Outcomes of Underweight Patients Undergoing Primary Total Hip Arthroplasty: A Matched Cohort Study

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INTRODUCTION: Numerous studies have demonstrated an association between obesity and increased complications in total hip arthroplasty (THA), but fewer have focused on underweight patients. This study investigated outcomes of underweight patients undergoing primary THA compared to normal weight and class III obese patients.

METHODS: Among all primary THAs performed at our institution between 1995-2020, we identified 206 patients with a BMI < 18.5 kg/m^2. These 206 patients were matched 1:2:2 for age, sex, Charlson Comorbidity Index (CCI), and year of surgery to cohorts with normal BMI (18.5-24.9 kg/m^2; n=411) and Class III obesity (BMI ≥40 kg/m^2; n=379). Kaplan-Meier survivorship and Harris hip scores (HHSs) were compared between groups. Cox regression analyses adjusting for confounding demographics were performed. Mean follow-up was 9 years.

RESULTS:

The 10-year survivorships free of any reoperation, any revision, infection, and death were 91%, 92%, 98%, and 66%, respectively, in the low BMI group. Underweight patients were at decreased risk of reoperation compared to obese patients (HR=0.5; p=0.02). Dislocation (3%) and aseptic loosening (1%) were the most common reasons for reoperation in underweight patients compared to aseptic loosening (4%) and infection (3%) in the obese cohort. Underweight patients had increased mortality risk compared to normal (HR 1.9; p<0.001) and obese cohorts (HR 1.6; p<0.001). There were no differences in non-operative complications or infection rates when comparing underweight to normal and obese cohorts. Overall, there was significant improvement in HHSs at 5 years in all groups (p<0.001).

DISCUSSION AND CONCLUSION: Underweight patients have good outcomes after primary THA with low rates of revision and reoperation after adjusting for confounding demographics. However, there is an increased mortality risk compared to normal and even obese patients, who have historically been identified as the group at highest risk for complications. Underweight patients should be counseled regarding this risk and optimized prior to THA.