Management of Acute Postoperative Hemorrhage in the Bariatric Patient

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KEYWORDS

• Gastrointestinal bleeding • Endoscopic treatment • Obesity
• Bariatric surgery • Postoperative hemorrhage
• Post-bariatric bleeding

Bariatric surgery is one of the treatment options to achieving and preserving weight loss and to managing medical complications related to obesity. With the obesity epidemic, the number of bariatric procedures performed annually has risen exponentially over the past two decades.[1–3] In the United States, laparoscopic Roux-en-Y gastric bypass (LRYGB) has become the gold standard procedure for morbid obesity. After bariatric surgery, early or late adverse events can occur. Although bariatric surgery is considered safe, especially with the advent of laparoscopic techniques, complications still occur. Systemic complications include malnutrition and vitamin deficiencies, thromboembolism, and infection. Local complications include anastomotic leaks and strictures, fistulas, marginal ulcers, staple line disruption, band erosion, small bowel obstruction, incisional or internal hernias, and intraluminal or extraluminal gastrointestinal (GI) hemorrhage.[2]

The approach to early postoperative GI hemorrhage (arbitrarily defined as bleeding occurring within 2 weeks after bariatric surgery) differs from that of bleeding in patients with native gut anatomy. Early GI bleeding is more often a complication associated with Roux-en-Y gastric bypass (RYGB) surgery than other bariatric procedures and usually involves the gastrojejunostomy anastomosis. GI bleeding that occurs beyond the early postoperative period commonly involves the staple line at the gastrojejunal or

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jejunojejunal anastomotic sites (marginal ulcers) or bypassed stomach. This review focuses on the current status and management of early GI bleeding after bariatric surgery.

EPIDEMIOLOGY

Early postoperative bleeding occurs in 1% to 5% of cases after RYGB.[3–5] The variable reported rates for early bleeding depend on the definition used for "early" hemorrhage, type of surgery performed (laparoscopic vs open), type of bleeding described (eg, intraluminal or extraluminal), perioperative use of antithrombotic agents, and threshold used to differentiate bleeding from normal postoperative hemodilution.

In a meta-analysis involving 3464 RYGB patients, the reported rate for acute postoperative GI bleeding was 1.9%.[3] In another study, early postoperative hemorrhage occurred in 33 of 1025 patients (3.2%) who underwent RYGB; bleeding was extraluminal in almost 50% of cases.[4] Similar to other study findings, the postoperative bleeding rate was higher in the laparoscopic group than in the open group (5.1% vs 2.4%). Rebleeding episodes may also occur more commonly in this patient population. In a retrospective study involving 933 LRYGB patients, 30 (3.2%) developed acute postoperative bleeding. Of these, a single bleeding episode occurred in 14 (47%) patients; two bleeding episodes occurred in 13 (43%) patients; and three bleeding episodes occurred in 3 (10%) patients.[5] In another study of 518 patients who underwent LRYGB, the rate of early postoperative bleeding was 3.9%; 80% of the bleeding was extraluminal and 20% was intraluminal.[6]

Postoperative bleeding is a rare complication after vertical banded gastroplasty, laparoscopic adjustable gastric banding, and laparoscopic sleeve gastrectomy.[7–10] Death after bariatric surgery as a consequence of acute bleeding is uncommon. In a retrospective study of 13,871 patients who underwent bariatric surgery, 34 deaths were reported. Of these, only one was due to a bleeding gastric ulcer after biliopancreatic diversion.[11]

PREDISPOSING FACTORS

Obesity itself is an independent risk factor for venous thromboembolism.[12–14] The risk for a thromboembolic event, including deep vein thrombosis and pulmonary embolism, is increased further in patients undergoing bariatric surgery.[14] Because the risk may be as high as 3.1%, several measures are implemented to reduce the rate of postoperative venous thromboembolism, including early ambulation, compression stockings, and administration of prophylactic heparin.[15–19] Drugs, such as heparin and clopidogrel, have been used to prevent thromboembolic events but the risk of postoperative bleeding using these agents must be balanced against the risk of postoperative thromboembolic events.[20,21]

In a retrospective study, no correlation was seen between serum levels of anti-Xa and use of low molecular weight heparin (LMWH) and the risk of postoperative bleeding.[22] In contrast, another retrospective study demonstrated an increased incidence of early hemorrhage after RYGB in patients who received preoperative LMWH.[4] In patients receiving prophylactic antithrombotic agents after LRYGB, unfractionated heparin was associated with a lower incidence of acute postoperative bleeding than enoxaparin.[20] In a recent prospective study, an extended 3-week LMWH protocol was used for prophylaxis of venous thromboembolism in 735 patients who underwent laparoscopic bariatric surgery. The incidence of postoperative venous thromboembolism was 0% and only 3 adverse bleeding events occurred.[23] In the