

Endoscopic Balloon Dilation for Afferent Loop Syndrome after Gastrectomy with Billroth II

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An 86-year-old female patient with a past history of gastrectomy with Billroth II operation 30 years ago came to our hospital, complaining mainly of epigastralgia and vomiting. Her blood amylase level was elevated (hyperamylasemia). Ultrasonographic examination and computed tomography (CT) of the abdomen revealed a dilated pancreatic duct and a markedly dilated duodenum, ie, an afferent loop. Endoscopy revealed a pinhole-like obstruction at the entrance of the afferent loop. Based on these findings, the patient was diagnosed as having afferent loop syndrome due to stricture of anastomosis. Balloon dilation performed endoscopically produced a quick improvement of the manifestations. The patient had no relapse for 18 months after the treatment.

Introduction

Afferent loop syndrome is a complication which occurs due to afferent loop obstruction for some reason in patients who underwent gastrectomy with Billroth II operation. This disease is classified into acute and chronic types. Regarding the acute afferent loop syndrome in particular, it has been reported that the afferent loop should be decompressed at an early stage.

We conducted endoscopic balloon dilation successfully for chronic afferent loop syndrome with scar stricture at the entrance of the afferent loop that was endoscopically detected in a patient with hyperamylasemia, and we report this case of very effective therapy in this paper.

Case

Patient: An 86-year-old female patient.

Main complaints: Epigastralgia and vomiting.

Past disease history: Gastrectomy with Billroth II operation performed 30 years ago.

Present disease history: The patient had acute epigastralgia on September 14, 1997, and went to another hospital. Although an analgesic was administered, there was no alleviation of the symptoms. The patient, diagnosed as having acute abdomen, was referred to our hospital.

Findings of physical examination: Swelling and tenderness of the upper abdomen were noted but there were no signs of peritoneal irritation. The vomitus was mixed with bile.

Laboratory findings on admission: The WBC count was high (11,500/ μ L), and serum amylase level was elevated (2,098 IU).

Plain radiography of the abdomen on admis-

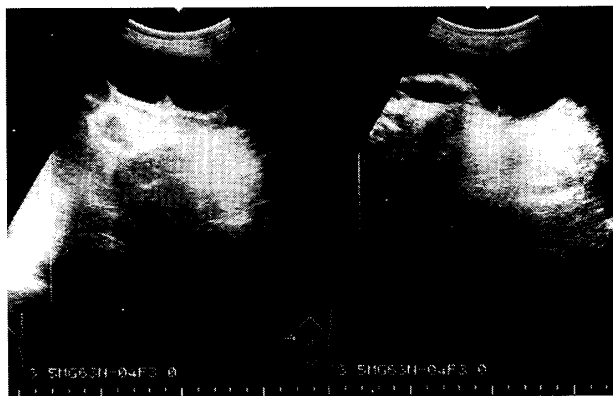


Fig. 1 Ultrasonographic findings on admission
Intestines filled with fluid in the upper abdomen were observed.

sion: There was no-gas area in the upper abdomen, but neither abnormal small intestinal gas nor free air was observed.

Ultrasonographic findings of the abdomen: A dilated pancreatic duct and intestines filled with fluid in the upper abdomen were observed (Fig. 1).

CT findings of the abdomen: A marked dilation of the duodenum, ie, an afferent loop, was seen (Fig. 2).

Upper gastrointestinal series: Upper gastrointestinal examination using gastrograffine revealed no inflow of the contrast medium from the anastomosis site to the afferent loop (Fig. 3 A).

Post-admission course: Judging from the above-mentioned examination results, the patient was diagnosed as having afferent loop syndrome with hyperamylasemia. On the admission day, gastroscopy was conducted. A little bile was observed in the residual stomach, but a pinhole-like stricture observed at the entrance of the afferent loop made it impossible to insert the endoscope (Fig. 3 B). When the patient went on fasting, epigastralgia was alleviated. To resolve the stricture at the entrance of the afferent loop, however, endoscopic balloon dilation was conducted for the stricture site on day 4 after admission after obtaining an informed consent from the patient. A

