

Conservative Management of Gastric Twist and Leak Post Band Removal and Sleeve Gastrectomy

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AIM: Gastric twist is a rare, however, troublesome complication of laparoscopic sleeve gastrectomy. This report describes a case complicated by perforation and leak in addition to twist. The patient was managed conservatively and successfully.

CASE PRESENTATION: A 29-year-old female patient with a body mass index (BMI) of 41.3 kg/m² (111 kg/1.64 m), who underwent gastric band insertion six years ago, recently experienced postprandial vomiting. Endoscopic examination revealed grade A esophagitis, minor antral gastropathy, and mild bulbar duodenitis. Her BMI was calculated at 33.1 kg/m² (89 kg/1.64 m). One week later, she had a laparoscopic band removal and sleeve gastrectomy using an endo GIA Tri-stapler. Both the surgical and postoperative periods proceeded without complications, and she was discharged home the next day after surgery. The patient was readmitted after two weeks due to an organo-axial gastric volvulus, which was managed with stent placement. Six weeks following, a stomach leak and peri splenic fluid collection were diagnosed. A 12 mm Ovesco clip was employed to seal a perforation situated 35 cm from the incisors. Subsequently, a MEGA bariatric stent was placed.

RESULTS: Two months after the removal of the MEGA stent, the patient had recovered completely and was in good health.

CONCLUSIONS: Gastric twist after sleeve gastrectomy is a rare condition; a high index of suspicion is required for diagnosis. Prioritize conservative treatment to prevent the risk of revisional surgery.

Keywords: laparoscopic sleeve gastrectomy; gastric twist; leak; case report

Introduction

Hess first described laparoscopic sleeve gastrectomy (LSG) as the first stage of the duodenal switch technique [1], and it has since increased in popularity as a primary surgery option. Laparoscopic sleeve gastrectomy is the most common restrictive bariatric surgical treatment used today [2]. Complications of LSG include gastrointestinal (GI) leaks occurring in up to 3% of patients [3] and gastric twists in 0.2–4% of patients [4]. We present a case of laparoscopic band removal and LSG complicated by a gastric twist and leak, which was successfully treated conservatively.

Case Presentation

A 29-year-old female patient with body mass index (BMI) of 41.3 kg/m² (111 kg/1.64 m) had laparoscopic adjustable gastric band insertion 6 years ago. She had recent postprandial vomiting due to grade A esophagitis, mild antral gastropathy, and mild bulbar duodenitis revealed by en-

doscopy. Her BMI was 33.1 kg/m² (89/1.64). She had a laparoscopic band removal and sleeve gastrectomy one week later, using an endo GIA Tri-stapler. The intraoperative and postoperative courses were unremarkable, and the patient was discharged home on the next postoperative day.

The patient was readmitted two weeks later due to persistent vomiting, dehydration, and achalasia like obstructive symptoms (difficulty swallowing liquids, but not soft or hard meals). Her pulse rate was 86 bpm, BP 107/76, temperature 36.9 °C. The patient was treated conservatively, Gastrografin swallow showed partial upper gastric remnant obstruction. Upper GI endoscopy revealed organo-axial gastric remnant twist (Fig. 1). Because self-expandable metal stents (SEMS) were not available, esophageal stent was used instead. The patient was able to tolerate all types of oral feeding, vomiting stopped, her vitals were stable, and bowel sounds active. The patient recovered and was discharged home two days later. This research was prepared following CARE checklist (**supplementary material**).

Six weeks later, the patient presented with epigastric pain, nausea, vomiting, and fever. Computed tomographic (CT) scan revealed a gastric leak and peri splenic fluid collection due to passage of fluids between the esophageal stent and esophageal wall and stent migration distal to site of leak (Fig. 2).

