

Tibial Stems in Primary Total Knee Arthroplasty for Obese Patients: Analysis of Data from a Large National Arthroplasty Registry

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INTRODUCTION:

We aimed to determine if the utilization of stems in primary total knee arthroplasty (TKA) for the obese patient was associated with a difference in the revision rate, reason for revision or type of revision over time..

METHODS:

Data from a large national arthroplasty registry from January 2015 to December 2020 of primary TKA for osteoarthritis using cemented tibial fixation with the five most commonly used stemmed and non-stemmed prostheses was stratified against body mass index (BMI). Hazard ratios (HR) from Cox proportional hazards models, adjusting for age and gender, were performed to compare the revision rates between the groups.

RESULTS:

There were 54,629 primary TKA procedures undertaken for osteoarthritis, of which 6,570 (12%) were stemmed and 48,059 (88%) were non-stemmed with patient BMI data available for analysis. Obese class 2 (35 to <40 kg/m²) patients had a higher rate of revision with a stemmed TKA compared to non-stemmed TKA (HR=1.55 [95% CI 1.04, 2.31]; p=0.030) [Fig 1]. There were no other significant differences in all-cause revision between patients in the other BMI categories. There was no difference in revision indication between obese (BMI>30kg/m²) patients with stemmed or non-stemmed components. When a minor revision was performed, obese patients (≥30kg/m²) with a non-stemmed TKA had a significantly lower rate of revision compared to obese patients (≥30kg/m²) with a stemmed TKA (HR=0.73 [95% CI 0.56, 0.96]; p=0.025) [Fig 2]. When a revision for the insert component only was performed, obese patients (≥30kg/m²) with a non-stemmed TKA had a significantly lower rate of revision compared to obese patients (≥30kg/m²) with a stemmed TKA for the entire period (HR=0.70 [95% CI 0.50, 0.97]; p=0.032)[Fig 3].

DISCUSSION AND CONCLUSION:

The use of stemmed prosthesis for patients with increased BMI undergoing primary TKA may not reduce the risk of revision.

Figure 1: Cumulative Percent Revision of Cemented Tibial Primary Total Knee Replacement with BMI Obese Class 2 (35.00-39.99) by Stem Extension (Primary Diagnosis OA)

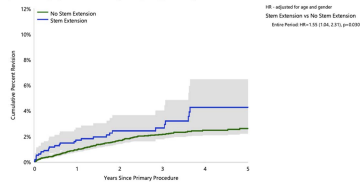


Figure 2: Cumulative Percent Revision of Cemented Tibial Primary Total Knee Replacement by BMI and Stem Extension (Primary Diagnosis OA, Minor Revisions Only)

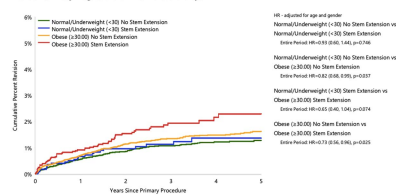


Figure 3: Cumulative Percent Revision of Cemented Tibial Primary Total Knee Replacement by BMI and Stem Extension (Primary Diagnosis OA, Revision for Insert Component Only)

