



Weight-Loss Surgery Yields Long-Term Benefits for Type 2 Diabetes

Bariatric surgery helped people better control their blood glucose years later compared to medical and lifestyle interventions.

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Diabetes affects more than 38 million people nationwide. It occurs when levels of blood sugar, or glucose, are too high. Over time, excess blood glucose can lead to serious health problems, such as heart disease, stroke, nerve damage, and eye disease.

Some people with type 2 diabetes—the most common type—keep blood glucose in check by making lifestyle changes, including diet and exercise. Medications can also help to control blood glucose. Clinical trials over the past few decades have found that bariatric surgery, or weight-control surgery, can also help control type 2 diabetes. But it had been unclear which of these interventions might have better long-term outcomes.

To learn more, NIH-supported researchers at four institutions drew on data collected from four previous clinical trials conducted between May 2007 and August 2013. These trials were single-center studies comparing the effectiveness of bariatric surgeries to medical and lifestyle interventions. The surgeries included sleeve gastrectomy, Roux-en-Y gastric bypass, and adjustable gastric banding. The medical and lifestyle interventions included nutrition counseling, self-monitoring of glucose, and medication to treat diabetes. By pooling data from the four clinical trials, the researchers had a larger, more diverse data set to analyze. Follow-up data was collected 7 to 12 years after the start of the original trials, through July 2022.

In total, 262 study participants agreed to long-term follow-up. All were between ages 18 and 65. Each had overweight or obesity, as measured by body mass index (BMI). Nearly 70% of participants were women, 31% were Black, and 67% were white. More than half (166) were randomized to receive bariatric surgery. The remaining 96 received diabetes medications plus lifestyle interventions known to be effective for weight loss. Results appeared in the [Journal of the American Medical Association](#) on February 27, 2024.

The researchers found that, seven years after the original intervention, 54% of those in the surgery group had an A1c measurement less than 7%. A1c is a blood test that measures a person's average blood sugar levels over the previous two or three months. In contrast, only 27% of those in the medical/lifestyle group had similar A1c values.

In addition, 18% of those in the surgery group no longer had signs or symptoms of diabetes by year seven, compared to 6% in the medical/lifestyle group. The surgery group also had an average weight loss of 20%, compared to 8% in the other group. The differences between groups remained significant at 12 years.

No differences in major side effects were detected. The surgery group did have a higher number of fractures, anemia, low iron, and gastrointestinal events. These might have been due to greater weight loss and associated nutritional deficiencies. Sleeve gastrectomy and Roux-en-Y gastric bypass were both better than adjustable gastric banding at reducing A1c levels.

The surgeries appeared to be beneficial even among those with lower BMI scores, between 27 and 34 at study enrollment. That BMI range includes overweight and low-range obesity. Such people had typically been excluded from receiving bariatric surgery for diabetes. But this finding aligns with other recent data that support the use of surgery for some people with a BMI less than 35.

“These results show that people with overweight or obesity and type 2 diabetes can make long-term improvements in their health and change the trajectory of their diabetes through surgery,” says Dr. Jean Lawrence of NIH’s National Institute of Diabetes and Digestive and Kidney Diseases.

This [research summary](#) was published by the National Institutes of Health on March 26, 2024.