# Short Tibial Stems Do Not Improve 1-Year Outcomes or Reduce Healthcare Utilization in Obese Patients Undergoing Primary Total Knee Arthroplasty

Nickelas Huffman, Ignacio Pasqualini, Shujaa T Khan[1], Yuxuan Jin, Alison K Klika[1], Robert M Molloy, Viktor Erik Krebs, Nicolas Santiago Piuzzi, Matthew Edward Deren[1]
[1]Cleveland Clinic

INTRODUCTION: Obese patients undergoing total knee arthroplasty (TKA) are at increased risk of complications and implant failure due to the higher biomechanical forces on the bone-implant interface. The use of short tibial stems has been proposed as a potential solution to improve fixation and outcomes in this population. However, the impact of short tibial stems on patient-reported outcomes and healthcare utilization in obese patients undergoing primary TKA remains unclear. This study aimed to 1) compare 1-year patient-reported outcome measures (PROMs), achievement of minimal clinically important difference (MCID), achievement of patient acceptable symptom state (PASS), and 1-year PASS between obese patients undergoing primary TKA with short tibial stems versus those without stems, and 2) compare hospital resource utilization, including length of stay (LOS), discharge disposition (DD), readmission, emergency department (ED) visits, and reoperation rates between the two cohorts.

METHODS: A prospective cohort of 5,771 obese patients (BMI ≥30 kg/m2) undergoing primary elective TKA between 2016-2021 from a single healthcare system was analyzed. Among these patients, 5,031 received TKA without a tibial stem, while 740 received TKA with a short tibial stem. (Table 1) PROMs were collected at baseline and 1-year post-surgery, with a completion rate of 88%. Demographics, surgical factors, and healthcare utilization outcomes were compared between the two groups. Multivariable logistic regression models were used to assess the association between stem use and PROMs, controlling for potential confounders.

RESULTS:

There were no significant differences in 1-year PROMs, achievement of MCID, achievement of PASS, or 1-year PASS between obese patients who received short tibial stems and those who did not. (Table 1) However, patients with short tibial stems were more likely to be discharged to a location other than home (OR=1.67, 95%CI: 1.30-2.15, p<0.001) compared to those without stems. There were no significant differences in LOS, readmission, ED visits, or reoperation rates between the two groups. (Table 1)

DISCUSSION AND CONCLUSION: In obese patients undergoing primary TKA, the use of short tibial stems did not significantly improve 1-year patient-reported outcomes or reduce healthcare utilization compared to TKA without stems. These findings suggest that routine use of short tibial stems may not be justified in obese patients undergoing primary TKA, given the added cost and surgical time associated with their use. Surgeons should carefully consider patient-specific factors and engage in shared decision-making when determining whether to use tibial stems in this population. Further research with longer-term follow-up and cost-effectiveness analyses is needed to better understand the role of short tibial stems in optimizing outcomes for obese patients undergoing primary TKA.