

Study shows long-term effects of bariatric surgery in patients with Type 2 diabetes

19 September 2013

Overweight patients with type 2 diabetes continue to experience the benefits of bariatric surgery up to nine years after the procedure, according to new research from Cleveland Clinic's Bariatric & Metabolic Institute, published online today in the journal, *Annals of Surgery*.

Prior research has shown that bariatric surgery effectively treats diabetes and reduces cardiovascular risk factors, but few studies have reported the long-term metabolic effects of bariatric surgery. This trial shows that obese patients with type 2 diabetes continue to improve or reverse their diabetes, as well as reduce their cardiovascular risk factors, nine years after the procedure.

Cleveland Clinic researchers also identified the factors that result in a higher rate of long-term diabetes remission. Long-term weight loss, a shorter duration of diabetes prior to surgery (less than five years), and undergoing [gastric bypass](#) surgery compared to adjustable gastric banding are the biggest predictors of sustained diabetes remission.

"Uncontrolled diabetes can lead to serious complications such as heart and kidney disease. Only about half of diabetics in the United States currently have acceptable control of their blood glucose level," said lead investigator Stacy Brethauer, M.D., a bariatric surgeon at the Cleveland Clinic Bariatric & Metabolic Institute. "Our study, however, shows that 80 percent of the diabetic patients still control their blood glucose five years after their bariatric surgery. Additionally, nearly one-third of gastric bypass patients had normal blood glucose levels off medication for over five years after surgery. This study confirms that the procedure can offer durable remission of diabetes in some patients and should be considered as an earlier treatment option for patients with uncontrolled diabetes."

Cleveland Clinic researchers have been at the forefront of research in this field. They led the groundbreaking STAMPEDE (Surgical Therapy And Medications Potentially Eradicate Diabetes Efficiently) trial published in *The New England Journal of Medicine* in 2012. The STAMPEDE trial was the first to show that bariatric surgery is more effective than medical therapy in controlling diabetes in obese patients. Additional pioneering research in the field includes a Cleveland Clinic-led substudy of STAMPEDE, published in *Diabetes Care* in 2013, which found that gastric bypass surgery reverses diabetes by uniquely restoring pancreatic function in moderately obese patients with uncontrolled type 2 diabetes.

With the publication of this new trial, Cleveland Clinic researchers further advance the body of research on bariatric surgery as a treatment option for patients with uncontrolled diabetes.

The retrospective study analyzed data on 217 patients with [type 2 diabetes](#) who underwent bariatric surgery between 2004 and 2007 and had at least five years follow-up. The patients were divided into three groups: 162 patients underwent gastric bypass surgery, 32 had the gastric banding procedure done, and 23 underwent sleeve gastrectomy.

Researchers used strict criteria to define glycemic control, including an HbA1c level of less than 6 percent, which is a more aggressive target than the American Diabetes Association (ADA) guidelines. ADA recommends an HbA1c target of 7 percent.

At a median follow-up of six years, data show that diabetes remission occurred in 50 percent of patients after bariatric [surgery](#). Specifically, 24 percent of patients sustained complete remission of their diabetes with a blood sugar level of less than six percent without diabetes medications, and another 26 percent achieved partial remission; 34 percent of all patients improved their long-term

[diabetes](#) control compared to presurgery status. As expected, the patients who received gastric bypass experienced the highest rates of weight loss and diabetic remission.

The study shows significant reductions in the number of diabetic medications used in the long-term follow-up. There was a 50 percent reduction in the number of patients requiring insulin therapy in the long term and a 10-fold increase in the number of patients requiring no medications. In addition, the data show [patients](#) significantly reduced their cardiovascular risk factors according to the Framingham Risk Score. Diabetic nephropathy, characterized by high protein levels in the urine, improved or stabilized as well.

Provided by Cleveland Clinic

APA citation: Study shows long-term effects of bariatric surgery in patients with Type 2 diabetes (2013, September 19) retrieved 25 June 2022 from <https://medicalxpress.com/news/2013-09-long-term-effects-bariatric-surgery-patients.html>

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