

ASMBS position statement

ASMBS position statement on prevention, detection, and treatment of gastrointestinal leak after gastric bypass and sleeve gastrectomy, including the roles of imaging, surgical exploration, and nonoperative management

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The following position statement is issued by the American Society for Metabolic and Bariatric Surgery in response to numerous inquiries made to the Society by patients, physicians, Society members, hospitals, health insurance payors, the media, and others, regarding the complication of gastrointestinal (GI) leak after primary stapled (laparoscopic or open) bariatric procedures, including gastric bypass (GB) and sleeve gastrectomy (SG). In this statement, a summary of current, published, peer-reviewed scientific evidence and expert opinion is presented and suggestions made regarding reasonable approaches to prevention, postoperative detection, and management of GI leaks. The intent of issuing such a statement is to provide available objective information about the complication of leaks after primary GB and SG procedures. The general principles of leak management herein may also apply to leaks occurring after stapled biliopancreatic diversion (BPD) and BPD with duodenal switch (DS) procedures; however, the paucity of procedure-specific literature for BPD and DS limits the value of this statement to those procedures. The statement is not intended as, and should not be construed as, stating or establishing a local, regional, or national standard of care. The statement will be revised in the future as additional evidence becomes available.

Introduction

GI leak is a known complication after both GB and SG with a reported incidence, in large published case series of open and laparoscopic cases, between .1% and 8.3% after GB [1–11] and 0% and 7% after SG [12]. In a large longitudinal study of 28,616 patients published in 2011, the incidence of leak after laparoscopic GB, laparoscopic SG, and open GB were reported to be .8%, .7%, and 1.5%, respectively, suggesting an overall decrease in the incidence of GI leak in recent years [13]. Despite the apparent decreased incidence over time, GI leak remains an important cause of overall morbidity and mortality after primary stapled bariatric procedures. The etiology of GI leaks is multiple but generally falls into mechanical/tissue causes or ischemic causes, both of which involve intraluminal pressure that exceeds the strength of the tissue and/or staple line [11]. Adherence to meticulous tissue handling, consideration of tissue thickness, and avoidance of inadvertent narrowing, undue tension, and twisting or kinking of the mesentery and tissues are believed to be important considerations when performing stapled bariatric procedures. The clinical presentation of GI leak may be more subtle or delayed in obese patients, relative to normal weight patients, making the very diagnosis of a GI leak challenging in many patients [2]. Once signs and symptoms develop, prompt diagnosis and treatment of a leak may minimize the inflammatory and septic sequelae, although evidence

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suggests that the immunoreactivity of the host determines the endogenous inflammatory responsiveness to a greater extent than the timing of treatment alone [14]. It is understood, therefore, that the development of secondary or tertiary complications, including death, can occur despite prompt and expeditious treatment of a GI leak.

The purpose of this position statement is to provide evidence-based findings on the prevention, detection, and management of GI leaks after GB and SG. The utilization of imaging techniques and surgical reexploration in the context of routine postoperative surveillance and suspected postoperative GI leak will be reviewed, as well as the utilization of nonoperative and endoscopic management.

Prevention of gastrointestinal leak after GB

GI leaks after GB occur most often in one of 4 locations, including the gastrojejunal anastomosis, gastric pouch staple line, jejunojejunostomy, and gastric remnant staple line. The true incidence and morbidity of any of the leak locations are not known. The most commonly reported location for GI leak after GB is at the gastrojejunal anastomosis, although some have reported a greater mortality from jejunojejunostomy leaks [15]. The majority of GI leaks seem to occur in the absence of a known technical error. Supporting this conclusion is the observation that leaks are reported to occur at some level of frequency in all reported large series of GB. Numerous intraoperative maneuvers have been suggested in an attempt to decrease the incidence of leak, including, but not limited to, oversewing the staple line and reinforcing the staple line with biologic or synthetic materials [16,17] such as fibrin glue or other tissue sealants [18–21].

