Data: PURPOSE To describe outcomes of posterior capsular release to treat knee extension loss after anterior cruciate ligament (ACL) reconstruction in athletes. METHODS A retrospective review was performed between January 2014 and December 2019 for patients undergoing arthroscopic posterior capsular release for knee extension loss after ACL reconstruction. Patients were indicated for the procedure if they had greater than 10 degrees of extension loss at least three months after ACL reconstruction that was refractory to physical therapy. Patients were included in the study if they were involved in either high school or college athletics, had complete outcomes of interest, and had at least 2 years of follow up. Collected outcomes included preoperative and postoperative measurement of knee extension, international knee documentation committee (IKDC) score, Lysholm score, return to sport data, and complications. RESULTS Over the study period a total of 38 arthroscopic posterior capsular releases were performed. Of these, 20 were high school or college athletes. Two of these patients did not have 2-year follow up, leaving a total of 18 patients included in the analysis. Patients underwent surgery at an average of 16 weeks after ACL reconstruction. Knee extension improved an average of 13.8 degrees at 2-years follow up (pre-extension loss 15.1, post-extension loss 1.3, p < 0.005). At 2 years, there was no significant difference in knee extension when compared to the contralateral knee (p = 0.0151). Improvements in the IKDC score averaged 21.7 at 6 months and 35.0 at 24 months, both of which were statistically significant (p < 0.005). Similarly, differences in Lysholm included an improvement of 23.0 and 34.2 at 6 months and 2 years, respectively (p < 0.005). In total, 77.8% returned to sport at an average of 9.8 months from surgery. Complications included one patient that required revision capsular release for persistent extension loss, one ACL tear of the ipsilateral knee, and two ACL tears of the contralateral knee. No infections or neurovascular injuries occurred. CONCLUSION Knee extension loss after surgery can have significant consequences including reduced patient satisfaction and reduced return to sport. Although arthroscopic posterior capsular release is a recognized treatment for knee extension loss, outcomes have not been reported in athletes. In our series, arthroscopic posterior capsular release resulted in significant improvement of knee extension and patient reported outcome scores at 6 months and 2 years postoperatively. On average, patients had comparable range of motion to the contralateral knee postoperatively. Additionally, the procedure appears to be safe with few complications, including 5.6% need for repeat arthroscopy for knee extension loss. Posterior capsular release appears to be a reliable and safe treatment for athletes with persistent knee extension loss after ACL reconstruction.

Category: Knee - ACL

Greater Knee Stability is Associated with Improved Return to High-Risk Sport Post ACL Reconstruction

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Summary: Quadriceps strength, better patient-reported functional outcomes, and a stable knee all demonstrated a positive association with return to increasingly demanding sports postoperative in patients from the STABILITY 1 Study

Data: Background: In the Stability randomized clinical trial (RCT) comparing ACL reconstruction with or without Lateral Extra-articular Tenodesis (LET) in young active patients, the addition of a LET resulted in reduced graft failure and graft rupture. The purpose of this study was to investigate the association of knee stability to rate of return to sport. Methods: The Stability RCT compared hamstring tendon autograft ACLR with or without a Modified Lemaire LET. Patients aged 25 years or less with an ACL deficient knee were included. They also had to have two of the following criteria: 1) Grade 2 pivot shift or greater; 2) Participation in a high risk/pivoting sport; 3) Generalized ligamentous laxity. Return to sport type and level was determined via administration of a questionnaire at 24 months post-operative. High-risk (HR) sport was defined as sports that required sudden change of direction, cutting, or landing from a jump, while low-risk (LR) sport did not require these movements. Low-level (LL) sport was defined as recreational, while high-level (HL) sport was competitive. Secondary outcomes included the 4-Item Pain Intensity Measure (P4), Lower Extremity Functional Score (LEFS), Quadriceps and Hamstrings strength indices, a single-leg hop test, and postoperative knee stability. In this exploratory analysis, we reported the proportion of patients that RTS in each group, along with reasons for not returning. We identified a subgroup of patients that participated in high-risk sports preoperative and report trends in outcomes by group (ACLR vs ACLR + LET) and postoperative sport demand (NR, LRLL, HRLL, LRHL, HRHL). Results: We randomized 618 patients with a mean age of 18.8 years (range: 14-25), 293 males. Information on return to sport was available for 603 patients at final analysis. The proportion of patients who did not return to sport was similar between the ACLR (11%) and ACLR + LET (14%) groups. For those not returning to sport, lack of confidence and fear of re-injury was the most common cited reason. 553 patients participated in high-risk sports preoperatively. Within this subgroup, there was a trend towards increasing quadriceps strength, LEFS score, and decreasing pain scores, as patients returned to increasingly more demanding levels of sport. Hamstring strength and the hop test limb symmetry index were not associated with the level and type of sport to which patients returned. A stable knee was associated with nearly two times greater odds of return to high-level, high-risk sport postoperative compared to those with persistent rotatory laxity. Conclusions: At 24 months postoperative, patients who underwent ACLR + LET had a similar return to sport rate as those who underwent ACLR alone. Quadriceps strength, better patient-reported functional outcomes, and a stable knee all demonstrated a positive association with return to increasingly demanding sports postoperative. While the subgroup analysis did not show a statistically significant increase in return to sport with the addition of LET, on returning, the addition of LET kept subjects playing longer by reducing graft failure rates.

