

tion activity and immune response to surgical intervention.

Bone-patellar Tendon-bone Autograft vs Hamstring Autograft Anterior Cruciate Ligament Reconstruction in the Young Athlete: A Retrospective Matched Analysis with 2 to 10 year Follow-up (SS-41) *Eric Kropf, M.D., Randy Mascarenhas, M.D., Michael Tranovich, B.A., James J. Irrgang, Ph.D., P.T., A.T.C., Freddie H. Fu, M.D., D.Sc., Christopher D. Harner, M.D.*

Introduction: Patellar tendon and hamstring autografts are the most common graft choices in anterior cruciate ligament (ACL) reconstruction, but the ability of these grafts to return young athletes not just to activity, but to their previous level of play is still somewhat uncertain. This study sought to examine clinical and patient-reported outcomes as well as return to sport in athletes younger than 25 following ACL reconstruction with either patellar tendon (PT) or hamstring (HS) autografts using a matched-pairs case-control experimental design.

Methods: Twenty-three matched pairs were obtained based on gender (56.5% Female), age (18.3 ± 2.5 yrs PT vs. 17.6 ± 2.6 HS), and length of follow-up (4.7 ± 2.1 yrs PT vs. 4.2 ± 1.6 HS). 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 return to play data, the IKDC, SAS, ADLS, and SF-36 forms. Clinical outcomes included knee range of motion, laxity, and hop/jump testing.

Results: Most patients in both groups were able to participate in very strenuous or strenuous sporting activity at follow-up [18 (78.3%) PT vs. 19 (82.6%) HS]. However, only 13(56.5%) of the PT subjects and 10 (43.5%) of the HS patients were able to return to pre-injury activity levels in terms of frequency and type of sport ($p=.63$). HS patients showed higher ADLS ($p<.01$) and SAS ($p<.01$) scores and better restoration of extension ($p<0.05$).

Conclusion: While both hamstring and patellar tendon graft types allow young athletes to return to some degree of strenuous or very strenuous sporting activity, only approximately half of all patients were able to return to their pre-injury level in terms of type and frequency of sport. Patellar tendon reconstruction may allow more patients to return to the same level of pre-injury sport, but hamstring grafts lead to better preservation of extension and higher patient-reported outcome scores.

Outcomes after Transphyseal Anterior Cruciate Ligament Reconstruction in Patients with Open Growth Plates (SS-42) *Christopher M. Larson, M.D., Christie Heikes, M.D., Chris Ellingson, M.D., M. Russell Giveans, Ph.D.*

Introduction: Concerns about growth disturbance after transphyseal ACL reconstruction in the presence of open growth plates exist. The hypothesis was that transphyseal soft tissue ACL reconstruction in individuals with open growth plates would result in minimal risk for growth disturbance.

Methods: Between 5/03 and 10/07, 30 skeletally immature individuals with a mean age of 13.9 years (range 9 - 15 years) underwent ACL reconstruction with soft tissue grafts (22 hamstring autograft, 8 tibialis anterior allograft) using extraphyseal fixation. 22 knees had wide open growth plates and 8 knees had partially open growth plates. Outcomes were prospectively evaluated with KT-1000 measurements, IKDC, Cincinnati, and Lysholm scoring. Radiographs were evaluated for asymmetric physeal closure, growth arrest lines, and knee alignment, and patients were also clinically evaluated for limb alignment and leg length inequality at minimum 2 year follow-up.

Results: The mean knee scoring was 93.8 pts (IKDC), 97.0 pts (Cincinnati), and 92.4 pts (Lysholm) at 3.2 years mean follow-up (range, 1 - 6 years). The mean KT-1000 side to side difference at most recent follow-up was 0.77 mm. Minimum two-year radiographic and clinic evaluation revealed three Harris growth arrest lines, no asymmetric physeal closure, and a mean side to side difference of 1.4 degrees for radiographic tibiofemoral angle, and 0.3cm leg length inequality. Three patients sustained a graft re-rupture (10.0%).

Conclusion: Transphyseal ACL reconstruction with soft tissue grafts and extraphyseal fixation in patients with open growth plates resulted in good to excellent outcomes in 90% without evidence for clinically significant growth abnormalities.

Fatigue Mediated Alteration of Knee Proprioception in the Adolescent Athlete: An Implication for Sports Related Injuries (SS-43) *Henry T. Goitz, M.D., Gaurav Jindal, M.D., Clinton Brawner, M.S., Nancy Hall, P.A., A.T.C., Clifford M. Les, D.V.M., Ph.D., Steve Keteyian, D.V.M., Ph.D., M.R.C.V.S.*

Introduction: Knee injuries generally occur late in the course of athletic play, suggesting that fatigue may contribute to altered neuromuscular control. The present study aims to investigate the effect of whole body fatigue on knee joint proprioception.