There is no high-quality clinical evidence, including available prospective randomized studies, to suggest that any such interventions significantly decrease leak incidence after GB. These interventions, however, are associated with increased operative cost and, in certain circumstances, increased operative time. In a recent meta-analysis and systematic review on the use of staple line reinforcement (SLR) after GB, there was a finding of decreased risk of leak with use of SLR. However, the presence of heterogeneity and poor overall quality of detail in data from the included trials was a recognized weakness of the study, as acknowledged by the authors [22]. Intraoperative leak assessment using endoscopy and/or distention of the anastomosis with dye, air, or other gas may be useful to detect leaks that can be repaired during the procedure, but these techniques have not been reported to decrease the risk of leak after surgery.

Identification of a “positive” intraoperative leak test, however, regardless of the type of test used, should warrant appropriate repair and retesting before completion of the operation. Whereas some surgeons advocate routine placement of drains in proximity to the gastrojejunal anastomosis to better diagnose and/or control leakage from this site during the postoperative period, or for conversion of a leak into a controlled fistula [20,23,24], others hypothesize that

drains in proximity to an anastomosis are unnecessary [25] and may increase the risk of a leak developing, particularly if left in place more than a few days [26,27]. In summary, there is no high-level evidence to support mandated use of any of the above practices for the prevention or amelioration of a GI leak after GB.

Radiologic imaging considerations after primary stapled bariatric procedures

A hospital in which bariatric procedures are performed should have the capability of imaging by plain film, fluoroscopy, and computed tomography (CT). The size and weight capacities of current CT, fluoroscopy units, and magnetic resonance imaging (MRI) scanners will accommodate the majority of bariatric surgery patients. The weight limitations for CT and MRI scanners are provided by the manufacturer and range from 135–200 kg (300–450 lbs) [28]. Of significance, a hospital’s warranty agreement for repair of expensive CT, fluoroscopy, and MRI equipment may be voided if the equipment is damaged by patients who weigh more than the manufacturers’ guidelines allow. Although CT machines that can accommodate patients of up to 350 kg weight (800 lbs) are commercially available, they are very expensive and therefore not routinely purchased by most hospitals. At this time, these scanners should not be considered a necessity for quality bariatric patient care, although surgeons performing bariatric surgery should be aware of the weight limitations of the radiology equipment in their facility because a subset of patients in a bariatric practice are likely to exceed the weight limitations of certain specialized imaging equipment, such as the CT or MRI machine.

Withholding surgical treatment for obesity from the highest weight subgroup of patients may not be sound clinical judgment because many series report acceptably low-risk treatment of super-obese patients [29–33]. These patients are in the highest need of surgical weight loss, and the decision to proceed with bariatric surgery should be a clinical judgment made by the surgeon based on patient risk factors for treatment weighed against the risks of failing to provide successful weight reduction treatment to an individual patient. The capabilities of the facility, the capabilities of nearby facilities, and the patient’s wishes should all be included in the surgeon’s judgment regarding acceptance of a patient for surgery. A patient should not be rejected for surgical treatment based solely on the fact that the patient exceeds the weight standards or gantry limitations of a hospital’s CT or MRI imaging equipment.

Routine postoperative radiologic assessment for leak after GB

Routine postoperative upper GI (UGI) contrast studies are performed by many surgeons to detect leaks [34], but

there is evidence to support selective, rather than routine, contrast studies after gastric bypass [35–39]. Information can be provided by routine UGI contrast studies regarding anastomotic narrowing, edema or stricture of both the gastrojejunal anastomosis and jejunojejunostomy, abnormal dilation of the gastric remnant, and other causes of early postoperative bowel obstruction, such as internal hernia or trocar site hernia, that can be useful and may influence subsequent care [40]. Based on current evidence, however, the decision to perform routine versus selective UGI contrast studies to assess for a GI leak should be left to the discretion of surgeons on the basis of their experience, on factors related to the system of care in place, and on other characteristics of the patient and the population being treated.

