



Effects of Patellar Tendon Width and Preoperative Quadriceps Strength on Strength Return After Anterior Cruciate Ligament Reconstruction With Ipsilateral Bone-Patellar Tendon-Bone Autograft. Shelbourne KD, Johnson BC.

Background: Strength return after anterior cruciate ligament reconstruction varies greatly.

Hypothesis: Patients with small patellar tendons and weak preoperative quadriceps muscle strength would not be able to regain full strength.

Study Design: Retrospective review of prospectively collected data.

Methods: Patellar tendon widths for 540 patients were measured intraoperatively and grouped according to size (small, 20-26 mm; medium, 27-30 mm; large, 31-36 mm). Strength measured preoperatively was determined by dividing the torque value of the injured leg by the torque value of the uninjured leg. Strength after surgery was determined by dividing the postoperative value in the anterior cruciate ligament reconstructed leg by the preoperative value of the uninjured leg.

Results: At 1, 2, and 3 months after surgery, patients with large tendons had statistically significantly better strength than patients with small and medium tendons ($P < .01$), but this difference was not significant 2 years after operation. At all times after surgery, patients with preoperative strength $>90\%$ had statistically significantly better strength than patients with preoperative strength $<75\%$ ($P < .01$). At 3 months after surgery, patients with good preoperative strength and large tendons had a mean postoperative strength of 79% compared with 62% for patients who had poor preoperative strength and small tendons ($P < .001$).

Conclusions: If patients undergoing anterior cruciate ligament reconstruction have a weak leg before surgery and small patellar tendons, their ability to regain full strength after surgery may be compromised, especially in the first year after surgery.

Keywords: anterior cruciate ligament (ACL); quadriceps strength; tendon width