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**Endoscopic salvage treatment of histoacryl after stent application on the anastomotic leak after gastrectomy: A case report**

Kim HS *et al*. Endoscopic treatment of add-on histoacryl sealin

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**Abstract**

BACKGROUND

Endoscopic approach could effectively manage postoperative anastomotic leakage. Various endoscopic methods have been developed for the treatment of anastomotic leakage.

CASE SUMMARY

A 53-year-old woman developed anastomotic leak after laparoscopic proximal gastrectomy. Endoscopic clip closure failed due to strong wall tension; therefore, a fully covered self-expandable esophageal metal stent (fc-SEMS) was placed to cover the leak after it was filled with a mixture of fibrin glue and histoacryl. However, fluoroscopy with gastrograffin showed dye leaking out of the fc-SEMS. Using the previous fluoroscopic image for guidance, a catheter was inserted at the leakage site. The radiocontrast dye was injected and was seen spreading along the sinus tract. Thereafter, histoacryl was injected. Seven days after the last procedure, upper gastrointestinal contrast studies showed no leaks. The patient was subsequently discharged 9 d after histoacryl injection without any complications.

CONCLUSION

To seal an anastomosis leak after stent application, salvage technique using histoacryl injection at the leakage site with fluoroscopy guidance could be considered cautiously.

**Key Words:** Anastomotic leak; Stent; Histoacryl; Endoscopy; Gastrectomy; Gastric cancer; Case report

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**Core Tip:** Endoscopic treatment including stent deployment, clipping or fibrin glue is considered as a safe and effective treatment options for anastomotic leakage after gastrectomy. We successfully treated esophago-gastric anastomotic leakage with endoscopic salvage treatment of add-on histoacryl after fully covered self-expandable esophageal metal stent (fc-SEMS). Histoacryl injection after fc-SEMS application on the anastomotic leak should be considered as treatment option.

**INTRODUCTION**

Laparoscopic approach for treating gastric cancer has fewer complications than open approach[1]. Aside from Intra-abdominal bleeding, anastomotic leakage was the most common complication[2]. Treatment options include surgery, conservative approaches, or endoscopic interventions[3]. Being as high mortality following revisional surgery for anastomotic leakage, conservative endoscopic method developed to decrease complication. Endoscopic clip, fibrin glue, endoscopic placement of stents has a crucial role in the management of anastomotic leakage. Depending on the size and location of defect, a variety of endoscopic procedures can be selected[4]. There have been several reports of endoscopic treatment for anastomotic leak. However there have been no reports of combining endoscopic management with injection of histoacryl after stent application on anastomotic leak. Herein, we present a case of anastomotic leak treated with combining endoscopic management with stent and histoacryl.

**CASE PRESENTATION**

***Chief complaints***

A 53-year-old women consulted gastroenterology for anastomotic leak after proximal gastrectomy for gastric cancer.

***History of present illness***

A 53-year-old woman underwent a laparoscopic proximal gastrectomy for early gastric cancer. Daily drainage *via* Jackson-Pratt (JP) drain was not decreased until the fourth postoperative day. Fluoroscopy with gastrograffin revealed leakage from the anastomotic site.

***History of past illness***

Apart from present illness, she has had no previous significant medical history.

***Personal and family history***

Her family history had any relevance to this present illness.

***Physical examination***

On the fourth postoperative day, the patient developed abdominal pain. Physical examination revealed a temperature of 37.3 ℃, a blood pressure of 110/60 mmHg, a pulse of 118/min, a respiratory rate of 22/min, and a diffusely tender abdomen without rebound or guarding.

***Laboratory examinations***

A complete blood count showed that the white blood cell count of 11.6 × 106, hemoglobin 11.2 g/dL, and a platelet count of 164 × 109/L. Other blood biochemical tests were normal.

