1,053 patients meeting the inclusion criteria, 133 (13%) had dysplasia with a mean LCEA of 22.8° (standard deviation, 2.4°) versus 34.6° (standard deviation, 6.3°) for non-dysplasia patients. There were no statistically significant differences in preoperative modified Harris Hip Score, International Hip Outcome Tool-12 score, or visual analog scale score (pain). Cam deformity occurred in 80% of dysplasia patients. There was a significant difference in internal rotation between the dysplasia (21°) and non-dysplasia groups (16°, $P < .001$). Mean internal rotation (33.5°; standard deviation, 15.6°) of the dysplastic subjects without cam morphology was greater than that of the dysplastic patients with cam morphology (18.5°; standard deviation, 11.6°; $P < .001$). Hypertrophic labra were found more commonly in dysplastic (33%) than non-dysplastic hips (11%, $P < .001$). Labral tears in patients with dysplasia were treated by repair (76%), reconstruction (13%), and selective debridement (11%); labral treatments were not significantly different between cohorts. The most common nonlabral procedures included femoroplasty (76%) and synovectomy (73%). There was no significant difference between the dysplasia and non-dysplasia groups regarding capsulotomy types and capsular closure rates (96% and 92%, respectively).

Conclusions
Dysplasia, typically of borderline to mild severity, comprises a significant incidence of surgical cases (13%) by surgeons performing high-volume hip arthroscopy. Despite having similar preoperative pain and functional profiles to patients without dysplasia, dysplasia patients may have increased flexed-hip internal rotation. Commonly associated cam morphology significantly decreases internal rotation. Arthroscopic labral repair, femoroplasty, and closure of interportal capsulotomy are the most commonly performed procedures.

Level of Evidence
Level III, therapeutic comparative case series.

BACK

Clinical Outcomes and Return to Sport in Competitive Athletes Undergoing Arthroscopic Iliopsoas Fractional Lengthening Compared With a Matched Control Group Without Iliopsoas Fractional Lengthening

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Arthroscopy, February 2018, Volume 34, Issue 2, Pages 456–463

https://doi.org/10.1016/j.arthro.2017.08.292

Purpose
To compare the minimum 2-year outcomes and return to sports in competitive athletes after arthroscopic iliopsoas fractional lengthening (IFL) and treatment for femoroacetabular impingement (FAI) to competitive athletes treated for FAI who did not undergo IFL.

Methods
Data were prospectively collected and retrospectively reviewed between November 2009 and April 2014. Included patients were high school, collegiate, or professional athletes who underwent arthroscopic IFL, treatment for FAI, and preoperative modified Harris Hip Score, Non-Arthritic Athletic Hip Score, Hip Outcome Score–Sports Specific Subscale, and visual analog scale. Exclusion criteria were patients younger than 16 years, Tönnis grade >1, microfracture, abductor pathology, and previous hip conditions. A subgroup of athletes were matched to athletes who did not undergo IFL by age ± 5 years, sex, and body mass index ± 5.

Results
There were 75 athletes eligible for inclusion, 60 (80.0%) of whom had minimum 2-year follow-up. All patient-reported outcome (PRO) scores demonstrated significant improvements at latest follow-up ($P < .001$). Mean satisfaction was 7.9. No patients converted to arthroplasty. Painful snapping was resolved in 55 athletes (91.7%). Nine athletes (15.0%) had nonpainful snapping at follow-up. Thirty-nine (65%) returned to their sport. Forty (66.7%) maintained or improved their competitive abilities. There was one case (1.6%) of temporary postoperative numbness. There were no complaints of weakness in hip flexion. Forty-one IFL athletes were matched to 41 controls. No differences were detected in demographics, follow-up time, intraoperative findings, procedures, mean magnitudes of improvement, or return to sports.

Conclusions
In competitive athletes, IFL during hip arthroscopy is safe and demonstrates favorable improvements in PROs and VAS, high satisfaction, and high rate of symptom resolution at a minimum of 2 years postoperatively. Most patients were able to return to sports and maintain or improve their competitive levels. These results were similar to a control group of athletes not requiring IFL.