Radiologic evaluation versus surgical exploration for suspected leak after GB

UGI contrast studies are used by many surgeons to evaluate gastrojejunostomy in patients with a suspected leak after GB. The first consideration to proceeding with any type of radiologic evaluation is the clinical stability of the patient. Radiologic evaluation is not appropriate for unstable patients, and prompt surgical exploration (open or laparoscopic) should be initiated. Numerous factors may influence the accuracy of fluoroscopic testing, including patient-related factors (the ability to stand, balance, and move; the ability to swallow; and the size of the patient) and factors related to the system of care in place (experience of the radiologist with bariatric patients and procedures, capabilities of the facility). Among reports, sensitivity of upper GI contrast examination varies between 22% and 75% [2,37,41]. CT of the abdomen after GB can detect leaks, abscesses, and bowel obstruction, and may be better able to discern suspected leaks of the jejunojejunostomy and/or remnant stomach [42]. CT may also be better able to discern whether a leak appears “contained” or “freely” communicating within the abdominal cavity [15]. In addition, CT of the chest has become a mainstay of evaluation for pulmonary embolism, pneumonia, and effusion, which can be in the differential diagnosis when assessing a patient for possible leak [43,44]. Inclusion of the chest during CT of the abdomen has not been found to delay treatment or increase morbidity and therefore may be considered when an abdominal CT is being obtained for evaluation of a GI leak.

There are inherent limitations of CT imaging in the obese patient, and patient weight has a profound effect on the magnitude of enhancement by intravenous (IV) contrast material both in the vascular system and in parenchymal organs such as the liver [45]. Additionally, patient positioning and the inability to ingest adequate oral contrast are important limitations in this population. The experience of the radiologist in interpreting postoperative GB anatomy

also plays an important role. These limitations may lead to false negative results. CT has not consistently been found to have a high level of sensitivity in detecting early postoperative leaks in this patient population. When a UGI and CT are combined, up to one third of patients will have both studies interpreted as normal despite the presence of a leak [2].

Laparoscopic or open reexploration is an appropriate diagnostic option, regardless of the feasibility of obtaining a postoperative imaging test, when a GI leak is suspected. Reexploration is characterized by a higher sensitivity, specificity, and accuracy than any other postoperative test to assess for leak and should be considered the definitive assessment for the possibility of a leak. Although invasive and not without potential difficulty or morbidity, several studies have reported that reexploration is a well-tolerated intervention compared with the consequences of peritonitis, excessive inflammatory response, sepsis, organ failure, and mortality, which may develop when diagnosis and treatment of a leak are delayed [2,46–49]. Thus, reexploration should be considered in patients with a suspected leak, and it is important to note that reliance on false-negative imaging studies may delay operative intervention, particularly when there is a leak at sites other than the gastrojejunostomy (e.g., the gastric remnant or the jejunojejunostomy) [46]. Given the high mortality from untreated GI leaks, it is understood that reexploration, open or laparoscopic, is an appropriate and acceptable treatment modality when a GI leak is suspected.

Mainstays of laparoscopic or open reexploration follow the principles of drainage, creation of a controlled fistula with drains, antimicrobial therapy, and parenteral nutrition or enteral nutrition with consideration of feeding access of the jejunum either with a nasoenteric catheter placed beyond the area of leak or a gastrostomy tube placed in the gastric remnant. Limited data are available, in the form of case reports and small case series, on the use of biologic tissue sealants and the use of endoscopic stent placement for a gastrojejunal leak [50–52]. Further research may be helpful in refining the application of these technologies.

Nonoperative management of GI leaks after GB

It is understood that there is heterogeneity regarding the location, timing of presentation, magnitude or severity of leak, and/or degree of containment/contamination from a GI leak after GB, which can affect the clinical stability of a patient. GI leaks can occur long after a primary GB as a secondary consequence of other types of known complications such as internal hernia, trocar site hernia, adhesive bowel obstruction, perforated marginal ulcer, and so on. All of these factors can influence how a leak is clinically managed. Several small case series have emerged over the past 10 years that have reported the use of nonoperative management of a GI leak after GB [15,47,49,53–55].