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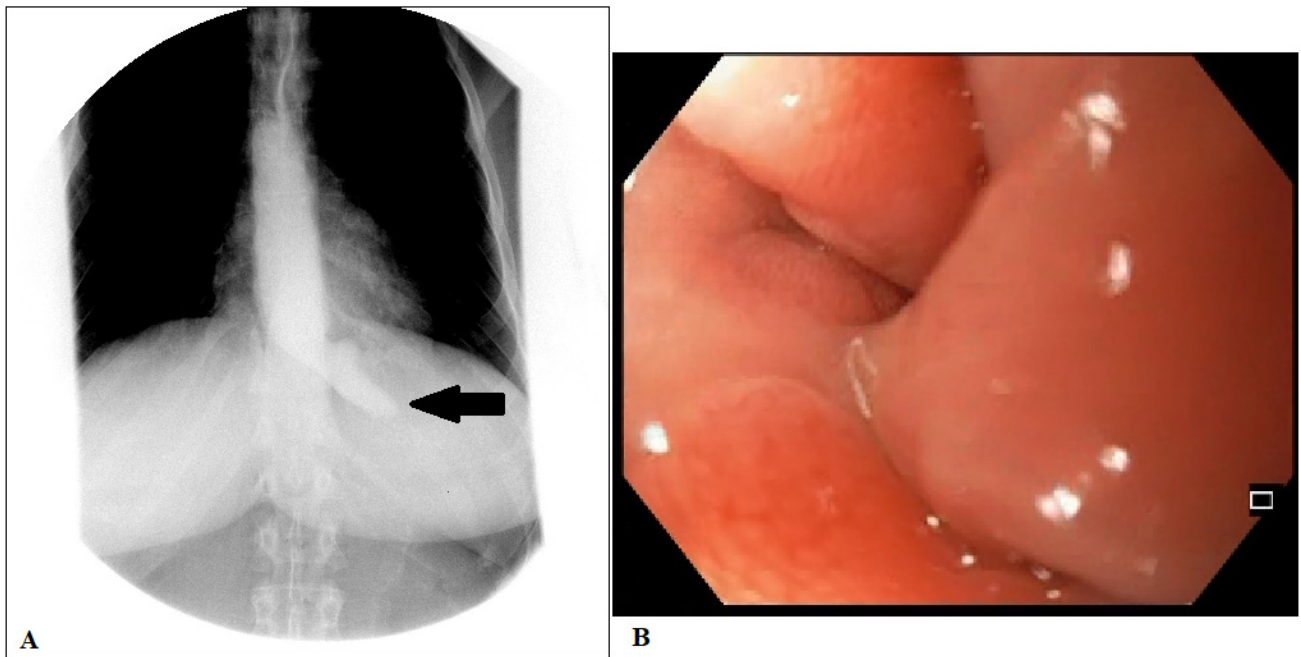


Fig. 1. Gastric remnant obstruction due to twist. (A) Gastrografin swallows show partial gastric remnant obstruction (arrow), the contrast can reach distally. (B) Upper endoscopy showing spiraled gastric sleeve.