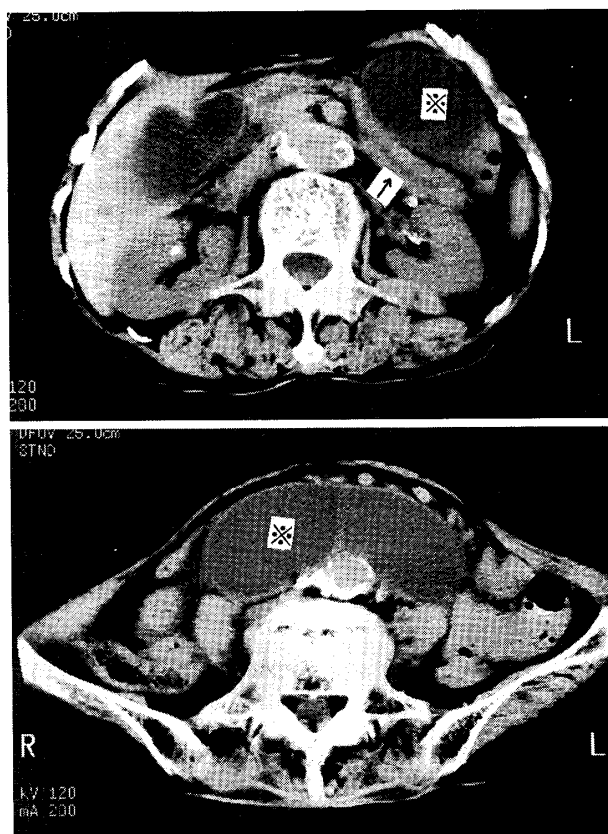


Fig. 2 CT findings on admission
Dilations of the pancreatic duct (↑) and duodenum (※) were seen.

guidewire was endoscopically inserted from the stricture site to the afferent loop, and an esophageal dilation balloon with a dilated diameter of 12 mm (Microvasive, Rigiflex Esophageal TTS) was then inserted and inflated (Figs. 4 A and 4 B). Upon balloon dilation, a great deal of bile flowed out, leading to stricture resolution, and the reflux to the afferent loop was confirmed by upper gastrointestinal series (Figs. 5 A and 5 B). The patient resumed eating with no more epigastralgia, and was discharged one week later. No relapse has been observed during 18-month follow-up after discharge.

Discussion

Post-gastrectomy afferent loop syndrome is a complication which occurs after gastrectomy with Billroth II operation. In this afferent loop syndrome, passage disorder of the afferent loop

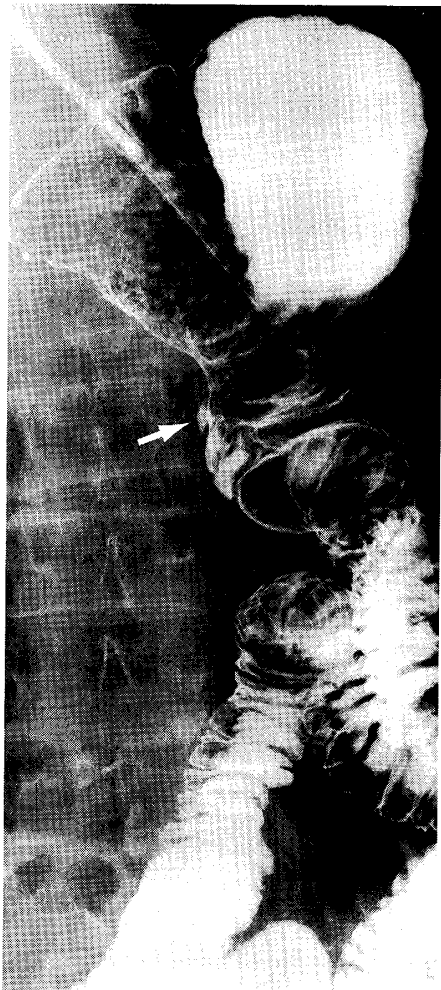


Fig. 3 A Upper gastrointestinal series on admission. No inflow of the contrast medium to the afferent loop (↑) was seen.



Fig. 3 B Gastroscopic finding. Pinhole-like stricture (↑) was observed at the entrance of the afferent loop.

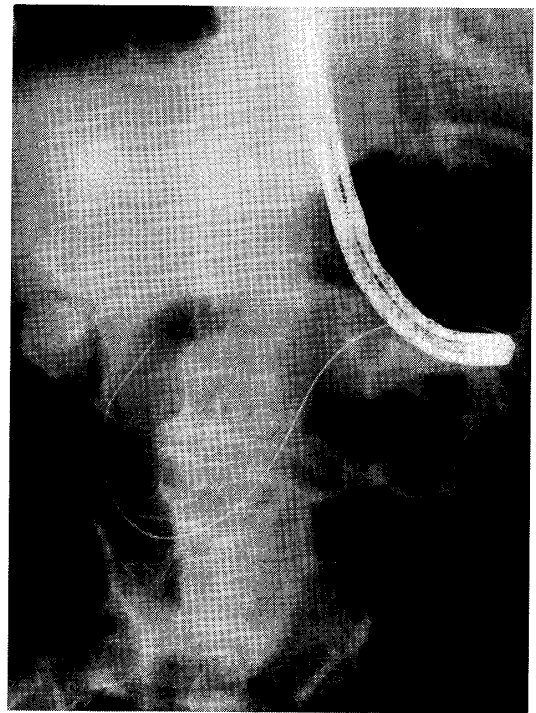


Fig. 4 A A guidewire was endoscopically inserted to the afferent loop.

