

Comparing Clinical Outcomes Between Transosseous Patellar Suture Fixation versus Suture Anchor Repair in the Treatment of Quadriceps Tendon Repair

Muhammad Yazid Mutawakkil, MD; Kelly Wun, BA; Alain Emil Sherman, BA; Michael Peabody, BS; Mark Allen Oyer, MD; Sohaib Zafar Hashmi, MD; Vehniah K. Tjong, MD Northwestern University, Chicago, IL, United States

Purpose: Repair of quadriceps tendon ruptures aims to restore strength and function to the extensor mechanism. The gold standard surgical treatment of quadriceps tendon injuries remains transosseous suture repair through the patella. However, limited biomechanical literature and small case series have reported use of suture anchor repair techniques. The objective of this study is to compare clinical and functional outcomes, in the largest series to date, of quadriceps tendon ruptures surgically treated with transosseous patellar suture or suture anchor repair.

Methods: A retrospective review was performed for patients undergoing surgical repair of quadriceps tendon injuries between 2007-2018 at a single institution. Patients treated with transosseous patellar suture (TS) repair and suture anchor repair (SA) were identified. Surgical technique included 1, 2, or 3 suture anchors or 2 or 3 transosseous suture patellar tunnels. We analyzed clinical and functional outcomes based on objective measurement of range of motion, graded strength testing, and follow-up duration. Infection, rerupture, deep vein thrombosis, and patella fracture were investigated as complications. Chi-squared, Fisher exact, and independent samples t-tests were used to compare the SA and TS groups, with significance defined as $P < 0.05$.

Results: This study included 143 patients and 154 quadriceps tendons ruptures: 128 males and 15 females with mean age of 58.4 years (range, 21-90 years). Of these, 91 were left, 63 were right including 10 bilateral injuries. Acute injuries, sustained within 6 weeks of surgery, occurred in 133 quadriceps ruptures and 21 injuries were chronic (>6 weeks). 41 injuries (30 acute, 11 chronic) were treated with the SA repair and 113 injuries (103 acute, 10 chronic) were treated with TS repair. The average follow-up for the SA and TS groups were 8.0 and 7.9 months, respectively ($P = 0.92$). The groups did not differ significantly in demographic characteristics (age, gender, and body mass index [BMI]). At final follow-up, mean extension was measured at 3.28° versus 1.71° ($P = 0.17$) and flexion was 121° versus 116° ($P = 0.29$), and were not statistically different between the SA and TS groups, respectively. Graded strength testing at final follow-up between SA and TS groups (4.35 vs 4.61, $P = 0.03$) was functionally comparable. There were no significant differences in the rates of complications, including rerupture.

Conclusion: Suture anchor repair of acute or chronic quadriceps tendon ruptures may provide similar clinical results compared to the gold standard transosseous patellar suture repair technique. Range of motion and strength in this short-term follow-up study was comparable among both groups, with no significant difference in complication rates.