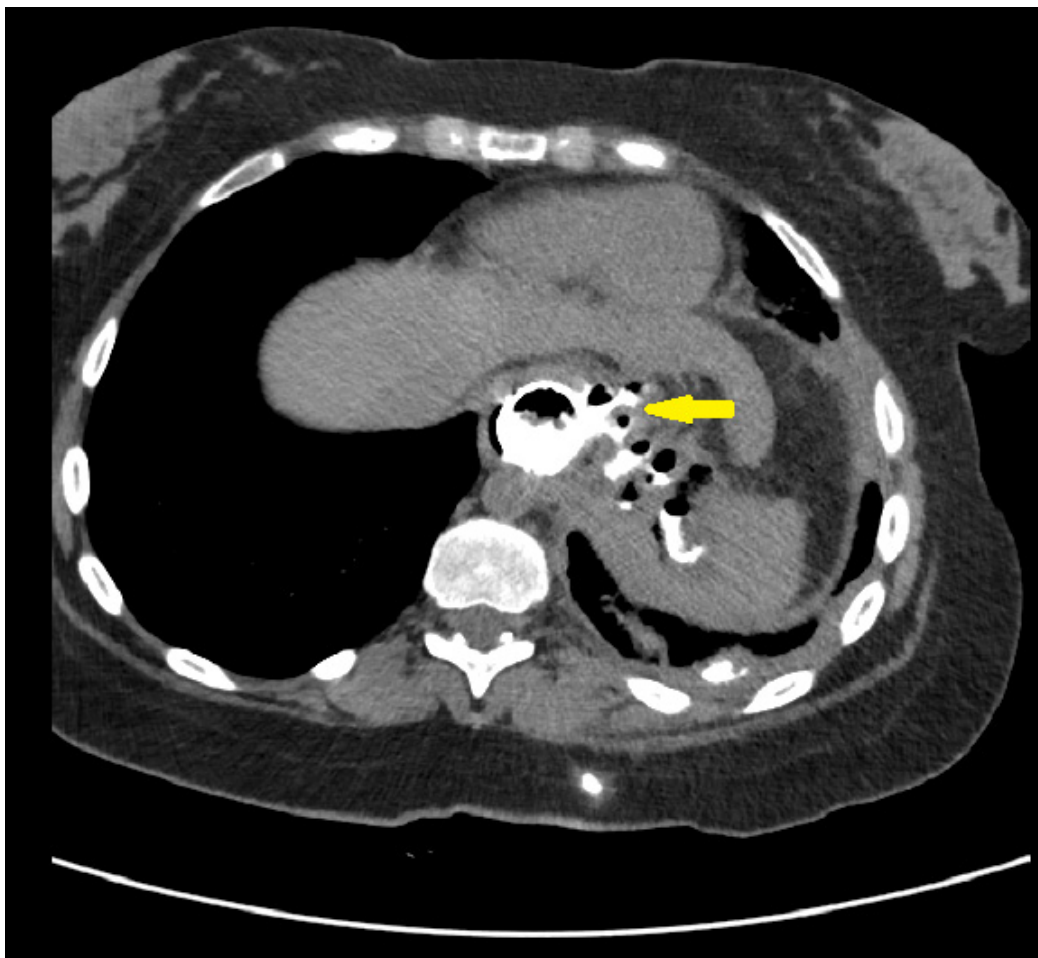


Fig. 2. Computed tomographic (CT) scan of the upper abdomen shows leak around the stent (arrow) and tracking around the left side of the abdomen.

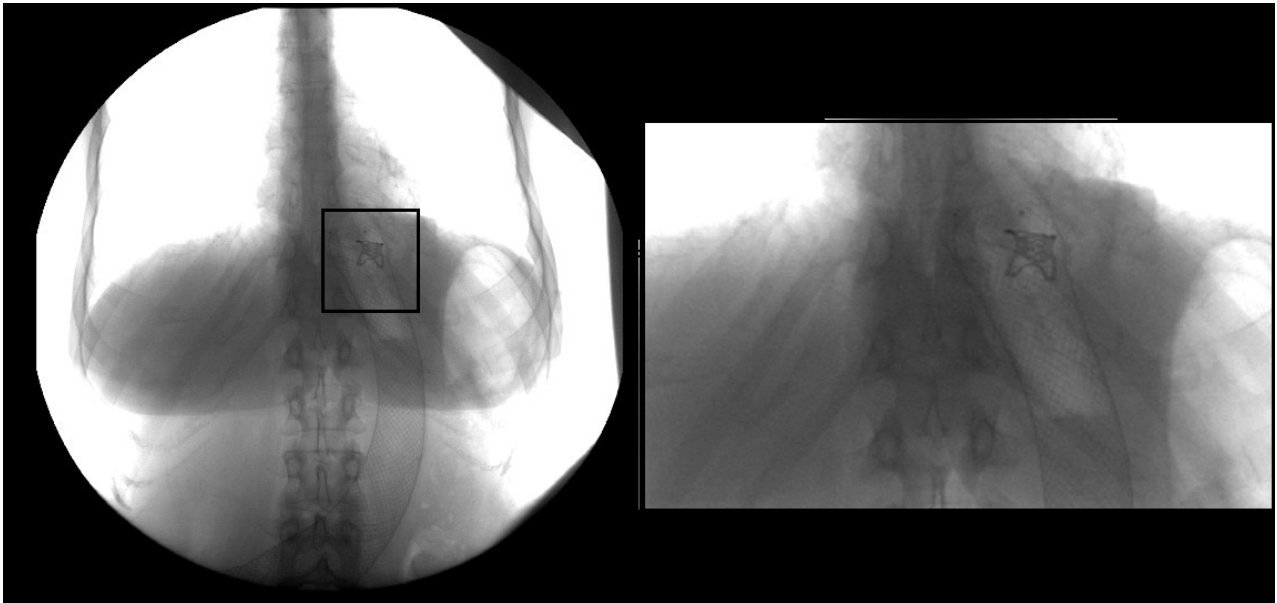


Fig. 3. Implanted MEGA stent overlying Ovesco 12 mm clip. The black square represents the magnified nearby picture which shows the MEGA stent over the Ovesco clip.

