Mechanical versus Kinematic Alignment in Obese Patients Undergoing Total Knee Arthroplasty: Do Tibial Stems Effect Aseptic Tibial Loosening Rates?

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INTRODUCTION:
Tibial stems in total knee arthroplasty (TKA) have been postulated to enhance fixation and decrease rates of aseptic tibial loosening (ATL) in obese patients. Tibial stems are commonly implanted in TKA placed using mechanical alignment (MA) rather than kinematic alignment (KA). The purpose of this study was to determine the influence of a tibial stem on ATL rates as a function of alignment strategy. We hypothesized that obese patients undergoing TKA with MA with stem would have lower ATL rates than patients undergoing KA without stem.
METHODS:
We reviewed patient records with body mass index (BMI) greater than 35.0 kg/m^2 who underwent primary, cemented TKA for osteoarthritis from 2013 to 2018 with minimum 12 months follow-up. Statistics included logistic regression with alpha=0.05. The post-hoc power analysis indicated our power is 80% using a difference of 11% in aseptic loosening rates.
RESULTS:
A total of 176 patients were included: 111 in the MA group and 65 in the KA group. 64 (58%) and 12 (18%) of the MA and KA groups had tibial stems, respectively. Mean BMI was 40.4 kg/m^2 (range, 35.0 to 55.9) and average follow-up was 3.9 years (range, 1 – 10 years). No patients with stems whereas four MA and four KA without stems experienced ATL. Neither alignment type (p = 0.98) nor stem presence (p=0.99) was associated with ATL.
DISCUSSION AND CONCLUSION:
In class 2 and class 3 obesity, the risk of developing ATL is not significantly associated with alignment strategy used nor the presence of a tibial stem.