Temporal Trends in the Rate of Complications and Prolonged Length of Stay Relative to Body Mass Index in Patients Undergoing Total Knee Arthroplasty from 2012 to 2020

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INTRODUCTION:

Elevated body mass index (BMI) is a well-demonstrated risk factor for increased complications following total knee arthroplasty (TKA). As anesthetic and surgical techniques continue to evolve, it is also important to constantly re-evaluate the relationship between BMI and complication risk following TKA.

METHODS:

Patients undergoing primary, elective TKA were identified in a national database from 2012-2020. Rates of major complications, minor complications, and length of stay (LOS) greater than 2 days were calculated using international classification of disease (ICD) coding. The prevalence of each postoperative outcome was calculated per 100 units of BMI (aBMI). To isolate the effect of BMI on postoperative outcomes, changes over time were analyzed using linear regression analysis controlling for age, sex, American Society of Anesthesiology (ASA) classification and smoking status.

RESULTS:

365,333 patients were included. Mean age 67 ± 9.4, BMI 33 ± 6.8. 10,616 (2.9%) of patients had a major postoperative complication, 9,345 (2.6%) of patients had a minor complication, 3,277 (0.9%) had a deep or superficial surgical site infection (SSI). 133,563 (37%) of patients had LOS >2 days. From 2012-2020, the ratio of major complications to aBMI decreased from 0.949 to 0.800 (15% decrease). Similarly, the ratio of patients with LOS >2 days to aBMI decreased from 20.01 to 2.158 (89% decrease). The ratio of SSI to aBMI increased from 0.174 to 0.357 (205% increase). The temporal change in minor complications to aBMI ratio was not significant (0.776 to 0.799). -

DISCUSSION AND CONCLUSION:

From 2012 to 2020, the ratio of major complications and extended LOS following TKA as a function of BMI has decreased significantly, while the ratio of SSI as a function of BMI has doubled. This suggests that BMI is becoming a less important risk factor for major postoperative complications, however, BMI has become an increasingly important risk factor for postoperative infection over time.