estimated area of physeal disruption (1.64 cm2 vs. 0.74 cm2, P<0.001), femoral (32.1° vs. 72.8°, P<0.001) and tibial (50.1° vs. 60.5°, P=0.003) tunnel drill angles, medial/lateral location of the femoral tunnel (24.2 mm vs. 36.1 mm from lateral cortex, P=0.001), and distance from the lateral aspect of the distal femoral physis and the femoral tunnel exit (4.7mm vs. 26.7mm from the perichondrial ring, P<0.001). All patients who underwent femoral tunnel drilling at an angle of greater than 25° from the transverse axis experienced a <6% disruption of physeal area.

**Conclusion:** With femoral tunnel drilling techniques that create more oblique tunnels, the area of physeal damage is larger, more eccentric and closer to the perichondrial ring. Since most studies noting the safety of transphyseal ACL reconstruction have utilized a vertical femoral tunnel, surgeons should be aware that if an independent femoral tunnel drilling technique is utilized during transphyseal ACL reconstruction, the physis is at greater risk when drilling at more horizontal angles. Angles greater than 25° from the transverse axis may safely create <6% physeal area damage.

### A Matched-pair Comparison of Patient-reported Outcomes following Primary ACL Reconstruction with Hamstring Autograft vs Hybrid Graft

**SS-13**

April 14, 11:45 AM

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**Introduction:** With the relatively recent introduction of hybrid autograft-allograft grafts for anterior cruciate ligament reconstruction (ACLR), few studies have compared outcomes between autografts versus hybrid grafts. The purpose of this study is to compare patient-rated outcomes between hamstring autografts and hybrid grafts for ACLR.

**Methods:** At a minimum two-year follow-up, patients who had undergone primary ACLR with hamstring autograft (A) or hybrid (H) graft (hamstring autograft with peroneus longus or tibialis posterior allograft) were contacted to fill out a survey containing the Knee injury and Osteoarthritis Outcome Score (KOOS), Subjective IKDC score, Single Assessment Numeric Evaluation (SANE), SF-12, and visual analog scale (VAS) for activity level prior to injury and at follow-up. A matched-pair analysis was performed by matching patients in each group by gender and by age at the time of surgery within three years. Paired t-tests were used to compare outcomes between groups.

**Results:** Twenty matched-pairs were formed, including nine males and eleven females in each group. Average age at surgery was 34 years (range, 13-57 years). Average follow-up was 3.3 years. No significant differences were found in any of the KOOS subscale scores, Subjective IKDC (A: 75, H: 77), SANE (A: 86, H: 90), SF-12 Physical (A: 53, H: 53) or Mental (A: 53, H: 52) component scores, or activity level prior to injury (A: 7.5, H: 7.4) or at time of follow-up (A: 6.7, H: 6.2).

**Conclusion:** Patients undergoing primary ACL reconstruction with a hybrid graft (hamstring autograft plus allograft) have similar subjective outcomes to those with a hamstring autograft. Further studies are needed to determine patient characteristics which favor the use of hybrid grafts.

### Allograft/Autograft Anterior Cruciate Ligament Reconstruction Equal Outcomes at All Ages With No Anterior Knee Pain: Average 7 Year Follow-Up

**SS-14**

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**Introduction:** Anatomic ACLR yields superior outcomes by restoring knee kinematics and stability though optimal graft source remains controversial. Bone-patellar-tendon-bone (BPTB) autograft ACLR is superior to hamstring for stability; however, anterior knee pain has been reported. Additionally, allografts are associated with higher risks of failure and infection. We hypothesize that allograft BPTB ACLR using biointerference screw will yield successful return to sports comparable to autograft ACLR without anterior knee pain.

**Methods:** Patients with allograft (17-58 years) and autograft (15-50 years) ACLR by a single surgeon (N=153) underwent evaluations including knee ROM, stability testing, Lysholm, IKDC, and Tegner questionnaires. Radiographic evaluation included preoperative plain film knee series and MRI, and postoperative MRI and CT scans. Allograft source was <40years of age and non-irradiated. Modified rehabilitation programs included return to pivoting sports at ≥6months. 2x2 ANOVA and independent samples t-test evaluated differences in outcomes (p<0.05).

**Results:** Follow-up was 7.2±5.4years (range:2-15). Functional scores (Lysholm:87±18 vs. 87±15, p=0.974; IKDC:80±18 vs 82±15, p=0.618) and KT-1000 measurements (30lbs p=0.926; manual maximum p=0.490) were not statistically significant between groups. Activities associated with anterior knee pain were not difficult for either group and all patients returned to moderate and vigorous sports. There were two autograft failures (1.3%) after 5 years due to unknown reasons and four allograft failures (2.6%) due to traumatic reinjuries at an average of 3.8 years postoperatively. All but one underwent revision allograft ACLR without recurrence. To date, there is no evidence of lysis from the interference screws.

**Conclusion:** Allograft and autograft single-bundle ACLR successfully return individuals to high level sports (e.g. skiing, soccer) and restore knee stability. Allograft is an acceptable option for ACLR in patients >16 years of age