The Interaction of Obesity and Metabolic Syndromein Determining Risk of Complication Following Total Joint Arthroplasty

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Introduction: The American arthroplasty population is increasingly co-morbid and current quality improvement initiatives demand accurate risk stratification. This investigation assesses risk of complication following THA and TKA attributable to obesity and metabolic syndrome (MetS) and seeks to identify any interaction between the two variables.

Methods: A retrospective analysis of all Medicare patients undergoing THA and TKA at a single institution between June 2009 and March 2013 investigated the interaction between obesity (BMI > 30), MetS, and risk for complications. MetS was defined as ≥2 of the following: diabetes, hypertension, dyslipidemia, or sleep apnea. Outcomes included CMS- reportable complications (pneumonia, myocardial infarction, death, pulmonary embolism, surgical site infection, surgical site bleeding, catheter-associated urinary track infection, mechanical complication, and readmission), as well as discharge disposition other than home, and length of hospital stay (LOS). Logistic regression models were fit to assess the effect of obesity and MetS on CMS-reportable complications and discharge to other than home; negative binomial regression was used for LOS.

Results: 1308 patients (850 TKA, 458 THA) were included. 382 patients (29.2%) had BMI < 30 without MetS; 334 (25.5%) had BMI < 30 with MetS; 219 (16.7%) had BMI ≥30 without MetS; and 373 (28.5%) had BMI ≥30 with MetS. Demographic and comorbidity data were significantly different between groups. Regression analysis found that MetS was significantly related to risk of CMS-reportable complications regardless of obesity (OR=1.45: 95% CI 1.01 – 2.10, p = 0.045). Obesity was significantly related to discharge disposition other than home (OR=1.5, 95% CI 1.20 – 1.88, p <0.001). There was no interaction evident between obesity and MetS on any outcome (p>0.3).

Conclusion: MetS increases risk for CMS-reportable complications following THA and TKA regardless of obesity status. Obesity is of less value than MetS in assessing overall risk for CMS-reportable complication following THA and TKA.