

Endoscopic treatment of efferent loop syndrome with insertion of double pigtail stent

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tient with efferent loop syndrome by implantation of a double pigtail stent. Efferent loop syndrome is a very rare postgastrectomy syndrome that can occur following Billroth-II or Roux-en-Y reconstruction. Surgical treatment is usually required. However, in this case, efferent loop obstruction was successfully resolved by the insertion of a double pigtail stent. A double pigtail stent should be considered a treatment option for relieving efferent loop obstruction if immediate surgical treatment is not required.

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Abstract

Efferent loop syndrome is a very rare postgastrectomy syndrome that can occur following Billroth-II or Roux-en-Y reconstruction. The most common loop syndrome after gastric surgery is afferent loop syndrome; however, efferent loop syndrome has been reported in rare cases. Here, we report a case of efferent loop obstruction that occurred after postoperative adhesiolysis of a small-bowel obstruction. The patient had undergone a partial gastrectomy with Billroth II anastomosis and gastric ulcer perforation 30 years prior. The efferent loop obstruction was successfully resolved by the insertion of a double pigtail stent. To the best of our knowledge, this is the first case in the literature describing the treatment of efferent loop obstruction.

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Key words: Efferent loop syndrome; Double pigtail stent; Postgastrectomy syndrome

Core tip: We report the successful treatment of a pa-

INTRODUCTION

Efferent loop syndrome is one of two “loop syndromes” that can occur after certain types of gastric surgery. Afferent loop syndrome is commonly reported, while efferent loop syndrome is very rarely reported. The signs and symptoms of both loop syndromes may be similar and difficult to distinguish, and surgical treatment is usually required to correct these problems. This report provided the first description of the successful treatment of a patient with efferent loop obstruction with the implantation of a double pigtail stent.

CASE REPORT

A 58-year-old man, who had undergone a previous partial gastrectomy 30 years prior, was admitted to the emergency room with severe abdominal pain and vomiting. He was resuscitated and underwent computed tomography, which revealed different sites of small-bowel obstruction in the left and middle lower abdomen. A



Figure 1 Endoscopic finding revealed a narrowed and swollen entrance of the efferent loop.



Figure 2 Gastrograph in study showed nearly complete obstruction of the efferent loop.

laparotomy, showed that the small bowel was markedly distended over adhesion band but not strangulated. Adhesiolysis was performed. Other abdominal findings were nonspecific. During surgery, signs of a partial gastrectomy that included a retrocolic and antiperistaltic gastrojejunostomy. Gross findings were nonspecific.

The patient recovered well and started orally; however, seven days later, he developed abdominal discomfort and experienced episodes of copious bilious vomiting at night. His abdomen remained soft and not distended. Plain abdominal radiography and laboratory tests showed no remarkable findings. The next day, the symptoms persisted, and a gastroendoscopy was performed under the suspicion of afferent loop syndrome. Copious amount of bilious fluid were found in the remnant stomach and dilatation. The lumen of the afferent loop was normal; however, the efferent loop was narrowed and edematous approximately 5 cm below the site of the gastrojejunostomy (Figure 1). The endoscope could be passed into the loop. The narrowed loop did not appear to have any abnormal mucosal lesions. A gastrografin study showed nearly complete obstruction of the efferent loop (Figure 2). The patient was treated with nasogastric tube decompression and total parenteral nutrition, but did not improve. After seven days, a follow-up endoscopy showed that the efferent loop had not changed. Endoscopic pneumatic balloon dilatation (CRE™ Balloon, Boston Scientific Co. Ltd., Ireland; 12 mm; 40 psi for 1 min, 45 psi for 1 min) over the guide-wire and under endoscopic view was immediately performed but was not effective. Subsequently, a double pigtail stent (Zimmon™ Biliary Stent, Cook Co. Ltd., Ireland; 10 Fr; 7 cm) was inserted through the efferent loop stenosis and over the guide wire using a double-channel endoscope (Olympus GIF-Type 2T240) under endoscopic view (Figure 3). Beginning the day after the procedure, the patient did not complain of abdominal discomfort or experience vomiting. The device was monitored by abdominal radiography (Figure 4A). Serial plain abdominal radiographs did not show migration of the stent to the other site. The patient subsequently recovered, and there were no further episodes of abdominal discomfort and vomiting. A repeated gastrogram in study

