Second-Look Arthroscopy After Surgery For Osteochondral Lesions of the Talus: A Systematic Review and Meta-Analysis

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All Authors:
Jari Dahmen BSc NETHERLANDS
Jelmer Vreken BSc NETHERLANDS
Alex Bastiaan Walinga MD NETHERLANDS
Tobias Stonebrink MD NETHERLANDS
Kaj Emanuel MD, PhD NETHERLANDS
Sjoerd A.S. Stufkens MD, PhD NETHERLANDS
Gino M. J. Kerkhoffs MD, PhD, Prof. NETHERLANDS

Summary:
Concerning treatment for osteochondral lesions of the talus, bone marrow stimulation yields inferior cartilage quality as assessed with second-look arthroscopy in comparison to fixation, osteochondral transplantation and cartilage implementation.

Data:
Purpose: The primary aim was to assess and compare cartilage quality after different surgical interventions evaluated by second-look arthroscopy (SLA). Secondary aims were to report concomitant diagnoses found during SLA, and to correlate the cartilage quality with clinical- and radiological outcomes. Methods: A literature search was performed through PubMed, Embase (Ovid), and Cochrane Library. The primary outcome was the difference of cartilage quality as assessed with SLA between different surgical interventions. The Moderator analysis was used to calculate differences between treatment groups. Associated 95% confidence intervals (CI) were calculated with the Clopper-Pearson interval. Additionally, correlations between the cartilage quality and clinical- or radiological outcomes were calculated and percentages of concomitant diagnoses per treatment group were reported. Results: Nineteen studies comprising 447 ankles having undergone SLA 14 months after the initial surgery were included. The cartilage quality success rate for bone marrow stimulation (BMS) was 53% (95% CI 38-68%), for Retrograde Drilling (RD) 100% (95% CI 66-100%), for fixation (FIX) 92% (95% CI 70-89%), for Osteochondral Transplantation (OCT) 94% (95% CI 69-99%) and Chondrogenesis-Inducing Techniques (CT) this was 81% (95% CI 70-89%). The success rate of BMS was significantly lower than FIX, OCT and CT. There were no significant differences in success rates between the other treatment options. The incidence of concomitant diagnoses found during second-look arthroscopy differed among different treatment strategies. For BMS, a positive correlation was found between the International Cartilage Repair Society score (ICRS) and AOFAS-scores (r = .67, p <.01). For OCT, no significant correlation was found between the MOCART score and the ICRS (r = .36, p = .23). Conclusions: Concerning treatment for osteochondral lesions of the talus, bone marrow stimulation yields inferior cartilage quality as assessed with SLA in comparison to fixation, osteochondral transplantation and cartilage implementation. The role of the quality of the subchondral bone and its repair must be highlighted concerning correlation with clinical outcomes and long-term success as well as prevention of development of osteo-arthritis.

Category: Ankle/Foot/Calf

Achilles Tendon Gait Dynamics After Rupture: A Three-Armed Randomized Controlled Trial Comparing An Individualized Treatment Algorithm Vs. Operative Or Non-Operative Treatment

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All Authors:
Maria Svinneergren Hansen PT, PhD DENMARK
Jesper Bencke PhD DENMARK
Morten Tange Kristensen PT, PhD, Prof. DENMARK
Thomas Kallemose MSc DENMARK
Per Hølmich DMSc, Prof. DENMARK
Kristoffer W. Barfod MD, PhD DENMARK

Summary:
This study presents the first evaluation of an ultrasound-based individualized treatment algorithm for patients with an Achilles tendon rupture, in a randomized controlled set up with valid functional outcomes.

Data:
Introduction: Individual treatment selection has been proposed as the key to optimized treatment for patients with an Achilles tendon rupture. The purpose was to determine if walking pattern, Achilles tendon elongation and patient reported outcome measure differ between patients having their treatment selected using the individualized treatment algorithm Copenhagen Achilles Rupture Treatment Algorithm (CARTA) and patients treated as usual (operative or non-operative by default). Materials and Methods: The trial was performed as a three-armed randomized controlled trial with the patients randomized in a 1:1:1 order to one of three parallel groups; 1) Intervention group: Participants treated according to the individualized ultrasound based treatment algorithm CARTA, 2) Control group: Participants treated non-operatively, 3) Control group: Participants treated operatively. The present study evaluates the newly developed CARTA, an individualized treatment algorithm based on an ultrasonographic examination. Firstly, the degree of overlap at the site of rupture was examined by looking at the cross-sectional area. If the investigator could identify a transverse picture with less than 25% fibers of the cross-sectional area, the rupture was evaluated not to overlap. If more than 25%, the tendon was evaluated to overlap. If no overlap was present operation was indicated. Secondly, the tendon elongation was measured by using the Copenhagen Achilles Length Measure. Both legs were examined and the difference between the sides was calculated as the elongation and was given in percent of the length of the non-injured tendon. Patients with up to 7% elongation were treated non-operatively and patients with 7% or more were treated operatively. Patients aged 18-65 years were eligible for inclusion. The primary outcome was peak ankle plantarflexor power during push when walking at 12 months measured in a 3D gait laboratory. Secondary outcomes were peak ankle plantarflexor moment, peak ankle dorsiflexion during stance phase, tendon elongation and Achilles tendon Total Rupture Score (ATRS). Analysis was conducted as intention-to-treat. Results: 156 patients were assessed for eligibility, 21 were allocated to the intervention group and 20 and 19 to the control groups. The results indicated no statistically significant differences between the intervention group and the control groups at 6- and 12-months follow-up for the primary or any of the secondary outcomes. Conclusion: Individualized treatment selection for operative vs non-operative treatment based on CARTA did not seem to result in less affected gait dynamics or less tendon elongation than usual care.

