

# Bariatric Surgery Mortality Risk Score Developed

BY BRUCE JANCIN  
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COLORADO SPRINGS — Development of the first validated risk scoring system in bariatric surgery is anticipated to bring some much-needed accountability to the field, according to speakers at the annual meeting of the American Surgical Association.

The Obesity Surgery Mortality Risk Score (OS-MRS) is an easy-to-use system that effectively stratified risk in its validation study of 4,431 consecutive bariatric surgery patients at four university medical centers, announced Dr. Eric J. DeMaria of Duke University, Durham, N.C.

Use of the OS-MRS will provide for a more complete and individualized informed consent process; assist insurance companies and centers-of-excellence programs in their surgeon credentialing efforts; and encourage development of testable surgical risk reduction strategies, he said.

Dr. DeMaria and coworkers developed the OS-MRS while he was at the Medical College of Virginia, Richmond, by analyzing prospectively collected data on 2,075

consecutive patients undergoing gastric bypass surgery. Using multivariate analysis, they identified five independent predictors of 90-day mortality: a body mass index of 50 kg/m<sup>2</sup> or greater, male gender, hypertension, age of at least 45 years, and increased pulmonary embolism risk as indicated by prior thrombosis or pulmonary embolus, right heart failure, obesity hypoventilation, or use of an inferior vena cava filter (Surg. Obes. Relat. Dis. 2007;3:134-40). Diabetes wasn't an independent predictor of mortality.

The investigators assigned one point to each of the five preoperative risk factors. Patients with a score of 0-1 were rated class A, lowest risk. A score of 2-3 earned a class B ranking, while 4-5 points conferred class C, high risk.

Ninety-day mortality in the validation study was 0.7%. A total of 25 of the deaths occurred within 30 days after surgery. Pulmonary embolism was the No. 1 cause of



mortality, accounting for 10 of the 33 postoperative deaths.

Mortality in the 2,166 patients who were class A by the OS-MRS was 0.2%, compared with 1.2% in the 2,140 class B patients and 2.4% in the 125 class C patients. Each of these differences was statistically significant.

A preoperative BMI of at least 50 kg/m<sup>2</sup> was the strongest mortality predictor in the single-center study, with an odds ratio of 3.6. This raises the hypothesis that preoperative weight loss might markedly reduce postoperative mortality.

Discussant Dr. Michael G. Sarr said bariatric surgery has been criticized in the press—"and potentially rightfully so"—because of its lack of accountability.

"The lack of a valid and predictive risk adjustment score has hampered the interpretation of outcomes in bariatric surgery tremendously over the last decade," added Dr. Sarr, professor of surgery and chair of

the division of general and GI surgery at the Mayo Clinic, Rochester, Minn.

Like others in the audience, he said the OS-MRS might have even greater predictive strength if it incorporated weighted scoring of the risk factors. Also, he continued, he'd like a scoring system that predicted major morbidity, not just mortality.

Dr. DeMaria said he deliberately steered clear of weighted scoring for the OS-MRS. "It's a clinically useful scoring system primarily due to its simplicity. It's so simple that it can allow bedside use and therefore may have utility along the lines of the Child-Pugh classification, which is still used by many surgeons when looking at liver disease today."

A risk score that also predicts postop major morbidity is in the works, he added. Dr. DeMaria will soon gain access to the American College of Surgeons' National Surgical Quality Improvement Program database, which might identify new variables that completely redefine risk stratification in bariatric surgery.

All papers presented at the 127th annual meeting of the ASA are subsequently submitted to the Annals of Surgery for consideration. ■

## Gastric Bypass Risk Factors Delineated

BY DOUG BRUNK  
San Diego Bureau

LAS VEGAS — Being male and having a higher than normal preoperative hemoglobin A<sub>1c</sub> level were significantly associated with having a major complication following Roux-en-Y gastric bypass surgery, results from an ongoing single-center study showed.

However, the rate of overall complications at 1 year was 15%, which is lower than the 20%-25% that has been reported in the medical literature, Dr. D. Brandon Williams said during a poster session at the annual meeting of the Society of American Gastrointestinal and Endoscopic Surgeons.

"In centers where we have a high volume—we do over 400 of these operations a year—the complication rate is very low, especially the rate of major complications," said Dr. Williams, of the department of surgery at Stanford (Calif.) University.