Level of Evidence
Level III, case-control study.

BACK

Independent Risk Factors for Revision Surgery or Conversion to Total Hip Arthroplasty After Hip Arthroscopy: A Review of a Large Statewide Database From 2011 to 2012

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Arthroscopy, February 2018, Volume 34, Issue 2, Pages 464–470

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Purpose
To use a large heterogeneous population to identify independent risk factors for revision surgery or conversion to total hip arthroplasty (THA) after hip arthroscopy.

Methods
The New York Statewide Planning and Research Cooperative System database was queried from 2011 through 2012 to identify patients undergoing hip arthroscopy. All patients aged 18 years or older who underwent hip arthroscopy according to Current Procedural Terminology coding were included. We chose to divide surgical volume into tertiles for the purposes of statistical analysis. Longitudinal analysis for a minimum of 2 years was performed to determine risk factors for revision surgery or conversion to THA.

Results
We identified 3,957 patients. The mean age was 35.8 years (standard deviation, 13.1 years). After a minimum follow-up period of 2 years, the overall failure rate was 9.6%: 3.7% of patients underwent revision hip arthroscopy at an average of 15.8 months, whereas 5.9% underwent conversion to THA at 14.7 months. Index surgery performed by surgeons in the third tertile of surgical volume (<40 cases per annum) was an independent risk factor for revision (odds ratio [OR], 1.71; P = .001), as well as conversion to THA (OR, 1.90; P < .001). Female patients (OR, 1.8; P < .001), older patients (OR, 3.4; P < .001), and patients with a history of obesity (OR, 5.6; P < .001) underwent conversion to THA at significantly higher rates than other patients. Young patients (OR, 4.4; P < .001) and female patients (OR, 1.6; P < .001) were more likely to undergo revision hip arthroscopy.

Conclusions
Our analysis of 3,957 patients found that female sex, age under 40 years, absence of a labral repair, and index procedure performed by a low-volume surgeon were independent risk factors for revision hip arthroscopy. Age over 60 years, index procedure performed by a low-volume surgeon, female sex, obesity, and the presence of pre-existing arthritis were risk factors for THA conversion.

Level of Evidence
Level III, case-control study.

BACK

Accessibility of the Talar Dome—Anatomic Comparison of Plantarflexion Versus Noninvasive Distraction in Arthroscopy

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Purpose
The purpose of this study was to evaluate the difference in accessibility of the talar dome during ankle arthroscopy between noninvasive distraction and maximum plantar flexion without distraction.

Methods
For this study, 20 matched pairs (n = 40) of anatomic ankle specimens were used. Two groups (distraction or maximum plantar flexion) were defined. Through the use of chondral picks, the accessibility of each technique was tested arthroscopically. Afterward, the ankle joint was dissected and the reach achieved was measured and compared between the 2 groups.

Results
Through noninvasive distraction, 13.1 ± 4.4 mm of the talar dome was reached laterally and 16.7 ± 3.7 mm medially. Through plantar flexion, 18.1 ± 3.4 mm of the talar dome was reached laterally and 18.1 ± 3.4 mm medially. Statistical comparison revealed a significantly better reach in plantar flexion on the lateral side of the talar dome (P = .007). There was no significant difference medially.

Conclusions
Plantar flexion significantly improves reachability of the dome on the lateral side and it is equal to noninvasive distraction medially. Results of this study may allow for better access to the lesion of the talus.

Clinical Relevance
Results of this study allow for a better planning of interventions in OCD of the talus.

BACK

Effect of the Timing of Anterior Cruciate Ligament Reconstruction on Clinical and Stability Outcomes: A Systematic Review and Meta-analysis

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Purpose
The purpose of this systematic review and meta-analysis was to evaluate the effect of the timing of anterior cruciate ligament (ACL) reconstruction on clinical and stability outcomes by analyzing high-quality studies that assessed timing as a primary objective.

