

Abstract Title:

Relationship of anterior cruciate ligament (ACL) bone-tendon-bone (BTB) graft width, patella tendon width, and return to play parameters

Background:

Many return to sport protocols after ACL reconstruction are based upon return of quadriceps and hamstring strength. ACL BTB autografts for reconstruction are commonly harvested using 10mm or 11mm catamarans, or roughly one third of the average patellar tendon width. However, a paucity of data exists examining the effects of ACL BTB graft width and its effects on return to play parameters over time. However, the impact of graft width upon functional outcomes has yet to be determined in the literature.

Purpose:

The aim of this study was to evaluate postoperative functional outcomes in patients based upon ACL BTB graft size.

Methods:

This was a retrospective cohort study which included 130 patients who underwent arthroscopic assisted ACL reconstruction with patellar BTB autograft from March 2012 to September 2018 with at least 2 years of follow up. MRI was used to evaluate preoperative patellar tendon width, and graft width was obtained from operative reports. 31 patients had grafts smaller than 33% of their patellar tendon width, and 99 patients had grafts larger than 33%. Each patient filled out patient reported outcome questionnaires, and completed knee extensor and flexor torque and symmetry, as assessed through an isokinetic dynamometer, were compared among groups at 6 months postoperatively.

Results:

Both peak torque of knee extension ($p = .002$) and knee flexion ($p = .001$) were negatively correlated with the larger graft width group at 6 months. Patients in the smaller graft group (7/31 (23%)) had graft failures, while only 8/99 (8%) in the larger graft group had re-ruptures. Although, this difference is not statistically significant (chi square $\chi^2 =$, $p = .057$). There were no significant differences in KOOS or IKDC scores between groups.

Conclusion:

Patients with larger size grafts, as a percent of original patellar tendon width, have weaker peak strength with knee extension and flexion at 6-months post-surgery. The nonsignificant difference favoring larger grafts as a percentage of original patella tendon, despite slower return of quadriceps function, may be in part a secondary result of a longer time before return to sport; however, further data collection and research is warranted given these findings. Weaker quadriceps function in the larger graft group may lead to a longer duration between surgery and return to play, warranting precise measurement of graft size and original patient patella tendon size.