Abdominal Catastrophe During Pregnancy Due to a Gastric Band

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ABSTRACT

Introduction: Laparoscopic adjustable gastric banding is popular bariatric procedure for patients with morbid obesity. The procedure is appealing to patients and surgeons because of its customizable approach to weight loss. The rate of complications after laparoscopic adjustable gastric banding has been reported to be up to 12.2%. Without a high degree of suspicion, the complications can go unrecognized until they have progressed to a catastrophic state.

Case Description: We present a 32-year-old pregnant woman, with a history of laparoscopic adjustable gastric banding, who presented with complaints of persistent nausea and vomiting causing significant weight loss. She was treated with intravenous hydration and antiemetic medication. After 3 days of in-hospital treatment, she was discharged home after resolution of symptoms. She then returned to the hospital with severe abdominal pain. The fetal heart tones were lost, and she delivered a stillborn fetus. Radiologic testing suggested abdominal hollow organ perforation, and the patient was taken to the operating room. Diagnostic laparoscopy discovered a prolapsed gastric band causing obstruction and an anterior gastric perforation proximal to the band. The perforation was repaired primarily, and an omental patch was used as a buttress.

Conclusion: Although nausea and vomiting are common symptoms during pregnancy, their cause must be fully investigated in bariatric patients. The complications in bariatric patients can be catastrophic if not recognized and treated appropriately. As weight loss surgery increases in popularity and age limits are decreased, more women of childbearing age will present after bariatric procedures, and all complications must be ruled out.

Key Words: Laparoscopic adjustable gastric banding, LAGB, Pregnancy, Bariatric surgery, Hyperemesis gravidarum, Abdominal catastrophe.

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INTRODUCTION

Laparoscopic adjustable gastric banding (LAGB) is a popular and effective surgery for weight loss. The procedure is quick, with the average operating time reported at 45.3 minutes, and the resultant anatomic alterations are not permanent.[1] Over the past few years, however, the literature has shown that LAGB is not a benign procedure and carries with it an inherent risk of morbidity and death. Complications are reported to occur in 12.2% of patients undergoing LAGB.[1] The complications that arise postoperatively can be difficult to recognize and require a high degree of suspicion to diagnose promptly and correctly. We present the case of a 32-year-old pregnant woman who had a complication from her gastric band that was masked by the gastrointestinal symptoms of pregnancy.

CASE REPORT

The patient is a 32-year-old woman, gravid 3 and para 2, who underwent LAGB placement in 2008. She lost 120 lb after LAGB placement, and in 2012, on finding out she was pregnant, the patient underwent deflation of the band to allow for proper weight gain and nutrition during pregnancy. She presented to our hospital at 26 weeks' gestation with complaints of an unintentional 36-lb weight loss, nausea, and vomiting. She denied abdominal pain, me-

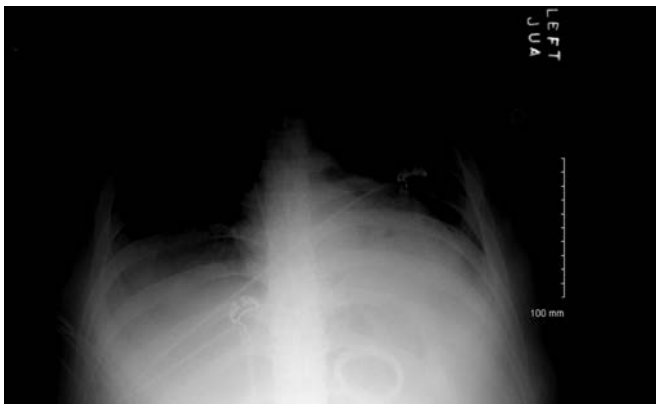

Figure 1. Portable one-view chest radiograph showing gastric band with an "O" sign in the upper abdomen.

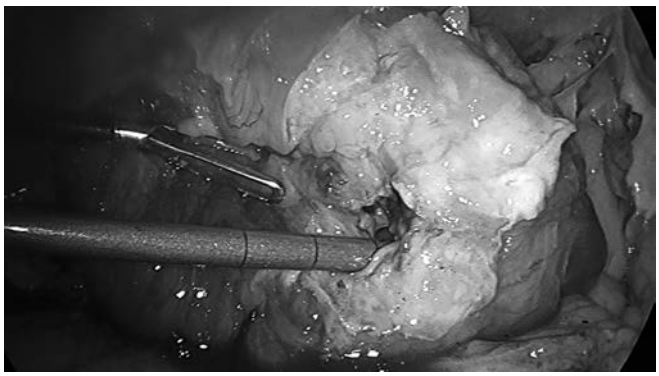

Figure 2. Intraoperative photograph showing perforation on the anterior gastric wall along the greater curvature proximal to the gastric band. The size of the perforation was approximately 2.5 cm.

