BMI does not capture the relevant obesity data in primary total joint arthroplasty patients

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INTRODUCTION:

The American Academy of Orthopaedic Surgeons (AAOS) defined the acceptable threshold for elective safe surgery as a BMI under 40 kilograms/meters² (kg/m²) due to the increased risk of complication. A consequence of this recommendation has been a hard cut-off based on BMI which restricts access to care for an increasingly large and diverse population. There is improved understanding that excess adipose tissue confers additional risk for postoperative complication including infection through mechanical and physiologic mechanisms. But it is unclear if BMI is an accurate indicator of adiposity in total joint arthroplasty (TJA) patients, and thus, whether BMI is capturing the clinically relevant information in obese patients. Our objective was to determine the relationship between peri-incisional adiposity (PIA) and BMI in a consecutive series of diverse primary TJA patients.

METHODS: A consecutive series of patients indicate

A consecutive series of patients indicated for primary TJA were preoperatively evaluated. For each patient the following variables were collected: BMI, and measures of peri-incisional adiposity (PIA) on radiograph and ultrasound. RESULTS:

In THA patients (N=84), r=0.435 which indicates a moderate correlation between BMI and adiposity. In TKA patients (N=192), r=0.407 for FPIA which indicates a moderate correlation and r=0.237 for TPIA which indicates a weak correlation between BMI and adiposity measured on radiography. In TKA patients, r=0.560 for FPIA and r=0.541 for TPIA which indicates a moderate correlation between BMI and adiposity measured on ultrasound.

DISCUSSION AND CONCLUSION:

Quantification of obesity has become common practice in preoperative evaluation of primary TJA patients. The intent being to determine the magnitude of adipose tissue which is one of the main drivers of postoperative complication in obesity. BMI is ubiquitously used as a proxy for obesity due to its simplicity of attainment and calculation. We report that BMI has a weak to moderate association with peri-incisional adiposity in TJA patients. These findings indicate that BMI may not accurately represent the state of adipose tissue and thus, is not capturing the relevant obesity data for preoperative risk stratification.







