What's Magical About the Surgical Management of Obesity?

By Chuck Dinerstein, MD, MBA — August 21, 2020

Obesity remains a significant health problem, especially when it increases one’s susceptibility to COVID-19. While better eating habits and exercise have long been the mainstays of weight reduction, in the last 10-to-15 years surgical rearrangements of the gastrointestinal tract have come to the fore. Not only do they reduce weight, but they’ve improved hypertension and diabetes mellitus. A new study compares surgical and medical management for diabetes.

There are several ways to rearrange the stomach to caused weight reduction. In fact, it was the side-effect or complication of weight loss after removing large portions of the stomach for ulcer disease (now treated with medication) that lead to this surgical approach. While some procedures reduce stomach size, others reroute the contents of the stomach past portions of the small intestine. Many believe that this form of rearrangement named a Roux-en-Y gastric bypass, not only reduces the amount of food an individual could eat without feeling full but how some magical effect on metabolism, further promoting weight loss. The researchers were looking to see if, indeed, there was some metabolic magic to the procedure.
The researchers compared 33 patients with both obesity and type 2 diabetes who had lost about 18% of their pre-treatment weight – 18 by dietary means, 15 through that Roux-en-Y gastric bypass. Nearly half of the patients managed with diet, and a third of the patients undergoing surgery failed to reach the target weight loss and were excluded. This reduction in participants makes the study less powerful statistically and demonstrates how difficult it is to lose the weight that is so quickly gained. This was not a randomized study either, so as always, apply as many grains of salt as you feel necessary.

In the study itself, after achieving target weight loss, participants were fed a standardized meal and blood samples taken over the next nine hours to characterize their metabolic response to glucose. Glucose is metabolized in the liver, muscles, and fatty, adipose tissue. Each has its time course of glucose activity and sensitivity to insulin making aggregate values less than useful. The researchers infused an agent to block circulating insulin to “provide a reliable assessment of hepatic, muscle, and adipose tissue insulin sensitivity across a physiologic range of plasma insulin concentrations.”

Results
- While the surgery was more effective in weight reduction, one patient required a blood transfusion, and another patient required emergency care to break up food impacted in their surgical rebuild. Dieting had no adverse effects.
- There was no significant difference between the groups in the reduction in medication required for glucose control. “Four participants in the diet group and two in the surgery group reached glycated hemoglobin levels lower than 6.0% without diabetes medications.”
- This degree of marked weight loss reduction improves all of the metabolic parameters of glucose metabolism, again, without a significant difference between the two groups.

“Our data showed that weight loss caused considerable improvement in the ability of insulin to suppress both glucose production and lipolysis and to stimulate glucose disposal, with no significant differences between the diet and surgery groups.”

The bottom line, from a treatment perspective, was that significant weight reduction, “by whatever means necessary,” improves or can reverse type 2 diabetes in patients. They found no metabolic alteration associated with surgical reconstruction. From their viewpoint, reducing our body mass improves our health.

Of course, the elephant in the room is that weight loss through “life-style” therapies is just not as successful in getting the weight off as surgical management. (With all due apologies to Weight Watchers and all the other programs out there.) The magic of surgery, in this instance, has to do with compliance, these procedures reduce the amount you can eat without feeling full, and not through some magic metabolic change. In choosing medical treatment, risk-benefit tradeoffs include efficacy and invasiveness; for obesity, a bit of invasiveness is overcome by greater effectiveness.

Source: Effects of Diet versus Gastric Bypass on Metabolic Function in Diabetes NEJM DOI: