

The Medical Minute: Bariatric surgery and diabetes

September 8 2010, By Ann M. Rogers, Christopher Lynch, and Andras Hajnal

Being overweight is the greatest risk factor for developing type 2 diabetes. With two thirds of the U.S. population now overweight and half of these individuals (one third) meeting the medical definition of obese, the connection between weight and type 2 diabetes is of great medical interest. Studies show that even modest weight losses reduce this risk. Even more interesting has been the discovery that about 85 percent of diabetes patients undergoing bariatric surgery are totally or partially cured of their diabetes, and the "why" is not yet fully understood.

Bariatric surgery is actually a collective label for a group of surgeries performed for the purpose of facilitating [weight reduction](#). There are two basic types of procedures - restrictive and malabsorptive.

A common restrictive procedure is called "gastric banding" and involves a band around the upper part of stomach. The band is designed to prevent large amounts of food from being eaten at any given time. Some bands can be inflated or deflated while in place to be made more or less restrictive. By contrast, a common malabsorptive procedure is called the Roux-en-Y gastric bypass. This surgery changes the plumbing of the [digestive tract](#) to bypass most of the stomach (hence the term "stomach bypass") and a portion of the intestine. Food is only partially digested and bypasses areas of the intestines so that absorption is reduced. However, this procedure is also restrictive in that the stomach bypass also limits the amount of food that the patient can comfortably consume. Another procedure commonly offered is the sleeve

gastrectomy, in which the stomach is made into a narrow tube. Most of the stomach is removed.

The amazing discoveries from [bariatric surgery](#) are twofold. First, patients typically wake up after surgery with significantly reduced feelings of hunger. Second, the impacts on [type 2 diabetes](#) occur within just one to three days after surgery. Because of these unique short-term results, scientists are actively working with patient volunteers to study how the brain and digestive system interact. Understanding how these two systems control eating behaviors holds promise for treatments that could provide the ideal weight loss and diabetes remedies that involve no hunger, no injections, and no surgery.

Research teams at Penn State College of Medicine have been able to study this type of surgery using obese rats. Teams are currently studying the hormones that affect how food tastes and how hungry we feel. They also are studying how our tissues respond to insulin, the hormone that is dysfunctional in diabetes. The effects of all of these hormones are somehow impacted by the surgery in ways that helps us reduce the amount of food we crave and eat, and to reverse diabetes. College of Medicine researchers believe that changes in the path our food takes as it moves along the gut are responsible for the changes in these hormones, since they are released in response to nutrient exposure on the inside of the gut.

For now, however, patients considering bariatric surgeries have to make life-changing decisions. These patients must forever change their eating practices. Even patients personally committed to lifestyle change must consider how to manage social situations where unknowing or unsensitized hosts and family members will serve portion sizes beyond their capacity.

Another question is the safety of bariatric surgeries. The 0.1 percent to

1.0 percent mortality rate is equal or better than most other major surgical procedures; however, it is elective. On the other hand, numerous studies show weight loss reduces risks of developing life-shortening diseases such as diabetes and heart disease. Yet how these data combine to predict the risk for any one individual is beyond the capabilities of even a skilled statistician. Patients considering these surgeries need to ask many questions and discuss it thoroughly with their physicians.

Provided by Pennsylvania State University

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