

Bacterial Deoxyribonucleic Acid (DNA) is Often Present in Ruptured Graft Tissue at Time of Revision Anterior Cruciate Ligament (ACL) Reconstruction

SS-17

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Introduction: Graft failure after primary anterior cruciate ligament reconstruction (ACLR) has been attributed to multiple risk factors. Colonization of graft tissue with low virulence bacteria could cause graft attenuation and predispose patients to ACL graft failure. Polymerase chain reaction (PCR) is highly sensitive and can detect bacteria in low concentrations, including strains that cannot be cultured. We hypothesize that bacterial DNA will be detectable via PCR in torn graft tissue at time of revision ACLR at higher rates than in primary ACLR graft tissue.

Methods: Thirty-one consecutive first time revision ACLR cases (mean age 28 ± 5.1 years) and 5 primary ACLR controls (all hamstring autograft; mean age 27 ± 4.6 years) from one center were included. No patients had clinical signs of infection. Among revisions, autograft was used in 22/31 (71%) and allograft in 9/31 (29%) at time of primary ACLR. Mean time to failure was 15.8 months (range 6 months-7 years). Samples were obtained with a previously unused set of instruments from the tibial tunnel in revision cases and from excess tibial sided graft after passage and fixation in primary cases. PCR analysis was performed with a universal bacterial probe.

Results: Bacterial DNA was detectable in torn graft tissue in most revision cases 27/31 (87.0%) and less commonly 1/5 (20%) in primary ACLR controls ($p=0.002$). Median DNA concentration in torn grafts during revision ACLR was low at 17.5 ng/ml (range 0-101) with no difference found between revision patients with allograft (median 18.6 ng/ml range 0-45) vs. autograft tissue (median 17.1 ng/ml range 0-105; $p=0.56$).

Conclusion: Bacteria is often present in torn graft tissue at time of revision ACLR and at much higher rates than seen from similar graft tissue samples from primary ACLR. These findings suggest likely bacterial colonization of many failed ACL grafts though the causal relationship between graft colonization and failure remains unclear.

Timing of Anterior Cruciate Ligament Reconstruction and Implications for Meniscus Pathology and Treatment: Results from a Prospective Cohort

SS-18

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Introduction: Optimal timing of ACL reconstruction after injury continues to be debated, particularly when concomitant intra-articular pathology is present. The purpose of the present study was to report patient reported outcomes and the incidence of concomitant intra-articular pathology for patients undergoing early or delayed ACL reconstruction.

Methods: Patients undergoing ACL reconstruction at a single institution between January 2012 and December 2014 were prospectively enrolled. Variables of interest included patient demographic characteristics, concomitant pathology, and patient reported outcomes. Patient reported outcome measures, KOOS and WOMAC, were collected at the time of surgery and at 6 months. Univariate analysis was performed to assess short-term outcomes following ACLR, meniscus pathology and treatment as function of timing from injury to surgery.

Results: Injury and operative data was available for 255 patients, while 6-month patient reported outcomes were available for 161/255 (63%) patients. Patients treated with delayed reconstruction were older (28.7 years vs 23.1 years, $p=0.01$) and had a higher incidence of cartilage injury (16.5% vs. 7.8%, $p=0.03$). There were no clinical differences between groups at 6-month follow-up in terms of both KOOS and WOMAC scores. There were more medial meniscectomies in delayed reconstructions (medial- 40.5% vs 20.5%, $p=0.01$; lateral- 48.1% vs 31.7%, $p=0.06$). Conversely, the medial meniscus was more often repairable in early reconstruction (medial- 61.5% vs 20.9%, $p=0.0003$; lateral- 30% vs 21.2%, $p=0.28$).

Conclusion: Data from our prospective cohort suggest with increasing time from ACL injury to reconstruction, the reparability of the medial meniscus may decline. When certain tears to the meniscus are identified after injury, consideration should be given to early treatment in order to prevent propagation of intra-articular pathologies including both meniscus and articular cartilage injury.

Revision Multi-ligament Knee Reconstruction: Treatment Algorithm and Outcomes

SS-19

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Introduction: The treatment of knee dislocations remains challenging, and there is limited evidence available to guide treatment after failed multi-ligament reconstruction. The purpose of this study is to (1) present an algorithm describing surgical decision-making in the setting of

