

Bariatric Surgery Cuts Type 2 Diabetes in Obese

BY MIRIAM E. TUCKER
IMNG Medical News

Bariatric surgery reduced the incidence of type 2 diabetes by 78% compared with usual care at 15 years in a prospective, case-matched study of more than 3,000 obese adults.

This significant risk reduction was seen with all types of bariatric surgery and regardless of baseline body mass index. And, it occurred despite the fact that the

matching process unexpectedly resulted in the bariatric surgery group having a higher mean body weight and more severe risks at baseline than the controls.

The impact of bariatric surgery was even greater, with an 87% risk reduction, for those with impaired fasting glucose, said Dr. Lena M.S. Carlsson of the Sahlgrenska Academy at the University of Gothenburg, Sweden, and her associates (N. Engl. J. Med. 2012;367:695-704). "Our data indicate that bariatric surgery

has a preventive effect on incident type 2 diabetes, particularly in participants with impaired fasting glucose. In contrast, baseline BMI did not influence the preventive effect of bariatric surgery on type 2 diabetes, implying that anthropometric data are not useful in the selection of candidates for bariatric surgery, whereas data on impaired fasting glucose may be helpful," the authors wrote.

The finding comes from the Swedish Obese Subjects (SOS) trial, which includ-

ed 1,658 patients who chose to undergo bariatric surgery and 1,771 matched controls. All patients in both groups entered the study with the intention of losing weight. None had diabetes at baseline.

In the bariatric surgery group, the types of procedures were banding in 311, vertical banded gastroplasty in 1,140, and gastric bypass in 207. Patients in the control group received the customary treatment for obesity at their primary health care centers, which in Sweden ranges from advanced lifestyle modification – including recommendations regarding eating behavior, food selection, energy intake, and physical activity – to no treatment. About half (54%) of the controls reported receiving professional guidance in attempts to lose weight.

There were several significant differences between groups at baseline. The bariatric surgery group weighed an average of 6 kg more than did the controls, and had a greater mean BMI (42.4 vs. 40.2 kg/m²). They also had higher mean blood pressures and total cholesterol and triglyceride levels, and were more likely to smoke and to be less active.

BARIATRIC SURGERY HAD A PREVENTIVE EFFECT, PARTICULARLY IN PARTICIPANTS WITH IMPAIRED FASTING GLUCOSE.

After adjustment for follow-up of less than 15 years and for death, the 15-year participation rate was 54%. At 15 years, the bariatric surgery group had lost 31 kg after 1 year, but then regained weight, so the average loss at 10 and 15 years was about 20 kg. The control group never lost or gained more than 3 kg over the entire study period, regardless of whether they had professional help.

During the follow-up, type 2 diabetes developed in 110 of the bariatric surgery patients and in 392 controls, corresponding to incidence rates of 6.8 and 28.4 cases per 1,000 person-years, respectively. The unadjusted hazard ratio was 0.22, which dropped to 0.17 following multivariate adjustments. Aside from treatment group, other strong univariate predictors of diabetes outcome were baseline blood glucose and the presence or absence of impaired fasting glucose, Dr. Carlsson and her associates reported.

In a sensitivity analysis performed to account for the low participation rate, the impact of treatment on the incidence of type 2 diabetes was at least as strong after 2 years and 10 years of follow-up as after 15 years. All types of bariatric surgery were associated with a reduced incidence of diabetes, with no significant differences among them. There were also no differences by receipt of professional weight-loss assistance, or by BMI at baseline, the investigators noted.

A total of 3 patients (0.2%) died within 90 days of surgery, and 245 patients in

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Bariatric Surgery Most Common Elective Procedure

BY DOUG BRUNK
IMNG Medical News

SAN DIEGO – Within the setting of academic medical centers, bariatric surgery is the most common elective general surgical operation and it has the highest use of laparoscopy.

In addition, the in-hospital mortality rate of laparoscopic bariatric surgery is now comparable to those of laparoscopic appendectomy and antireflux surgery, and is currently lower than that of laparoscopic cholecystectomy.

Those are main findings from an analysis of data from the University HealthSystem Consortium database, which contains data from 114 academic centers and 250 major teaching affiliates in the United States.

"Laparoscopy has revolutionized the performance of most intra-abdominal operations [and] is now widely utilized in many different types of general surgical operations," Brian Nguyen, a research student at the University of California, Irvine, said at the annual meeting of the American Society for Metabolic and Bariatric Surgery.

He and his associates searched the University HealthSystem database to determine the rate of laparoscopy use in seven common elective general surgical

operations performed between Oct. 1, 2008, and March 31, 2012: antireflux surgery for gastroesophageal reflux disease (GERD) or hiatal hernia, cholecystectomy for chronic cholecystitis, bariatric surgery for morbid obesity, ventral hernia repair for incisional hernia, appendectomy for acute appendicitis, rectal resection for rectal cancer, and colectomy for colon cancer or diverticulitis. Secondary objectives were to determine the rate of conversion to open surgery, length of stay, overall complications, and in-hospital mortality.

The most common elective surgical procedure performed during the study period was bariatric surgery (53,958 cases), followed by colectomy (29,934 cases), ventral hernia repair (17,749 cases), antireflux surgery (13,918 cases), appendectomy (8,654 cases), cholecystectomy (8,512 cases), and rectal resection (4,729). Bariatric surgery also led the way with the highest rate of laparoscopy use (94%), followed by antireflux surgery (83%), appendectomy (79%), cholecystectomy (77%), colectomy (52%), ventral hernia repair (28%), and rectal resection (18%).

