

Survivorship of Highly Porous Titanium Metaphyseal Cones in Aseptic Revision Total Knee Arthroplasty, Minimum 5-Year Follow-Up

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INTRODUCTION: Revision total knee arthroplasty (rTKA) can be challenging due to multiple factors including metaphyseal bone loss, with approximately 77.9% of failures attributed to aseptic etiology. Addressing metaphyseal bone loss is paramount for success in rTKA procedures. Highly porous titanium metaphyseal cones were introduced for ease of use with prior studies demonstrating excellent short-term survivorship. The purpose of this study was to evaluate survivorship of highly porous titanium metaphyseal cones in aseptic rTKA with a minimum 5-year follow-up.

METHODS: This was a retrospective analysis of 170 patients who underwent revision TKA for aseptic indications with a metaphyseal cone. Exclusion criteria included septic revisions and patients with less than 5-year follow-up. 117 patients with 140 cones (106 tibial / 34 femoral) were analyzed. The mean age was 63.9 years (range 32-89) and consisted of 59.8% women with a mean BMI of 34.1 (range 19.6-51.0). Results, complications, and re-do revisions were documented.

RESULTS:

All-cause survivorship in this study was 87.2% and 91.5% with exclusion of PJI at 5 years. 10 cones were removed: 8 tibial (5 for PJI) and 2 femoral. All-cause survivorship for metaphyseal cones was 92.9% and 96.4% when excluding for PJI. Mean Knee Society Knee Score improved 26.5 points ($p<0.001$) and mean Knee Society Function Score improved 23.5 points ($p<0.001$). 15 patients (12.8%) required a subsequent revision procedure, with 8 (6.8%) for aseptic loosening and 5 (4.3%) for infection. 19 additional patients required subsequent non-revision procedures, most commonly arthroscopic lysis of adhesions, and extensor mechanism realignment.

DISCUSSION AND CONCLUSION:

Highly porous titanium metaphyseal cones provided rigid, durable metaphyseal fixation with excellent 5-year survivorship and clinical outcomes. Aseptic loosening and prosthetic joint infection were leading causes of revision TKA failure and need for subsequent revision. Further studies with longer follow-up are needed to assess whether these results will be maintained over the long term.