

# Bariatric Surgery Can Be Beneficial for Nonobese

BY BRUCE JANCIN

GRAPEVINE, TEX. — The next frontier in obesity surgery may be its extension to people who are mildly to moderately obese—or even nonobese—so they, too, can reap the metabolic benefits.

Several studies presented at the annual meeting of the American Society for Metabolic and Bariatric Surgery called into question current National Institutes of Health (NIH) guidelines recommending bariatric surgery only for patients with a body mass index greater than 40 kg/m<sup>2</sup> or those with a BMI greater than 35 with type 2 diabetes or other obesity-related comorbidities. Those guidelines serve as the basis for insurance coverage decisions. But the new studies consistently showed marked benefits of obesity surgery in patients who don't fall within the NIH guidelines, including the potential for reversing type 2 diabetes.

One such study is an ongoing prospective observational study that, to date, includes 66 patients who had laparoscopic adjustable gastric banding (LAGB). The patients enrolled in the study had either a BMI of 30-35 and comorbidities or a BMI of 35-40 with no comorbidities. The control group consisted of 475 LAGB patients who met the NIH bariatric surgery criteria, said Dr. Jenny J. Choi of Columbia University Medical Center, New York.

At 18 months' follow-up, the NIH non-qualifiers had an average 42% excess weight loss, the same as those in the control group. Although the low-BMI cohort had fewer baseline comorbidities than did controls, those with diabetes, hypertension, gastroesophageal reflux disease, obstructive sleep apnea, hyperlipidemia, stress incontinence, or depression saw improvement in their comorbidities to an extent

similar to that of the more obese controls. Indeed, only arthritis was less likely to show significant improvement in the low-BMI group than in controls, she said.

The 6% complication rate in the low-BMI cohort consisted mainly of band slippage or erosion. LAGB is an attractive bariatric procedure for patients with mild to moderate obesity, because even though it results in less weight loss than does gastric bypass, it has substantially less morbidity, Dr. Choi explained.



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DR. CHOI

Dr. Choi noted that hers is not the first study to show that LAGB has significant benefits in patients too thin to qualify for bariatric surgery under the NIH guidelines, which date back to 1991.

For example, a landmark randomized trial by researchers at Monash University, Melbourne, involving 80 patients with a BMI of 30-35 showed an 87% excess weight loss at 2-years' follow-up in the LAGB group, compared with 22% in patients assigned to intensive medical management. The prevalence of the metabolic syndrome—38% at baseline in both study arms—dropped to 3% at 2 years in the LAGB group, versus 24% in the intensive medical management group. Significant quality of life improvements at 2 years were documented in all eight domains of the Short Form-36 for LAGB-treated patients but in only three domains

for the nonsurgically managed group (Ann. Intern. Med. 2006;144:625-33).

Researchers at New York University recently reported that LAGB in 53 patients with a mean preoperative BMI of 33.1 dropped their BMI to 25.8 at 2 years' follow-up, with a mean 70% excess weight loss. Of the 53 patients, 49 had at least one baseline obesity-related comorbid condition; substantial improvement was seen in their diabetes, hypertension, asthma, osteoarthritis, hyperlipidemia, obstructive sleep apnea, and depression (Surg. Endosc. 2009;23:1569-73).

A small, randomized Brazilian trial presented at the bariatric surgery meeting showed that two versions of laparoscopic ileal interposition and sleeve gastrectomy had similarly substantial weight-loss and metabolic benefits. Dr. Aureo L. De Paula of Albert Einstein Hospital in São Paulo reported on 38 nonobese type 2 diabetic patients with a mean baseline BMI of 28.5. They were randomized to laparoscopic surgery in which a 170-cm segment of ileum was transposed to the proximal jejunum in conjunction with a sleeve gastrectomy, or to having the same segment of ileum interposed to the proximal duodenum.

The study hypothesis was that the latter procedure, involving both foregut and distal gut mechanisms, would show greater benefit. And although there was a trend in that direction, it did not achieve significance in this small study. Indeed, both procedures proved dramatically effective in reversing diabetes.

For example, in the group as a whole, mean glycosylated hemoglobin (HbA<sub>1c</sub>) dropped from 8.5% preoperatively to 5.9% at 26 months' follow-up; 35 patients had an HbA<sub>1c</sub> below 7%, and 35 permanently discontinued all antidiabetic med-

ications. Mean fasting blood glucose went from 207 to 114 mg/dL, postprandial blood glucose fell from 250 to 140 mg/dL, and mean BMI dropped by 5.

Session cochair Dr. Michel Gagner of Mount Sinai Medical Center, Miami Beach, commented that this is "fairly complex" surgery, especially the version involving diversion of the second portion of the duodenum. Why not just study gastric bypass—the most widely performed bariatric operation—in nonobese patients with type 2 diabetes? he asked.