Methods
The MEDLINE, EMBASE, and Cochrane database were systematically searched. The inclusion criteria were as follows: (1) English articles, (2) noncomparative study or relevant study reporting clinical and/or stability results, and (3) timing of the ACL reconstruction as a primary objective. Study type, level of evidence, randomization method, exclusion criteria, number of cases, age, sex, timing of ACL reconstruction, follow-up, clinical outcomes, stability outcomes, and other relevant findings were recorded. Statistical analysis of the Lysholm scores and KT-1000 arthrometer measurements after early and delayed ACL reconstruction was performed using R version 3.3.1.

Results
Seven articles were included in the final analysis. There were 6 randomized controlled trials and 1 Level II study. Pooled analysis was performed using only Level I studies. All studies assessed the timing of ACL reconstruction as a primary objective. The definition of early ranged broadly from 9 days to 5 months and delayed ranged from 10 weeks to >24 months, and there was an overlap of the time intervals between some studies. The standard timing of the delayed reconstruction was around 10 weeks from injury in the pooled analysis. After pooling of data, clinical result was not statistically different between groups (I2: 47%, moderate level of heterogeneity). No statistically significant difference was observed in the KT-1000 arthrometer measurements between groups (I2: 76.2%, high level of heterogeneity) either.

Conclusion
This systematic review and meta-analysis performed using currently available high-quality literature provides relatively strong evidence that early ACL reconstruction results in good clinical and stability outcomes. Early ACL reconstruction results in comparable clinical and stability outcomes compared with delayed ACL reconstruction.

Level of Evidence
Level II, a systematic review and meta-analysis of Level I and II studies.

BACK

Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA), volume 26, issue 2

Preoperative magnetic resonance imaging predicts eligibility for arthroscopic primary anterior cruciate ligament repair

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February 2018, Volume 26, Issue 2, pp 660–671

https://link.springer.com/article/10.1007/s00167-017-4646-z/fulltext.html

Purpose
To assess the role of preoperative magnetic resonance imaging (MRI) on the eligibility for arthroscopic primary anterior cruciate ligament (ACL) repair.

Methods
All patients undergoing ACL surgery between 2008 and 2017 were included. Patients underwent arthroscopic primary repair if sufficient tissue length and quality were present, or they underwent single-bundle ACL reconstruction. Preoperative MRI tear locations were graded with the modified Sherman classification: type I (>90% distal remnant length), type II (75–90%), or type III (25–75%). MRI tissue quality was graded as good, fair, or poor. Arthroscopy videos were reviewed for tissue length and quality, and final treatment.

Results
Sixty-three repair patients and 67 reconstruction patients were included. Repair patients had more often type I tears (41 vs. 4%, $p < 0.001$) and good tissue quality (89 vs. 12%, $p < 0.001$). Preoperative MRI tear location and tissue quality predicted eligibility for primary repair: 90% of all type I tears and 88% of type II tears with good tissue quality were repaired, while only 23% of type II tears with fair tissue quality, 0% of type II tears with poor tissue quality, and 14% of all type III tears could be repaired.

Conclusions
This study showed that tear location and tissue quality on preoperative MRI can predict eligibility for arthroscopic primary ACL repair. These findings may guide the orthopaedic surgeon on the preoperative assessment for arthroscopic primary repair of proximal ACL tears.

Level of evidence
Level IV.

BACK

American Journal of Sport Medicine (AJSM), February 2018, Vol 46, Issue 2

Return to Play After Hip Arthroscopic Surgery for Femoroacetabular Impingement in Professional Soccer Players

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Background:
Arthroscopic hip surgery has been shown to be effective in returning professional athletes back to play at a high level of performance in different sports. Limited information exists regarding professional soccer players and their return to play.

Purpose:
To determine the rate and time to return to sport for professional soccer players after hip arthroscopic surgery for the treatment of femoroacetabular impingement (FAI) and to identify possible risk factors associated with a delay in returning to play.

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

Methods:
Professional soccer players who underwent hip arthroscopic surgery for FAI by a single surgeon between 2005 and 2015 were evaluated. Data retrieved from www.mlssoccer.com, www.fifa.com, www.transfermarkt.co.uk, and www.wikipedia.org included information on each player's professional career, participation on the national team, length of professional career before surgery, number of appearances (games) before surgery, time between surgery and first appearance in a professional game, and number of appearances after surgery. Other data were obtained from the patient's medical records.