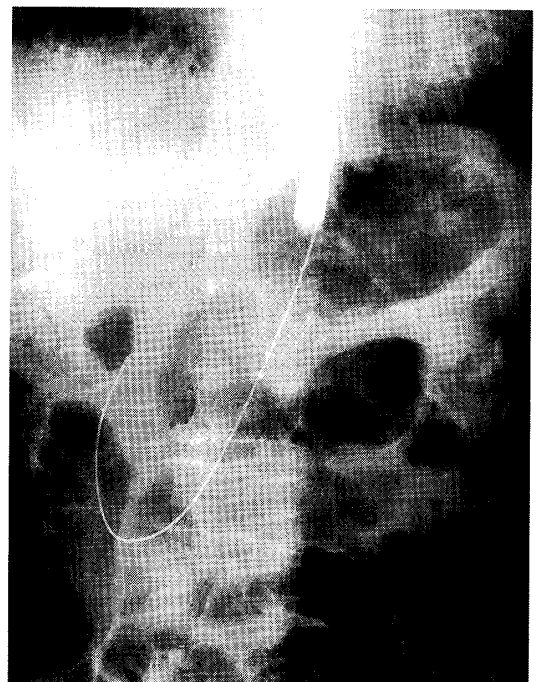


Fig. 4 B Esophageal dilation balloon was then inserted and inflated.

and retention of bile and pancreatic juice in the afferent loop occur, causing abdominal pain and vomiting. The incidence of afferent loop syndrome has been reported to range from 0.5% to



Fig. 5 A Endoscopically, stricture resolution was observed (↑).



Fig. 5 B Reflux of the contrast medium to the afferent loop was confirmed by upper gastrointestinal series.

2.5% of patients who underwent gastrectomy with Billroth II operation¹⁾²⁾.

There are two types of the afferent loop syndrome; chronic afferent loop syndrome in which the incomplete obstruction of an afferent loop causes repeated relapses, and acute afferent loop

syndrome in which the complete obstruction of an afferent loop causes necrosis and perforation of the afferent loop rapidly. Our patient was diagnosed as having chronic afferent loop syndrome with incomplete obstruction of the afferent loop due to anastomotic scar stricture.

Internal herniation, adhesions, flexion, and torsion constitute the major causes of passage disorder, whereas only a few cases of anastomotic stricture at the entrance of the afferent loop, as observed in our patient, have been reported¹⁾³⁾⁴⁾.

In terms of laboratory test results, many afferent loop syndrome patients have been reported to exhibit hyperamylasemia, as observed in our patient. There have been few reports of complication by acute pancreatitis, and only 16 cases were mentioned in Conter's collection in 1990⁵⁾.

Ultrasonographic examination and CT of the abdomen are useful for diagnosis of afferent loop syndrome. Ultrasonographic examination shows a dilated afferent loop as a cystic tumor inferior to the superior mesenteric artery and vein⁶⁾. CT of the abdomen characteristically reveals the distended duodenum anterior to the aorta⁷⁾. Ultrasonographic examination and CT of the abdomen revealed the dilated afferent loop in our patient as well, which enabled us to make the diagnosis.

Afferent loop syndrome is treated by decompressing the afferent loop at an early stage, and decompression surgery is frequently conducted. If there were no findings of perforation and anastomotic constriction is the cause of afferent loop syndrome, as in our patient, non-surgical techniques, including endoscopic electrotomy, laser incision, dilation with a balloon, etc., are safe and easy to conduct and should be attempted at first. Especially, dilation with a balloon is considered to be useful with less hazards such as hemorrhage and perforation. Although our search in the Japanese and international literatures showed only one report⁸⁾ about the usefulness of conducting

endoscopic balloon dilation for afferent loop syndrome, it is anticipated that this technique will spread.

Conclusion

We demonstrated that endoscopic balloon dilation was effective for treatment of afferent loop syndrome in a female patient who underwent gastrectomy with Billroth II operation 30 years ago.

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内視鏡的バルーン拡張が有効であった輸入脚症候群の1例

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症例は86歳の女性で、30年前にBillroth II法再建による胃切除の既往があり心窩部痛、嘔吐を主訴に来院した。高アミラーゼ血症を認め、腹部超音波およびcomputed tomography (CT) 検査で膵管の拡張と輸入脚である十二指腸の著明な拡張を認め、内視鏡で輸入脚入口部にピンホール様のはん痕狭窄を認めたため、吻合部狭窄による輸入脚症候群と診断した。内視鏡下に実施したバルーン拡張術でただちに症状は改善し、治療1年6ヵ月後の現在再発を認めていない。輸入脚入口部の狭窄による輸入脚症候群に対し、内視鏡的バルーン拡張は試みるべき治療法である。