Risk Stratification for Acute Deep Infection After Total Joint Arthroplasty by Body Mass Index Category

Kevin Timur Rezzadeh, Caleb Durst[1], Andrew I Spitzer[2], Eytan Debbi, Brad L Penenberg[3], Sean Rajaee[1]
[1]Cedars-Sinai Medical Center, [2]Cedars-Sinai Department of Orthopaedic Surgery, [3]Cedars- Sinai Medical Center

INTRODUCTION:

Obesity is a known risk factor for infection. The purpose of this study is to better understand the association of body mass index (BMI) and acute deep infection within 30 days after elective total joint arthroplasty in an effort to improve risk stratification.

METHODS:

The National Surgical Quality Improvement Program years 2015 through 2019 was used to identify patients that underwent elective total knee arthroplasty or total hip arthroplasty. Body mass index was recategorized into groups: underweight (<18.5), normal weight (18.5-<25), overweight (25-<30), mild obesity (30-<35), moderate obesity (35-<40), and severe obesity (40+). The odds ratio of deep infection (deep surgical site infection or joint space infection) in each BMI classification group relative to the normal BMI group was analyzed.

RESULTS:

There were 495,329 patients included in this study with an overall deep infection rate of 0.4% (1,943/495,329). The odds ratio of infection in each BMI group relative to normal weight BMI patients is as follows: underweight OR: 2.25 (95% CI: 1.36-3.72), overweight OR: 1.14 (95% CI: 0.95-1.39), mild obesity OR: 1.58 (95% CI: 1.31-1.89), moderate obesity OR: 2.12 (95% CI: 1.86-2.56), and severe obesity OR: 3.54 (95% CI: 2.94-4.26). Except for the overweight BMI group (p=0.15), all BMI classification groups had a statistically significant increase in the odds of deep infection after total joint arthroplasty relative to the normal BMI group (p<0.001). Figure 1 shows the incidence of deep infection in the 30-days after total joint arthroplasty amongst differing BMI groups.

DISCUSSION AND CONCLUSION:

There appears to be a significantly increased risk of deep surgical site infection in underweight and obese patients in the 30 days after elective total joint arthroplasty. The risk of deep infection seems to increase with the severity of obesity.

Figure 1. Incidence of Acute Deep Infection by BMI