

rehabilitation was associated with significantly improved pain and function by 6 weeks post-operative.

Low Vitamin D is Associated with Lower Extremity Strains and Sports Hernia Injuries in NFL Combine Athletes

SS-40

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Introduction: Vitamin D has been linked to overall muscle function and strength, with recent findings depicting a correlate between preseason performance and vitamin D status in NFL athletes. The purpose of our study is to evaluate the association between serum vitamin D level and the prevalence of lower extremity muscle strains or sports hernia injuries in elite level athletes at the National Football League (NFL) combine.

Methods: This is a retrospective study of 214 prospective professional athletes who participated in the 2015 NFL combine. Baseline demographic data was collected, including age, body mass index (BMI), injury history specific to lower extremity muscle strain or sports hernia, at least one missed game due to the specified injury, and Functional Movement Screen (FMS) testing scores. Serum 25(OH) vitamin D was collected at the combine visit; and defined as normal ≥ 32 ng/mL. Overall summary statistics were calculated in terms of means and standard deviations for continuous variables and frequencies and percentages for categorical variables.

Results: There were 107 (50%) players reporting previous sports hernia or lower extremity strains, who also had lower vitamin D levels than athletes without associated injury history (29.7 ± 11 ng/mL vs. 34.0 ± 13 ng/mL; $p=0.01$). Overall incidence of below normal serum vitamin D was present in 126 players (59%); including 16 (13%) with severe deficiency (<21 ng/mL). Group comparisons between low and normal vitamin D levels showed no difference in age, race, BMI or FMS scores recorded at the NFL combine (Table I).

Conclusion: Low serum vitamin D is associated with a history of sports hernia or lower extremity strains in NFL combine athletes. While no difference was found in FMS testing, low vitamin D may contribute to injury susceptibility or muscle dysfunction in this select population.

Anterior and Posterior Ankle Impingement by One-Step Arthroscopic Treatment: 10years Follow-up Prospective Study by Standard Anterior and Double Postero-Medial Portals

SS-41

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Introduction: Simultaneous anterior and posterior ankle impingement is preferably treated by 2steps surgery. Aiming to avoid postponing further surgery in prone position, authors focused a procedure which addresses posterior ankle disorders through 2postero-medial portals, after anterior arthroscopic step without changing patient's assessment. They present this 10years follow-up prospective study.

Methods: In period January 2001-January 2015 78 ankle affected with both side pathology, were submitted to arthroscopic treatment by standard anterior portals and double postero-medial approach, maintaining supine position and addressing simultaneously one-step surgery anteriorly and posteriorly. Reproducing same posterior portals of prone procedure, peroneal approach is rotated 90°medially lying 5cm superiorly to medial one along Achilles' tendon. FHL tendon landmark prevents damage to posterior tibial bundle. Patients were evaluated with pre-op and post-op x-ray scan and AOFAS scale.

Results: At final survey 71patients have been evaluated, being 7 lost. Wilcoxon test was utilized to compare score values reported at admission time, after 12months and after 10years. AOFAS scale, steady improved from preoperative mean 38.73(range21-51) to 1year post-operative=89.87 and to further 95.4 at 10years. The preop vs/postop 12months was $p\text{-value}=0.00051$ and postop 12months vs/10years $p\text{-value} = 0.03628$. Big improvement was reported in study group at 10years follow-up compared to control group (the former $p\text{-value}=0.0004883$, the lesser $p\text{-value}=0.0009766$, inferior to threshold $p=0.05$). None patient reported any complication, any problem to posterior tibial nerve territory or to medial talus skin sensitivity. Varicose veins caused in 3patients posterior ankle swelling and oedema for 3weeks. Four patients have been submitted to new surgical procedure for same disorder.

Conclusion: In open surgery as in arthroscopic procedure, supine assessment made impossible to reach both the joint spaces without intra-operative patient's repositioning. Maintaining supine assessment during arthroscopy, this technique allowed to reach disorders in posterior ankle compartment after anterior treatment by standard portals. Absence of neurovascular lesions confirmed safety and reproducibility of this procedure providing anatomical landmarks respect.

Arthroscopic Brostrom versus combined repairs of ATFL and CFL: A Biomechanical Comparison of Repair Techniques

SS-42

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Introduction: The standard for lateral ligament stabilization is direct repair of the ATFL by open or arthroscopic technique. The implications and necessity of repairing the CFL are not well understood. The purpose of this study was to assess the impact of repairing the ATFL alone compared to repairing both the ATFL and CFL, in a biomechanical cadaver model. We hypothesized that repairing the CFL will substantially augment ankle and subtalar joint stability during weight-bearing ankle inversion compared to ATFL repair alone.

