

compared pre- and postoperatively for pitchers who returned to greater than or equal to one MLB game following revision surgery to age- and position-matched controls.

Results: Since 1999, 235 MLB pitchers underwent Tommy John Surgeries; 31 pitchers (13.2%) underwent revision surgery. 37% underwent revision within 3 years of their index procedure. 26 revisions had more than 2-year follow up; 17 pitchers (65.4%) returned to pitch at least one major league game while only 11 pitchers (42.3%) returned to pitch ten or more games. Of those who returned to MLB competition, the average length of recovery was 20.76 months. Compared to age- and position-matched controls, MLB pitchers undergoing revision surgery had a statistically shorter career following revision surgery (4.9 vs 2.6 seasons, $p = 0.002$), and pitched fewer innings and total pitches per season.

Conclusion: The rate of revision Tommy John surgery is substantially higher than previously reported. For MLB pitchers, return to play after revision surgery is much lower than after primary reconstruction. Overall, the durability of MLB pitchers following revision UCL reconstruction decreases significantly compared to age- and position-matched controls.

Two Modified Anterolateral Portals in Elbow Arthroscopy: A Cadaveric Study

SS-44

April 15, 1:45 PM

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Introduction: To analyze the placement of two modified anterolateral portal sites in elbow arthroscopy and demonstrate the safety of each with respect to portal sites proximity to the radial nerve.

Methods: Twelve fresh cadaveric elbow specimens (6 matched pairs) were prepared, anatomic landmarks were marked, and 4mm Steinman pins were inserted into three anterolateral portal sites in relation to the lateral epicondyle: 1) proximal, 2cm proximal and 2cm anterior 2) direct anterior, 2cm anterior 3) distal, 3cm distal and 1cm anterior. Each elbow was then dissected to reveal the course of the radial nerve. Digital photographs were taken of each specimen and the distance from the Steinman pin and the radial nerve was measured.

Results: Our proximal and direct anterior portal sites were found to be an average of 11.1mm and 13.8mm from the radial nerve, respectively. Similar to past studies we found the original distal anterolateral portal, as described by Andrews and Carson, in close proximity to the radial nerve, an average distance of 4.5mm. The distal anterolateral portal came in contact with the radial nerve 40% of the time, with 3 total Steinman pins piercing the nerve. There was a statistically significant difference in the distance between our proximal and distal anterior portals, as well as, our direct anterior and the distal

portals to the radial nerve. No significant difference was found between the distance of the proximal and direct anterior portal sites.

Conclusion: Our two modified, proximal and direct anterior, anterolateral portal sites should be considered safe and provides the surgeon with an adequate distance between the arthroscope and the radial nerve with little risk of iatrogenic injury. The distal portal puts the radial nerve at the most risk for iatrogenic injury. Our two modified anterolateral portal sites should be considered for use when performing elbow arthroscopy.

Primary Repair of Traumatic Distal Bicep Ruptures: Effect of 1 vs. 2-Incision Technique

SS-45

April 15, 1:50 PM

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Introduction: There is no consensus on the optimal method for surgical management, and rates of perioperative complications and re-rupture may vary widely. The purpose of this study was to determine success of distal biceps repair in active cohorts.

Methods: All U.S. military servicemembers undergoing primary surgical repair for confirmed distal biceps rupture through the Military Health System were isolated between 2007-2013. Demographic variables (age, gender, and hand dominance) and surgical variables [time to surgery, surgical technique (e.g. single- vs. two-incision), method of fixation] were extracted. Rates of perioperative complications, recurrent distal biceps rupture, reoperation, and revision repair were evaluated.

Results: A total of 303 surgical repairs were performed for traumatic distal biceps rupture, including 19% for subacute or chronic ruptures (e.g. >30 days after injury). The cohort was exclusively male with an average age of 39 years (range, 20-61). The median time to the surgery was 13 days (range, 1-365) and the majority of cases were performed using a single-incision volar technique (77%). Cortical button accounted for at least 87% of all repairs, as opposed to suture anchors (8.3%) and interference screw fixation (4.4%). At an average 51-month follow-up, a total of 46 complications (15%) occurred, including traction neuropraxia ($n=24$; 7.9%), lateral antebrachial cutaneous nerve ($n=13$; 4.3%), recurrent rupture ($n=10$; 3.3%), heterotopic ossification ($n=8$; 2.6%), superficial infection ($n=2$; 0.7%), radial neck fracture ($n=1$; 0.3%). When compared to two-incision technique (11.9%), complications were not significantly greater with single-incision repairs (19.7%; $p=0.22$). Similarly, the rate of re-rupture after primary repair with one- ($n=8$; 4.0%) and two-incision ($n=2$; 3.4%) was not significantly different ($p=0.82$). Only two patients underwent medical discharge due to persistent elbow pain after surgery (0.7%).

