How does Bariatric Surgery Impact your Risk of Diabetes?

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Abstract

The global prevalence of diabetes and obesity in adults indicates that it has reached endemic proportions. Obesity is a chronic disease affecting more than 100 million adults. The prevalence of class III obesity BMI 40 has quadrupled, BMI 30 has tripled, and super obesity (extreme obesity of BMI 50) has increased fivefold. The alarming and major concern is the increasing prevalence of obesity in children which is suggesting the endemic is going to get worse. The percentage of diabetes among adults increased from 4.7% in 1980 to 8.5% in 2014.

The estimation of death directly caused by diabetes as reported by the World Health Organization is 1.6 million deaths in 2016. Healthy diet, regular physical activity, and maintaining a normal body weight are crucial ways to prevent or delay the onset of Type 2 diabetes. Weight loss in general, surgically or non-surgically, results in better glycemic control, complete resolution of diabetes, and prevention of diabetes. The weight loss and diabetes control go hand in hand although studies have shown that gastric bypasses help to resolve the diabetes even before weight loss occurs.

The Indications & Effects of Bariatric Surgery on Diabetes Type 2

Bariatric surgery which is now called metabolic surgery is considered a powerful weapon against diabetes and obesity. The Bariatric surgery is not only shrinking the gastrointestinal tract and making you eat less, but it also alters the hormones which regulates energy intake and controls blood sugar. The bariatric surgery alters microbiota which we are now learning has an impact on obesity and weight gain.

According to the latest guidelines by the American Diabetes Association, the bariatric surgery is recommended for T2DM with BMI 40 or more (class III obesity), regardless of the glycemic control. The patient with BMI (35-39.9) class II obesity with inadequate control T2DM despite lifestyle modification and optimal medical therapy. The surgery should also be considered for patients with class I obesity (BMI 30-34.9) and inadequate controlled T2DM despite optimal oral hypoglycemic agent. The studies showed that bariatric surgery affects diabetes in different ways, reducing the dosage of medication, lowering blood sugar, reducing the number of medications required, improving diabetes related complications.

Types of Bariatric Surgeries and their Effects on Type 2 Diabetes

Sleeve Gastrectomy

This is the most common weight loss surgery performed worldwide. 80% of the greater curvature of the stomach is removed vertically. The remaining stomach is narrow and results in significant weight loss and diabetes remission is more than 60%. Sleeve gastrectomy is not only shrinking the stomach but also decreases the hunger hormone (Ghrelin) significantly which is predominantly secreted by the greater curvature of the stomach. Reduction of the hunger hormone reduces appetite and induces weight loss.

Roux-en-Y gastric bypass (RYGB)

This surgery alters the GI tract to cause the food to bypass most of the stomach and the upper portion of the small intestine. The surgery results in significant weight loss and 80% remission of diabetes. The diabetes remission is independent of the weight loss and the blood sugar reduction is noticed immediately after the surgery, secondary to the hormonal changes. There is a significant increase in GLP-1 hormone after a gastric bypass. The GLP-1 produced by the intestines (ileum and colon) has peripheral and central effects. The peripheral effect causes the pancreas to produce more insulin and delayed gastric emptying, therefore it plays a major role in blood sugar control. The central effect stimulates receptors directly in the brain to increase satiety.

Duodenal Switch (DS)

This procedure is less common compared to the other procedures. It is called the malabsorptive procedure where a significant part of intestine is bypassed. The operation has the most weight loss and diabetes remission is more than 85%. The diabetes remission is independent of the weight loss. There is a significant vitamins and minerals deficiency after surgery. Close monitoring postoperatively is crucial in these patients.

Adjustable Gastric Band

This procedure is noninvasive involves the placement of a band around the upper portion of the stomach. This procedure has lost popularity because of its insufficient weight loss and complications. The remission of diabetes depends on the weight loss. The patients who did not lose weight after the procedure their blood sugar will remain

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the same. Expected weight loss is 45-60%. The most common downfalls of this procedure are band slipped, ulceration, and insufficient weight loss.

The Risks and Benefits of Bariatric Surgery in Diabetic patients

The risks of bariatric surgery can be divided into early and late postoperative complications. The most common early complications of bariatric surgeries are bleeding, leak, infections, pulmonary embolism, and death. The late complications involve, vitamins and minerals deficiency, stenosis, anastomotic ulcer, and hernia. Mortality of bariatric surgery depends on many different factors: the surgeon, facility, procedure, and patient related factors. Selection of what type of surgery for specific patients in order to minimize the risk of surgery and to maximize the outcome.

Bariatric surgery carries some risks, but the benefits of the surgery overcome the risks. The risk of death from bariatric surgery is less than 0.3% compared with the risk of death from diabetic complications which is 4.5%. In general, diabetic patients have higher risk for bariatric surgery and any other surgeries compare with nondiabetic patients.

The risk of death of diabetic patients from bariatric surgery is less than 1%, this is an acceptable risk for the huge benefits of minimizing the progression of type 2 diabetes in obese patients.

Performing bariatric surgery earlier in diabetic patients has a better outcome. Many studies have shown that the shorter duration of diabetes, the greater chance of remission. A long standing of poor controlled diabetes results in destruction of beta cells in the pancreas and weight loss improves the response of beta cells to glucose. Early surgical approach in diabetic patients preserves the beta cells in the pancreas and results in better out comes and long-term remission.

Conclusion

Bariatric/metabolic surgery helps to cure and prevent type 2 diabetes, improve overall glycemic control, increase remission of type 2 diabetes, and reduce overall mortality in diabetic patients. Bariatric surgery is currently considered the most effective therapy for morbid obesity with uncontrolled diabetes. The risk of death from bariatric surgery is far less from the risk of death from diabetic complications. Bariatric surgery considers the most effective treatment for T2DM who are affected by obesity and may result in improvement of diabetes by 90% and remission by 78%. The complications of bariatric surgery are significantly reduced by expertise, advanced technology, and periodic postoperative follow ups.

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