Surgical management should always be considered in the early postoperative setting. However, nonoperative management of a GI leak after GB may be considered in selected and clinically stable patients. In general, the use of diagnostic imaging studies, including UGI and CT, can be considered more liberally in patients being considered for nonoperative management to better define the anatomic location, severity, and containment of a leak. Treatment options include bowel rest, antimicrobial agents, total parenteral nutrition, percutaneous drainage of collections, and percutaneous access into the remnant stomach both for decompression and feeding.

Response to treatment is measured clinically as well as by assessing drain outputs, resolution of leukocytosis, fever, and reimaging to confirm closure. Conversion of an acute leak into a controlled fistula that fails to close should raise suspicion to search for other factors that may promote nonhealing, such as downstream obstruction, stenosis, or foreign body (e.g., from introduction of a drain into the site of the leak). Clinicians, however, should maintain a low threshold for operative intervention in the face of clinical deterioration or failure of nonoperative management.

Prevention of GI leaks after SG

As with GI leaks after GB, GI leaks after SG are an important cause of morbidity and mortality. An overall decline in the incidence of leak after SG has been documented since the procedure's inception. Part of this decline may be related to an emphasis on standardization of technique based on accrued experience as well as published recommendations from international consensus summits and expert panels [56,57]. The pathophysiology of a GI leak after SG may be different than that of GI leak after GB. Maintenance of the pylorus in the SG with surgical creation of a longer, narrower conduit results in higher intraluminal pressures compared with the gastric pouch created during GB. The latter is considered a lower pressure conduit, where gastric contents generally flow passively through the gastrojejunostomy into the small bowel. These differences may explain the more constant location of GI leaks and the delayed nature of presentation after SG compared with GB.

It is estimated that 75%–85% of leaks after SG will occur at the proximal third of the greater curvature staple line as opposed to the distal or antral staple line [12,58]. A few series have reported leaks exclusively at the proximal third of the greater curvature staple line [59–61]. Leaks have been reported to occur in the early postoperative period within a few days of surgery; however, most series have reported leaks occurring after >5 days (5 to >8) after surgery in 50%–80% of patients [62–65]. A recently published large systematic review looking at SG and the risk of a leak, which included 4888 patients, reported 79% of leaks were diagnosed after hospital discharge and >10 days after surgery [12]. Technical factors that have been

associated with an increased risk of a leak include bougie size <40F; narrowing or stricture of the sleeve conduit, particularly at the level of the gastric incisura; and inadvertent stapling of the esophageal wall (rather than gastric tissue) at the gastroesophageal junction when creating the proximal staple line [66].

Stapling technology has evolved to include stapler heights able to accommodate different gastric wall tissue thicknesses, varying between individuals and in the different anatomic regions of the stomach. There is, however, no way to definitively identify the thickness of gastric tissue before stapling with the current technology. A variety of other options intended to help prevent GI leaks after SG have been described, including use of SLR (absorbable, remodelable, and permanent types), biological sealants, and oversewing (continuous, interrupted, full thickness, and Lember techniques) of the staple line.

Three metaanalyses and several systematic reviews have been published within the past 5 years on the use of staple line reinforcement, with conclusions ranging from no significant effect on bleeding or leak, variable effect on leak depending on the material used for buttressing without assessment of bleeding, and no effect on leak but decreased staple line bleeding. One review identified buttressing to be associated with an increased risk of bleeding [67–76]. One randomized controlled trial on the use of fibrin sealant during SG reported a significant reduction in operative bleeding, although the clinical relevancy of this finding was not clear. Leak incidence, however, was not found to be significantly different [77]. Most studies have not found oversewing to reduce the incidence of leak [67,78,79]. The heterogeneity of the studies, small statistical power, discrepancy of buttressing materials used, and variety of oversewing methods, in conjunction with varying staple heights and techniques (different bougie sizes) limit any recommendations regarding the use of these materials to prevent GI leak after SG. Several small case series have discussed the use of a routine intraoperative leak test (air, endoscopy, dye) to assess for intraoperative leak [80]. As with GB, intraoperative leak tests can identify otherwise undetectable areas of staple line disruption but have not been reported to prevent subsequent leaks and should be used at the discretion of the surgeon.

