Endoscopic closure of persistent gastric leak and fistula following laparoscopic sleeve gastrectomy

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1. Introduction

Laparoscopic sleeve gastrectomy (LSG) was initially developed as part of a two-stage bariatric procedure involving biliopancreatic diversion with duodenal switch [1]. It is increasingly being performed alone as an alternative to laparoscopic gastric banding and Roux-en-Y gastric bypass due to decreased postoperative complications and mortality [2]. Secondary to the changes in intra-gastric pressure and a long surgical staple line, hemorrhage and gastric leakage remain the two most common complications after LSG [3]. While the American Society for Metabolic and Bariatric Surgery reports a complication rate of 1–3%, both can ultimately lead to the patient death if not recognized and treated quickly. The surgery reports a complication rate of 1–3%, both can ultimately lead to patient death if not recognized and treated quickly. As other non-invasive means of treatment are absent, we believe this case demonstrates a new technique for multiple gastric leaks following LSG in patients without sepsis or peritonitis.

Present Findings

A 45 year old woman with a medical history of sarcoidosis and metabolic syndrome underwent LSG for treatment of morbid obesity (BMI of 46). She tolerated the procedure well but subsequently developed a staple line gastric leak post-operative day one, which was confirmed by free air and fluid collection in the left upper quadrant adjacent to stomach on imaging. Two days after the initial operation, exploratory laparotomy and upper endoscopy revealed leak along the gastrectomy staple line several centimeters below the diaphragm. The defect was closed using vicryl suture with subcutaneous injection of fibrin seal, endoclips, and cautery to include the surrounding area. Endoclips were placed along the fistula tracts. A repeat procedure was required. Follow up imaging confirmed resolution of gastric leak and patient did not experience additional complications.

Discussion

The patient was able to discontinue TPN and return to an oral diet. Both procedures were well tolerated and did not require hospitalization.

Conclusion

Endoscopic management of multiple gastric leaks and fistulae using fibrin seal, endoclips, and cautery appears to be a promising noninvasive form of treatment with a lower associated morbidity and shortened hospitalization.

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as a leak in the middle of the staple line along the gastric greater curve. She was discharged on TPN and levofloxacin following closed suction drain placement (via interventional radiology) with intentions to allow healing of suture line leak. The gastrectomy sleeve leakage persisted 10 weeks post-operatively.

She elected to undergo endoscopic management, but refused the use of stents. She underwent the following procedure: Esophagogastroduodenoscopy (EGD) revealed two fistulous tracts along the staple line. The most proximal tract in the gastric fundus measured 1.5 cm wide and the fistula at the mid sleeve staple line site measured 8 mm in width. Fistulae margins were cauterized with argon plasma coagulation (21 min at 60 W). Fibrin Glue Evicel® was injected into the fistula bed using 3 cc for the distal tract and 2 cc in distal fistula. Eight endoclips (Cook Medical®) were applied to approximate the margins of the edge until distal fistula was closed. The process was repeated to the proximal staple line dehiscence, except endoclips could not be applied.

An upper GI series 3 weeks later demonstrated a persistent leak at the proximal dehiscence but closure of the mid suture line dehiscence. Repeat endoscopy revealed the mid suture line fistulous tract remained sealed with the previously placed endoclips; however, the more proximal tract was open. Here, the previous process was repeated. A second attempt to close proximal tract involved the following: a cytology brush and scope cleaning brush were used to roughen fistula margins, fibrin sealant, Evicel®, was injected into the fistula and surrounding area. Three endoclips were placed along the tract, but the length (1.5 cm) was too large to fully approximate the fistula edges. Barium upper gastrointestinal series at 5 weeks follow up demonstrated no further extravasation. The patient returned to an oral diet and the closed suction drain was removed without complications.

3. Discussion

Our patient failed both immediate surgical closure of a postsleeve gastrectomy staple line leak as well as multiple modalities of conservative management. While endoscopically-placed self-expanding stents have been the primary non-invasive treatment when medical management in patients without peritonitis fails (typically with leakages persisting for greater than 4 weeks) [1,5], the patient elected against having this procedure. Additionally, the high rate of stent migration resulting in uncovering of the treated leak or stricture results in considerable risk and added healthcare costs for additional stent replacement, hospital monitoring for immediate complications, and possible surgical revision if stent placement fails [4].

Our method of using EGD to perform cauterization with endoclips and fibrin glue to treat more than a single gastric leak and fistula has not yet been described in related literature. It may serve as a preferred alternative to other less-invasive procedures given improved patient comfort along with the ability to maintain an oral diet. Although our patient underwent a repeat procedure for a continued leak, this was done as outpatient and did not result in additional hospital admissions.

4. Conclusion

LSG staple line leaks are a dreaded post-operative complication that often results in reoperation along with prolonged hospitalization [1]. Treatment of a post-LSG leak and fistulous tracts in this patient, without sepsis or peritonitis present, using cauterization, endoclips, and fibrin glue via EGD provided a minimally invasive method with no added morbidity or hospitalization. While this technique was used as a last resort for two persistent gastric leaks and fistulae, other patients may benefit from having it as first line treatment. Additional studies are needed to determine this.

Conflict of Interest

The authors declare that there are no conflicts of interest.

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Ethical approval

Ethical approval has not been given, as this is a retrospective case report, and not a research study.

Author contribution

Dr. Fernandez – case report concept, editing paper. Dr. Evans – case report concept, editing paper, obtaining patient consent. Dr. Luthra – writing the paper, data collection, reviewing prior records of primary surgery.

Guarantor

Anjuli K. Luthra, John A. Evans, Adolfo Z. Fernandez.

Consent

Written informed consent was obtained from the patient for publication of this case report. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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