

## **PJI Risk Increases with Successive Aseptic Revision TKAs: 4000 Cases with Long-Term Follow-Up**

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**INTRODUCTION:** The risk of periprosthetic joint infection (PJI) is thought to increase with each subsequent revision total knee arthroplasty (TKA). However, there is limited literature to support this claim and cumulative risk of each subsequent revision is unknown. We evaluated the long-term risk of PJI following aseptic revision TKAs when stratified by number of prior revisions in a large series with extended follow-up.

**METHODS:** We identified 4090 aseptic revision TKAs performed from 2000-2022 at a single academic institution. Patients with prior PJI were excluded. Patients were stratified as having 0, 1, 2, or  $\geq 3$  previous revision arthroplasties on the affected knee. The 15-year survivorship free of PJI was evaluated based on number of prior revision arthroplasties and select demographics. The mean age was 67, 56% of patients were female, and mean BMI was 32 kg/m<sup>2</sup>. The mean follow-up was 6 years.

### **RESULTS:**

The 15-year survivorship free of PJI when stratified by number of prior revision TKAs (0, 1, 2 or  $\geq 3$ ) was 94%, 91%, 87%, and 84%, respectively. When controlling for age, BMI and ASA score, the relative risk of PJI when compared to a first-time revision was 2-fold higher for TKAs with one prior aseptic revision ( $p < 0.01$ ), 3-fold higher for TKAs with two prior aseptic revisions ( $p < 0.01$ ), and 4-fold higher for TKAs with  $\geq 3$  prior aseptic revisions ( $p < 0.01$ ). Each additional re-revision conferred a 2-fold increase in relative PJI risk ( $p < 0.01$ ).

### **DISCUSSION AND CONCLUSION:**

First-time aseptic revision TKA demonstrated excellent long-term survivorship, with 94% free of PJI at 15 years. However, each additional revision carried a twofold increase in relative PJI risk, and 3% decline in absolute survivorship. These data underscore the increasing PJI risk with each re-revision and the need for strategic decision-making in complex revision scenarios.