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Original article

Impact of accreditation in bariatric surgery

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Abstract

Background: Several studies have shown improved outcomes associated with accredited bariatric centers. The aim of our study was to examine the outcomes of bariatric surgery performed at accredited versus nonaccredited centers using a nationally representative database. Additionally, we aimed to determine if the presence of bariatric surgery accreditation could lead to improved outcomes for morbidly obese patients undergoing other general laparoscopic operations.

Methods: Using the Nationwide Inpatient Sample database, for data between 2008 and 2010, clinical data of morbidly obese patients who underwent bariatric surgery, laparoscopic antireflux surgery, cholecystectomy, and colectomy were analyzed according to the hospital's bariatric accreditation status.

Results: A total of 277,068 bariatric operations were performed during the 3-year period, with 88.4% of cases performed at accredited centers. In-hospital mortality was significantly lower at accredited compared to nonaccredited centers (.08% versus .19%, respectively). Multivariate analysis showed that nonaccredited centers had higher risk-adjusted mortality for bariatric procedures compared to accredited centers (odds ratio [OR] 3.1, $P < .01$). Post hoc analysis showed improved mortality for patients who underwent gastric bypass and sleeve gastrectomy at accredited centers compared to nonaccredited centers (.09% versus .27%, respectively, $P < .01$). Patients with a high severity of illness who underwent bariatric surgery also had lower mortality rates when the surgery was performed at accredited versus nonaccredited centers (.17% versus .45%, respectively, $P < .01$). Multivariate analysis showed that morbidly obese patients who underwent laparoscopic cholecystectomy (OR 2.4, $P < .05$) and antireflux surgery (OR 2.03, $P < .01$) at nonaccredited centers had higher rates of serious complications.

Conclusion: Accreditation in bariatric surgery was associated with more than a 3-fold reduction in risk-adjusted in-hospital mortality. Resources established for bariatric surgery accreditation may have the secondary benefit of improving outcomes for morbidly obese patients undergoing general laparoscopic operations. (Surg Obes Relat Dis 2014;▮:00–00.)

Keywords: Bariatric accreditation; Center of excellence; CMS national coverage determination

In 2006, the Centers for Medicare & Medicaid Services (CMS) limited coverage of bariatric surgery to centers accredited by the American College of Surgeons or by the American Society for Metabolic and Bariatric Surgery. These 2 accreditation programs were unified in 2012 to create the Metabolic Bariatric Surgery Accreditation and Quality Improvement Program. The criteria for certification now includes 50 bariatric stapling procedures annually, experienced surgeons, staff members trained in metabolic and bariatric surgery, and availability of appropriate equipment to

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accommodate morbidly obese patients [1]. Recently, CMS removed the facility certification requirement for bariatric surgery. This action will allow any hospital to perform bariatric surgery on Medicare patients. This decision was made despite the fact that studies have shown that accreditation leads to lower morality and complication rates [2–6]. However, the CMS states that the evidence is sufficient to conclude that continuing the requirement for certification of bariatric surgery facilities will not improve health outcomes for Medicare beneficiaries [7–10]. Furthermore, the CMS argues that since 2006, bariatric surgery has experienced a trend toward less invasive procedures and lower mortality and complication rates, and that bariatric surgery standards have been well established [11].

In 2012, Nguyen et al. [3] previously reported the outcomes of bariatric surgery performed at accredited versus nonaccredited centers using the University HealthSystem Consortium database of academic centers. The authors found that the rate of in-hospital mortality was significantly lower at accredited centers than at nonaccredited centers (.06% versus .21%, respectively) [3]. A major limitation of that study was that the analysis was performed only at academic centers. Therefore, the results may not be representative of national bariatric practices. The aim of the present study was to examine the outcomes of bariatric surgery performed between 2008 and 2010 at accredited versus nonaccredited centers using a more representative national inpatient database. Additionally, we hypothesize that the structure and processes established for bariatric surgery accreditation may also lead to improved outcomes for morbidly obese patients undergoing other general laparoscopic operations.

Methods

Database

The Nationwide Inpatient Sample (NIS) is the largest all-payor inpatient care database and provides a 20% stratified representative sample of U.S. community hospitals. Using hospital discharge abstracts, the NIS collects inpatient data, such as patient and hospital demographic characteristics, length of stay, morbidity, in-hospital mortality, and hospital charges. The NIS uses an All Patient Refined Diagnosis Related Group classification system to assign patients to severity of illness categories (minor, moderate, major, or extreme), using a combination of principal diagnosis, procedures, co-morbidities, gender, and age. The use of NIS data was approved by the Institutional Review Board of the University of California, Irvine and the NIS.

Data analysis and outcomes

Utilizing the NIS database from 2008–2010, clinical data of morbidly obese patients undergoing elective bariatric surgery were analyzed using designated International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) diagnosis and procedural codes. The principal ICD-9-CM diagnosis codes for obesity and morbid obesity (278.0, 278.00, 278.01) were used. Bariatric surgery procedural codes included 44.31 and 44.39 (open Roux-en-Y gastric bypass), 44.38 (laparoscopic Roux-en-Y gastric bypass), 44.95 (laparoscopic gastric banding), 44.68 and 43.82 (laparoscopic sleeve gastrectomy).

Patient demographic characteristics, hospital location (urban versus rural), hospital type (teaching versus nonteaching), procedural type, severity of illness, and perioperative outcomes of patients undergoing bariatric surgery were compared based on hospital accreditation status–accredited (AC) versus nonaccredited (NAC) centers. Accredited centers were identified in January 2013 from the CMS website (www.cms.gov) based on each institution's unique Medicare provider number. Primary outcome measures were rates of in-hospital mortality and serious morbidity. In-hospital mortality was defined as a death occurring within the index surgical admission. Serious morbidity was defined as anastomotic leak, sepsis, pulmonary empyema/abscess, acute renal failure, acute respiratory failure, cardiac complications, cerebrovascular accident, deep venous thrombosis, and wound complications. Secondary outcomes included length of stay, total hospital charges, and specific postoperative complications.

Clinical data of morbidly obese patients undergoing common laparoscopic general surgery operations (antireflux surgery, cholecystectomy, and colectomy) were also analyzed according to accreditation status. The principal ICD-9 diagnosis codes used for antireflux surgery included esophagitis (530.1, 530.10, 530.11, 530.12, 530.19), esophageal reflux/Barrett's (530.81, 530.85), and diaphragmatic hernia (553.3). The principal diagnosis used for colectomy was neoplasm of the colon (562.10, 562.11, 562.12, 562.13, 562.1). The principal diagnosis used for cholecystectomy was calculus of the gallbladder (574.1, 574.10, 574.11, 574.2, 574.20). The secondary diagnosis codes applied were obesity and morbid obesity (278.0, 278.00, 278.01). The procedural codes for laparoscopic general surgeries included 44.67 and 53.71 for antireflux surgery, 17.36, 17.35, 17.39, 17.34, 17.33, 17.32, 45.81 for colectomy, and 51.23 for cholecystectomy. The primary outcome measure was rate of serious in-hospital morbidity. Secondary outcomes included length of stay, in-hospital mortality, and specific in-hospital morbidity.

Statistical analysis

Patient demographic characteristics, hospital type, preoperative co-morbidities, and perioperative outcomes were analyzed by accreditation status. Continuous outcomes were compared using 2-sample t tests with unequal variance, and binary outcomes were compared using χ^2 tests with Yates correction. Multivariate logistic regression analysis was performed for in-hospital mortality and serious complications