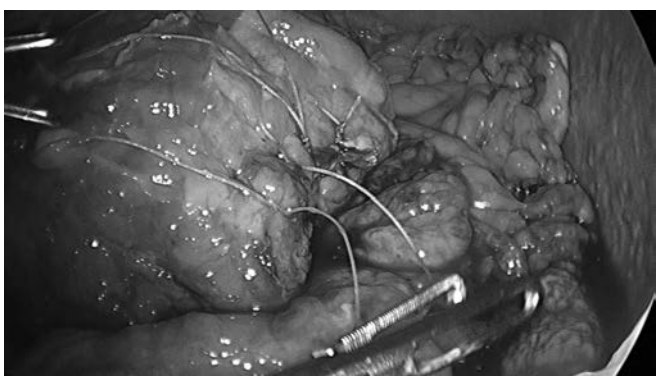

Figure 3. Intraoperative photograph showing primary closure of the anterior gastric wall perforation. Closure was performed with interrupted absorbable sutures.

lena, and hematochezia. She sought medical attention because the nausea and vomiting had increased in frequency and intensity over the previous week. She was admitted and treated for dehydration with intravenous fluid. She began to feel better, and her nausea was controlled with metoclopramide and ondansetron. On this admission, no investigation of the LAGB was performed because the gastric band was deflated. The symptoms were attributed to hyperemesis gravidarum. She was discharged home after 3 days of treatment with intravenous fluid and antiemetics.

After 2 days at home, the patient presented to another institution with complaints of chest pain and shortness of breath. On evaluation, she was found to be tachycardic and shortly thereafter began complaining of abdominal pain. She was transferred to our institution for further care. On arrival, the fetal heart tones were present; however, the tones were lost within 3 hours of the patient's presentation as her condition deteriorated. She was thought to have chorioamnionitis, and labor was induced. Spontaneous vaginal delivery of a stillborn fetus occurred, and postpartum, the patient continued to deteriorate as her tachycardia and hypotension worsened. She was transferred to the medical intensive care unit for treatment of systemic inflammatory response and possible septic shock. A central venous catheter was placed in the right internal jugular vein. On a postprocedure chest radiograph, the gastric band was found to be in an abnormal position, showing an "O" sign (**Figure 1**). It was clear that the complication from the gastric band had gone unrecognized before this image was obtained.

A computed tomography scan of the patient's abdomen and pelvis was performed, showing a large amount of free air and ascites within the abdomen. On surgical consultation, she was found to have an acute abdomen. She was emergently taken to the operating room for a diagnostic laparoscopy. On entry in the abdomen, 9 L of murky ascites fluid was found along with severe inflammatory changes of the peritoneum. An anterior gastric prolapse was present with a 2-cm perforation along the anterior greater curvature (**Figures 2** and **3**). The perforation was sutured closed, and an omental patch was placed. The intra-abdominal portion of the LAGB was removed. The subcutaneous access port was left in place because of the patient's unstable condition. Drains were placed in the perihepatic space, perisplenic space, and pelvis. The procedure was complete laparoscopically. The patient was taken back to the intensive care unit and treated with vasopressors and full ventilator support.

Over the first postoperative week, the patient's condition improved and vasopressor support was weaned off. The continuous infusion of proton pump inhibitor was

changed to a twice-daily intravenous administration after 48 hours. Hyperalimentation was started on postoperative day 3, and she was unable to be weaned from the ventilator until postoperative day 6. An upper gastrointestinal contrast examination was performed on postoperative day 10 and showed slow transit through the upper stomach without a leak (**Figure 4**). She was started on a noncarbonated, clear-liquid diet on postoperative day 12. As she tolerated her diet, it was slowly advanced to a regular diet over the next 4 days. She was discharged home in stable condition on postoperative day 16.

