Patellar Tendon Anterior Cruciate Ligament Reconstruction in the High-Demand Patient: A Retrospective Matched Analysis of Autograft Versus Allograft Reconstruction with 3- to 14-year Follow-up (SS-47) *Randy Mascarenhas, M.D., Michael Tranovich, B.A., John Karpie, M.D., James J. Irrgang, Ph.D., P.T., A.T.C., Freddie H. Fu, M.D., D.Sc., Christopher D. Harner, M.D.*

Introduction: Anterior cruciate ligament (ACL) reconstruction with patellar tendon allograft has been stated to result in increased post-operative laxity and delays in return to sport secondary to slower graft incorporation when compared to patellar tendon autograft tissue. This study sought to compare clinical outcomes in high-demand patients following ACL reconstruction with either patella tendon allograft or autograft using a matched-pairs case-control experimental design.

Methods: Nineteen matched pairs were obtained based on gender (46.8% Female), age (27.9±8.1yrs autograft vs. 28.1±9.1 allograft), and length of follow-up (9.1±2.7yrs autograft vs. 10.3±2.6 allograft). All patients reported participating in very strenuous (soccer, basketball etc.) or strenuous (skiing, tennis etc.) sporting activity 4-7 times/week prior to their knee injury. Patient-reported outcomes included the IKDC, SAS, ADLS, and SF-36. Clinical outcomes were also evaluated in terms of knee range of motion, laxity, and functional strength testing.

Results: There were no significant differences in gender, age, or BMI. There was a slight difference in length of follow-up ($p<.05$). The groups showed no significant differences in any of the patient-reported or clinical outcome measures. More autograft patients reported that they were able to perform very strenuous activity without knee laxity symptoms (14 vs. 7), but this difference only approached significance ($p<.07$). Twelve autograft patients were able to return to pre-injury levels of sporting activity compared to ten allograft patients. Sixteen autograft patients and twelve allograft patients were able to participate in strenuous or very strenuous sporting activity at follow-up. Both differences were not significant.

Conclusion: While autograft and allograft patellar tendon ACL reconstruction exhibit similar clinical outcomes in high-demand individuals, autogenous patellar tendon grafts may be indicated to allow patients to return to very strenuous levels of activity without experiencing symptoms of knee laxity.

High Dose Gamma Irradiated Tibialis Anterior Allograft in Anterior Cruciate Ligament Reconstruction (SS-48) *Semon R. Bader, M.D., Ivan Garcia, M.D., Ronald Navarro, M.D.*

Introduction: Anterior cruciate ligament (ACL) reconstruction with irradiated allografts remains controversial. We prospectively evaluated allograft ACL reconstructions sterilized with high dose gamma radiation.

Methods: Twenty-nine (29) consecutive patients underwent arthroscopic ACL reconstruction using highly irradiated tibialis anterior allografts fixated with bioabsorbable interference screws between June 2004 and March 2005. All allografts were obtained from a single tissue bank and sterilized with 5.0 Mrad of irradiation. Follow up exams consisted of International Knee Documentation Committee (IKDC) examination, Tegner scoring and SF-12 survey. Failure was defined as need for revision ACL reconstruction or severely abnormal rating on IKDC. One failure was identified early in the study. Two patients that did not meet inclusion criteria were excluded from analysis.

Results: Twenty-seven (27) patients met inclusion criteria and 22 patients were available for follow up at an average of 36 months (31-48 months), 3 patients were available only for interview. IKDC scoring revealed 15/19 (82%) normal or near normal knees, 3/19 (16%) abnormal knees and 0/19 (0%) severely abnormal knees. Tegner scores dropped from 7.7 preoperatively to 5.7 on follow up,($p<.001$). However, there was no statistically significant difference on hop test between the operative and non-operative leg. The average postoperative SF-12 physical composite score of 51.0 and average mental composite score of 51.7 placed patients within mean range for US population.

Conclusion: A failure rate of 2/22 (9%) observed in this study for allografts sterilized with high dose (5.0 Mrad) irradiation is in contrast to reports of 23% and 33% failure rates recently published. This data suggests that concerns regarding the integrity of grafts sterilized with high dose radiation may be overstated.

Arthroscopic Excision of Posterior Ankle Bony Impingement for Early Return to the Field (SS-49) *Hideo Noguchi, M.D., Yoshinori Ishii, M.D., Mitsuhiro Takeda, M.D., Atsushi Hasegawa, M.D.*

Introduction: Athletes frequently present with symptomatic os trigonum, and usually a non-operative treatment is chosen first. However, non-operative treatment requires an extended recovery period, and the results may be unsatisfactory. We arthroscopically treated 12 cases of symptomatic os trigonum in 12 athletes and examined the postoperative results.