Category: Ankle/Foot/Calf

Talar Osteoperiostic Grafting From The Iliac Crest (TOPIC): Return To Sports Outcomes Of A Novel Press-Fit Surgical Treatment For Large Talar Osteochondral Lesions

Abstract ID# 22693
All Authors:
Jari Dahmen BSc NETHERLANDS
Quinten G.H. Rikken BSc, NETHERLANDS
Sjoerd A.S. Stufkens MD, PhD NETHERLANDS
Gino M. J. Kerkhoffs MD, PhD, Prof. NETHERLANDS

Summary:
The TOPIC procedure for large osteochondral lesions of the talus resulted in a 90% of return to any level of sports rate, a 72% return to pre-injury of sports rate, and a 30% of return to performance rate. Long-term follow-up at 24 months post-operatively. The mean follow-up duration was 24 months (SD 4.5). The mean length size was 356 mm2. Return to any level of sports rate was 90% (95% CI 83 – 95) with an associated time of 8 months (SD 2.5), return to pre-injury level of sports rate was 72% (95% CI 60 – 83) with an associated time of 9.5 months (SD 3.0). Return to performance was 30% (95% CI 20 – 40) with an associated return to performance time of 12 months (SD 4.6). Conclusions: The TOPIC procedure for large osteochondral lesions of the talus resulted in a 90% of return to any level of sports rate, a 72% return to pre-injury of sports rate, and a 30% of return to performance rate. Long-
term results are necessary to evaluate whether the TOPIC procedure stands the test of time from both a clinical and sports outcome perspective in order to be considered the treatment of choice for large OLTs at long-term follow-up.

Category: Ankle/Foot/Calf

One-Year Serial MRI Study of the Calf Muscle Volume and Fatty Degeneration after Achilles Tendon Repair

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All Authors:
Shota Mashino PT, BSc JAPAN
Taiki Nozaki MD, PhD JAPAN
Kentaro Amaha MD, PhD JAPAN
Junya Kubota PT, BSc JAPAN
Hiroyuki Sato PT, BSc JAPAN
Keita Tanaka PT, BSc JAPAN
Nobuto Kitamura MD, PhD JAPAN

Summary:
Based on one-year serial quantitative MRI assessment, the soleus muscle volume did not fully recover and fatty degeneration in the soleus muscle progressed in the first postoperative year. On the other hand, HFL showed early muscle volume recovery, and it suggested that FHL compensates for decreased ankle plantarflexion strength.

Data:
Background: Recovery of calf muscle function is one of the important factors that influence the clinical outcome of Achilles tendon repair. A number of studies reported the calf muscle atrophy is a common long-term problem after surgery, however, there is still lack of data concerning early postoperative morphological changes in calf muscle following Achilles tendon repair. The aim of this study was to investigate changes over time in the calf muscle volume and fatty degeneration during one year after Achilles tendon repair with use of quantitative MRI measurements. Methods: A prospective one-year serial MRI study was carried out with 20 patients who underwent tendon repair surgery for unilateral acute Achilles tendon rupture. MRI assessment was performed at 1, 3, 6, and 12 months after surgery. The healthy contralateral leg was also scanned at 12 months after surgery as control. The muscle volume was measured for medial and lateral gastrocnemius (MG/LG), soleus (SOL), and flexor hallucis longus (FHL). The fatty degeneration was measured for MG, LG, and SOL. Relative volume or fatty degeneration changes in the affected leg compared to the healthy contralateral leg were calculated as percentage ((injured/healthy control)x100 (%)) to assess structural changes over time. One-way repeated measures analysis of variance with the Bonferroni post hoc analysis was performed to compare the change in each value over time. Results: Muscle volumes of MG, LG, SOL, and FHL were 93.1%, 91.9%, 85.7%, and 96.9% at 12 months after surgery, respectively. MG, LG, and FHL muscle volumes improved over time and recovered to almost equal to the healthy side at 12 months after surgery (p<0.062, 0.224, and 1.000, respectively). SOL muscle volume was significantly lower than the healthy side at all time points (p<0.001), with poor recovery over time. Fatty degeneration of MG, LG, and SOL were 118.2%, 113.9% and 121.1% at 12 months after surgery, respectively. MG and LG fatty degeneration did not change significantly (p=0.289 and 0.553, respectively), but there was a statistically significant increase in fatty degeneration of SOL over time (p<0.001). Conclusion: Among the triceps surae muscle, SOL muscle was most negatively affected by surgery as for muscle volume and fatty degeneration. Contrary to other calf flexors, the SOL muscle volume decreases with time for 6 months and recovered only 85% of healthy control at 1 year after surgery. These early postoperative findings were similar to previous studies of long-term follow-up and may affect the clinical outcome of Achilles tendon repair. Postoperative management to recover soleus muscle function at early phase after surgery before return-to-sporting activities should be considered.