Results:
Twenty-four professional soccer players (26 hips) were included. The mean age at surgery was 25.0 ± 4.0 years (range, 19-32 years). A total of 96% of patients were able to return to play at the professional level. The mean time between surgery and the first professional game played was 9.2 months (range, 1.9-24.0 months). On average, players played in 70 games after surgery (range, 0-224). National team players were able to return to play significantly earlier than the rest of the players (median, 5.7 months vs 11.6 months, respectively; P = .018). Severe chondral damage and microfracture did not interfere with return to play.

Conclusion:
The arthroscopic management of FAI in symptomatic professional soccer players allowed 96% of them to return to play. Players with national team experience were able to return to play earlier than those without it. Severe chondral damage and microfracture did not interfere with return to play.

BACK

Multicenter Analysis of Midterm Clinical Outcomes of Arthroscopic Labral Repair in the Hip: Minimum 5-Year Follow-up

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Background:
The technique of hip arthroscopic surgery is advancing and becoming more commonly performed. However, most current reported results are limited to short-term follow-up, and therefore, the durability of the procedure is largely unknown.

Purpose:
To perform a multicenter analysis of mid-term clinical outcomes of arthroscopic hip labral repair and determine the risk factors for patient outcomes.

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

Methods:
Prospectively collected data of primary hip arthroscopic labral repair performed at 4 high-volume centers between 2008 and 2011 were reviewed retrospectively. Patients were assessed preoperatively and postoperatively with the visual analog scale (VAS), modified Harris Hip Score (mHHS), and Hip Outcome Score–Sports-Specific Subscale (HOS-SSS) at a minimum of 5 years' follow-up. Factors including age, body mass index (BMI), Tönnis grade, and cartilage grade were analyzed in relation to outcome scores, and revision rates were determined. Failure was defined as subsequent ipsilateral hip surgery, including revision arthroscopic surgery and open hip surgery.

Results:
A total of 303 patients (101 male, 202 female) with a mean age of 32.0 years (range, 10.7-58.9 years) were followed for a mean of 5.7 years (range, 5.0-7.9 years). Patients achieved mean improvements in VAS of 3.5 points, mHHS of 20.1 points, and HOS-SSS of 29.3 points. Thirty-seven patients (12.2%) underwent revision arthroscopic surgery, and 12 (4.0%) underwent periacetabular osteotomy, resurfacing, or total hip arthroplasty during the study period. Patients with a BMI >30 kg/m2 had a mean mHHS score 9.5 points lower and a mean HOS-SSS score 15.9 points lower than those with a BMI ≤30 kg/m2 ($P < .01$). Patients aged >35 years at surgery had a mean mHHS score 4.5 points lower and a HOS-SSS score 6.7 points lower than those aged ≤35 years ($P = .03$). Patients with Tönnis grade 2 radiographs demonstrated a 12.5-point worse mHHS score ($P = .02$) and a 23.0-point worse HOS-SSS score ($P < .01$) when compared with patients with Tönnis grade 0.

Conclusion:
Patients demonstrated significant improvements in VAS, mHHS, and HOS-SSS scores after arthroscopic labral repair. However, those with Tönnis grade 2 changes preoperatively, BMI >30 kg/m2, and age >35 years at the time of surgery demonstrated significantly decreased mHHS and HOS-SSS scores at final follow-up.

BACK

Hip Arthroscopic Surgery for Femoroacetabular Impingement With Capsular Management: Factors Associated With Achieving Clinically Significant Outcomes

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Background:
There has been increasing interest in defining clinically meaningful outcomes in patient reported outcomes following orthopaedic surgery. Little is known about the factors associated with clinically meaningful outcomes after hip arthroscopy for femoroacetabular impingement.

