

Case report

Internal hernia after revisional laparoscopic loop duodenal switch surgery

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Loop duodenal switch (LDS) is a new surgical technique that allows surgeons to perform a duodenal switch with less effort and fewer complications [1]. Although Torres describes the potential for internal hernias (IHs) that may accompany the procedure, his study never found evidence of hernias. Single anastomotic techniques, LDS, and mini gastric bypass have never been associated with internal herniation in the literature [2–4]. What is being reported in this article is a first for this type of procedure.

Case report

A 35-year-old woman was presented to the hospital with burping, a burning sensation in her chest, and abdominal pain. The patient was on antireflux medication and had Roux-en-Y gastric bypass surgery (RYGB) done 6 years ago, which had resulted in minimal weight loss. She wanted the RYGB reversed because of chronic pain from ulcers.

She underwent an uncomplicated repair of the hiatal hernia and then the reversal of the RYGB as described by Gagner [5]. However, instead of performing a regular biliary pancreatic diversion with duodenal switch surgery (BPD/DS), a single anastomosis duodenal switch or LDS was performed. The technique for performing the procedure is similar to that described by Torres [2,6], the only difference being a bougie size of 40 and a common channel (distance between anastomosis and ileocecal valve) length of 300 cm (Fig. 1). The patient was discharged home on day 3, tolerating a full liquid diet.

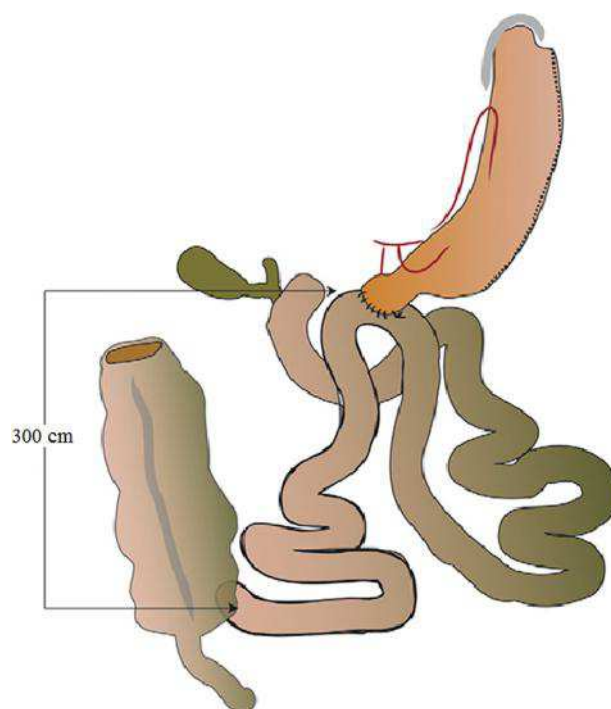


Fig. 1. A simple anatomy drawing of the loop duodenal switch. Common channel length is highlighted. A 40F bougie is also used.

Sixty-four days later, the patient presented with mid- and left-sided abdominal pain. Physical examination revealed abdominal discomfort on deep palpation only. The rest of the patient's exam was unremarkable. Computed tomography scans indicated mesenteric inflammation and an umbilical hernia. The radiologist who read the film did not feel there was an IH despite being asked specifically about it. The surgical team also did not identify this

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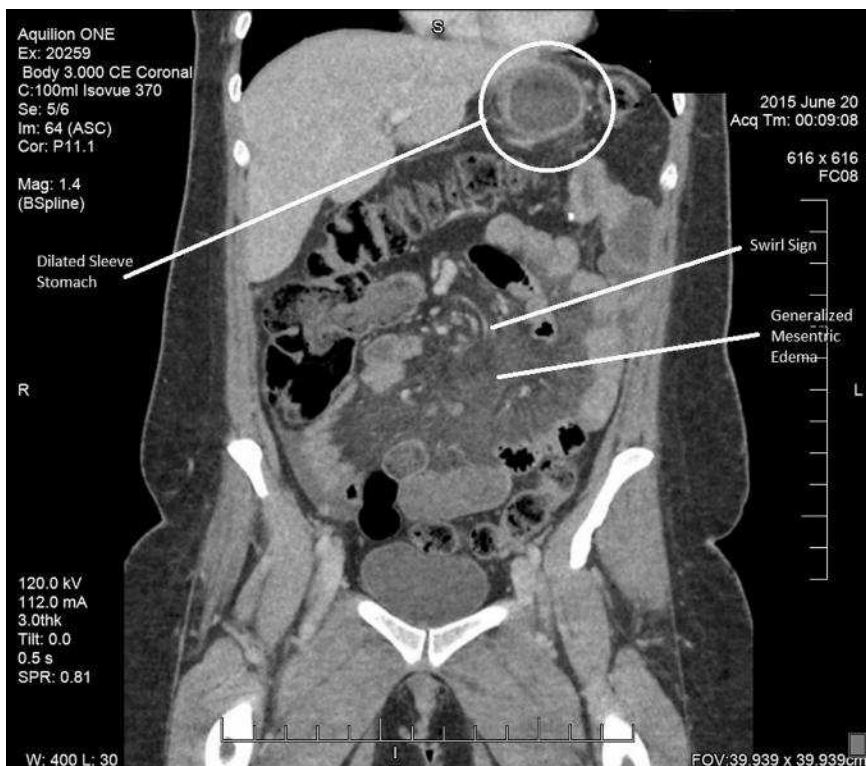


Fig. 2. This figure shows the highlighted mesenteric swirl that is only seen on coronal views. Of note is the larger diameter sleeve that is associated with a partial outlet obstruction at the duodenal ileostomy and the larger diameter reconstruction associated with reversal of laparoscopic Roux-en-Y gastric bypass to sleeve. Additionally, there is generalized edema throughout the small bowel mesentery.

