

Stepped Porous Titanium Metaphyseal Sleeves for Tibial Defects in Revision Total Knee Arthroplasty

Leera Choi, Ryan Mayer, Jay Patel, MD,
Steven L. Barnett, MD, Robert S. Gorab, MD, **Joseph S. Gondusky, MD**

Introduction: The treatment of tibial defects during revision total knee arthroplasty (TKA) can be challenging. Stepped titanium metaphyseal sleeves with in-growth potential allow for diffuse force distribution and bony support, and may provide a good construct option.

Material and Methods: We retrospectively reviewed data on 51 patients who underwent revision TKA utilizing a metaphyseal sleeve for Anderson Orthopaedic Research Institute (AORI) Type II and III tibial defects between June 2007 and July 2011. Fifty-eight percent of patients were male, with average age of 66, body mass index of 30.74, and American Society of Anesthesiology class of 2.31. The majority of the TKA revisions were for instability (27.8%), infection (25.0%) and aseptic loosening (16.7%). Preoperative and postoperative knee range of motion (ROM) and Knee Society scores were analyzed. We report survivorship data and investigated all failed cases in detail for mode of failure.

Results: Final clinical follow-up averaged 38 months (SD: 11.64; range: 24-62 months). We observed improvements in knee range of motion ($p < 0.001$) and Knee Society Functional and Knee scores ($p < 0.001$). Radiographic review at final follow-up revealed stable, osteointegrated components without component migration or clinically significant osteolysis. Four component revisions were required by the time of final follow-up. Etiology included femoral adaptor fracture after trauma, aseptic loosening of the femoral component, infection, and recalcitrant end-of-stem pain on the tibial side. No case of aseptic failure of the tibial metaphyseal sleeve was observed.

Conclusion: Use of stepped porous titanium metaphyseal sleeves led to good short-term outcomes in our study and may provide a good option for the management of challenging tibial defects in revision TKA.