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

Purpose:
To report on a large, prospectively collected consecutive series of patients who underwent comprehensive arthroscopic treatment of femoroacetabular impingement (FAI) and capsular management with greater than 2-year follow-up. The objectives were to determine (1) what percentage of patients achieve clinically significant outcomes after hip arthroscopic surgery for FAI as determined by the minimal clinically important difference (MCID) and patient acceptable symptom state (PASS) and (2) what factors are associated with achieving the MCID and PASS.

Methods:
Data from an institutional repository of consecutive patients undergoing primary hip arthroscopic surgery with routine capsular closure for FAI that had failed nonsurgical management between January 2012 and January 2014 were prospectively collected and analyzed. Of 474 patients during the enrollment period, 386 (81.4%) patients were available for a minimum 2-year follow-up. Demographics, radiographic measurements, intraoperative characteristics, and patient-reported outcome scores were collected. The primary outcome measure was achieving published thresholds for the MCID and PASS for the Hip Outcome Score (HOS)–Activities of Daily Living (ADL) in patients with FAI. The HOS–Sport-Specific Subscale (SSS), complications, and reoperations were secondary outcome measures. Multivariate regression analyses were conducted to identify factors associated with achieving the MCID and PASS.

Results:
At a minimum of 2-year follow-up, the patients had statistically significant improvements in all patient-reported outcomes (HOS-ADL, HOS-SSS, and modified Harris Hip Score [mHHS]; $P < .001$ for all), with a 1.2% rate of revision hip arthroscopic surgery and 1.7% rate of conversion to total hip arthroplasty. The MCID was achieved by 78.8% of patients for the HOS-ADL, and the PASS was achieved by 62.5% for the HOS-ADL. Younger age ($P = .008$), Tönnis grade 0 ($P = .022$), and lower preoperative HOS-ADL score ($P < .001$) were associated with successfully achieving the MCID for the HOS-ADL. Younger age ($P < .001$), larger medial joint space width ($P = .028$), and higher preoperative HOS-ADL score ($P < .001$) were associated with achieving the PASS for the HOS-ADL. Younger age ($P < .001$), lower body mass index ($P = .006$), non–workers' compensation status ($P = .020$), and lower preoperative HOS-SSS score ($P < .001$) were associated with achieving the MCID for the HOS-SSS. Younger age ($P = .001$), Tönnis grade 0 ($P = .014$), running ($P = .008$), and higher preoperative HOS-SSS score ($P < .001$) were associated with achieving the PASS for the HOS-SSS. Overall, 49.4% of patients achieved all 4 clinically significant outcomes: both the MCID and PASS for the HOS-ADL and HOS-SSS.

BACK

Conclusion:
The majority of patients undergoing hip arthroscopic surgery with routine capsular closure for FAI experienced clinically significant outcomes that met the MCID or PASS criteria, with low rates of revision and conversion to total hip arthroplasty. Factors associated with these successful outcomes on multivariate analyses included younger age with a normal joint space. Patients with lower preoperative HOS scores were more likely to achieve the MCID, whereas patients with higher preoperative HOS scores were more likely to achieve the PASS.

Selective Debridement With Labral Preservation Using Narrow Indications in the Hip: Minimum 5-Year Outcomes With a Matched-Pair Labral Repair Control Group

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Background:
Arthroscopic labral debridement in the hip can be an effective treatment for labral tears but has demonstrated inferior outcomes compared with labral repair. Thus, the role for labral debridement has become unclear.

Hypothesis/Purpose:
The purpose was to evaluate the outcomes of a selective debridement with labral preservation (SDLP) group with a minimum 5-year follow-up. It was hypothesized that, with narrow indications, SDLP would produce statistically improved patient-reported outcome (PRO) scores, comparable with those of a matched-pair labral repair control group.

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

Methods:
Data were collected on all patients undergoing primary hip arthroscopic surgery between February 2008 and September 2011. Exclusion criteria were acetabular or femoral head Outerbridge grade 4 chondral damage, preoperative Tnnis grade ≥2, workers' compensation claims, previous hip conditions, severe dysplasia (lateral center-edge angle <18°), or previous ipsilateral hip surgery. Patients who underwent arthroscopic labral debridement and had preoperative and minimum 5-year PRO scores, including the modified Harris Hip Score (mHHS), Non-Arthritic Hip Score (NAHS), and Hip Outcome Score–Sports-Specific Subscale (HOS-SSS) as well as the visual analog scale (VAS) for pain, were included. In a nested matched-pair comparison, the SDLP group was matched 1:1 to an arthroscopic labral repair control group based on age ±5 years, body mass index ±5 kg/m2, sex, and Seldes tear type.

