Summary: ACL + ALLR were found to have significantly better outcomes in terms of knee rotational stability and graft failure rate than isolated ACL reconstructions, but the clinical outcomes were unlikely uncertain after a minimum 12 months follow-up.

Data: Purpose: To conduct a network meta-analysis (NMA) comparing the results of randomized controlled trials (RCTs) among patients who underwent either isolated ACL reconstruction or combined lateral extra-articular tenodesis (LET) or anterolateral ligament reconstruction (ALLR). Methods: RCTs that compared isolated ACL reconstruction and combined LET or ALLR were included with minimum 12 months follow-up. Studies that used the double-bundle technique were excluded. Outcome assessment included the number of positive pivot shifts, amount of anterior tibial translation, and IKDC subjective, Tegner, and Lysholm scores. Bayesian NMA and the surface under the cumulative ranking area (SUCRA) were evaluated. Results: A total of 1,077 patients from 11 RCTs were enrolled in this study. In NMA, the odds ratios (ORs) of positive pivot shift were significantly lower in ACL + ALLR (OR, 0.17; 95% CI, 0.027–0.67) than isolated ACL reconstruction, but no difference between ACL + ALLR and ACL + LET. There were no significant differences in anterior tibial translation among the techniques, but the IKDC subjective and Lysholm scores of ACL + ALLR and ACL + LET were significantly higher than isolated ACL reconstruction. ACL + ALLR was the most preferred in terms of residual pivot, shift anterior tibial translation, and IKDC subjective scores (SUCRA = 88.2%; 86.4%; 93.1%, respectively). Additional lateral procedures resulted in significantly lower risk of graft failure (OR, 0.27; 95% CI, 0.1–0.71) than isolated ACL reconstruction. Conclusion: ACL + ALLR were found to have significantly better outcomes in terms of knee rotational stability and graft failure rate than isolated ACL reconstructions, but the clinical outcomes were uncertain after a minimum 12 months follow up. Considering the greatest probability of obtaining better knee rotational stability in this NMA, ACL + ALLR was found to be the most preferred technique for patients with ACL injury.

Category: Knee - Lateral Extraarticular Tenodesis

More Severe Adverse Events are Associated with Worse Patient Reported Outcome Measures Following Anterior Cruciate Ligament Reconstruction with and Without Lateral Extra-Articular Tenodesis Augmentation - Results from the Stability Randomized Trial

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Summary:
In the Stability Study, worsening severity of adverse events were associated with lower patient reported outcome measures at 2 years post-operative following anterior cruciate ligament reconstruction with or without lateral extra-articular tenodesis augmentation.

Data:
Background: The results of the Stability Study suggest that the addition of lateral extra-articular tenodesis (LET) to a hamstring tendon autograft reduces the rate of anterior cruciate ligament reconstruction (ACLr) failure in high-risk patients. However, there was a higher proportion of patients who experienced hardware irritation and removal following ACLR + LET. It is unclear whether these and other adverse events are similarly associated with changes in patient reported outcome measures (PROMs) and how this should be accounted for in the surgical decision making process. Objective: Investigate how the severity of adverse events encountered during the follow up period of the Stability Study were associated with patient reported outcomes at two years post-operative. Methods: Stability is a pragmatic, multicenter, randomized clinical trial comparing single-bundle hamstring tendon ACLR with combined ACLR + LET. Patients aged 14-25 years with an ACL deficient knee were included (n=618). Participants completed PROMs (KOOS, IKDC, ACL-QOL), and adverse events were documented pre-operatively and at 3, 6, 12 and 24 months postoperatively. Adverse events were categorized into four groups: none (no adverse event), minor medical (resolved spontaneously or with minimum medical management), minor surgical (event such as meniscus tear or stiffness that required surgical intervention but is not a graft rupture), contralateral ACL rupture, and graft rupture. A generalized linear model was used to compare mean PROM scores with the different levels of adverse events. Results: The rate of minor medical adverse events (11.2%), minor surgical adverse events (7.4%), and ipsilateral (7%) or contralateral (3%) ACL tears at 24 months post-operative were low considering the high-risk patient profile. There was no difference in the proportion of minor medical events, minor surgical events, or contralateral ACL ruptures between the ACLR only and ACLR + LET groups (p=0.05). The ACLR only group had a significantly higher rate of graft rupture (11 vs 4%, p=0.01). Increasing severity of adverse events were associated with lower PROM scores at 24 months post-operative. Patients who experienced any adverse event within the two-year follow up had significantly lower outcome scores than those with no events. When only adverse events in the first year post-operative were included, the influence of minor medical and minor surgical events was largely washed out suggesting the effect on outcomes may be due to recency rather than severity. However, graft tears and contralateral ACL tears within the first year led to significantly lower scores at two-years post-operative in all outcomes (p<0.01). Conclusions: Increasing severity of adverse events were associated with lower patient reported outcome measures at 2 years post-operative. Recent minor medical and minor surgical events worsened PROM scores, but this effect was largely eliminated within a year of the event. Patients who experience a graft rupture or contralateral ACL tear appear to have a significantly lower PROMs at 2 years post-operative, regardless of the time at which the tear occurs. Therefore, the benefit of the LET procedure reducing graft rupture outweighs the potential for less severe events such as hardware irritation/removal which will likely be less detrimental to patient-important outcomes.

Category: Knee - Lateral Extraarticular Tenodesis

Adolescent Patients Experience Significantly Lower ACL Graft Rupture Rates When ACL Reconstruction is Combined with Lateral Extra-Articular Tenodesis: A Comparison Against Outcomes of Isolated ACL Reconstruction

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Summary:
The addition of an LET to ACLR was associated with a significantly lower graft rupture rate when compared to isolated ACLR in pediatric patients. Data: INTRODUCTION: Young patients undergoing anterior cruciate ligament reconstruction (ACLr) are at particularly high risk of graft rupture when compared to adults. Recent studies have demonstrated significant reductions in Anterior cruciate ligament (ACL) graft rupture rates in high-risk adult populations when a lateral extra-articular procedure is performed, but comparative studies in pediatric and adolescent populations are currently lacking in the literature. Purpose: The purpose of this study was to compare the clinical outcomes of isolated ACLr versus combined ACLR+ lateral extra-articular tenodesis (LET) when using the Arnold-Coker modification of the MacIntosh procedure in early adolescent patients. The hypothesis was that combined procedures would be associated with a significantly reduced risk of graft rupture. METHODS: A retrospective analysis of consecutive early adolescent patients who underwent ACLRby hamstrings tendons autograft with or without the Arnold Coker modification of the MacIntosh procedure was conducted. Patients with the presence of one or more specific additional risk factors for graft rupture were offered a LET in addition to ACLR. Clinical outcomes including graft rupture rates, patient reported outcome measures (KOOS and subjective IKDC), knee stability, return to sport rates, re-operation rates and complications were assessed. Comparisons between variables were assessed with Chi-square or the Fisher exact test for categorical variables.