Category: Knee - ACL

Improved Subjective Knee Function if Primary Anterior Cruciate Ligament Reconstruction Is Conducted by Experienced Surgeons: A Study from the Swedish National Knee Ligament Registry

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Summary: Patients operated by surgeons with high total caseload and annual volume have better subjective knee function two years after primary ACL reconstruction, but there is no difference in subsequent revision rates.

Data: Background Primary anterior cruciate ligament (ACL) reconstruction (ACLR) performed by high volume surgeons and/or clinics has been associated with increased treatment individualization, shorter operating time, decreased complication rates and lower total costs. However, the influence of surgeon/clinic volume on subjective knee function and risk of revision surgery following primary ACLR is still unclear. Purpose To investigate if surgeon and/or clinic volume affects the Knee Injury and Osteoarthritis Score (KOOS) in patients with primary ACLR and to compare the occurrence and risk of subsequent ACL revision surgery between higher and lower volume surgeons/clinics. Methods Data from the Swedish National Knee Ligament Registry (SNKLR) were used to retrospectively study patients >15 years with ACL injury that underwent primary ACLR with autograft in 2008-2019. Patients completing the two-year KOOS without undergoing subsequent surgery two years postoperatively were included. Patients undergoing subsequent revision ACLR within two years were analyzed separately. Surgeons and clinics were categorized into four groups respectively, based on a combination of total caseload volume (<50 ACLRs for surgeons, <500 ACLRs for clinics) and annual volume (<29 ACLRs/year for surgeons, <56 ACLRs/year for clinics). Thresholds of Minimal Important Change (MIC), Patient Acceptable Symptom State (PASS) and Treatment Failure (TF) were applied to determine if the results were of clinical meaningful importance. An adjusted multivariable logistic regression was performed to assess variables influencing MIC, PASS and TF of the KOOS (average score of S35

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Background: Knee laxity in the non-surgically treated ACL injured knee joint may increase further over time due to excessive load exposure to the secondary restraints. However, there are no data on an objective measure of the clinical course of knee laxity. Further, the importance of knee laxity for recovering knee function and patients’ perception of knee instability and fear of reinjury at different timepoints after ACL injury is uncertain. Objectives: To analyse changes in knee joint laxity between 3, 6, 12 and 24 months after non-surgically treated ACL injury and to analyse associations between knee joint laxity and knee function, self-reported knee stability, fear and confidence at different timepoints during recovery. A secondary aim was to compare knee joint laxity at 3 months between patients who did not have an ACLR within 24 months after the ACL injury and patients who had undertaken an ACL reconstruction at the 3-month follow-up but had an ACLR reconstruction later. Method: Design: Prospective cohort study, part of the NACOX study. Participants: 125 patients (67 males, mean age 25.0 ± 7.0 years) with acute ACL injury. Main outcome: At 3, 6, 12 and 24 months after injury, knee joint laxity was measured using KT-1000 arthrometer. Self-reported knee function was assessed using the International Knee Documentation Committee Subjective Knee Form (IKDC-SKF). Confidence and fear were assessed with two questions from the ACL-Return to Sport after Injury (ACLRSI) scale. Subjectively perceived knee joint stability was assessed using a single question. Results: Knee laxity increased bilaterally from 3 to 12 months, and in the non-involved knee from 3 to 24 months (p=0.05), although mean change was below 1 mm. Side-to-side difference in knee laxity was correlated with IKDC-SKF (r=-0.283, p=0.016) and self-reported perception of knee stability in rehabilitation/sport activities (r=-0.315, p=0.007) at 6 months, but not at 3, 12 and 24 months. There was no correlation between side-to-side difference in knee laxity and confidence and fear. At assessment 3 months after the ACL injury, side-to-side difference in knee laxity did not differ between patients who did not have an ACLR reconstruction within the 24-month follow-up period (mean side-to-side difference 3.56, 95% CI 2.90-4.24, n=65) compared to patients who had an ACLR reconstruction after the 3-month assessment (mean side-to-side difference 4.00, 95% CI 3.13-4.87, n=42) (mean group difference -0.43, 95% CI -1.51-0.65, p=0.429). Conclusion: Knee laxity increased bilaterally during the first year after non-surgically treated ACL injury. Knee laxity was weakly associated with knee function and perceived knee stability at 6 months after injury. Clinical implications: The increase in laxity over time in the ACL injured knee could be attributed to excessive load on secondary restraints. Patients with non-surgically treated ACL injury might also develop increased laxity in the non-involved knee over time, which may be interpreted as an adaptation towards the injured knee. The present findings could contribute to the basis for treatment decisions after ACL injury. However, the mean change in knee laxity was below 1 mm and might be of limited clinical significance.