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ASMBS, SAGES, ASGE statement

The role of endoscopy in the bariatric surgery patient

This is one of a series of statements discussing the use of GI endoscopy in common clinical situations. The Standards of Practice Committee of the American Society for Gastrointestinal Endoscopy (ASGE) prepared this text in conjunction with representatives from the Society of Gastrointestinal and Endoscopic Surgeons (SAGES) and the American Society for Metabolic and Bariatric Surgery (ASMBS). In preparing this document, MEDLINE and PubMed databases were used to search for publications between January 1980 and December 2013 pertaining to this topic by using the key words "bariatric surgery" and "endoscopy." The search was supplemented by accessing the "related articles" feature of PubMed with articles identified on MEDLINE and PubMed as the references. Additional references were obtained from the bibliographies of the identified articles and from recommendations of expert consultants. When few or no data were available from well-designed prospective trials, emphasis was given to results from large series and reports from recognized experts. Weaker recommendations are indicated by phrases such as "We suggest…," whereas stronger recommendations are stated as "We recommend…." The strength of individual recommendations was based on both the aggregate evidence quality (Table 1) [1] *and an assessment of the anticipated benefits and harms.*

ASGE position statements for appropriate use of endoscopy are based on a critical review of the available data and expert consensus at the time that the documents are drafted. Further controlled clinical studies may be needed to clarify aspects of this document. This document may be revised as necessary to account for changes in technology, new data, or other aspects of clinical practice and is solely intended to be an educational device to provide information that may assist endoscopists in providing care to patients. This document is not a rule and should not be construed as establishing a legal standard of care or as encouraging, advocating, requiring, or discouraging any particular treatment. Clinical decisions in any particular case involve a complex analysis of the patient's condition and available courses of action. Therefore, clinical considerations may lead an endoscopist to take a course of action that varies from the recommendations and suggestions proposed in this document.

Introduction

This document is an update of the 2008 publication entitled "The Role of Endoscopy in the Bariatric Surgery Patient [2]." The purpose of this document is to update endoscopists on the utility of endoscopy in the management of patients considering bariatric surgery and those who have undergone a bariatric procedure. A recent ASGE technology publication discussed current bariatric endoluminal techniques [3]. Body mass index (BMI) is calculated as weight/height^2 (kg/m^2) and is commonly used to classify adults as overweight (BMI 25.0-29.9) and obese (BMI $\geq$30.0). In 2010, 68% of adults older than 20 years of in the United States were overweight or obese, 36% were frankly obese, and 6% had a BMI $\geq$40 [4]. By 2030, 40% of the United States population is expected to be obese [5]. Obesity is associated with an increased risk of morbidity and mortality [6–11]. In recognition of these risks and the evidence of risk reduction associated with weight loss [12–14], bariatric surgery is endorsed as an appropriate therapy in carefully selected individuals with severe obesity (BMI $\geq$40 or those with a BMI $\geq$30 and serious comorbid conditions) when dietary, behavioral, and pharmacotherapy interventions have failed [15,16].

Bariatric surgery in appropriately selected patients results in a significant and durable weight loss and an improvement in weight-related comorbidities. Bariatric procedures cause

Abbreviations: BMI, body mass index; LAGB, laparoscopic adjustable gastric band; RYGB, Roux-en-Y gastrojejunal bypass; SEMS, selfexpandable metal stent; SG, sleeve gastrectomy; VBG, vertical banded gastroplasty.

This document was developed by the ASGE Standards of Practice Committee. This document was reviewed and approved by the governing boards of the American Society for Gastrointestinal Endoscopy, the American Society of Metabolic and Bariatric Surgery, and the Society of American Gastrointestinal and Endoscopic Surgeons.

