lower post-operative FAOS. Conclusions: The main finding of this study is patient age was not an independent risk factor for inferior clinical outcomes after AOT for OLT. Additionally, having a cystic lesion, or having a lesion because of a traumatic injury were not significantly associated with post-operative FAOS. Having a shorter lesion had the largest marginal effect on post-operative FAOS. These findings provide important information for providers when counseling and selecting patients for AOT procedure for treatment of OLT.

Category: Ankle/Foot/Calf

M1 And M2 Monocytes In Concentrated Bone Marrow Aspirate As Predictive Biomarkers For Clinical Response After Foot And Ankle Procedures

Abstract ID# 23283
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Summary: This study aims to determine how the M1:M2 monocyte ratio in cBMA affects clinical outcomes after foot and ankle procedures. We hypothesized that patients who produced an “anti-inflammatory” cBMA with a lower M1:M2 monocyte ratio at the time of injection would have improved clinical outcomes. Methods: The study proposal was reviewed and approved by an Institutional Review Board. Patients aged 18-85 years old undergoing a foot and ankle procedure with cBMA injection were offered enrolment into this study. Patients with a history of inflammatory disorders, corticosteroid use, cancer, and previous injections in the past year were excluded. Samples of peripheral blood (PB), bone marrow aspirate (BMA), and cBMA were collected during the procedure. The samples were analyzed by automated cell counting and multicolor fluorescence activated cell sorting with specific antibodies recognizing monocytes (CD14+CD16+) and the M1 (CD86+) and M2 (CD163+CD206+) populations within that monocyte population. Cytokine concentrations within the samples were evaluated with ELISA. Clinical outcomes were assessed with Patient-Reported Outcomes Measurement Information System (PROMIS) Global-10 and Foot and Ankle Outcome Score (FAOS) questionnaires on the day of the procedure, at the 3-month, 6-month, and 1-year follow-up visits. Results: Currently, 38 patients have been enrolled in the study. The mean age was 49.3 years (range 18-84 years). cBMA had a mean fold increase of 5.31±5.5 for all leukocytes, 7.0±6.0 for monocytes, 9.2±9.4 for lymphocytes, 3.4±4.0 for neutrophils, and 10.7±14.0 for platelets when compared to BMA. No significant differences in M1 monocyte levels were found between PB, BMA, and cBMA (p>0.5). M2 monocytes were significantly more prevalent in PB than in BMA (p=0.0008) and cBMA (p=0.0027). The ratio of M1:M2 monocytes across all subjects trended higher in cBMA compared to PB (p=0.18). The patient had a significant effect on M1 (p=0.0093), and M2 (p=0.0001) levels, as well as M1:M2 ratio (p=0.0001) in PB, BMA, and cBMA. ELISA results and patient outcome comparisons are pending full enrolment of all planned subjects into the study. Discussion and Conclusion Both the cells and cytokines found within cBMA are important for generating its site-directed effects. cBMA preparation enriches multiple leukocyte populations involved in inflammation modulation including M1 and M2 monocytes. Due to the over-abundance of adjuvant therapeutic options, predicting responders and non-responders to any given treatment is necessary to provide high-quality patient care at reduced costs. The results of this study will enable orthopedic surgeons to evaluate the quality of a cBMA preparation and determine which patients should receive cBMA versus an alternative therapy.

Category: Ankle/Foot/Calf


Abstract ID# 23292
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Summary: Inferior extensor retinaculum reinforcement does not improve clinical outcome scores in patients undergoing lateral ankle ligament stabilization.