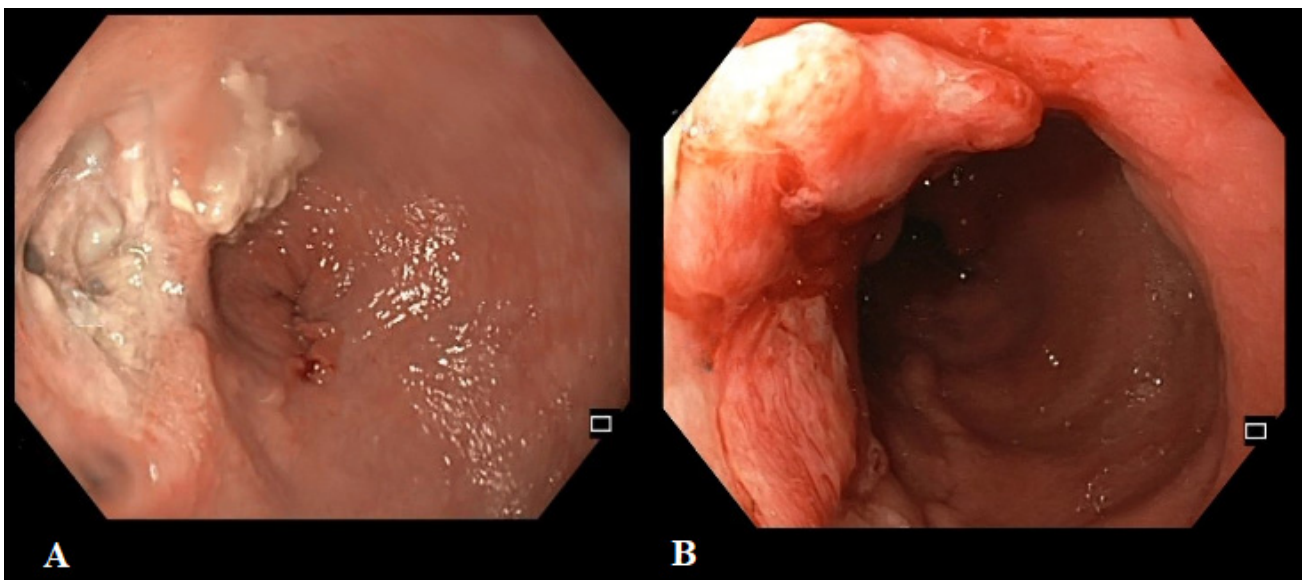


Fig. 4. Follow up two months post MEGA stent removal. (A) Site of perforation and leak, staple line is obvious. (B) Complete healing after conservative management.

She underwent an upper GI endoscopy, the esophageal stent was removed, and an Ovesco 12 mm clip (OTSC® System, Tuebingen, Germany) was used to close a perforation site at 35 cm from incisors. A bariatric stent (NitiSTM MEGA™, TaeWoong Medical, Gimpo-si, South Korea) was implanted (Fig. 3).

Ultrasound guided percutaneous peritoneal fluid drainage is performed under appropriate antibiotic cover. The patient improved gradually. The Gastrografin study and upper GI endoscopy were repeated the following day and revealed no leaks or obstruction. The patient recovered well and was sent home. The patient was doing well after two months

when the MEGA stent was removed and showed complete healing (Fig. 4).

After two years of follow-up, the patient has no new complaints; her weight is 67 kg, and her BMI is 24.9 kg/m². She lives a comfortable and good lifestyle.