Methods: We treated the os trigonum arthroscopically in nine men and three women; the average age was 21.4 years. All patients were injured during a sports

activity. The operation was performed using posterolateral and accessory posterolateral portals. Once the entire flexor hallucis longus tendon was seen, the operation was complete. No splints or casts were applied postoperatively. The stitches were removed 1 week after surgery, and the athletes gradually returned to sports activity from 3 week after surgery.

Results: The average postoperative AOFAS ankle-hindfoot score improved from 68.0 to 98.3 points. The average period of a return to sports was 5.9 weeks (range, 3-13 weeks).

Conclusion: Non-operative treatment should be the first choice for cases of symptomatic os trigonum. However, non-operative treatment may produce unsatisfactory results in some cases. In particular, an extended sports restriction for competitive athletes results in poor fitness levels. Arthroscopic treatment has a rather high cost and risks; it leaves a 2 cm scar, takes two hours of operation time, and up to 2 months of recovery.

Repair of Osteochondral Lesions of Ankle Joint with TruFit CB Plug Arthroscopic Procedure: Six to Twenty-four Months Follow-up (SS-50) *Francesco Allegra, M.D., Emanuele Delianni, M.D., Fabio Cerza, M.D.*

Introduction: Because hyaline cartilage permits to withstand a big amount of pressure thank its surface, it is mandatory to restore it in presence of osteochondral defect. Articular cartilage disorders remain a challenging problem for orthopaedic surgeons, because their limited healing potential. Current surgical techniques for ankle joint permit a wide choice, reserved to high biological response population. Middle aged to elderly healthy population with performance demanding expectations, risks to be neglected for a durable repair. The use of artificial scaffolds represent a valid answer to withstand load immediately, to repair chondral defects, reaching in time mesenchymal cells induced response inside a biological 3-dimensional structure.

Methods: On a group of 31 patients affected by chondral disorders, Authors present a selected group of 11 patients operated with TruFit CB plug arthroscopic procedure, between July 2007 and February 2009. Because the increased expectation of life, higher activity and sport demand by a larger elderly population, the authors has been reserved this treatment to patients from 45 to 58 years (51.5 average), for those defects placed on talar dome or tibial plafond, isolated lesions independently their width and placement, no kissing lesions, with good and intact surrounding cartilage. Ten patients presented talar dome defect: 6 antero-medial, 2 antero-lateral, 2 postero-medial: one was placed on anteromedial area of tibial plafond. All have been submitted both to plain x-ray and MRI scan, to check the defected area characteristics, its placement, width and depth. To check the plug maturation and ingrowth, patients have been submitted to 6 and 12 months postoperative MRI. All patients have been clinically controlled every 30 days until complete recovery and return to their former activities.

Results: The surgical procedure was performed totally arthroscopically, allowing to treat all intra-articular accompanying disorders. During surgery, patients with anterior lesions were assessed supine, adding anterosuperior portal opened medially or laterally to anterior regular portals, for the posterior ones patients were assessed prone opening 2 posterior portals. The x-ray and MRI exams, repeated 6 and 12 months after surgery, showed total graft ingrowth with apparent restore of cartilage layer at same level of the surrounding one. Patients has been followed with clinical controls every 30 days, until recovery and complete return former activities. All patients have been evaluated with AOFAS score scale (from 65.3 points at mean to a final 91.6 at 12 months evaluation). No arthroscopic "second-look" nor histological exams has been done because there was no authorization by the Ethical Committee.

Conclusion: Current surgical techniques based on stimulation of new blood vessels (microfractures, perforations, chondroabrasion) produced a defect coverage by fibrocartilage, decreasing the results in few years. Autologous chondrocytes transplantation (ACI, MACI) present some lack of hyaline cartilage by time and periosteal patch hypertrophy, but the procedure is opened and results are proportional to patient's biological response. Osteochondral autografting permit to cartilage surface restoring, with some concerns on integration and donor-site morbidity. Artificial biological scaffolds can support to withstand load immediately, having in time a biological response by mesenchymal cells inside a biological 3-dimensional structure, giving a solution to a middle age to elderly healthy population with performance demanding requests.

Acute Achilles Tendon Repair Using a Mini-Dorsolateral Incision and Accelerated Rehabilitation (SS-51) *John M. Crates, M.D., Scott A. Hrnack, M.D., F. Alan Barber, M.D., James A. Bynum, M.D.*

Introduction: Purpose: to assess the midterm clinical outcomes of acute Achilles tendon repairs using a mini-dorsolateral incision and the effectiveness of rapid rehabilitation. Introduction: There is no consensus as to the best surgical procedure for primary repair of an acute