Data: Background: Ankle sprains are common musculoskeletal injuries and the lateral ligament complex, most notably the ATFL, is involved in 85% of cases. First line therapy is conservative, but up to 20% of ankle sprains will not resolve with conservative therapy and progress to chronic lateral ankle instability. Patients with chronic lateral ankle instability after failed conservative management often require surgical intervention. Various arthroscopic procedures have been introduced to restore lateral ankle stability. Some arthroscopic procedures involve repair of only the ATFL with suture anchors, while others involve a procedure similar to the traditional modified Brostrom and utilize reinforcement with the inferior extensor retinaculum (IER). Studies directly comparing different arthroscopic techniques are limited. Purpose: The purpose of this meta-analysis was to compare clinical outcomes of patients receiving different arthroscopic lateral ankle stabilization: procedures in which only the ATFL was repaired vs procedures involving a Brostrom-like repair with IER reinforcement. We hypothesized that clinical outcomes would be superior in patients receiving a Brostrom-like arthroscopic ankle stabilization with IER reinforcement. Methods: A systematic review per PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) guidelines was conducted. The search net 867 results. Two independent reviewers subsequently conducted exclusion by title and abstract, resulting in 59 studies. The remaining studies then underwent full-text review to confirm they met the appropriate inclusion and exclusion criteria. The reviewers cross-referenced inclusive studies for references to ensure no studies were missed in the initial search. 19 studies were included in the final analysis. To assess the relationship of type of surgical procedure (repair of only the ATFL or repair of the ATFL plus IER reinforcement) to reported clinical outcomes based on the American Orthopaedic Foot and Ankle Society (AOFAS) score, the Karlsson and Peterson Scoring System for Ankle Function (KAFS), and the Visual Analogue Score (VAS), we used the standardized mean difference (SMD) with a 95% confidence interval (CI) of preoperative to postoperative scores as an effect size. The method of random-effects models was used to calculate the overall summary estimates. Results: 19 studies were included in this meta-analysis to compare clinical outcomes of arthroscopic procedures to restore lateral ankle instability. Improvement of AOFAS, KAFS, and VAS scores from preoperative to postoperative periods were compared across studies to assess patient outcomes. In the meta-regression model, the type of surgical procedure had no significant difference on the preoperative to postoperative SMD score of AOFAS (P.value=0.315), KAFS (P.value=0.373), and VAS (P.value=0.942). Conclusion: There is no significant difference in clinical outcomes for patients receiving arthroscopic lateral ankle stabilization with repair of only the ATFL (without IER reinforcement) or repair of the ATFL with IER reinforcement. Patients receiving either modification of ankle arthroscopic surgery should achieve excellent functional outcomes. Disclosures: Military Identification: Benjamin C Murray, LT, MC, USN, NMFTEP Non-research disclaimer: The views expressed in this abstract are those of the authors and do not necessarily reflect the official policy or position of the Department of the Navy, Department of Defense, or the United States Government. Research Disclaimer: The views expressed in this abstract reflect the results of research conducted by the authors and do not necessarily reflect the official policy or position of the Department of the Navy, Department of Defense, or the United States Government. Copyright Statement: I am a military service member. This work was prepared as part of my official duties. Title 17 U.S.C. 105 provides that “Copyright protection under this title is not available...
for any work of the United States Government.” Title 17 U.S.C. 101 defines a United States Government work as a work prepared by a military service member or employee of the United States Government as part of that person’s official duties. Funding Acknowledgement: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Category: Ankle/Foot/Calf

Psychiatric Disorders are Predictive of Worse Pain Severity and Functional Outcomes after Fasciotomy for Chronic Exertional Compartment Syndrome of the Leg

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Summary:
History of psychiatric disorder was predictive of worse postoperative pain and activity outcomes after fasciotomy for CECS but not pain frequency or return to sports.

Data:
Background: Chronic exertional compartment syndrome (CECS) is a neuromuscular disorder that causes exertional limb pain and is most commonly diagnosed among athletes such as runners and joggers. CECS of the leg may be surgically treated with fasciotomy but pain relief and outcomes for return to sport may vary considerably. Psychiatric conditions may influence pain perception and thus affect patient-reported outcomes following fasciotomy. This study aimed to determine whether psychiatric diagnoses and medication use were associated with post-fasciotomy outcomes among CECS patients. Methods: We conducted a retrospective analysis of patients who underwent primary fasciotomy for CECS at a single academic medical center from 2010-2020. Psychiatric history was abstracted from electronic health records and included disease diagnosis and associated medications. Postoperative outcomes were assessed using an email survey and included pain frequency, pain severity, Tegner Activity Scale score, and return to sport. Associations between psychiatric history and outcomes were identified using multivariable linear or logistic regression with subjects without psychiatric disorders as controls. P-values less than 0.05 were considered significant. Results: 81 subjects (legs) were included in the study cohort. The cohort was 54% male with average age at time of surgery of 30 years (range 14 - 64) and average follow-up time of 52 months (range 4 - 126). 24 subjects (30%) had at least one psychiatric diagnosis at the time of surgery. Regression analysis found positive psychiatric history to be an independent predictor of worse outcomes versus controls for postoperative pain severity and postoperative Tegner scores (p < 0.05). Furthermore, subjects with a psychiatric disorder but not on medication were associated with worse pain severity (p < 0.001) and Tegner scores (p < 0.01) versus controls whereas subjects with a psychiatric disorder and on medication were associated with better pain severity during daily activity and sports (p < 0.05) versus controls. Conclusion: History of psychiatric disorder was predictive of worse postoperative pain and activity outcomes after fasciotomy for CECS but not pain frequency or return to sports. Furthermore, use of psychiatric medication was associated with improvement in pain severity in some domains. These findings suggest that psychiatric disorders may modulate pain pathways leading to more severe self-reported postoperative pain, while psychiatric medications may potentially provide an analgesic effect in these patients.