As for perioperative outcomes (see table), Mr. Nguyen reported that patients who underwent bariatric surgery had the lowest conversion rate to open

procedures (0.89%). The overall complication rate of 2.2% and the in-hospital mortality rate of 0.06% associated with bariatric surgery were lower only in appendectomy, which had rates of 0.8% and 0.01%, respectively. The mean length of stay for bariatric surgery patients was 2.26 days, which was higher than that for appendectomy and cholecystectomy pa-

tients (a mean of 1.66 and 2.03 days, respectively), but lower than that for antireflux surgery (a mean of 2.80 days).

Mr. Nguyen acknowledged that the study was limited by the fact that it represented only inpatients at academic medical centers and affiliated hospitals.

He said he had no relevant financial conflicts to disclose.

Perioperative Outcomes of Common Elective Procedures

Operation	Conversion rate	Length of stay* (days)	Overall complications*	In-hospital mortality*
Bariatric surgery (n = 53,958)	0.89%	2.26	2.2%	0.06%
Appendectomy (n = 8,654)	2.35%	1.66	0.8%	0.01%
Antireflux surgery (n = 13,918)	2.66%	2.80	4.1%	0.15%
Ventral hernia repair (n = 17,749)	6.55%	3.05	2.6%	0.20%
Colectomy (n = 29,934)	13.5%	5.34	6.4%	0.38%
Cholecystectomy (n = 8,512)	14.6%	2.03	3.6%	0.27%
Rectal resection (n = 4,729)	16.4%	7.04	10.0%	0.58%

*Outcome of laparoscopic operations.
Note: Based on an analysis of the University HealthSystem Consortium database.
Source: Mr. Nguyen

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the surgery group (15%) reported at least one complication. Of those, 46 (2.8%) were serious enough to require a reoperation.

The risk reduction seen among those with impaired fasting glucose was at least twice as large as the risk reduction achieved with lifestyle interventions in large, long-term trials of moderately obese people with prediabetes (Lancet 2006;368:1673-9, Lancet 2009;374:1677-86, and Lancet 2008;371:1783-9), the investigators noted.

The ongoing SOS study is supported by

grants from the Swedish Research Council, the Swedish Foundation for Strategic Research to the Sahlgrenska Center for Cardiovascular and Metabolic Research, the Swedish federal government, the VINNOVA-VINNMER program, and the Wenner-Gren Foundations. The SOS study has previously been supported by grants to one of the authors from Hoffmann-La Roche, AstraZeneca, and other companies. Dr. Carlsson reported receiving consulting fees from AstraZeneca and owning stock in Sahltch. Other coinvestigators also had financial disclosures.

PERSPECTIVE

The long-term findings of the SOS study are both provocative and exciting, especially the findings suggesting that bariatric surgery may prevent the conversion of abnormalities in glucose metabolism to frank diabetes.

The findings of previous studies, showing that bariatric surgery can have a prolonged, positive effect on blood sugar beyond that attainable with medication, have led to speculation about whether surgery might be considered earlier in the course of disease in patients with adult-onset diabetes.

However, it remains impractical and unjustified to contemplate the performance of bariatric surgery in the millions of eligible obese adults. And to be certain, the authors do not suggest such an approach. Rather, the current study should provide an impetus to develop a more comprehensive understanding of the mechanisms by which various bariatric procedures exert beneficial effects. Such under-

standing will be important because it will enable the identification of individuals who are the most appropriate candidates for surgery.

The cause of type 2 diabetes is multifactorial, and this long-term study shows that surgery did not prevent the development of diabetes in all patients. Furthermore, it is possible that interventions that are even less invasive may accomplish the very desirable goal of decreasing the incidence of type 2 diabetes and its attendant complications.

DR. DANNY O. JACOBS is chair of surgery at the Duke University School of Medicine, Durham, N.C. These remarks were taken from his editorial accompanying Dr. Carlson's report (N. Engl. J. Med. 2012;367:764-5). Dr. Jacobs has consulting, research, and/or educational services working relationships with Ethicon, Surgisphere, and other companies.

Risks Keyed to Outcomes After Colorectal Surgery

BY HEIDI SPLETE
IMNG Medical News

Operating room time, body mass index, and the surgeon performing the procedure were the top three factors affecting readmission rates, transfusion rates, and surgical site infections after colorectal surgery in a single-center prospective study of more than 3,000 patients.

Many previous studies have addressed risk factors and surgical outcomes, but "little is known about the relative contribution of various risk factors to specific outcomes," said Elena Manilich, Ph.D., of the Cleveland Clinic.

Dr. Manilich presented the findings at the annual meeting of the American Society of Colon and Rectal Surgeons.

She and her colleagues analyzed outcomes from 3,552 patients who underwent colorectal surgery. Their average age at the time of surgery was 51 years, and approximately half were women. Cancer was the most common indication for surgery (16%).

Complications were defined as outcomes that occurred prior to hospital discharge or within 30 days of the initial surgery.

Overall, the increased length of surgery was significantly associated

with greater complication rates, Dr. Manilich said. In particular, the adjusted odds ratios for procedures lasting more than 200 minutes vs. those lasting less than 200 minutes were 2.79 for transfusion, 2.11 for surgical site infection and abscess, and 2.09 for wound infection.

Surgeons who performed fewer than 20 procedures were significant predictors of surgical site infections, abscesses, reoperation, and anastomotic leaks in their patients, Dr. Manilich said.

Increased patient body mass index was independently associated with wound infection, surgical site infection, and portal and deep vein thrombosis, she added.

In addition, a patient age older than 75 years was independently associated with transfusion and reoperation.

The findings were limited by the use of data from a single hospital and by the inability to adjust for patient histories (such as prior abdominal procedures) that might have affected the outcomes, Dr. Manilich said.

"An understanding of these results may be useful to colorectal surgeons who are making an effort to understand and improve their surgical outcomes," she said.

Dr. Manilich had no financial conflicts to disclose.