Isolated Anterior Cruciate Ligament Reconstruction Versus combined Lateral Extra-articular Tenodesis Versus combined anterolateral ligament reconstruction : Which is better? A Network Meta-analysis of Randomized Controlled Trials

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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. (Figure 1) In NMA, the odds ratios (ORs) of positive pivot shift were significantly lower in ACL + ALLR (OR, 0.17; 95% Cl, 0.027–0.67) than isolated ACL reconstruction, but no difference between ACL + ALLR and ACL + LET. (Figure 2) 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% Cl, 0.1–0.71) than isolated ACL reconstruction. (Figure 3)

DISCUSSION AND 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 unlikely after a minimum 12 months follow up. Considering the greatest probability of obtaining better knee stability in this NMA, ACL + ALLR was found to be the most

preferred	technique	for	patients	with	ACL	injury.
a. k.			Odds Ratio (95% Crl)	Experimental Control Study Events Total Odds Ratio	OR 95%-Cl Weight	
<u>, , , , , , , , , , , , , , , , , , , </u>	3	Compared with A= Isolated ACL recon B= ACL + ALLR C= ACL + LET	- 0.17 (0.027, 0.67) 0.32 (0.067, 1.1)	Group A = ACL + ALLR Hamido et al. 2021 0 50 5 52 Bornery-Cottet et al. 2020 1 112 6 112 Random effects model Hemogenity: F = 0, r = 0, P = 0,74	0.09 [0.00; 1.59] 10.8% 0.16 [0.02; 1.34] 20.2% 0.13 [0.02; 0.72] 31.0%	
•	•			Group B = ACL + LET Castoldi et al. 2020 5 38 12 42 Random effects model 28 42 Heterogeneity: not applicable	0.38 [0.12; 1.20] 69.0% 0.38 [0.12; 1.20] 60.0%	
e d				Random effects model 200 206	0.27 [0.10; 0.71] 100.0%	
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