Comparison of Early Complication Rates Following Primary Repair of Quadriceps and Patellar Tendon Ruptures

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Introduction

- Quadriceps and patellar tendon ruptures are significant injuries that require surgical repair to restore the extensor mechanism function of the knee.

- Postoperative complications following quadriceps or patellar tendon repair can be common and extremely disabling, but the data on early postoperative complications following these surgeries have not been well studied.

- **Purpose of this study**: To quantify and compare the incidence of 90-day postoperative complications after primary repair of quadriceps and patellar tendon ruptures.

Methods

A retrospective cohort study was performed using the TriNetX (Cambridge, MA), a global research network that includes research data from more than 70 healthcare organizations across 4 countries.

- **Patients who underwent primary repair of quadriceps tendon (CPT code 27385) or patellar tendon (CPT code 27380) ruptures in the past 20 years (2004 to 2024) were identified.**
  - The incidence of 90-day postoperative complications, including infection, deep vein thrombosis (DVT), nerve injury, and need for reoperation, was queried.
- **Rates of postoperative complications between the two treatment groups were compared.**

Results

Table 1. 90-day post-op complications following QT or PT repair with comparison

90-day outcomes:	Infection	DVT	Nerve Injury	Re-operation
Quadriceps tendon repair (n = 7,743)	355 (4.6%)	254 (3.3%)	<10 (<0.1%)	662 (8.5%)
Patellar tendon repair (n = 7,446)	360 (4.8%)	207 (2.8%)	<10 (<0.1%)	707 (9.5%)
p-value	0.134	0.072	0.930	0.042

Discussion: Overall Complication Rates

Early postoperative complication rates following primary repair of quadriceps or patellar tendon ruptures were high.

- **Overall infection rate: 4.7% (vs. ~0.5-2% general SSI rate for all orthopedic surgeries[1])**
  - Possibly due to low overlying subcutaneous tissue volume.
- **Overall DVT incidence: 3% (vs. 0.25–0.3% in isolated arthroscopy[2,3] vs ~3% in THA/TKA[4])**
  - Highlights need for careful perioperative assessment and DVT prophylaxis
- **Overall reoperation rate: 9%**
  - Highlights the potential need for augmentation repair strategies to reduce failure rates.

Discussion: Quad vs Patella Tendon Complication Comparison

- **Patients who underwent patellar tendon repair (9.5%) had a higher rate of reoperation than patients who underwent quadriceps tendon repair (8.5%) (p = 0.042).**
  - May be attributed to multiple factors including:
    - decreased tissue volume of the patellar ligament vs distal quadriceps tendon.
    - decreased subcutaneous tissue thickness over the patellar tendon.
    - occurrence of mid-substance patellar tendon ruptures that may be harder to fix and more prone to failure.
- **Limitations of the study:** Retrospective design, varied postoperative protocols, reliance on EHR data and accuracy of inputted data, database did not capture complications after 90 days post-op.

Conclusions

- **Clinical Take Away:**
  - Early postoperative complication rates following primary repair of quadriceps and patellar tendon ruptures were high with infection, DVT, and reoperation rates of approximately 4.7%, 3%, and 9%, respectively. These findings emphasize the need for vigilant postoperative management and infection prevention strategies, as well as the potential need for augmentation repair strategies to reduce failure rates.

- **Future research needed:**
  - Failure reduction strategies
  - Prospective studies
  - DVT / infection prophylaxis optimization

Thank You

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