

Embargoed:
March 12, 2019 at 12:01 am PT

Underweight patients at greatest risk of complications following total shoulder arthroplasty

LAS VEGAS (March 12, 2019)—While studies often identify obesity as a potential risk factor for complications following total shoulder arthroplasty (TSA), few have looked at outcomes for patients who are underweight. A study presented at the 2019 Annual Meeting of the [American Academy of Orthopaedic Surgeons](#) (AAOS) demonstrated that underweight patients actually have a higher risk of adverse events and infection following surgery than any other body mass index (BMI) category, including the morbidly obese.

“Overweight patients are frequently delayed or denied from surgery due to their weight,” said Jonathan Grauer, MD, Professor and Interim Chair, Department of Orthopaedics and Rehabilitation at Yale School of Medicine. “In the past, literature has predominantly stated that overweight patients are at risk of adverse outcomes, however, more recently studies have started to state a more mixed picture. Although there are many studies investigating the effect of obesity on outcomes, underweight patients on the other end of the BMI spectrum are often not considered in these studies and have largely been underrepresented.”

The study, [“Underweight Patients are the Greatest Risk Body Mass Index Group for Perioperative Adverse Events Following Total Shoulder Arthroplasty,”](#) looked at a total of 15,725 patients undergoing elective TSA who were pulled from the National Surgical Quality Improvement Program database. Patients were put into BMI categories according to the World Health Organization: underweight (BMI < 18.5 kg/m²), normal weight (BMI of 18.5 to 24.9 kg/m²), overweight (BMI 25.0 to 29.9 kg/m²), obese (BMI of greater than 30.0 to 39.9 kg/m²), morbidly obese (BMI of greater than 40.0 to 49.9 kg/m²), and super morbidly obese (BMI greater than 50.0 kg/m²).

The study found that underweight patients were more likely to experience a major adverse event such as cardiac arrest or a major infection following total shoulder surgery. Compared to normal weight patients, underweight patients experienced more adverse events within 30 days after surgery—12.07 percent versus 3.82 percent. Underweight patients were also 4.01 more likely to develop postoperative infections, 2.11 times more likely to be readmitted to the hospital within 30 days following surgery and were more likely to need revision surgery.

“As we looked into the literature, we found that previous studies were aggregating the patients in a variety of ways—how they were defining the BMI parameters of obesity and then putting patients into groups such as obese or morbidly obese – and then running the analysis, was all different,” said Taylor Ottesen, a medical student, class of 2020, Yale School of Medicine. “Some studies considered anyone with a BMI of over 35 as obese; however, someone with a BMI of 35 is very different from someone with a BMI of 55, but they are putting them in the same group. We felt these groups needed to be more granular so we decided to take the World Health Organization categories of BMI and then run the analysis based on their striations of multiple tiers of obesity.”

When they ran the analysis this way, super morbidly obese patients were not more likely to experience any adverse event (3.65 percent vs. 3.82 percent), consistent with some of the newer literature. Further, overweight patients actually had the lowest rate of adverse events across all six BMI categories (2.92 percent) which has also been shown in a variety of general surgery papers.

The researchers concluded that, much like patients who have obesity, careful deliberation should be taken when underweight patients are considered for surgery. Additionally, obesity is a scale that should be more carefully assessed when determining this eligibility.

###

[2019 AAOS Annual Meeting Disclosure Statement](#)

[About the AAOS](#)

With more than 39,000 members, the [American Academy of Orthopaedic Surgeons](#) is the world's largest medical association of musculoskeletal specialists. The AAOS is the trusted leader in advancing musculoskeletal health. It provides the highest quality, most comprehensive education to help orthopaedic surgeons and allied health professionals at every career level best treat patients in their daily practices. The AAOS is the source for information on bone and joint conditions, treatments and related musculoskeletal health care issues and it leads the health care discussion on advancing quality.

For more information, contact:

Kayee Ip	847-384-4035	312-543-3211	ip@aaos.org
Lauren P. Riley	847-384-4031	708-227-1773	pearson@aaos.org