A New Look at Bariatric Surgery for People With Type 2 Diabetes

Preface

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Often described as the "twin epidemics," diabetes and obesity continue to be top public health concerns. More than one-third of U.S. adults are considered obese (i.e., have a BMI > 30 kg/m^2), although the increasing rate of obesity has shown some very modest signs of attenuation in recent years.[1] The same cannot be said for diabetes. Although prevalence estimates for 2011 indicate that nearly one in 10 people in the United States have diabetes,[2] it is also predicted that anywhere from one in three to one in five Americans will have diabetes by 2050.[3]

At the same time, bariatric surgery remains the most effective approach to achieving long-term weight loss.[4] As the types of bariatric procedures continue to evolve, more patients and providers are turning to weight loss surgery not only to help in achieving a healthier body weight, but also to improve metabolic parameters.

For years, observational findings have indicated that patients with diabetes who undergo bariatric surgery gain improved diabetes management even before experiencing substantial weight loss. What is becoming more apparent is the difference in improvement of glycemia depending on the procedural choice. This From Research to Practice section provides an update on the state of bariatric surgery, with a particular emphasis on its effects on diabetes-related outcomes.

In our first article (p. 200), Marion L. Vetter, MD, RD, et al. discuss the types of bariatric procedures currently available and look at the efficacy and mechanisms of these procedures with regard to diabetes remission. Importantly, they describe the latest research that compares bariatric surgery to intensive medical management of diabetes.

One of the trials they discuss, the Surgical Therapy and Medications Potentially Eradicate Diabetes Efficiently (STAMPEDE) trial,[5] found promising results for patients who have had type 2 diabetes for some time. STAMPEDE, one of the first studies to compare the sleeve gastrectomy and the gastric bypass to medical therapies, targeted individuals with a BMI of 27–42 kg/m^2 with poorly controlled diabetes as evidenced by an A1C ≥ 9% and a diabetes duration ≥ 9 years.

This is important because previous observations found that patients with a recent diagnosis may be the best candidates and that duration of diabetes, severity of the disease, and patient age all affect diabetes remission.[6,7] In patients with a short duration of diabetes, impressive improvements in glycemia have been observed with less complex surgeries such as the adjustable gastric band (AGB) procedure. Mingrone et al.,[8] in a trial carried out contemporaneously to STAMPEDE, demonstrated that the malabsorptive biliopancreatic diversion procedure results in the most dramatic improvement in glycemia. This suggests that malabsorption of fat may play an additive role in contributing to reduced insulin resistance.

Although their results reflect 1- to 2-year outcomes and more follow-up is needed, these studies help to inform decisions regarding which candidates are the most appropriate for surgical intervention. The National Institutes for Health guidelines for adults indicate that candidates for bariatric surgery must have a BMI > 40 kg/m^2 or a BMI > 35 kg/m^2 with at least one comorbidity (such as diabetes) to qualify for surgery.[4] Recently, the

U.S. Food and Drug Administration also approved the use of the AGB for patients with a BMI ≥ 30 kg/m^2 who also have at least one obesity-related condition (such as diabetes).[9]

Many ongoing studies are examining the effects of bariatric surgery on short- and long-term health outcomes. Cohen et al.[10] recently published outcomes in 66 patients with diabetes, 100% of whom were followed up for 5 years. They demonstrated a dramatic reduction in A1C and diabetes remission, defined as an A1C < 6.5%, in 88% of the patients.

Clearly, surgical interventions in patients with a BMI ≥ 30 kg/m^2 and with type 2 diabetes will have limitations. Proper patient selection is of paramount importance. In our second article (p. 211), Paul S. Bagdade, PhD, LP, and Karen B. Grothe, PhD, ABPP, LP, describe important factors that are likely to influence surgery success and address some common misperceptions about patient selection. They also explore some important post-surgery psychosocial considerations.

As the number and types of bariatric procedures increase, so does our understanding of the body's complex responses to the various procedures. In our third article (p. 217), Ekta Singh, MD, and Adrian Vella, MD, review a fairly recently identified physiological consequence of surgery: severe hypoglycemia. They explain the potential mechanisms behind this phenomenon, the involved process for diagnosing it, and potential treatment options.

Although this phenomenon is rare, it can be quite dramatic clinically. For this reason, hypoglycemia after gastric bypass has received considerable attention.

Therapeutic challenges include demonstrating the etiology of this phenomenon to patients (i.e., showing them that it is related to carbohydrate intake). It is also important to differentiate hypoglycemia after gastric bypass from spontaneous hypoglycemia, which is clearly not related to diet.[11]

An initial observation that this phenomenon resulted from islet cell hyperplasia led to selective resection of the pancreas. However, this strategy is losing momentum.

In our final article (p. 222), Kellene A. Isom, MS, RD, LDN, provides a historical overview of the types of bariatric procedures performed and addresses the evolution of the role of nutrition in these procedures. She highlights the fact that there is no nationally accepted standard for postoperative nutrition guidelines and describes the evidence basis for some of the most common nutrition practices relative to the physiological changes brought on by each type of surgery. Nutrition may arguably be the most discussed bariatric surgery–related topic for patients and providers alike. Therefore, an understanding of current practices and proposed recommendations for a standardized diet is helpful for those who care for patients who have had bariatric surgery.

Chances are, you have seen or will soon see a number of individuals come through your practice who have had bariatric surgery. There will likely be many more to follow. This research section provides important and thought-provoking information about the considerations unique to patients with diabetes both before and after bariatric surgery. We hope you enjoy it.

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