Total Hip Arthroplasty in Morbidly Obese: Does a Strict Body Mass Index Cutoff Yield Meaningful Change?
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INTRODUCTION:
The number of obese patients seeking total hip arthroplasty (THA) continues to expand. With the rise in value-based health care and bundled reimbursement models, attention has been given to optimizing surgical outcomes while minimizing the risk of infection, readmission, and revision surgery. In 2013, the American Association of Hip and Knee Surgeons (AAHKS), rendered a consensus opinion that consideration should be given to delaying total joint arthroplasty in a patient with a body mass index (BMI) > 40 kg/m². For total knee arthroplasty, current literature demonstrates that morbid obesity, defined as a BMI ≥ 40, is the threshold at which perioperative complications increase considerably. However, the data for total hip arthroplasty is mixed, and there is no consensus in the literature on a threshold above which complications increase. To this end, we sought to compare clinical outcomes of THA in the morbidly obese patient population (Class III obesity, BMI ≥ 40) to two matched cohorts of patients: obese (Class I-II obesity, BMI ≥30 to <40 kg/m²) and regular weight to overweight (BMI ≥18.5 to <30 kg/m²). The authors hypothesized that morbidly obese patients would have satisfactory results in the following three categories: survivorship free of infection and all-cause revision, acute postoperative outcomes including discharge disposition and readmissions, and finally, postoperative change in BMI.

METHODS:
THA performed on morbidly obese patients (BMI >40 kg/m²) by fellowship trained arthroplasty surgeons at a single academic center from 2010 until 2020 were retrospectively reviewed. THA for hip fractures, revision, and conversion arthroplasty were excluded. Eighty morbidly obese patients who underwent 83 separate THAs were identified, and propensity score matched in a 1:3:3 ratio based on age, sex, race, Elixhauser comorbidity score, and tobacco use to control cohorts of BMI 30-40 kg/m² and BMI <30 kg/m². Acute postoperative outcomes and BMI change were evaluated with univariate and regression analyses. Cox proportional hazard ratio was calculated to evaluate prosthetic joint infection (PJI) and all-cause revision surgery through final follow up. Mean follow up was 3.9 years.

RESULTS:
The percentage of patients with PJI or revision for any cause was not significantly different between the three cohorts. Furthermore, Cox Hazard ratio with BMI <30 kg/m² as a reference demonstrated no significant difference in survival to PJI and all cause revision in the morbidly obese cohort. In the acute postoperative period, morbidly obese patients tended toward longer hospital length of stay (LOS), facility discharges, and 90-day hospital returns. Morbid obesity (p=0.04), age (p<0.01), female gender (p<0.01), non-caucasian race (p=0.02), and Elixhauser score (p<0.01) were all independent predictors for facility discharge. Female gender, non-caucasian race, and Elixhauser score were predictors of longer hospital LOS. Age, female gender, and Elixhauser score were all predictors of 90-day hospital returns. At final follow up, a higher percentage of morbidly obese patients had clinically significant (>5%) BMI loss, however this was not significant.

DISCUSSION AND CONCLUSION:
The results demonstrate that PJI and revision rates in morbidly obese patients undergoing THA are not inferior to those classified by the WHO as normal weight, overweight, class I or II obesity. Morbid obesity was an independent predictor for facility discharge, and patients in this cohort trended toward longer length of hospital stay and increased 90-day hospital returns, however these results were not significant. In addition, other variables including age, female gender, and Elixhauser comorbidity score were also shown to be independent predictors of increased resource utilization in the acute postoperative period. Finally, the morbidly obese cohort trended toward a higher percentage of patients with clinically significant BMI loss at final follow up, which could theoretically lead to decreased downstream healthcare costs. Morbid obese patients may require increased resource utilization in the postoperative period, however, it alone is not predictive of inferior revision outcomes. There may also be a downstream benefit to both patients and healthcare systems if these patients undergo THA. Therefore, the practice of restricting THA to patients solely due to their BMI should be reconsidered.