DISCUSSION

Nausea and vomiting affect 50% to 90% of pregnant women and usually begin at 6 to 8 weeks' gestation. The symptoms generally reach a maximum at 9 weeks and subside by week 12.[2] Fewer than 1% of women have a more severe form of nausea and vomiting termed hyperemesis gravidarum.[2] Vomiting that begins after 12 weeks' gestation is unlikely to be hyperemesis gravidarum, and other causes must be investigated. In patients who have a history of LAGB, the position of the band must be investigated to rule out life-threatening complications.

Figure 4. Upper gastrointestinal image showing flow of contrast into the distal stomach without evidence of leak or stricture.

The methodology of choice for investigation of the band is a contrast-enhanced upper gastrointestinal series. The orientation of the gastric band and flow dynamics through the esophagus, the proximal stomach, the band, and the distal stomach are shown. The study allows the radiologist to evaluate for obstruction, leak, and prolapse. Any radiologic test causes anxiety in both pregnant mothers and their physicians. The risk of radiation exposure must be weighed against the benefit of prompt diagnosis. The mean dose of absorbed fetal radiation for an upper gastrointestinal series study is 1.1 mGy, and the maximum reported is 5.8 mGy.[3] The International Commission on Radiological Protection has determined that no deterministic effect of practical significance would be expected to occur in humans below a dose of at least 100 mGy. The risk of cancer development in the fetus is lower during the first 3 to 4 weeks of pregnancy. After the first 3 to 4 weeks, the excess absolute childhood cancer risk coefficient is about 1 in 13,000 per mGy.[4] Although the radiation risk is low, the uterus should be protected with a lead apron without interfering with imaging of the upper abdomen.

LAGB is the least invasive of the bariatric procedures and the only one that is technically reversible. It is a restrictive procedure and does not subject the patient to the complications of malabsorptive procedures. It has been shown to decrease excess weight by 62.5% to 87.2% over a period of 2 years.[5] LAGB has also been shown to decrease the prevalence of diabetes and metabolic syndrome, along with a reduction in the use of metformin, insulin, antihypertensives, and lipid-lowering agents. Specifically in pregnant women, weight reduction, as after bariatric surgery, is associated with a decreased incidence of gestational diabetes, gestational hypertension, and fetal macrosomia.[6,7]

The procedure, though not usually technically challenging, is associated with complications, some of which are surgical emergencies. The patients are subject to device-related and non–device-related complications of surgery. As reported by Carelli et al[1] in 2010, the most common device-related complication was slippage and prolapse, occurring in 4.52% of their patients. Other device-related complications included port-related problems (leak, abscess, disconnection, infection, migration, or ulceration), band-related problems (band intolerance or removal, leak or perforation, device-related obstruction, or malfunction), and band erosion, occurring at rates of 3.34%, 1.65%, and 0.24%, respectively. The 3 most common non–device-related complications of surgery were dehydration, ventral hernia, and nutritional abnormality, presenting at rates of

0.54%, 0.54%, and 0.30%, respectively. In a recent review of 92 patients who became pregnant after LAGB, 3 women had band slips during pregnancy.[8] One of these 3 women required emergency surgery to remove the band. The other 2 underwent revision procedures after parturition. Band slippage occurred in an additional 8 women within the first 6 months postpartum. All 8 underwent revision of the gastric band. In another study Guelinckx et al[9] reported that band migration and band leakage are present in up to 29% of pregnant patients.

Proper management of a gastric band when a patient becomes pregnant is an area of debate. With the band inflated, maternal consumption and weight gain are tempered, which is associated with lower birth weight and an increased incidence of preterm labor.[9–11] With the band deflated, the risk of excessive gestational maternal weight gain is accompanied by maternal problems such as gestational diabetes, pregnancy-induced hypertension, preeclampsia, infectious complications, miscarriage, primary postpartum hemorrhage, and caesarean section.[12] The optimal management of adjustable gastric bands during pregnancy requires further investigation.

LAGB patients must be counseled on the risk of prolapse and alarm symptoms to suggest the diagnosis. They must know to seek medical attention as quickly as possible to prevent further complications. In women of childbearing age, waiting for weight to be optimized before conception should be stressed. The recommended time for optimization is from 6 to 18 months.[7,8] Obstetric and gynecologic clinicians also must recognize that many of their patients will have a history of bariatric surgery as these procedures increase in popularity. The presented case shows the need for a high degree of suspicion for complications in bariatric patients. The systemic inflammatory response that resulted from the perforation in the stomach was likely the cause of the fetal demise. Pregnancy-related vomiting in a bariatric patient must be fully investigated because it can mimic the signs of an impending abdominal catastrophe related to LAGB.

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