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

Abstract ID# 23436
All Authors:
Andrew S Bi MD UNITED STATES
Dhruv S Shankar BS UNITED STATES
John Avendano BA UNITED STATES
Michael Buldo-Liccari BS UNITED STATES
Lauren E Borowski MD UNITED STATES
Laith M. Jazrawi MD UNITED STATES
Dennis Cardone DO UNITED STATES
Lauren E Borowski MD UNITED STATES
Andrew S Bi MD UNITED STATES
Laith M. Jazrawi MD UNITED STATES
Dennis Cardone DO UNITED STATES
Dhruv S Shankar BS UNITED STATES
John Avendano BA UNITED STATES
Michael Buldo-Liccari BS UNITED STATES
Lauren E Borowski MD UNITED STATES
Laith M. Jazrawi MD UNITED STATES
Dennis Cardone DO UNITED STATES
Dhruv S Shankar BS UNITED STATES
John Avendano BA UNITED STATES
Michael Buldo-Liccari BS UNITED STATES
Lauren E Borowski MD UNITED STATES
Laith M. Jazrawi MD UNITED STATES
Dennis Cardone DO UNITED STATES
Dhruv S Shankar BS UNITED STATES
John Avendano BA UNITED STATES
Michael Buldo-Liccari BS UNITED STATES
Lauren E Borowski MD UNITED STATES
Laith M. Jazrawi MD UNITED STATES
Dennis Cardone DO UNITED STATES

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
All Authors:
Kristoffer W. Barfod MD, PhD DENMARK
Anders Brøgger Overgård MD DENMARK
Maria Svennerberg Hansen MSc, PT, PhD DENMARK
Ibrahim El Haddouchi Medical Student DENMARK
Marianne Toft Vestmark MD, PhD DENMARK

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 (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 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
All Authors:
Mai Katakur MD, PhD JAPAN
Justin Lee MB BS, FRCR UNITED KINGDOM
Adam Mitchell MB BS, FRCS, FRCR UNITED KINGDOM
Richard Clark MSc UNITED KINGDOM
Joseph Shaw PhD UNITED KINGDOM
Shane Kelly MSc SportPhys UNITED KINGDOM
James D. Calder OBE, MBBS, MD, PhD, FFSEM(UK) UNITED KINGDOM

Summary:
Bilateral foot and ankle MRIs 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 MRIs 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.
to an injury. Previous studies have investigated MRI findings of ballet dancers’ ankles, but they lack information on forefoot and tendon pathologies other than flexor hallucis longus tendon. Therefore, the present study aims to fully identify asymptomatic radiological findings in the feet and ankles of ballet dancers. Methods: Thirty-one professional ballet dancers (15 men and 16 women; mean age, 26.5 ± 4.3 years) who were dancing in full capacity were included in this prospective study. Dancers who had foot or ankle pain requiring modification of dance activities which lasted for more than one week or had a history of surgery, fracture or bone stress reaction to the foot or ankle in the last six months were excluded. Orthogonal 3-plane STIR imaging of both feet and ankles was obtained using 3.0-T MRI and the images were reviewed using a standardised evaluation form by two musculoskeletal radiologists. Results: Fifty (80.6%) of the 62 feet and ankles had at least one bone marrow oedema. The common locations of bone marrow oedema were talus (n = 39, 62.9%), metatarsals (n = 17, 27.4%), and tarsal bones (n = 10, 16.1%). On trinum and Stieda process were seen in 5 (8.1%) and 8 (12.9%) ankles respectively and among them, bone marrow oedema was seen in two os trigonum. In addition, posterior synovitis was seen in one ankle (1.6%). Conclusion: This study showed the prevalence of foot and ankle MRI findings in asymptomatic professional ballet dancers. Those findings may come from high loads to which dancers are exposed and may not be related to symptoms. The results of this study would help interpret the MRI findings in symptomatic ballet dancers. Further analysis investigating the relationship between the MRI findings and the past and future injuries is warranted.

Category: Ankle/Foot/Calf

Talar OsteoPeriostic Grafting From The Iliac Crest (Topic): 2-Year Results Of A Novel Press-Fit Surgical Treatment For Large Talar Osteochondral Lesions

Abstract ID# 22692

All Authors:
Jari Dahmen Bsc NETHERLANDS
Sjoerd A.S. Stuikens MD, PhD NETHERLANDS
Gino M. M. J. Kerkhoffs MD, PhD, Prof. NETHERLANDS

Summary:
The Talar OsteoPeriostic grafting from the iliac crest (TOPIC) procedure for large OLTs results in clinically effective outcomes with 100% ingrowth of all the grafts with no non-unions. 