Category: Ankle/Foot/Calf

Diagnostic Accuracy of Weightbearing CT in Detecting Subtle Chronic Syndesmotic Instability: A Prospective Comparative Study

Abstract ID# 22939
All Authors:
Cesar de Cesar Netto MD UNITED STATES
Nacine Salomao Barbacan Mansur MD, PhD UNITED STATES
Kepler Carvalho MD UNITED STATES
Kevin Dibbern PhD UNITED STATES
Aly Fayed MD, M.SC. UNITED STATES

Summary:
Weigh bearing CT Distance, Area and Volumetric Measurements demonstrated low/average diagnostic accuracy in detecting chronic subtle syndesmotic instability.

Data:
Introduction: Improving the diagnosis of subtle syndesmotic instability (SSI) represents one of the most challenging missions in orthopaedic surgery, since undiagnosed instability frequently leads to post-traumatic ankle arthritis. The advent of weight-bearing computed tomography (WBCT) brought hope for improved non-invasive SSI diagnosis, particularly by utilizing distal tibio-fibular syndesmotic (DTFS) area and volume measurements. The goal of this study was to prospectively evaluate the diagnostic accuracy of WBCT Distance Maps (DM), Area and Volumetric Measurements in Detecting Chronic Subtle Syndesmotic Instability. We hypothesized that WBCT measurements would demonstrate high diagnostic accuracy in detecting chronic subtle syndesmotic instability. Methods: This is a prospective comparative diagnostic controlled study. We included patients who met the following criteria: chronic syndesmotic injury (>6 months), Normal tibiofibular clear space (<6mm), 18 years old or older, no hindfoot malalignment (0.6°–Foot Ankle Offset <5.2°), flexible hindfoot deformity (Progressive Collapsing Foot Deformity stage I) and those without major ankle arthritis changes (The Kellgren and Lawrence score =1). All included patients and controls underwent Foot/Ankle WBCT. We measured distance mapping, area and volume at 1.3 and 5 cm from the ankle joint. All patients with suspected syndesmotic instability underwent arthroscopic assessment/treatment (passage of 3 mm sphere in the tibio-fibular space at the syndesmosis while performing manual external rotation test confirmed syndesmotic instability). Results: 15 patients were included in the study and matched to 12 controls. Area measurements were most accurate at 1 cm proximal to ankle joint (70.4%) and least accurate at 3 cm and 5 cm (46.8% at both sites). Volume measurements were most accurate at 1 cm proximal to the ankle joint (66.2%) followed by measurements at 3 cm (62.5%), while the least accurate was measurement at 5 cm (56.5%). Conclusion: WBCT Distance, Area and Volumetric Measurements demonstrated low/average diagnostic accuracy in detecting chronic subtle syndesmotic instability. We found also that area measurement at 1 cm and volumetric measurements at 1 and 3 cm proximal to the joint were to be the best diagnostic tools. Minimum syndesmotic distances, area measurements (1 cm) and Volumetric measurements (1 and 3 cm) were significantly increased in the injured side in comparison to the contralateral non-injured side.

Category: Ankle/Foot/Calf

Can All Weightbearing Stable Weber B Fractures Be Treated Functionally with Orthoses? – A Prospective Non-Inferiority Study Comparing Weightbearing Stable Fractures with and without Stress Instability

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All Authors:
Martin Gregor Gregersen MSc NORWAY
Hilde Stendal Robinson PhD, Prof. NORWAY
Marius Molund MD, PhD NORWAY

Summary:
This study found that Weber B/SER ankle fractures that appear stable on weightbearing radiographs can be treated successfully with orthoses and weightbearing allowed, resulting in excellent clinical outcomes at two years. Interestingly, a concomitant unstable gravity stress test, which may indicate a partial deltoid ligament rupture, did not influence the outcome.

Data:
Background Assessment of potential tibiotalar displacement (stability) should dictate treatment of Weber B/supination-external rotation (SER) fractures. Tibiotalar stability is primarily determined by competence of the deltoid ligament. If intact (SER2), abundant evidence supports functional orthosis treatment. While if ruptured (SER4), operative fixation is necessary to preserve stability. However, evidence suggest that one third to half of these common fractures probably have partial deltoid ligament rupture (classified SER4a), determined by stability evaluation using weightbearing radiographs deemed stable, but with concomitant stress tests deemed unstable. Traditionally, SER 4a fractures have been treated operatively, but some studies have suggested that...