and gastroscopy showed a good patency and a widened loop (Figure 5). Thirteen days after procedure, the double pigtail stent was expelled with the feces (Figure 4B). The patient eventually recovered and was discharged. At a 3-mo follow-up, the patient did not have any symptoms.

DISCUSSION

Afferent or efferent loop syndrome is a purely mechanical problem characterized by the obstruction of gastric emptying at or near the site of a gastrojejunostomy^[1]. Efferent loop syndrome is a rare post-gastrectomy syndrome, while afferent loop syndrome is more common^[2]. The major cause of the syndrome is an intestinal hernia. The more minor causes include an adhesive band and kinking because of scarring or poor reconstruction during gastric surgery^[3,4]. In some cases, intussusception causes efferent loop syndrome^[5]. Rarely do we experience efferent loop obstruction with mucosal prolapse-like stenosis of the efferent loop due to adhesion or bowel edema.

Efferent loop syndrome usually occurs within the first few weeks following a gastric surgery. However, this syndrome can also develop years after gastric surgery^[6]. The usual causes of this syndrome during the early post-operative period are anastomotic edema and kinking due to poor operative procedure. The later-occurring forms of the syndrome may be caused by anastomotic stricture, ulcer, bowel adhesion, jejuno-gastric intussusception, and anastomotic cancer^[7]. Rarely do we experience efferent loop syndrome caused by the adhesiolysis of a mechanical obstruction from a previous operation.

The clinical symptoms of efferent loop syndrome are characterized by abdominal cramps and copious bilious vomiting. In particular, abdominal discomfort is relieved by vomiting. This symptom is worse when the patient is supine, as in this patient who had vomiting only at nights. Patients may be dehydrated and have metabolic alkalosis if the syndrome occurs over a prolonged period of time, patients may experience paradoxical aciduria.

The treatment of efferent loop syndrome varies depending on the cause of the syndrome. Complete loop obstruction due to a mechanical cause requires surgical

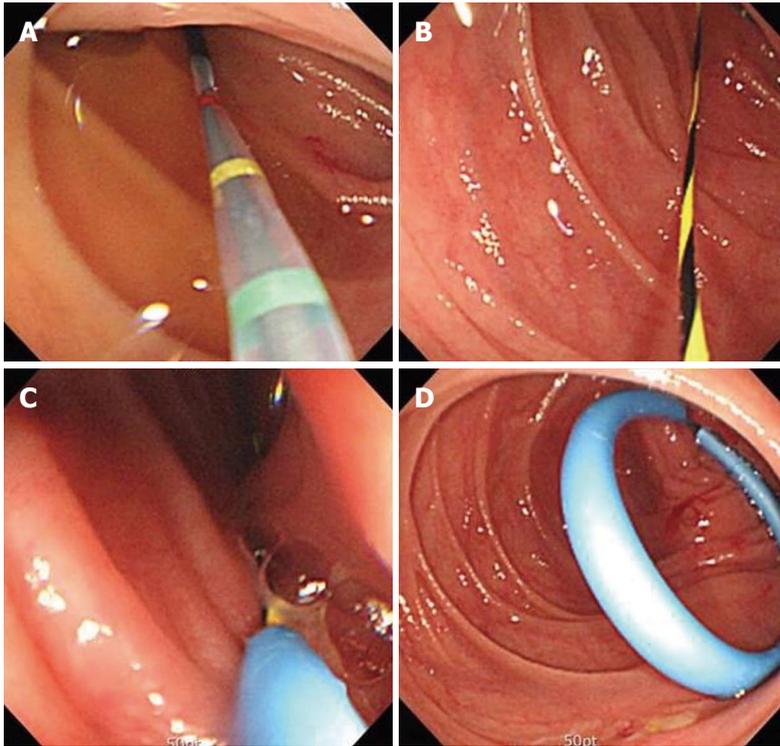


Figure 3 Endoscopic stent procedure was performed that double pigtail stent was inserted through efferent loop stenosis and over the guide wire using double-channel endoscope under endoscopic view.

