be useful to the clinician in determining prognosis and operative indications for hip arthroscopy.

A Comparison of Staged vs Simultaneous Hip Arthroscopy for Selected Patients With Symptomatic, Bilateral Femoroacetabular Impingement

SS-34

April 15, 1:55 PM

Andrea Spiker, M.D., Presenting Author
Ryan Degen, M.D., M.Sc., F.R.C.S.C.
Danyal Nawabi, M.D, F.R.C.S (Orth)
Kara Fields, M.S.
C. Wentzel, B.A.
Bryan Kelly, M.D.
Struan Coleman, M.D.

Introduction: Symptomatic, bilateral femoroacetabular impingement (FAI) has been increasingly recognized in recent years. Treatment options include staged or simultaneous (single anesthetic) bilateral hip arthroscopy, however the outcomes of the latter are largely unknown. The purpose of this study was to compare clinical outcomes and complication rates of staged versus simultaneous bilateral hip arthroscopy.
Methods: Between March 2010 and June 2013, 1800 hip arthroscopy cases were reviewed, identifying 81 patients (162 hips) who underwent bilateral hip arthroscopy for symptomatic FAI. Twelve patients (24 hips) had undergone a simultaneous procedure with a minimum of 1-year follow-up. This group was matched 1:2 for age, sex, and alpha angle, to a control group of 24 patients (48 hips) that had undergone a staged procedure. Patient-reported outcome scores, including the Modified Harris Hip Score (mHHS), the Hip Outcome Score-Activity of Daily Living (HOS-ADL), and the Hip Outcome Score-Sport-specific Subscale (HOS-SSS) were obtained preoperatively at 6 months, 1, and 2 years postoperatively.
Results: Patient demographics (age and sex) were comparable between groups ($p>0.95$). Mean preoperative alpha angle was $65.3 \pm 9.6^\circ$ in the simultaneous group and $65.9 \pm 11.2^\circ$ in the staged group ($p=0.6$). At a mean of 17.8 months (range, 12-33 months), there was significant improvement ($p<0.001$) in all patient reported outcome scores (mHHS, HOS-ADL, HOS-SSS). The mean single anesthetic traction time was 90.8 ± 21.9 minutes (sum of both hips) in the simultaneous group, compared with a combined two-anesthetic traction time of 85.7 ± 27.2 minutes in the staged group ($p=0.579$). There were no traction-related complications in either group. No patients in the simultaneous group required revision surgery, while one patient in the staged group required lysis of adhesions at 24 months postoperatively.
Conclusion: Simultaneous bilateral hip arthroscopy is safe and effective, resulting in improved patient-reported outcomes at 1-year follow-up comparable with the results of staged treatment.

The Effects of Arthroscopic Lateral Acromioplasty on the Critical Shoulder Angle and the Anterolateral Deltoid Origin: An Anatomical Study

SS-35

April 15, 2:10 PM

Jan Katthagen, M.D., Presenting Author
Daniel Marchetti, B.A.
Dimitri Tahal, M.Sc
Travis Turnbull, Ph.D.
Peter Millett, M.D, M.Sc

Introduction: A critical shoulder angle (CSA) greater than 35° is associated with rotator cuff tears (RCTs). Reduction of a CSA greater than 35° to the "favorable" range of 30-35° may potentially lower the risk of primary RCTs or decrease re-tears after rotator cuff repair. The aims of this study were to investigate if (1) a standard acromioplasty and (2) a lateral acromion resection alters the CSA without affecting the deltoid origin.
Methods: First, the native CSAs of 10 human cadaveric shoulders (6 male, 4 female, average age 54.2 years) was determined with the use of fluoroscopy. The test setup allowed for consistent repetitive measurements. Next, a standard arthroscopic anterolateral acromioplasty was performed and the CSA was then re-assessed fluoroscopically. Then, a lateral acromioplasty was performed with a 5mm lateral acromion resection using a 5mm burr, and the CSA was measured again. The native CSA was compared to: (1) the CSA after acromioplasty and (2) the CSA after lateral acromion resection using a paired t-test. Finally, the acromial deltoid attachment was evaluated anatomically for damage to the anterolateral origin.
Results: The average native CSA ($34.3 \pm 2.1^\circ$) was reduced significantly ($p<0.001$) by standard acromioplasty (mean CSA= $33.1 \pm 2.0^\circ$) and was further reduced by lateral acromion resection (mean CSA= $31.5 \pm 1.7^\circ$; $p<0.0001$). In three specimens with a pre-surgery CSA greater than 35°, the CSA was reduced to the desired range of 30-35° by the combination of a standard anterolateral acromioplasty and a 5mm lateral acromion resection. The acromial deltoid attachment was found to be well-preserved in all specimens.
Conclusion: Standard arthroscopic acromioplasty as well as a 5mm lateral acromion resection each reduced the CSA significantly and did not damage the deltoid origin. Future investigations will determine whether the combination of both techniques can be used in clinical practice to reduce a CSA $>35^\circ$ to the desired range of 30-35°.