Between June 5, 2000, and December 5, 2006, 613 patients with a mean age of 43 years and a mean body mass index of 47 kg/m<sup>2</sup> underwent Roux-en-Y gastric bypass surgery at the medical center. In an effort to identify predictors of complications, Dr. Williams and his associates reviewed the medical records for preoperative comorbidities and complications at 12 months postoperatively.

Major complications were defined as anastomotic leak, bleeding, deep vein thrombosis (DVT)/pulmonary embolism (PE), bowel obstruction, myocardial infarction (MI), cerebrovascular accident (CVA), intra-abdominal abscess, and pneumonia. Minor complications were defined as micronutrient deficiency, arrhythmia, wound infection/dehiscence/hernia, and ulcers/strictures.

Dr. Williams reported that 92 patients (15%) ex-

perienced 133 complications. Of those, 60 patients had minor complications, and 32 had major complications.

The most common complications included bleeding (28), ulcers/strictures (23), vitamin/nutrient deficiency (15), anastomotic leak (12), bowel obstruction (12), wound infection (11), pneumonia (10), DVT/PE (9), abscess (5), MI (3), arrhythmia (3), and CVA (2). None of the patients died.

Univariate analysis revealed that patients with minor complications were generally older than those with major complications (a mean of 47 vs. 41 years, respectively).

Multivariate analysis revealed that significant predictors of having a major versus a minor complication were being male (odds ratio [OR] 2.1) and having a preoperative hemoglobin A<sub>1c</sub> level that was higher than the normal HbA<sub>1c</sub> level (OR 0.8).

"We actually expected more [factors] would be predictors of complications," Dr. Williams said. "But there are a couple of things that you can use to counsel your patients preoperatively: They might be more likely to have problems if they have uncontrolled diabetes and if they're male."

The researchers also observed a strong association between the rate of major complications and surgeon experience. For example, 16 major complications were attributed to surgeons who had performed up to 200 gastric bypass operations. That rate dropped to 6 for those who had performed more than 401 procedures.

However, the rate of minor complications remained about the same, regardless of surgeon experience. "This would suggest that there are patient-dependent [risk factors for complications] that you're not going to be able to predict no matter how good [a surgeon] you are," he said. ■



**Patients 'might be more likely to have problems if they have uncontrolled diabetes and if they're male.'**

DR. WILLIAMS

## Roux-en-Y Gastric Bypass Lessens CV Comorbidities

BY DOUG BRUNK  
San Diego Bureau

LAS VEGAS — Both young and old patients had significant improvements in preoperative cardiovascular comorbidities after laparoscopic Roux-en-Y gastric bypass surgery, results from a large, single-center study showed.

However, the improvements were less pronounced in patients aged 50 years and older, compared with younger patients, Eric Ketchum said at a poster session at the annual meeting of the Society of American Gastrointestinal and Endoscopic Surgeons.

"People over age 50 did pretty well," Mr. Ketchum, a fourth-year medical student at Stanford (Calif.) University, said in an interview. "For example, 75% of them did not have to take medicines for diabetes [after surgery], but they did a little bit worse than younger people did."

He and his associates in the department of surgery at Stanford University Medical Center reviewed the records of 273 patients who underwent laparoscopic Roux-en-Y gastric bypass during January 2003-December 2005. They compared the resolution of comorbidities, cardiovascular risk factors, and weight loss 1 year after surgery in patients aged 50 and older with those in patients younger than age 50.

One year postoperatively, the

mean body mass index was similar between the older and younger groups (31 kg/m<sup>2</sup> vs. 32 kg/m<sup>2</sup>, respectively).

The older patients showed less postoperative reductions than did the younger patients in levels of total cholesterol (8% vs. 16%, respectively), LDL cholesterol (17% vs. 26%), triglycerides (31% vs. 42%), and HDL cholesterol (15% vs. 19%).

Patients in the older group also required more medicines postoperatively, compared with those in the younger group, for preoperative comorbid conditions including hypertension (65% vs. 78%, respectively), hyperlipidemia (73% vs. 78%), and diabetes (75% vs. 94%).

Patients in the older group also showed less improvement than the younger group in terms of C-reactive protein (55% vs. 81%) and lipoprotein (a) (11% vs. 26%).

However, patients in the older group demonstrated greater improvement than the younger group in terms of hemoglobin A<sub>1c</sub> levels (15% vs. 12%) and homocysteine levels (26% vs. 17%).

In their poster, the researchers noted that the "12-month postoperative lipid parameters did not show a statistically significant difference between the two cohorts" probably because "a significantly higher proportion of the senior cohort was medicated for hyperlipidemia" preoperatively. ■