Conclusion: There were no statistically significant differences in the rate of complications and/or re-rupture after single or two-incision distal biceps repair. In an active

patient population, re-rupture (3.3%) or other complications (11.8%) can be anticipated with 99.6% return to military duty after primary biceps repair.

Arthroscopic Ankle Arthrodesis: A Long-Term Follow-up Study

SS-46

April 15, 2:20 PM

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Introduction: Despite advances in arthroplasty techniques, ankle arthrodesis remains the gold standard for the treatment of degenerative ankle disease. Following tibiotalar fusion, there is concern of development of arthritis in the adjacent hindfoot joints as well as deterioration in functional outcomes secondary to a loss of motion at the ankle joint. We performed a long-term study to address these concerns.

Methods: Between 1993 and 2013, 116 patients (120 ankles) underwent arthroscopic ankle arthrodesis (AAA). Mean age at surgery was 61.1 years with a mean follow-up of 86 months. Patients were assessed according to the American Orthopaedic Foot and Ankle Society (AOFAS) Ankle and Hindfoot scale, Ankle Osteoarthritis Scale (AOS) and Foot and Ankle Outcome Score (FAOS). Patients also underwent a comprehensive clinical and radiographic (pre and postoperative x-ray/CT) examination.

Results: Radiographic evidence of ankle fusion was achieved in 95% of patients. The mean AOFAS score was 83.3 (SD 13.2). The mean modified FAOS score was 87.4 (SD 10.4). There were 75% good/excellent results according to the modified AOS scoring system. According to the Kellgren-Lawrence score and van Dijk osteoarthritis grading scale 85% and 69% of patients had no change in talonavicular or subtalar grade of osteoarthritis, respectively. There were no cases of deep infection or other serious adverse events. All but 4 patients were able to return to work following AAA.

Conclusion: Arthroscopic ankle arthrodesis is an effective operation for treating degenerative ankle disease, even in cases of moderate tibiotalar coronal deformity. It resulted in good/excellent functional outcomes at a mean of 86 months post-operatively in nearly three-quarters of our patient cohort. Arthritis found in the adjacent hindfoot joints at the time of tibiotalar fusion appears to be a function of preexisting arthritic change and not directly caused by the tibiotalar fusion.

Outcomes and Complications of Endoscopically-assisted Percutaneous Achilles Tendon Repair

SS-47

April 15, 2:30 PM

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Introduction: Open repair of acute Achilles tendon rupture is considered as a standard surgical treatment while percutaneous technique has gained increasing popularity especially under endoscopic control. However, there is a lack of currently research reporting outcomes and complications following this technique.

Methods: A retrospective chart reviews with prospectively collecting data were performed in 30 patients with 30 legs who underwent endoscopically-assisted percutaneous Achilles tendon repair using 6-portal technique between 2008 and 2015. The minimum follow up to be included in the study was 6 months (mean, 49.3 months; range, 6 to 76 months). The primary outcome was FAAM, SF-36, and VAS. The secondary outcomes included operative time, recovery time, and complications.

Results: There were 30 patients (24 male and 6 female) with mean age of 36.7 years. An average of tourniquet time was 39.6 minutes (range, 23-67 minutes). There was significant improvement of VAS (7.1/10 to 0.1/10), SF-36 (PCS (38.8 to 49.9) and MCS (49.0 to 51.8)), FAAM (Activity, 19.0 to 88.4 and Sport, 0 to 65.6). An average time to return to activity of daily living, work, and sports were 6 weeks, 7 weeks, 3.6 months respectively. The complications included hypertrophic scar without pain (6.7%), superficial wound infection (3%). There was no re-rupture, deep vein thrombosis, sural nerve injury, and painful scar in this study.

Conclusion: Endoscopically assisted percutaneous Achilles tendon repair demonstrated significant improvement in terms of functional outcomes as measured with the FAAM, SF-36, and VAS. This technique is safe and feasible for treatment patients with acute rupture of Achilles tendon.

Arthroscopic Antero-superior Ancillary Portals for Addressing Surgical Repair perpendicularly on Talar Dome: Sixteen Years' Experience

SS-48

April 15, 2:25 PM

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Introduction: Restore of talar dome cartilage disorders are generally achieved with open surgery, considering malleolar osteotomy as main surgical choice. Concerns are on fate of ankles submitted to this procedure, being still unclear even this may influence further evolution in DJD. Aiming to avoid open surgery, authors have set up an arthroscopic technique by antero-superior portal, placed medially or laterally to permit vertical instruments position for addressing surgery to chondral lesions.

Methods: Since 1998, 123 patients underwent arthroscopic OLT repair by superior portals in addition to 2 standard anterior ones. Maintaining foot in maximum plantar flexion, a spinal needle is inserted 5-to-7 centimetres superiorly to anterior standard portal: slipping along anterior tibial bone surface, it reaches talar dome vertically. Trying several times until correct perpendicular placement