Dr. De Paula replied that he has found gastric bypass to be less effective in reversing type 2 diabetes than the laparoscopic ileal interposition he and his colleagues have developed.

Dr. Nicola Scoparino presented preliminary evidence that another bariatric procedure that's not widely done at present—biliopancreatic diversion—is effective in resolving type 2 diabetes in patients with a BMI of 25-35. Thirty such patients with a mean BMI of 30.6 underwent biliopancreatic diversion, 14 laparoscopically. At a follow-up of 1 year, mean HbA<sub>1c</sub> dropped from 9.3% preoperatively to 6.3%, while fasting blood glucose fell from 220 to 136 mg/dL. Most patients were off all diabetes medications.

Outcomes tended to be better in patients with a baseline BMI of 30-35 than in those in the 25-30 class, which is consistent with the notion that when type 2 diabetes manifests in lower-BMI individuals it indicates more severe pancreatic dysfunction, said Dr. Scoparino, professor of surgery at the University of Genoa (Italy).

He disclosed serving as a consultant to Ethicon Endo-Surgery Inc. and GI Dynamics Inc. Dr. De Paula disclosed that his study was partially funded by Covidien. ■

## About Half of Diabetes in Remission 5 Years After Surgery

BY BRUCE JANCIN

GRAPEVINE, TEX. — Greater initial weight loss following surgery and the ability to keep much of that excess weight off over time distinguished patients who achieved long-term remission of their type 2 diabetes after bariatric surgery.

Severely obese patients with type 2 diabetes had a 40% remission rate at 5 years after laparoscopic adjustable gastric banding (LAGB), in one large retrospective study presented at the annual meeting of the American Society for Metabolic and Bariatric Surgery. In a second study, those who had gastric bypass surgery maintained a 57% diabetes remission rate at a median of 8.6 years.

Samuel Sultan reported on 95 type 2 diabetic patients who underwent LAGB. They went from a mean preoperative body mass index of 46.3 kg/m<sup>2</sup> to a mean BMI of 35.0 at 5 years, with a resultant mean 48% excess weight loss.

At 5 years' follow-up, 40% of patients were off all diabetes medications and had a hemoglobin A<sub>1c</sub> level below 6.0% or a fasting blood glucose below 100 mg/dL. In 80% of patients, diabetes was either in remission or improved as defined by reduced need for diabetes medications and fasting blood glucose of 100-125 mg/dL, said Mr. Sultan, a medical student at New York University.

The 5-year excess weight loss in the group with long-term diabetes remission was 57%, compared with 38% in those with recurrence. There was a trend toward a higher remission rate in patients whose presurgical duration of diabetes was shorter: The remission group had a mean 4.7-year history of diabetes, whereas those not in remission had a mean 7.3-year history. Viewed another way, the 5-year remission rate in patients with less than a 7-year history of type 2 diabetes was 44%, compared with 27% in those with diabetes for more than 7 years.

Mean fasting blood glucose in the overall study population was 146 mg/dL preoperatively and 118.5 mg/dL at 5 years. Mean HbA<sub>1c</sub> was 7.5% before LAGB and 6.6% after 5 years.

In a separate presentation, Dr. Silas M. Chikunguwo reported on 177 patients with type 2 diabetes who underwent open or laparoscopic gastric bypass for morbid obesity and were followed for a mean of 8.6 years. Their mean BMI went from 50 to 31.

Postoperatively, 89% of patients had complete remission of their diabetes. The remission proved durable in 57%, said Dr. Chikunguwo of Virginia Commonwealth University, Richmond.

One predictor of durable remission was less severe preoperative diabetes: The recurrence rate was 72% in patients on preoperative insulin, 34% in those on oral

agents, and 24% in those on dietary control alone.

These studies are consistent with the results of a landmark recent systematic review and meta-analysis that included 621 studies involving more than 135,000 morbidly obese patients, 22% of them with type 2 diabetes, who underwent various forms of bariatric surgery. Complete resolution of the clinical and laboratory manifestations of diabetes was experienced in the first 2 years postsurgery by 82% of patients, dropping off to a 62% after 2 years (Am. J. Med. 2009;122:248-56.e5).

Diabetes can go into remission within days after bariatric surgery, before major weight loss has occurred, so surgically induced changes in the gut hormonal milieu may be involved.

How long these remissions will last remains unclear, but recurrence of type 2 diabetes shouldn't be misconstrued as indicating that a patient's bariatric surgery wasn't beneficial, according to Dr. Richard A. Perugini of the University of Massachusetts, Worcester.

"If you can keep someone off medications with good glycemic control for 5 years and then they have to go back on medications, we've still done a great service to that particular person and to the system," he said.

Dr. Chikunguwo and Mr. Sultan reported having no conflicts of interest, but Mr. Sultan noted that his coinvestigators serve as consultants to Allergan, marketer of the LAP-BAND system. ■