DOES THE USE OF A “HYBRID” GRAFT ALTER GRAFT FAILURE RATES OR OUTCOMES IN ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION? A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background
The use of hamstring autografts less than 8.0mm in size to reconstruct anterior cruciate ligament (ACL) injuries is associated with a higher risk of graft failure. A hybrid graft consisting of hamstring autograft tendons supplemented by allograft tendon to create a more robust graft has been proposed as an alternative treatment option in patients with small hamstring graft size. Multiple studies have shown inconsistent results for ACL reconstructions with hybrid grafts. This meta-analysis was designed to examine the rates of graft failure and clinical outcome measures for hybrid grafts in primary ACL reconstructions.

Methods
A search was performed of PubMed, MEDLINE and Google Scholar using the terms “Anterior Cruciate Ligament” OR “ACL” combined with “reconstruction” and “hybrid.” Two authors reviewed the papers, and outcomes were subdivided into autograft and hybrid graft. Chi Square with Yates Correction was used to determine the correlation between failure and type of graft for all patients, as well as for the subanalysis done for patients less than 18 years old and patients greater than 18 years old. Chi Square with Yates Correction and unpaired t-test were used to compare the demographic characteristics of the two groups. Unpaired t-test was used to evaluate for differences in subjective outcome scores.

Results
A total of 9 studies met the inclusion criteria. Only one study included a comparison of hybrid grafts with autografts and allografts, and as such, the allograft data was excluded from the analysis. Overall a total of 506 patients were treated with autografts with an average age of 26.7 +/- 10.8 years; and a total of 453 patients were treated with hybrid grafts with an average age of 28.33 +/-10.4 years. All patients had minimum follow up of 2 years with average follow up of 38.2 months. There was no significant difference in sex between the two groups (p = 0.07). There were significantly more females in the hybrid group compared to the autograft group (48% versus 42%, respectively p = 0.02). There was no significant difference in failure rates for the autograft or hybrid graft subgroups (p = 0.92). International Knee Documentation (IKDC) scores and Lysholm scores were significantly higher in the autograft group than the hybrid graft group (p = 0.02 and p < 0.01, respectively). There was no significant difference in Tegner Activity scores (p =0.68). On further subgroup analysis, there was no difference in failure rates for autografts vs hybrid grafts with subgroup analysis for both patients under 18 years of age and patients over 18 years of age (p = 0.78 and p = 0.24, respectively).

Conclusions
Supplementation of hamstring autograft with allograft tissue to form a “hybrid graft” did not alter the graft failure rate. But, the use of hybrid graft was associated with worse subjective outcome scores as measured by IKDC and Lysholm scores.

Level of Evidence: Level IV (A meta-analysis of Level II, III, and IV studies)

The Orthopaedic Journal of Sports Medicine, 7(3)(suppl 1)
DOI: 10.1177/2325967119S00131
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