Methods: Ten matched pair fresh frozen human cadaveric ankles were mounted to an Instron, loaded to body weight and inverted to 20° for three cycles; torque and stiffness were recorded. Ankles underwent sectioning of ATFL and CFL and were randomly assigned to ATFL only repair using two arthroscopic Broström all-soft anchors, or combined ATFL and CFL repair. Testing was repeated after repair, followed by load-to-failure (LTF).

Results: The predominant mode of failure after repair was at the tissue/suture. There was an 11.7% increase in stiffness in combined repairs, and only a 1.6% increase in ATFL-only repairs. CFL failed at lower torque and rotation than the ATFL in combined repairs. There were strong correlations between intact stiffness and stiffness after repair ($r=.74$) and ATFL torque in LTF testing ($r=.77$), across both groups.

Conclusion: We found a greater increase in stiffness following combined ATFL and CFL repair compared to ATFL repair alone. This added stability is due to complementary contributions of the CFL, not augmented LTF strength of the ATFL. Intact specimen stiffness correlated strongly with stiffness after repair and LTF torque, suggesting that a patient's inherent tissue laxity or inelasticity is likely a meaningful predictor of strength after repair. Restoring the CFL plays a relevant role in lateral ligament repair, however sufficient time for ligament healing should be allowed before inversion stresses are applied.

Reliability and Validity of Preoperative MRI for Surgical Decision Making in the Chronic Lateral Ankle Instability

SS-43

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Introduction: The anterior talofibular ligament (ATFL) is the most frequently affected ligament in chronic lateral ankle instability. When surgery is indicated, the choice of technique is performed intraoperatively according to the arthroscopic aspect of the residual ATFL. In our department, the technique used is either the arthroscopic

Brostrom-Gould procedure repair if the ligament is thickened/disinserted or an anatomical reconstruction with autograft if ATFL is absent/thin. The purpose of this study was to assess the reliability and validity of preoperative MRI for surgical decision making in chronic lateral ankle instability.

Methods: This single-center prospective study included all patients who underwent an arthroscopic ankle stabilization between 2013 and 2016. The study complied with the recommendations of the group STARD. Preoperative MRI evaluation of ATFL was performed in axial T2-weighted images, twice, by 2 independent observers. Arthroscopy assessment, used as the gold standard, was carried out by a single senior surgeon. The primary endpoint was the ATFL aspect in two categories: (1) thin or absent/(2) avulsed or thickened. The intra and inter-observer agreement was assessed by the kappa coefficient (k). The diagnostic performance parameters of preoperative MRI were calculated.

Results: Twenty two patients were included in this study, 15 men/7 women, mean age 30.3 ± 9.5 years. An anatomical ligament repair was performed in 14 patients (63.6%), and 8 patients (36.4%) underwent a ligamentoplasty with a gracilis autograft. The intra-observer reproducibility of MRI analysis was substantial ($k=0.75$ and 0.68) and inter-observer reproducibility was moderate ($k=0.55$) to almost perfect ($k=0.87$). In comparison with arthroscopy, the agreement was substantial and significant ($k=0.70$ and 0.80). Diagnostic performance parameters of preoperative MRI were good: sensitivity: 85.7-87.5%, specificity: 86.7-92.9%, and percentage of patients correctly classified 86.4-90.9%.

Conclusion: Preoperative MRI is a reliable and valid decision making tool for the choice of surgical stabilization technique in patients with chronic lateral ankle instability.

Osteochondral Defects of Talus treated with Juvenile Cartilage Transplant Cells

SS-44

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Introduction: To prove that Juvenile Cartilage cells have a role in the treatment of Osteochondral Defect (OCD) of the Talus.

Methods: This is Retrospective case series with clinical follow up. We obtained appropriate IRB approval for reviewing our cases of OCD of Talus treated with transplanted cartilage cells. OCD of the Talus is initially treated with trial of splintage, activity modification, NSAIDS and Physical therapy. When patients do not respond to nonoperative measures the standard surgical intervention is debridement with or without micro-fracture or an OATS procedure. In our Institution for the cases which needed surgical Intervention we treated them with an ankle arthroscopic debridement of the lesion and a synovectomy. We then proceeded to transplant juvenile allograft cartilage cells (Denovo, Zimmer) to cover the defect. Patients were nonweight bearing 2 weeks in a splint. Patients then