Routine postoperative radiologic assessment for GI leaks after SG

Routine early postoperative UGI contrast studies are seldom advocated in most centers [25,58,60,65,81–83]. Early postoperative UGI contrast studies have very low sensitivity to detect a leak early after SG, because most leaks are reported to occur after hospital discharge and >10 days after surgery [12]. In addition, UGI contrast accuracy may vary depending on patient factors, such as body size and the ability to stand and swallow, among others, along with experience of the

radiologist, the size of the leak, and the contrast material used [78]. Based on current evidence, as with GB, the decision to perform routine versus selective UGI contrast studies should be left to the discretion of the surgeon, depending on factors related to the system of care in place and on other characteristics of the patient and population being treated.

Radiologic evaluation versus exploration for suspected GI leaks after SG

Tachycardia, fever, and abdominal pain (often radiating to the left shoulder or scapular region) are the most common, but not exclusive, signs of a GI leak after SG. In general, laboratory examinations are rarely contributory [61]. In patients with clinical signs or symptoms of a suspected leak after SG, UGI contrast studies have a low sensitivity (0%–25%), though higher specificity (90%–95%). Because of its higher sensitivity, most studies recommend obtaining a CT with oral and IV contrast as the method of choice for diagnosis of a leak in patients who show signs and symptoms suggestive of a leak but remain clinically stable [31,55,61,62]. Inclusion of the chest may help rule out other causes of tachycardia such as pneumonia, pulmonary embolism, or pleural effusion. CT results are also influenced by patient factors, the experience of the radiologist, the size of the leak, and the contrast material used; however, high sensitivity (83%–93%) [58,60,65] and specificity (75%–100%) [65,83] are reported in most series. As with GI leak after GB, laparoscopic or open reexploration is an also appropriate diagnostic option, regardless of the feasibility of obtaining a postoperative imaging test, when a GI leak is suspected. Reexploration is characterized by a higher sensitivity, specificity, and accuracy than any other postoperative test to assess for leak and should be considered to be the definitive assessment for the possibility of leak when the patient is clinically unstable, or in the scenario wherein alternate diagnoses have been excluded and/or clinical suspicion remains [12,56,84].

Role of operative management of GI leaks after SG

The role of operative management in the setting of an SG leak differs significantly between an acute/early postoperative leak (<5 d) and chronic fistula (leaks present beyond 4 wk).

Acute setting

In an acute postoperative leak the primary goal of surgical management is to ensure prompt adequate drainage to avoid or manage abdominal sepsis and its consequences. Secondary goals include confirmation of diagnosis and insertion of a feeding jejunostomy. The primary goal of early surgical management should not be definitive repair of the defect; however, in the setting of very early reoperation (48–72 hr postoperative), primary suture and repair of the

defect has been described as effective, but its efficacy decreases significantly thereafter. In the setting of a distal leak, primary repair including suturing or restapling might be more effective than in proximal leaks [63].

Chronic fistula

Given the higher pressures within the sleeve conduit, leaks may be difficult to seal despite adequate drainage. Over time, these may evolve into a chronic fistula. Non-operative management of these fistulas should be favored whenever possible. Average closure time of these fistulas may be >4 weeks. Closure times of 3 months are not uncommon and durations of >200 days have been reported [58,85,86].

Definitive surgical management in the presence of a chronic fistula is technically challenging. It should be reserved for nonhealing fistulas and only after sufficient time has lapsed to allow success of nonsurgical management. If the patient is adequately drained and is receiving appropriate nutrition, a minimum of 4 weeks [86] to 3 months should be allowed before nonoperative treatment is deemed unsuccessful [87].