Outcomes and Survivorship After Arthroscopic Management of Glenohumeral Osteoarthritis With a Minimum 5 Year Follow-up

SS-36

April 15, 2:15 PM

Justin Mitchell, M.D., Presenting Author
Marilee Horan, M.P.H.
Joshua Greenspoon, B.Sc
Peter Millett, M.D, M.Sc

Introduction: The outcomes and durability of arthroscopic treatment for glenohumeral osteoarthritis(GHOA) are not well studied. The purpose was to determine 5 yr survivorship for a comprehensive arthroscopic management (CAM) procedure for the treatment of GHOA.
Methods: This study had prior IRB approval. The CAM procedure was performed on a consecutive series of 42 young patients(44 shoulders) with GHOA. All patients had clinical and radiographic features, which would otherwise qualify them for total shoulder arthroplasty(TSA). The CAM procedure included glenohumeral chondroplasty, capsular release, and synovectomy, humeral osteoplasty, axillary nerve neurolysis, subacromial decompression, loose body removal, microfracture and biceps tenodesis. Patients a minimum of 5 years out from surgery were included. Outcomes scores were collected including ASES and satisfaction. Failure was defined as progression to TSA. Kaplan Meier survivorship analysis was performed.
Results: Results: 42 patients (with 44 shoulders) were included. All were recreational athletes. 7 were former collegiate or professional athletes. Mean age at surgery was 52yrs (range,27 to 68), with 13 women and 29 men. The mean follow-up on 86% of the cohort was 6yrs (range,5 to 8). 11 shoulders(26%) progressed to TSA, at a mean of 2.9 yrs (1.0-5.4). One progressed to another surgery for stiffness at a mean of 5.6 months, and another underwent a revision CAM procedure at 7.9 yrs. Mean pre-op ASES score was 64.5(SD+11.6) and 86.7(SD+16.6) at final follow-up. Median satisfaction was 10 (range,2-10). From this cohort, Kaplan Meier survivorship was 84.6% at 3 yrs and 73.3% survivorship at 5 yrs.
Conclusion: The long term durability of arthroscopic management for symptomatic GHOA is important to understand for proper surgical decision-making, particularly in young patients with GHOA. At a mean of 6 yrs and minimum of 5 yrs after the CAM procedure, we found acceptable outcomes scores with survivorship at 3 years of 84.6% and at 5 yrs of 73.3%

Mid-Term Complications and Re-operation Rates Following Pectoralis Major Tendon Repair in the Young Active Population

SS-37

April 15, 2:20 PM

Drew Nute, M.D., Presenting Author
Brian Waterman, M.D.
Nicholas Kusnezov, M.D.

Introduction: We sought to determine the functional outcomes, complications, and reoperation rates in a cohort of young highly-active individuals undergoing pectoralis major repair.
Methods: All patients with pectoralis major rupture undergoing surgical repair were isolated from the Military Health System. Demographic variables, injury characteristics (e.g. location, mechanism, chronicity), and surgical technique were recorded. Self-reported pain scale (SRPS, i.e. 0-10), range of motion, and strength were tracked. Rates of complications, functional outcomes, return to duty, re-rupture, and re-operation were also recorded. Primary endpoints of interest included clinical failure (i.e. inability to return to military function), surgical failure, and presence of major or minor complications. Variables associated with failure were evaluated using t-test and chi-square univariate analysis.
Results: 257 patients underwent pectoralis major repair with mean follow-up of 47.8±17.1 months(range: 24.1−89.5). The average age was 31.5±7.2 years and all patients were male. 89 (35%) patients were injured during combat deployments, and bench press was the predominant mechanism of injury(n=158;61.5%). Complete ruptures of sternocostal and clavicular heads occurred in 120(51%), and 109(50%) of the tears occurred at the myotendinous junction. Average SRPS improved from 3.1±1.5 to 0.5±1.1 at final follow-up. There were 45 minor complications (37 patients), most commonly persistent anterior shoulder pain (n=19;7%). 42 major complications occurred in 32 patients, including 15 re-ruptures in 14 patients (5.8%). 242 patients (94%) were able to return to full military duty and 34% of patients deployed after surgical repair. Insertional (36%) and myotendinous (36%) disruptions were associated with greater risk of surgical failure(p=0.0014), and myotendinous tears accounted for 54% of total failures(p=0.073). Furthermore, increasing body mass index and psychiatric comorbidity were associated with greater risk of clinical(p=0.0002; p=0.0169) and total failure(p=0.0097;p=0.016), respectively.
Conclusion: In the largest study to date, 94% of patients are able to return to full military duty after primary pectoralis major repair and 5.8% experience re-rupture.

Evaluation of Hyperosmolar Irrigation Solution for Shoulder Arthroscopy: A Prospective, Double-blind, Randomized, Controlled Study

SS-38

April 15, 2:25 PM

Nicholas Capito, M.D., Presenting Author
James Cook, D.V.M., Ph.D.
Seth Sherman, M.D.
Jonathan Fech, B.S.
Marie Capito, Pharm.D., B.C.P.S.
Matthew Smith, M.D.

Introduction: A hyperosmolar irrigation fluid has been reported to be safe and have potential benefits for use during shoulder arthroscopy in a pre-clinical translational animal model study. The present study was designed to compare the clinical effects of a hyperosmolar solution to a standard isotonic solution with respect to periarticular fluid retention based on net weight gain and change in shoulder girth, as well as associated pain, after shoulder arthroscopy.
Methods: Under IRB approval, a prospective, double-blind, randomized, controlled trial was performed to compare isotonic (LR, 273mOsm/L) and hyperosmolar (593mOsm/L) irrigation solutions used for arthroscopic