

# Weight loss surgery cuts risk of heart complications and death in patients with obstructive sleep apnea and obesity

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A Cleveland Clinic study shows that bariatric surgery performed in patients with obesity and moderate to severe obstructive sleep apnea is

associated with a significantly lower risk of death and major adverse cardiovascular events, compared with patients who did not have the surgery. This study was [published](#) in the *Journal of the American College of Cardiology*.

Ali Aminian, M.D., director of Cleveland Clinic's Bariatric & Metabolic Institute and primary investigator of the MOSAIC study, said, "The research shows that weight loss achieved with bariatric surgery is significantly associated with a 42% lower risk of major adverse cardiovascular events and 37% lower risk of death in patients with obesity and moderate to [severe obstructive sleep apnea](#)."

According to a [study](#) published in *The Lancet Respiratory Medicine*, nearly 1 billion adults around the world have [obstructive sleep apnea](#). One of the most common risk factors for developing this sleep disorder is obesity. The Obesity Medicine Association reports that about 70% of [adult patients](#) with obstructive sleep apnea have obesity.

Patients with obstructive sleep apnea—which can disrupt metabolism and cause more [weight gain](#)—are at an increased risk of developing life-threatening conditions, including [heart attack](#) and heart failure. The Cleveland Clinic-led MOSAIC (Metabolic surgery for OSA and Incident Cardiovascular disease) research is the first of its kind to report data on the long-term cardiovascular outcomes of bariatric surgery in patients with obstructive sleep apnea and obesity.

The observational study included 13,657 adult patients with a [body mass index](#) from 35–70 and the presence of moderate to severe obstructive sleep apnea (diagnosed by a sleep study test) between 2004 and 2018. Baseline clinical characteristics of 970 patients who underwent bariatric surgery were balanced with 12,687 patients in the nonsurgical control group using overlap weighting methods. Follow-up ended in September 2022.

At the end of the study period, results showed that the cumulative incidence of major adverse cardiovascular events at 10 years was 27% in the bariatric surgery group and 35.6% in the nonsurgical group. A major adverse cardiovascular event is defined as the first occurrence of coronary artery events, cerebrovascular events, heart failure, atrial fibrillation, and all-cause mortality. Additional analysis shows that the cumulative incidence of all-cause mortality at 10 years was 9.1% in the bariatric surgery group and 12.5% in the nonsurgical group.

Steven Nissen, M.D., Chief Academic Officer of the Heart, Vascular & Thoracic Institute at Cleveland Clinic and senior author of the study, said, "There are currently no approved drug therapies for obstructive sleep apnea. Before the MOSAIC study, no therapy had been shown to reduce the risk of major adverse cardiovascular events and death in patients with sleep apnea."

At 10 years, patients in the bariatric surgery group had lost 33.2 kg and patients in the nonsurgical control group had lost 6.64 kg. Patients in the bariatric surgery group maintained 25% weight loss for at least up to 10 years following the procedure.

"The current management guidelines of obstructive sleep apnea recommend weight loss and [lifestyle modifications](#)," said Nancy Foldvary-Schaefer, D.O., director of Cleveland Clinic's Sleep Disorders Center. "The MOSAIC study findings support those recommendations. However, rather than focusing on lifestyle modification alone, treating obesity with more effective and durable methods such as bariatric surgery would be required to improve cardiovascular outcomes and survival in patients with obstructive sleep apnea and obesity."

Dr. Aminian added, "In select patients, [bariatric surgery](#) is a lifesaving treatment. The MOSAIC study suggests the presence of a dose-dependent response between the amount of weight loss and

cardiovascular benefits in patients with obstructive sleep [apnea](#); the greater the weight loss, the lower the risk of heart complications. With the emergence of a new generation of [obesity](#) medications that can provide an average weight loss in the range of 15-20%, similar findings are theoretically possible from medical therapies."

**More information:** Adverse Cardiovascular Outcomes in Patients with Obstructive Sleep Apnea and Obesity: Metabolic Surgery versus Usual Care, *Journal of the American College of Cardiology* (2024). [DOI: 10.1016/j.jacc.2024.06.008](#)

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