

**Extensor Mechanism Reconstruction After Total Knee Arthroplasty:  
Is There a Clear Winner? A Multicenter Retrospective Cohort**

*Pasquale Gencarelli, BS; Alex Tang, MD; Jonathan Paul Yawman, MD;  
Luke Gregory Menken, DO; Cody Green, MD; George John Haidukewych, MD;  
Frank A. Liporace, MD; Richard S. Yoon, MD  
Jersey City Medical Center, Jersey City, New Jersey, UNITED STATES*

**Purpose:** Patellar and quadricep tendon ruptures after total knee arthroplasty (TKA) have historically poor outcomes for patients. Treatment modalities have recently advanced for extensor mechanism (EM) reconstruction; however, there is no consensus for optimal treatment. The primary purpose of this study is to compare clinical outcomes and survivorship between synthetic mesh versus allograft reconstruction for treatment of native EM rupture after TKA.

**Methods:** A multicenter, retrospective review was performed between December 2009 and November 2019 to identify consecutive patients  $\geq 45$  years old with native EM disruption after TKA treated with allograft or synthetic mesh with a minimum follow-up time of 2 years. Data were collected on baseline demographic information, injury mechanism, range of motion (ROM), operative time, reoperations, and postoperative Knee Injury and Osteoarthritis Outcome Scores, Joint Replacement (KOOS JR). Student t and Fisher exact tests were used to compare demographic data between the 2 groups. The Kaplan-Meier survival curve method was used to determine the survivorship for both mesh and allograft implants until failure, defined as postoperative EM lag  $>30^\circ$  or reoperation at most recent follow-up. Survival curves were compared between the 2 groups using a log-rank test. A univariate Cox proportional hazard regression was used to identify risk factors associated with implant failure and to determine each variable's individual hazard ratio (HR).

**Results:** 35 TKA patients underwent EM reconstruction using synthetic mesh while 20 were treated with allograft. Both groups were similar in age, gender, and race. Average follow-up time was 3.5 years ( $P = 0.98$ ). Overall postoperative flexion was statistically significant ( $92.6 \pm 13.6$  synthetic mesh vs  $99.4 \pm 9.5$  allograft,  $P = 0.04$ ). There was no difference in postoperative outcomes between mesh versus allograft in average KOOS, JR ( $49.2 \pm 22.9$  vs  $55.97 \pm 22.7$ ,  $P = 0.29$ ), extensor lag ( $16.3^\circ \pm 15.2^\circ$  vs  $10.9^\circ \pm 10.3^\circ$ ,  $P = 0.15$ ), graft failure ( $P = 0.71$ ), reoperation rates ( $P = 0.81$ ), operative time ( $P = 0.42$ ), and ambulation status ( $P = 0.34$ ) at latest follow-up. Mesh versus allograft survival curve comparison yielded no difference for up to 5-year follow-up (log-rank  $P = 0.48$ ). A Cox hazard regression model revealed that TKA patients presenting with quadricep tendon rupture were more likely to fail than patients with patellar tendon ruptures (HR 2.569,  $P = 0.03$ ).

**Conclusion:** Our findings suggest reconstruction with synthetic mesh or allograft lead to similar clinical outcomes with good survivorship. Future studies, including larger randomized controlled trials, are required to determine the superior reconstruction method for this injury.