Category: Ankle/Foot/Calf

Calf Muscles Volume And Tendon Elongation After Acute Achilles Tendon Rupture. A Predefined Secondary Analysis In A Randomized Controlled Trial Investigating Treatment Selection Using The Copenhagen Achilles Rupture Treatment Algorithm (CARTA)

Abstract ID# 22088
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Summary:
The aim of the present study was, in a randomized setup, to investigate if treatment selection by use of CARTA could reduce hypotrophy and tendon elongation. No indication was found that treatment selection by use of CARTA reduced calf muscle atrophy or tendon elongation when compared to surgical and non-surgical treatment.

Data:
Background: Surgical treatment of acute Achilles tendon rupture substantially lowers the risk of re-rupture and has been claimed to reduce calf atrophy and elongation of the Achilles tendon compared to non-surgical treatment. The Copenhagen Achilles Rupture Treatment Algorithm (CARTA) was developed to provide evidence-based individualized treatment selection based ultrasound-guided (US) evaluation of the rupture. Purpose: The aim of the present study was, in a randomized setup, to investigate if treatment selection by use of CARTA could reduce hypotrophy and tendon elongation in comparison with 1) patients treated surgically, and 2) patients treated non-surgically. Study design: Randomized controlled clinical trial Methods: 60 patients with an acute ATR were randomized in a 1:1:1 order to treatment selection based on CARTA (Intervention), surgical treatment (control) or non-surgical treatment (control). After one year MRI of both calves was performed and muscle volume and Achilles tendon length was measured. Results were presented as the ratio between the affected and the unaffected limbs: the Limb Symmetry Index (LSI). Trial registration: NCT03525964. Results: 156 patients were assessed for eligibility, 60 patients were randomized and 54 provided data for the study: 19 in the group assigned treatment based on CARTA, 17 in the group assigned non-surgical treatment, and 18 in the group assigned surgical treatment. No statistically significant differences were found between the intervention group and the two control groups regarding muscle volume and tendon length. Also, no statistically significant differences were found between patients treated surgically and patients treated non-surgically. Comparison between the affected and the unaffected limb showed statistically significant muscle atrophy (25%-30%) and tendon elongation (Soleus 59%-76%, Gastrocnemius 8%-14%) in the affected limb in all three groups. Conclusion: No indication was found that treatment selection by use of CARTA in the treatment of acute ATR reduced calf muscle atrophy or tendon elongation when compared to surgical and non-surgical treatment. Also, no indication was found that surgical treatment reduced calf muscle atrophy or tendon elongation. Clinical relevance: The results are directly adaptable in the treatment of acute Achilles tendon rupture as they question the advantages of surgical treatment. What is known about the subject: It is claimed that surgical treatment of acute Achilles tendon rupture as they question the advantages of surgical treatment. What is known about the subject: It is claimed that surgical treatment of acute Achilles tendon rupture reduces calf atrophy and tendon elongation. The Copenhagen Achilles Rupture Treatment Algorithm (CARTA) has been developed but needs adequate testing. What this study adds to existing knowledge: The study questions whether surgical treatment of acute Achilles tendon rupture actually does reduce calf atrophy and tendon elongation. The same accounts for CARTA.

Category: Ankle/Foot/Calf

MRI Findings of the Foot and Ankle in Asymptomatic Professional Ballet Dancers

Abstract ID# 22271
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Summary:
Bilateral foot and ankle MRI’s of 31 professional ballet dancers were reviewed and a high prevalence of bone marrow oedema in the talus and the metatarsals were found.

Data:
Background: The use of Magnetic Resonance Imaging (MRI) is considered the gold standard assessment tool for the most common injuries that are sustained in the elite ballet foot and ankle, namely, posterior ankle impingement, ligament injury, bone stress reaction and tendon injury. However, it is sometimes difficult to evaluate the foot and ankle MRI’s in dancers since some of the signal changes seen on MRI scans are secondary to the repetitive high loads to which dancers are exposed during training and they may not be pathological or in any way related.