Multiple surgical procedures have been described for management of nonhealing fistulas. They include laparoscopic or open gastrojejunal anastomosis [86–92], conversion to GB [88,93], total gastrectomy with esophagojejunostomy [58,88,93–95] and T-tube placement [96,97]. With a total of approximately 70 cases reported, no reliable conclusions can be drawn in terms of postoperative outcomes of these various treatment strategies. Reported operative times vary from 120–430 minutes with a median approximation of >3 hours. Persistent and recurrent leaks up to >50% have been described with the previously described techniques, although closure was eventually obtained nonoperatively [86–89,94,96].

Role of nonoperative management of GI leaks after SG

The mainstay of treatment of gastric leak after SG relies on adequate drainage, nutritional support, and antibiotics [55]. Many surgeons advocate an initial nonoperative approach for treatment of GI leaks after sleeve gastrectomy in stable patients, whether presenting early or late after surgery [53,56,81,95,96]. Nonoperative treatment of leaks can require a multimodality, multidisciplinary approach to treatment, which may require input from gastroenterologists and radiologists in addition to the surgeon. The endoluminal, self-expandable stent may conform well to the tubularized stomach conduit after SG to effectively exclude the site of a proximal staple line leak. Stenting may allow patients to support their own nutritional needs with oral feeding during the healing process, potentially decreasing the overall duration of treatment [59]. The majority of patients treated with an endoluminal stent achieve complete

healing with a success rate of 55%–100% [58–60,63,83, 98–112]. Stenting often requires multiple endoscopies for stent replacement, or for the addition of other endoscopic adjuncts, over the course of treatment [59,101,106, 108,113]. Stent migration, kinking, erosion, and patient intolerance may complicate the use of endoluminal stents. Extralong, covered, self-expandable endoluminal stents have been developed, and their use may decrease the incidence of these stent-specific complications [111]. It should be noted that the use of the current esophageal stent technology for the management of leaks is an off-label use of the device.

Wide clips placed with the use of an endoscope can provide a mechanical approximation to close a GI fistula. There is minimal risk of migration, and isolated case reports have indicated short-term successful treatment of SG leak when used alone, or in combination with other endoscopic modalities [114,115]. An internal drain placed endoscopically through the staple line dehiscence may effectively control local sepsis by draining a perigastric abscess, promote resorption of fluid, enhance healing, and avoid the formation of an external fistula. Internal drainage strategies often require multiple endoscopies, drain replacements, and other adjuncts, however, to achieve complete healing [101,108]. Interest in biological glue has grown from case reports of successful treatment of gastrointestinal fistulae with fibrin glue injection. However, in the setting of a SG staple line leak, it is rarely successful as a stand-alone treatment and is more commonly used in combination with other endoscopic treatment modalities [58,106]. Endoscopic suturing devices are potential options in the armamentarium for nonoperative treatments of SG leaks; however, technologic shortcomings and lack of durability of primary suture closure are limiting, and this modality is not commonly used at this time [116].

Summary and recommendations

There has been a decrease in the incidence of GI leaks after primary stapled open and laparoscopic bariatric procedures (GB and SG) over time. Despite this decline, a GI leak remains a significant cause of morbidity and mortality and remains a potential complication of these procedures. Early detection and treatment remain pivotal principles in the management of GI leaks and may play a role in reducing subsequent morbidity and mortality. Some of the factors promoting leak may be different between GB and SG procedures. This may be related to the technical differences between the 2 procedures, as well as the distinct anatomic and physical properties that exist between the sleeve conduit versus the gastric pouch, which are helpful when considering some of the qualitative and temporal dissimilarities reported in the clinical manifestation of GI leaks after these procedures. Despite the advent of new technologies, the management of GI leaks after GB and SG

procedures can be extremely complex and involve multiple and/or multimodal treatment options.