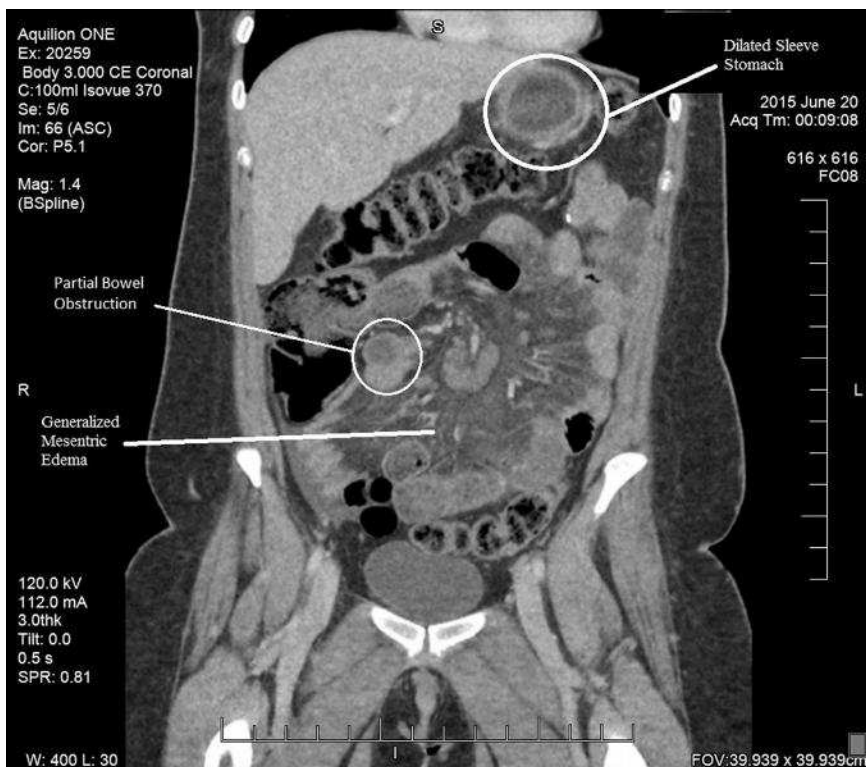


Fig. 3. This figure shows generalized mesenteric edema with the dilated sleeve and a single partially obstructed loop of bowel.

preoperatively. The patient had no other abnormal signs or symptoms. The patient was scheduled the next day for exploratory laparoscopy and umbilical hernia repair.

During the exploratory laparoscopy, an umbilical hernia was not found. An endoscopic gastroduodenoscopy performed during the laparoscopic surgery found no bleeding in the stomach, esophagus, or small bowel. There were no staple line breaks or any errant staple lines in esophageal tissue. No hiatal recurrence was noted. However, the duodenal ileostomy had scarred and twisted 180 degrees ante-clockwise. This caused rolling of the entire afferent limb underneath the anastomosis and over to the right side of the abdominal cavity, creating a partial bowel obstruction. Additionally, there was mesenteric inflammation present, as seen on the computed tomography scans (Figs. 2 and 3).

An adhesiolysis was done to allow the reduction of the afferent limb back to the left side of the abdomen. This surgery does not have mesenteric defects, and the defect underneath the loop is so large that closing it effectively is extremely difficult. Rather than do this, we sutured the omentum to the mesentery of the small bowel to keep the afferent limb in place. The patient had no perioperative or postoperative complications and was later discharged 2 days after the surgery.

Discussion

The LDS is a recently developed procedure that is a variant of the BPD/DS. The restrictive aspect of this operation is similar to the BPD/DS. However, instead of a Roux limb, a loop is brought up to the duodenal anastomosis [1].

The BPD/DS has previously raised cause for concern regarding its technical complexity, as well as the operative and metabolic complications that may arise [1,7]. The LDS attempts to rectify this by decreasing the complexity of the procedure to only 1 small bowel anastomosis, bougie sizes through greater restriction, and malabsorption by preserving more bowel length. Presumably, with fewer major alterations, the metabolic and operative complications should decrease over both the RYGB and the BPD/DS [2].

The type of IH in this case is the first unique complication related to the single anastomotic techniques seen in

both the mini gastric bypass and the LDS procedure [3,8]. In this instance, there was scarring that caused the IH to form. Presumably, the scarring played a role in the formation of this IH, as the defect created by bringing up a loop is very large and should let the small bowel travel freely underneath the anastomosis.

Conclusions

The LDS, compared with the BPD/DS and RYGB, minimizes the amount of postoperative complications that may occur. However, without closure of this defect, this rare complication may occur.

Disclosures

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

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