Data:
Purpose: The purpose of this study was to present the surgical technique and to evaluate the clinical and radiological outcomes of a new press-fit OATS technique for large primary and secondary talar osteochondral defects of the talus, Talar OsteoPeriostic grafting from the iliac crest (TOPIC). Methods: 60 patients underwent a press-fit TOPIC procedure. Mean age was 38 years (SD 4.6). Pre- and postoperative clinical assessment at 12- and 24-months follow-up included the American Orthopaedic Foot and Ankle Society (AOFAS) score, the Short-Form 36 (SF-36) Mental Component Scale (MCS) and Physical Component Scale (PCS), the Numeric Rating Scales (NRS) of pain at rest, during walking and stair-climbing, and the Foot and Ankle Outcome Score (FAOS). Return to work was assessed in time and rate. Remodeling of the contour of the talus, bone ingrowth and consolidation of the implanted graft were assessed on computed tomography (CT) one year post-operatively. Results: All patients were available for the two-year follow-up. The AOFAS improved from 48 to 90 (p<0.05). All NRS scores improved; the NRS during rest from 3 to 0 (p<0.05), the NRS during walking from 5 to 1 (p<0.05), and the NRS during stair-climbing from 5 to 1 (p<0.05). Both components of the SF-36 improved. The PCS improved from 34 to 47 (p<0.05) and the MCS from 37 to 66 (p<0.05). All FAOS subscales significantly improved. 72% returned to sport at pre-injury sports level and mean time to return to sports was 9 months (SD 2.4). All patients showed remodeling of the talus and all grafts showed consolidation as well as bone ingrowth on the CT scans. All patients returned to work, at a mean time of 4 months post-operatively (SD 4.4). One patient had a temporary loss of n. saphenous sensibility. Conclusions: The TOPIC procedure for large OLTs results in clinically effective outcomes with 100% ingrowth of all the grafts with no non-unions. There is a 100% return to work rate and a 72% return to pre-injury of sports rate. Long-term results are necessary to evaluate whether the TOPIC procedure stands the test of time and can be considered the treatment of choice for large OLTs at long-term follow-up.

Category: Ankle/Foot/Calf

Biomechanical Comparison Of Open Versus Percutaneous Techniques For Primary Mid-Substance Achilles Tendon Repair: A Systematic Review And Meta-Analysis

Abstract ID# 22944

All Authors:
Jonathan J Lawson MS UNITED STATES
Sean B Sequeira MD UNITED STATES
Casey M Imbergero MD UNITED STATES
Gregory P Guyton M.D. UNITED STATES
W. Chad Hembree Heath Patrick Gould M.D. UNITED STATES

Summary:
Both open and percutaneous techniques are biomechanically viable approaches for primary mid-substance Achilles tendon repair. Methods: A systematic review of original research articles was performed using PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. To qualify for study inclusion, articles were required to be published in English, utilized a cadaveric laboratory design, and had to directly compare the biomechanical properties of open Achilles repair using a Krackow or Kessler technique versus percutaneous repair using either the PARS (Arthrex) or Achilles (Integra) tendon repair systems. Evaluated outcomes included displacement (mm), load to failure (N), and stiffness (N/m). Results: Nine studies met inclusion criteria, including 190 cadaveric specimens (open: 83, PARS: 56; Achilles: 51) that underwent primary mid-substance Achilles tendon repair. Pooled analysis demonstrated no statistically significant difference in displacement (p = 0.418; Figure 1), load to failure (p = 0.923; Figure 2), or stiffness (p = 0.195; Figure 3) between the open and percutaneous techniques. Discussion/Conclusion: The results of this study suggest that both open and percutaneous techniques are biomechanically viable approaches for primary mid-substance Achilles tendon repair. These biomechanical findings must be interpreted in the context of clinical outcomes data as well as the differing complication profiles of the two techniques to best inform the surgical decision-making process for primary mid-substance Achilles tendon repair.

Category: Ankle/Foot/Calf

“Progressive Foot Peak Pressure Analysis after FHL Transfer for Chronic Retracted Tendo-achilles Tear” – A Pedobarographic Analysis of Normal Foot Versus Affected Foot

Abstract ID# 23153

All Authors:
Rajagopalakrishnan Ramakanth D.ortho,DNB(ortho),D.SICOT, Fellowship Arthroscopy INDIA
S R Sundararajan MS(Orth) INDIA
Thippeswamy Venugopal MS Ortho, DNB(ortho) INDIA
Terence Dsouza MS, DNB, FNB INDIA
Palaniswamy Arumugam BPT, MPT INDIA
S Rajasekaran MS ortho DBN ortho, MCh, FRCS, FACS, PhD INDIA

Summary:
Loading foot pressures though altered initially are restored and comparable to normal foot at the end of 1 year follow-up after FHL transfer for chronic retracted tendo-achilles tear, thus reducing the forefoot morbidity. FHL hypertrophy is seen at the muscle and tendinous region of the transferred graft.

Data:
“Progressive Foot Peak Pressure Analysis after FHL Transfer for Chronic Retracted Tendo-achilles Tear” – A Pedobarographic Analysis of Normal Foot Versus Affected Foot. ABSTRACT Introduction Foot pressure changes and morbidity after FHL transfer in chronic retracted TA tears have not been documented. The primary aim of our study is to analyze the peak pressure changes in various zones of the foot at