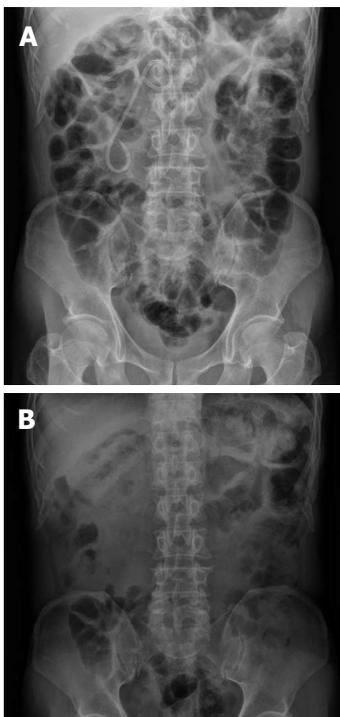


Figure 4 Plain abdominal radiography revealed double pigtail stent to efferent loop (A) and no double pigtail stent and other specific finding (B).

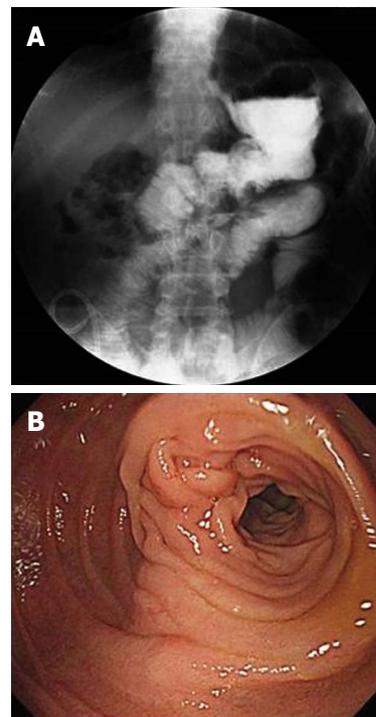


Figure 5 Follow-up gastrograin and endoscopic study showed free flow of contrast and recovery of narrowed, swollen orifice of the efferent loop.

intervention. Surgical interventions are numerous. However, if the syndrome is caused by an anastomotic ulcer or edema and adhesion, conservative treatment is indicated. Conservative treatments include nasogastric drainage,

keeping non *per os*, prescribing H2 antagonist or proton pump inhibitors, and total parenteral nutrition.

Because of recent advances in endoscopic intervention, various treatment methods have been attempted.

However, treatment has mainly been reported in afferent loop syndrome, very little documentation on the treatment of efferent loop syndrome exists in the literature. In several cases, endoscopic stent insertion was reported for the treatment of an obstruction due to tumor recurrence or peritoneal seeding. An endoscopic stent induced complication generally involve dislocation and clogging with subsequent infection. An endoscopic stent could be used in various types of gastrointestinal (GI) tract diseases, whereas a double pigtail stent is specifically used for managing biliary tract or pancreatic diseases. Pigtail stents may be inferior to straight stents in their drainage capacity, but the risk of migration of pigtail stents is lower^[8]. In this case, we treated a patient with efferent loop obstruction caused by benign stricture with a double pigtail stent to prevent the dislocation of the GI stent. The patient improved following the clearing of efferent loop obstruction by the treatment. We therefore report that this case was resolved with the use of a double pigtail stent.

In conclusion, efferent loop syndrome following after a gastrectomy can be diagnosed by meticulous history-taking, physical examination, and radiologic modalities. In our opinion, a double pigtail stent should be considered a treatment option for relieving efferent loop obstruction if immediate surgical treatment is not required.

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