

VAS. Preoperative strength and gait were compared to latest follow-up.

**Results:** There were 25 patients that fit our criteria. Significant improvement in PRO scores were demonstrated for mHHS, HOS-ADL, HOS-SSS, NAHS, and VAS from 54.9-76.2, 50.2-80.6, 30.1-67.3, 51.9-82.4, and 7.1-2.7 respectively ( $p < 0.001$ ). There were 11 patients with appreciable weakness prior to surgery; seven of these patients moved up at least one strength grade by final follow-up. There were 14 patients who had a Trendelenburg gait pre-operatively, 12 of them had a normal gait at latest follow-up ( $p < 0.001$ ). Average patient satisfaction was 7.5. There were no revision surgeries, and no complications noted.

**Conclusion:** PUSTA lesions can be treated successfully with endoscopic trans-tendinous repair preserving the intact attachment of superficial fibers of the gluteus medius. We recommend this treatment for partial undersurface tears recalcitrant to non-operative treatment.

### The Effect of Platelet-Rich Fibrin Matrix at the Time of Gluteus Medius Repair: A Case-Control Study

SS-38

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**Introduction:** The purpose of this study was to evaluate the effect of Platelet-Rich Fibrin Matrix (PRFM) on outcomes after surgical repair of gluteus medius tendons.

**Methods:** This is a retrospective review of prospectively-collected data comparing a single surgeon's case patients who underwent gluteus medius repair with PRFM to control patients without PRFM. Preoperative characteristics (gender, age, laterality, surgical history, duration and mechanism of symptoms, gait/limp, presence of femoroacetabular impingement, tear grade/size, presence of atrophy, and PROs), intraoperative characteristics (surgical approach, repair technique, concomitant surgery), and postoperative outcomes at a minimum 2-years (retear, PROs) were recorded. A multivariate analysis of variance (MANOVA) was used to test for differences in continuous demographic variables and postoperative-only scores between cohorts, chi-squared-tests for categorical variables, and a repeated measures-ANOVA was performed to test for the effects of PRFM. We also assessed for inter-observer variation for grading adductor tendon tears.

**Results:** In total, the gluteus medius repair without PRFM [(-)PRFM] cohort included 29 patients (25F/4M; 15R/4L) with a mean age of  $63.09 \pm 12.0$  years. The gluteus medius repair with PRFM [(+)PRFM] cohort included 18 patients (16 female, 2 male; 6 right, 12 left) with a mean age of  $60.26 \pm 8.8$  years. There were no differences in patient preoperative variables or intraoperative characteristics. While there was a significant effect of surgical intervention

on VAS-Pain, HOS-ADL, HOS-SS, and mHHS, the utilization of PRFM had no significant effect on outcome. Linear models showed a significant positive effect of PRFM only on postoperative SF-12 Physical and iHOT-12 scores.

**Conclusion:** PRFM augmentation does not appear to have an effect on gluteus medius tendon repair in terms of pain or re-tear, but may have a role in improving subjective outcomes of overall and hip-specific physical functioning. Future longer-term evaluations with prospective, randomized protocols are necessary to further delineate any significant efficacy with PRFM use in this setting.

### Continuous Passive Motion after Hip Arthroscopy for Femoroacetabular Impingement: A Prospective, Comparative Trial

SS-39

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**Introduction:** Though continuous passive motion (CPM) devices are often used in post-operative rehabilitation protocols after surgical treatment of symptomatic femoroacetabular impingement (FAI), no prospective, controlled data currently exists about whether or not these devices provide measureable benefit to patients after hip arthroscopy. The aim of this prospective, comparative study is to investigate whether or not CPM devices objectively benefit patients in the early post-operative period.

**Methods:** In this IRB-approved study at a tertiary care academic medical center, surgical and post-operative medications and rehabilitation protocols between 2 surgeons were standardized. One surgeon used CPM in his rehabilitation protocol while the other surgeon did not. Consented subjects answered questions regarding pre-operative pain, function, and psychological status included the International Hip Outcome Tool (iHOT-12), visual analog scale (VAS) pain, pain medication usage, Patient Health Questionnaire (PHQ-8), and Pain Catastrophizing Scale (PCS). At the two-week and six-week post-operative visits, patients recorded average pain felt over the preceding 2 weeks. At the 6-week visit, patients also completed the iHOT-12. Pre-operative predictors with univariate p-values less than 0.15 were incorporated into multivariable linear regression models.

**Results:** In a complete case analysis of 40 and 29 patients having reached the 2-week and 6-week post-operative marks, respectively, patients prescribed CPM devices had statistically significantly greater pain reduction at 6 weeks (normalized pain reduction of 76% vs. 33%,  $p = 0.0048$ ) and greater improvement in hip function score at 6 weeks (normalized iHOT-12 score increase of 143% vs. 50%,  $p = 0.0088$ ). No factors achieved significance at 2 weeks post-operative.

**Conclusion:** This is the first study to investigate the impact of CPM inclusion in short-term post-operative rehabilitation outcomes after hip arthroscopy for symptomatic FAI. Including CPM in post-operative

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  $\geq 32$  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 ( $29.7 \pm 11$  ng/mL vs.  $34.0 \pm 13$  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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