Obesity-related comorbidities are numerous and involve virtually every bodily system: cardiovascular, pulmonary, hematopoietic, endocrine, gastrointestinal, genitourinary, gynecologic, musculoskeletal and urticaria (see table). Without significant weight loss to correct the underlying biochemical abnormalities, patient and physician become engaged in a difficult, costly and frustrating cycle. Bariatric surgery is now proven to resolve, or dramatically improve, these comorbidities. In fact, bariatric surgery simultaneously treats more disease conditions than does any other single medical or surgical treatment.

At Cleveland Clinic we currently perform laparoscopic Roux-en-Y gastric bypass (LRNY) in 75 percent of our bariatric patients and laparoscopic adjustable gastric banding (LAGB) in the remainder. We tailor the choice of procedure to the patient based on his or her preference and expectations, body mass index (BMI), comorbidities, and willingness and ability to comply with the specific post-surgical dietary, medical and nutritional regimens. We found the risk to benefit ratio for these procedures to be favorable for most bariatric patients. We have experienced excellent success with both procedures not only in weight loss, but also in the improvement of obesity-related comorbidities. Both of these have contributed to LRNY and LAGB becoming our procedures of choice.

Weight loss is the main criteria for success after bariatric surgery, although not the only one. Weight loss is typically expressed as the percentage of excess weight loss (EWL). Excess weight is defined as the number of pounds above the patient’s ideal body weight. In one meta-analysis, EWL for 20 surgical group, respectively: cardiovascular disease (4.7 percent vs. 37.3 percent; 77 percent relative risk reduction), endocrine (9.5 percent vs. 27.3 percent; 65 percent relative risk reduction), musculoskeletal (4.8 percent vs. 11.9 percent; 59 percent risk reduction), and respiratory disorders (2.7 percent vs. 11.4 percent; 76 percent risk reduction).

Cardiovascular
- Coronary artery disease
- Congestive heart failure
- Hypertension
- Left ventricular hypertrophy
- Venous stasis ulcers/thrombophlebitis
- Hyperlipidemia

Pulmonary
- Obstructive sleep apnea
- Obstructive hyperventilation syndrome
- Pulmonary hypertension
- Asthma

Endocrine
- Insulin resistance
- Type 2 diabetes
- Polycystic ovarian syndrome

Hematopoietic
- Deep venous thrombosis
- Pulmonary embolism

Gastrointestinal/Hepatobiliary
- Gastroesophageal reflux disease
- Hernia
- Non-alcoholic fatty liver disease
- Gallstones

Genitourinary
- Stress urinary incontinence
- Urinary tract infections

Obstetric/Gynecologic
- Infertility
- Miscarriage
- Fetal abnormalities and infant mortality
- Gestational diabetes

Musculoskeletal
- Degenerative joint disease
- Gout
- Plantar fasciitis
- Carpal tunnel syndrome

Neurologic/Psychiatric
- Stroke
- Pseudotumor cerebi
- Depression
- Anxiety

“Bariatric surgery simultaneously treats more disease conditions than does any other single medical or surgical treatment.”

Buchwald’s meta-analysis showed dramatic results for diabetes (improved or resolved in 86 percent of patients), hyperlipidemia (improved in 70 percent), hypertension (improved or resolved in 78.5 percent), and obstructive sleep apnea (improved or resolved in 83.6 percent of patients).7 Diabetes outcomes varied with operative procedure, however. Patients who underwent BPD had the highest success rate (99 percent) and those who underwent gastric banding, the lowest (48 percent). BPD and gastric bypass were the most effective techniques for improving hyperlipidemia, with 99 percent and 97 percent post-operative resolution, respectively.8

In a study that compared pre- and post-operative liver biopsies, bariatric surgery was associated with significant improvement in liver steatosis, inflammation and fibrosis.9 As an additional benefit, bariatric surgery reversed the metabolic syndrome in 80 percent of these patients.

“Bariatric surgery simultaneously treats more disease conditions than does any other single medical or surgical treatment.”

LAGB likewise results in resolution of comorbidities such as hypercholesterolemia, gastroesophageal reflux disease (GERD) and sleep apnea at rates comparable to those seen with LRNY (75 percent to 94 percent). LAGB resolution rates also are favorable for diabetes (54 percent to 64 percent) and hypertension (55 percent).10,11 As might be expected from these reductions in serious comorbidities, bariatric surgery has similar dramatic effects on life expectancy. Flum and his colleagues found a 27 percent reduction in 15-year mortality in morbidly obese patients who underwent gastric bypass versus those who did not. After the surgical patients reached their first post-operative year, the long-term survival advantage increased to 53 percent.12

Aside from the cost in terms of human pain, suffering and illness, morbid obesity is associated with high economic costs. Most of these are related to the ongoing management of chronic comorbidities such as diabetes, hypertension and cardiovascular disease. The Centers for Disease Control estimates these costs to be nearly $120 billion a year.

One measure of reductions in direct costs achieved by bariatric surgery is a comparison of costs for medications to treat hypertension and diabetes before and after surgery. Sampalis and his colleagues calculated a savings of as much as 77 percent post-operatively.13 Snow et al. found that after LRNY, the savings in drug costs equaled the cost of surgery at 32 months post-operative.14 Sampalis also demonstrated that the cost of bariatric surgery is offset by a reduction in total healthcare costs in three and a half years, and by five years, there is a nearly

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by Philip Schauer, MD and Bipan Chand, MD
Reducing Obesity-Related Comorbidities through Bariatric Surgery

30 percent reduction in healthcare costs for patients who undergo bariatric surgery. Bariatric surgery currently is the only effective method we have to achieve long-term weight loss in severely obese patients. In appropriately selected patients, the result is long-term improvement in all obesity-related comorbidities, extended life expectancy and meaningful reduction in healthcare costs.

References

Dr. Philip Schauer is the Director of Advanced Laparoscopic and Bariatric Surgery at Cleveland Clinic. In addition to bariatric surgery, his specialty interests include laparoscopic surgery, gastrointestinal surgery and colon surgery. His areas of research interest include the effect of bariatric surgery on comorbidities, pathophysiology of obesity and diabetes, physiologic effects of laparoscopic surgery on post-operative injury and recovery, and the development of new minimally invasive endoscopic and laparoscopic operations. A frequent national and international lecturer, Dr. Schauer also has published scores of articles on topics relating to laparoscopic surgery, and his first textbook on this subject will be published this year.

Dr. Bipan Chand has particular clinical interests in advanced laparoscopy concerning the foregut, bariatric, gastric, solid organ and hernia repairs, and he has developed the surgical field for transgastric surgery. His other clinical areas of interest include upper endoscopy, colonoscopy, and liver and pancreatic duct imaging. Dr. Chand completed both an advanced endoscopy and laparoscopy fellowship at Cleveland Clinic, and he has published numerous papers on the topics in peer-reviewed journals.

The Cleveland Clinic Bariatric and Metabolic Institute has been designated a Bariatric Surgery Center of Excellence by the American Society for Bariatric Surgery.

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