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Table 1
GRADE system[1] for rating the quality of evidence for guidelines

Quality of evidence	Definition	Symbol
High quality	Further research is very unlikely to change our confidence in the estimate of effect	⊕⊕⊕⊕
Moderate quality	Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate	⊕⊕⊕◯
Low quality	Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate	⊕⊕◯◯
Very low quality	Any estimate of effect is very uncertain	⊕◯◯◯

Adapted from Guyatt et al. [1].

weight loss via gastric volume restriction or malabsorption or through a combination of the two and their associated hormonal changes (Table 2, Figs. 1–3). For the purposes of this document, surgical descriptors such as restrictive and malabsorptive are used; however, these terms may be overly simplistic and likely do not encompass the complete physiological effects of bariatric surgery. Behavioral modification, learned through counseling and education, is also an important component for the long-term success of any weight loss intervention. This is one important reason why surgical and endoscopic weight loss procedures should be offered only as components of a multidisciplinary weight management team approach. Historically, the most commonly used restrictive bariatric surgical procedure was the laparoscopic adjustable gastric band (LAGB); however, in the modern era, sleeve gastrectomy (SG) has supplanted LAGB in this regard. Vertical banded gastroplasty (VBG) was popular in the early to mid-1980s, but it is no longer routinely used. SG is an effective restrictive-type bariatric operation, which is also associated with gut peptide alterations, and when converted to duodenal switch and biliopancreatic diversion, the result becomes both restrictive and malabsorptive. The Roux-en-Y gastrojejunal bypass (RYGB) is also both restrictive and malabsorptive. A thorough discussion of hormonal changes induced by these various weight loss interventions is beyond the scope of this document. It is useful, however, to understand the anatomic alterations created by these operations as they pertain to the mechanisms for weight loss, expected adverse events, and considerations for endoscopic evaluation. Feitoza and Baron and Feitoza [17] published a review of endoscopy in patients with postsurgical anatomy, including information on the equipment needed for successful completion of diagnostic and therapeutic procedures and tips on accessing distant or excluded portions of the GI tract in patients who have undergone RYGB. A central tenet surrounding the practice of endoscopy in patients before or after bariatric surgery is the need for close consultation or coordination with the surgeon/surgical team by the endoscopist if the endoscopist is not part of the bariatric surgery team.

Table 2
Mechanism of weight loss for common obesity surgeries

Procedure	Mechanism
Laparoscopic adjustable gastric band	Restrictive
Vertical banded gastroplasty	Restrictive
Sleeve gastrectomy	Restrictive; hormonal alteration
Sleeve gastrectomy with duodenal switch/ biliopancreatic diversion	Restrictive/maldigestive; hormonal alteration
Roux-en-Y gastrojejunal bypass	Restrictive/maldigestive; hormonal alteration

Preoperative Endoscopic Evaluation of The Bariatric Surgery Patient

Preoperative endoscopy with EGD can identify patients with asymptomatic anatomic findings that may alter surgical planning. Patients with symptoms of GERD, such as heartburn, regurgitation, dysphagia, or any postprandial symptoms that suggest a foregut pathology and/or who chronically use antisecretory medications, should have an upper GI endoscopic evaluation before bariatric surgery [18]. Multiple published studies have demonstrated that routine EGD before surgery can identify a variety of conditions including hiatal hernia, esophagitis, ulcers, and tumors [19,20]. Although the majority of patients with abnormalities in these studies were asymptomatic, endoscopic findings resulted in an alteration of the surgical approach or delay in surgery ranging from less than 1% to 9% of patients [19–22]. A barium contrast study may be a useful alternative as it can provide information complementary to endoscopy [23]. The presence of a hiatal hernia and endoscopic signs of reflux esophagitis represent a relative contraindication to SG because of an increased risk of the development of de novo GERD-type symptoms and esophageal mucosa injury after SG. Surgeons advocate hiatal hernia reduction and crural closure in patients with hiatal hernia undergoing any weight loss operation [24]. It is useful for surgeons planning weight loss interventions to know the measured size of any hiatal hernia, reported in centimeters, both as the length of the hernia and the gap between the diaphragmatic crura, with the latter measurement obtained via intraoperative endoscopy.

Helicobacter pylori infection is present in 23% to 70% of patients scheduled for bariatric surgery [25,26]. There are conflicting data for preoperative testing and treatment of *H pylori* with respect to related surgical outcomes, and additional