1. Intraoperative leak tests (air, dye, endoscopy) are described for both GB and SG. Although widely used, they have not been found to reduce the incidence of leak after GB and SG procedures.
2. Intraoperative leak prevention interventions described for both GB and SG procedures include oversewing, SLR, tissue sealants, and glue. There is still considerable debate over the utility or superiority of any of these interventions. Mandated use of any of these leak prevention interventions was not indicated by the data.
3. Radiographic studies after GB and SG procedures have varying sensitivity and specificity that is affected by study choice, patient factors, facility factors, and reviewer factors.
 - There is no high-quality evidence available to mandate the routine postoperative use of UGI contrast studies after GB or SG procedures, particularly for SG given the greater likelihood of leaks presenting in a delayed fashion. Routine or selective UGI studies may, however, identify other technical or anatomic problems after GB or SG procedures. Based on current evidence, the decision to perform routine versus selective UGI contrast studies should be left to the discretion of the surgeon, based on factors related to the system of care in place and on other characteristics of the patient and the population being treated.
4. Radiographic evaluation versus surgical exploration for suspected leak after GB and SG.
 - Clinically unstable patients suspected of having a leak may not be appropriate candidates for radiographic evaluation. Reexploration through a laparoscopic or open approach should be considered.
 - In the clinically stable patient with a suspected leak, CT of the abdomen and pelvis with oral and IV contrast may have higher sensitivity and specificity than UGI contrast studies, with the added utility of identifying associated intraabdominal abscesses, hernias, or other pathologic conditions after GB or SG. Addition of the chest component to the abdominal CT to rule out distinct or concomitant pulmonary pathologic conditions may be considered.
 - Given the high mortality from untreated GI leaks, it is understood that reexploration, open or laparoscopic, is an appropriate and acceptable treatment modality when a GI leak is suspected and remains the diagnostic test with the highest sensitivity and specificity after GB and SG.
5. Operative management (open or laparoscopic) for acute GI leaks after GB or SG follows the goals of drainage, placement of drains to create controlled fistulas, use of antimicrobial agents, and nutrition considerations.
 - Chronic fistulas are described after SG with long closure times (≥ 1 –3 mo). Definitive surgical management of

nonhealing fistulas is technically challenging, and current available data do not favor one procedure over another.

6. Nonoperative management may be an appropriate treatment option for GI leaks after GB or SG in stable patients.

- Nonoperative methods of GI leak treatment after both GB and SG include endoscopic endoluminal self-expandable stents, clips, endoscopic and percutaneously placed drains, and biologic glue/tissue sealants. Multiple endoscopies and multimodality treatments may be required to achieve full healing of a chronic fistula. The available data do not favor one treatment over another.

Gastrointestinal leak position statement and standard of care

This Position Statement is not intended to provide inflexible rules or requirements of practice and is not intended, nor should it be used, to state or establish a local, regional, or national legal standard of care. Ultimately, there are various appropriate treatment modalities for each patient, and the surgeon must use his or her judgment in selecting from among the different feasible options. The American Society for Metabolic and Bariatric Surgery cautions against the use of this Position Statement in litigation in which the clinical decisions of a physician are called into question. The ultimate judgment regarding appropriateness of any specific procedure or course of action must be made by the physician in light of all the circumstances presented. Thus, an approach that differs from the Position Statement, standing alone, does not necessarily imply that the approach was below the standard of care. To the contrary, a conscientious physician may responsibly adopt a course of action different from that set forth in the Position Statement when, in the reasonable judgment of the physician, such course of action is indicated by the condition of the patient, limitations on available resources, or advances in knowledge or technology. All that should be expected is that the physician will follow a reasonable course of action based on current knowledge, available resources, and the needs of the patient to deliver effective and safe medical care. The sole purpose of this Position Statement is to assist practitioners in achieving this objective.

Disclosures

The authors have no commercial associations that might be a conflict of interest in relation to this article.

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