Results:
One hundred twenty-five hips were eligible for inclusion, of which 101 (80.8%) hips had a minimum 5-year follow-up. All PRO scores were significantly improved ($P < .001$) at latest follow-up (mHHS, 63.4 to 82.4; NAHS, 57.4 to 83.6; HOS-SSS, 44.2 to 74.5). The mean VAS score decreased from 5.8 to 2.3 ($P < .001$). The mean patient satisfaction score was 8.1. Four (4.0%) patients underwent second-look arthroscopic surgery (mean, 18.5 months), and 14 (13.9%) patients converted to total hip arthroplasty (mean, 46.9 months). In the matched-pair comparison, 69 in the SDLP group were matched 1:1 with those undergoing labral repair. Outcomes at latest follow-up of the SDLP group were comparable with those of the control group, respectively: mHHS, 83.0 vs 86.1 ($P = .084$); NAHS, 85.0 vs 85.4 ($P = .415$); HOS-SSS, 74.8 vs 76.8 ($P = .219$); VAS, 2.3 vs 2.0 ($P = .277$); international Hip Outcome Tool–12 (iHOT-12), 73.8 vs 76.4 ($P = .136$); Short Form Health Survey–12 (SF-12) mental, 57.4 vs 55.1 ($P = .031$); SF-12 physical, 48.7 vs 48.9 ($P = .357$); Veterans RAND Health Survey–12 (VR-12) mental, 61.6 vs 59.8 ($P = .160$); VR-12 physical, 50.1 vs 50.2 ($P = .340$); and patient satisfaction, 8.0 vs 8.3 ($P = .211$).

BACK

Conclusion:
In select cases of stable labral tears, SDLP may allow the preservation of a functional labrum. At a minimum 5-year follow-up, SDLP using narrow indications produced favorable outcomes comparable with a matched-pair labral repair group.

Hip Arthroscopic Surgery With Labral Preservation and Capsular Plication in Patients With Borderline Hip Dysplasia: Minimum 5-Year Patient-Reported Outcomes

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Background:
The arthroscopic management of hip dysplasia has been controversial and has historically demonstrated mixed results. Studies on patients with borderline dysplasia, emphasizing the importance of the labrum and capsule as secondary stabilizers, have shown improvement in patient-reported outcomes (PROs).

Purpose/Hypothesis:
The purpose was to assess whether the results of hip arthroscopic surgery with labral preservation and concurrent capsular plication in patients with borderline hip dysplasia have lasting, positive outcomes at a minimum 5-year follow-up. It was hypothesized that with careful patient selection, outcomes would be favorable.

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

Methods:
Data were prospectively collected and retrospectively reviewed for patients aged <40 years who underwent hip arthroscopic surgery for intra-articular abnormalities. Inclusion criteria included lateral center-edge angle (LCEA) between 18° and 25°, concurrent capsular plication and labral preservation, and minimum 5-year follow-up. Exclusion criteria were severe dysplasia (LCEA ≤18°), Tönnis grade ≥2, pre-existing childhood hip conditions, or prior hip surgery. PRO scores including the modified Harris Hip Score (mHHS), Non-Arthritic Hip Score (NAHS), and Hip Outcome Score Sport-Specific Subscale (HOS-SSS) and the visual analog scale (VAS) score for pain were collected preoperatively, at 3 months, and annually thereafter. Complications and revisions were recorded.