Discussion

LSG provides the advantage of resecting ghrelin-producing gastric bulk, and it can be transformed into other bariatric surgeries (duodenal switch with biliopancreatic diversion, laparoscopic Roux-en-Y gastric bypass, and mini gastric bypass) [5,6]. It can, however, be complicated by a gas-

tric leak or fistula, gastroesophageal reflux, splenic damage, hemorrhage, nutritional deficits, and stenosis or twist [7].

A gastric twist, or functional stenosis, is a disorder in which all or part of the gastric sleeve rotates around its anatomical axes. Gastric twist can be classified into two types: organo-axial, where the axis of rotation is 180 degrees longitudinally and passes through the pylorus and gastroesophageal junction at the level of the incisura angularis (as in our case), and mesenteric-axial, where the axis of rotation is transverse and passes through the middle of the stomach from the lesser to the greater curvature [4,5].

In reviewing the literature for cases like our presented case here, Bortul *et al.* [8] and Kicska *et al.* [9] reported that organo-axial twist occurred after the posterior gastric wall's extensive dissection, which gives it mobility. Furthermore, in LSG, the gastrophrenic, gastrosplenic, gastrocolic, and gastrohepatic ligaments that support the posterior gastric wall together are severed, causing the normal anatomic structure to weaken, and become unstable [10]. Furthermore, separating the greater omentum from the greater curvature of the stomach, as we typically do during LSG, leaves the remnant stomach prone to twisting because there are no fixations throughout the entire greater curvature [11].

The zigzagging of the staple during stomach resection by progressive rotation of the staple line in an anterior-posterior plane, as documented by Subhas *et al.* [12], did not occur in our case.

The diagnosis is difficult and requires a high level of suspicion because the twist can occur intraoperatively, early postoperatively, or late postoperatively [13]. This is significant since it determines the type of management. If a gastric twist is identified during surgery, the choices for correction are stricturoplasty, seromyotomy with an omental flap, or conversion to Roux-en-Y gastric bypass or mini-bypass [14]. In contrast, delayed presentation, as in our case, can be treated with endoscopic dilation/stenting, surgery alone, or surgery after endoscopic therapy failure [15]. The choices of treatment were explained to the patient, and she chose the conservative methods, which save time, expense, and invasiveness. The success rate of endoscopic management varies; it might be high, as in the case of Abd Ellatif *et al.* [5], where it reached 95% (43 out of 45 patients). This contrasts with previous reports that advised surgical treatment is mandatory [16,17]. Due to the leak and non-healing at the gastric resection site, we tried endoscopic therapy (with stenting and clip application) twice. This emphasizes the importance of multidisciplinary management in difficult cases with frequent or multiple complications in the late postoperative period. Our approach was almost identical to that of Costa *et al.* [18], utilizing upper endoscopy to treat two cases of gastric twist, both of which involved the intra-gastric insertion of a self-expandable metallic stent.

Preventive recommendations in the literature included omentopexy to stabilize the posterior gastric wall following dissection [7] and symmetric stapling of the posterior and anterior walls to avoid twisting of the remaining stomach tube [17].

Conclusions

Gastric twist after sleeve gastrectomy is a rare condition; a high index of suspicion is required for the diagnosis. Using the Ovesco clip and stent via endoscopic intervention allowed us to avoid mini bypass surgery and the hazards associated with revisional surgery.

Availability of Data and Materials

Available upon request from the corresponding author.

Author Contributions

MN: Conception and design, AY: Drafting the manuscript, analyzed data, MS: Prepared figures, revised draft, SS: Critical review, references collection, analyzed data. All authors have been involved in revising it critically for important intellectual content. All authors gave final approval of the version to be published. All authors have participated sufficiently in the work to take public responsibility for appropriate portions of the content and agreed to be accountable for all aspects of the work in ensuring that questions related to its accuracy or integrity.

Ethics Approval and Consent to Participate

This study was approved by the Institutional Review Board (IRB) of the School of Medicine at Mutah University (IRB No.1542024) on 3 April 2024. Patient informed consent was obtained for anonymous publication of this research.

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Conflict of Interest

The authors declare no conflict of interest.

Supplementary Material

Supplementary material associated with this article can be found, in the online version, at <https://doi.org/10.62713/ai.c.3742>.

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