Paper #29

Porous-Coated Metaphyseal Sleeves for Severe Femoral and Tibial Bone Loss in Revision Total Knee Arthroplasty

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Introduction: Metaphyseal bone loss is commonly encountered in revision total knee arthroplasty (TKA). While Anderson Orthopaedic Research Institute (AORI) type 1 defects can typically be managed with standard revision components, with or without stems, type 2 and 3 defects generally require some form of metaphyseal fixation or augmentation. The purpose of this study was to evaluate the midterm results of stepped, porous-coated metaphyseal sleeves for revision TKA in the setting of severe bone loss.

Methods: All patients who had undergone revision TKA using metaphyseal sleeves from March 2006 to May 2014 at our institution were identified from a prospective research database. Only patients with minimum 2 year clinical and radiographic follow-up were included in the final analysis. Preoperative patient characteristics and operative data were reviewed, including AORI defect classification. Postoperative outcomes, included Knee Society Scores (KSS), were compared with preoperative values. Primary study outcomes included complications, reoperations, radiographic assessment of sleeve osteointegration, and survivorship.

Results: 116 knees (108 patients) underwent revision TKA with 152 metaphyseal sleeves (111 tibial, 41 femoral). AORI defect classification on the tibial side included 5 type 2A, 89 type 2B, and 17 type 3 defects. The femoral side included 3 type 2A, 34 type 2B, and 4 type 3 defects. There were 3 intraoperative fractures (1.9%) associated with sleeve preparation/insertion, all of which went on heal uneventfully. 6 knees (5 patients) were lost to follow-up before 2 years and 5 patients (6 knees) died before 2 years. Of the remaining 104 knees (98 patients, 134 sleeves), mean follow-up was 5.3 years. Nineteen knees (16.4%) required reoperation, most commonly for recurrent infection (6 knees). Only 1 sleeve demonstrated radiographic evidence of failed osteointegration with subsidence, however this did not require revision. Two sleeves (1.3%) required removal as part of resection for recurrent infection.

Conclusions: This large retrospective series illustrates the utility of porous metaphyseal sleeves in revision TKA with a low rate of intraoperative complications, excellent osteointegration and long-term fixation.

Notes