Results:
Twenty-five hips (24 patients) met the inclusion criteria. Twenty-one hips (19 patients, 84%) were available for follow-up. The mean age at surgery was 22.9 years. The mean preoperative LCEA and Tönnis angle were 21.7° (range, 18° to 24°) and 6.9° (range, –1° to 16°), respectively. The mean follow-up was 68.8 months. The mean mHHS increased from 70.3 to 85.9 ($P < .0001$), the mean NAHS from 68.3 to 87.3 ($P < .0001$), and the mean HOS-SSS from 52.1 to 70.8 ($P = .0002$). The mean VAS score improved from 5.6 to 1.8 ($P < .0001$). Four hips (19%) required secondary arthroscopic procedures, all of which resulted in improved PRO scores at latest follow-up. No patient required conversion to total hip arthroplasty.

Conclusion:
While periacetabular osteotomy remains the standard for treating true acetabular dysplasia, hip arthroscopy may provide a safe and durable means of managing intra-articular abnormalities in the setting of borderline acetabular dysplasia at midterm follow-up. These procedures should be performed by surgeons with expertise in advanced arthroscopic techniques, using strict patient selection criteria, with emphasis on labral preservation and capsular plication.

BACK

Journal of Bone and Joint Surgery (JBJS), Volume 100, Issue 3 & 4

Not Using a Tourniquet During Anterior Ankle Arthroscopy Did Not Affect Postoperative Intra-Articular Bleeding or Function at Six Months

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Journal of Bone & Joint Surgery - American Volume. 100(4):344, February 21, 2018.

Question: In patients undergoing anterior ankle arthroscopy, does not using a tourniquet affect operative and postoperative outcomes?

Design: Randomized {allocation concealed}*, blinded (patients, surgeon, and data collector), controlled trial with 6 months of follow-up.

Setting: A clinical center in Croatia. Patients: 50 patients 16 to 55 years of age (mean age, 33 years; 55% women) who were scheduled for anterior ankle arthroscopy. Exclusion criteria were lower-limb vascular or neuromusculoskeletal pathology other than the reason for the surgery, previous ipsilateral ankle operative procedure, superficial skin infection of the ankle, tumor in the ankle area, pronounced edema of the extremities, need for operative procedure requiring posterior and anterior arthroscopic approach or additional endoscopic procedure on the tendons around the ankle, or pregnancy. 98% of patients completed follow-up. The study had .80% power to detect a difference in intra-articular bleeding (a = 0.05).

Intervention: All patients had a pneumatic tourniquet applied around the upper thigh in the operating room and were then allocated to a noninflated tourniquet (n= 25) or an inflated tourniquet (n = 25). One surgeon performed all surgeries and was blinded to the allocated treatment (left room during inflation, draping of tourniquets, wound closure by surgeon's assistant). In the tourniquet group, the leg was exsanguinated by elevation for 60 seconds, and the tourniquet was inflated to 350 mm Hg. A 2-portal dorsiflexion method was used to create standard anteromedial and anterolateral portals, with an accessory anteromedial or anterolateral portal used if needed. A 4-mm 30 arthroscope was used.

Main outcome measures: The primary outcome was postoperative intra-articular bleeding at 24 hours. Secondary outcomes included the duration of the operation, visualization during surgery, and the volume of sterile saline solution used during surgery; pain (100-mm visual analog scale) on postoperative days 1 to 13; and ankle function (Tegner activity score, American Orthopaedic Foot & Ankle Society Score, and Foot and Ankle Disability Index) at 6 months.

Main results: The main results are summarized in Table I. The no-tourniquet and tourniquet groups did not differ with regard to the duration of the operation (mean, 50 vs. 41 minutes; p = 0.08), excellent visualization during surgery (79% vs. 100%; p = 0.053), or the volume of sterile saline solution used during surgery (median, 6.25 vs. 6.00 L; p = 0.36). Patients in the no-tourniquet group had less pain on postoperative days 5, 6, 7, 10, and 13 (p £ 0.047) but not on days 1 to 4, 8, 9, 11, or 12.

Conclusions: In patients undergoing anterior ankle arthroscopy, nonuse and use of a tourniquet did not differ in terms of the duration of the operation, intraoperative outcomes, postoperative intra-articular blood loss, or function at 6 months. Nonuse reduced postoperati

BACK