***Imaging examinations***

On the fourth postoperative days, upper gastrointestinal (UGI) contrast studies revealed a leakage from anastomotic site, and endoscopy showed a lesion (Figure 1A). A fully covered self-expandable esophageal metal stent (fc-SEMS) (12 cm length, outer diameter 2.2 cm, Hanaro, Seoul, Korea) was placed to cover the leak. Subsequently, drainage was diminished to 15-20 mL/d. However, fluoroscopy with gastrograffin showed dye leaking out of the fc-SEMS. (Figure 1B)

**FINAL DIAGNOSIS**

Unsuccessful sealing anastomotic leak with fc-SEMS after laparoscopic proximal gastrectomy.

**TREATMENT**

Using the previous fluoroscopic image (Figure 1B) for guidance, a catheter (MTW Endoskpie, Dusseldorf, Germany) was inserted at the leakage site after puncturing the stent membrane. The radiocontrast dye was injected and was seen spreading along the sinus tract. Thereafter, 8 mm of histoacryl was injected into the sinus tract as the catheter was withdrawn (Figure 1C).

**OUTCOME AND FOLLOW-UP**

Seven days after the last endoscopic procedure, UGI contrast studies showed no leaks (Figure 2A). One month later, endoscopy was performed to remove the stent and remnant histoacryl (Figure 2B arrow) was observed covering the site without leakage (Figure 2B).

**DISCUSSION**

Anastomotic leakage following gastrectomy for gastric cancer is a life-threatening complication, and revisional surgery has a high mortality rate. The treatment includes conservative management, endoscopic treatment, and surgery[5]. Surgery is generally recommended for patients in critical condition. Otherwise, conservative management with endoscopic management is sufficient for minimal anastomotic leakage. Endoscopic management including stent deployment, clipping or tissue sealant had been considered safe and effective for anastomotic leak[6-9]. Stent implantation achieved 70% complete healing in 115 patients with anastomotic leakage[10]. However stent migration often occur and stent-related pain, stricture were reported following repeated stent placement[11,12]. Endoscopic repair using clips proven to be effective for only small defect[13,14]. The use of tissue sealants may be effective in small leaks with long tracts. Histoacryl occludes leak instantly after contact with liquid and it also promote inflammatory reaction which improve vascularity and healing[15]. High-output gastrointestinal fistula are less likely to close with the tissue sealant alone[16]. In case series, the reported outcomes showed that combination therapy by using clips and stents along with glue are more successful[17]. To achieve best result, the quality of the tissue surrounding the defects, interrupting flow across defect, confirmation of continued integrity need to be considered[16].

Depending on the size and location of the defect, a variety of endoscopic procedures can be selected[4]. In failure to seal an anastomosis leak with a stent after gastrectomy, salvage technique using histoacryl injection at the leakage site, with fluoroscopy guidance could be considered cautiously.

**CONCLUSION**

Postgastrectomy esophago-gastric leak is a serious complication. The endoscopic placement of fc-SEMS has become preferred treatment for esophageal anastomotic leakage. However, in failure to control leakage with fc-SEMS, salvage treatment with add-on histoacryl injection should be considered as a treatment option.

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**Footnotes**

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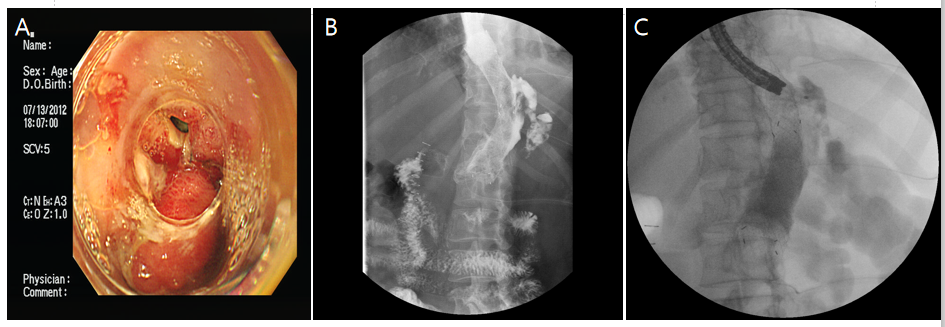
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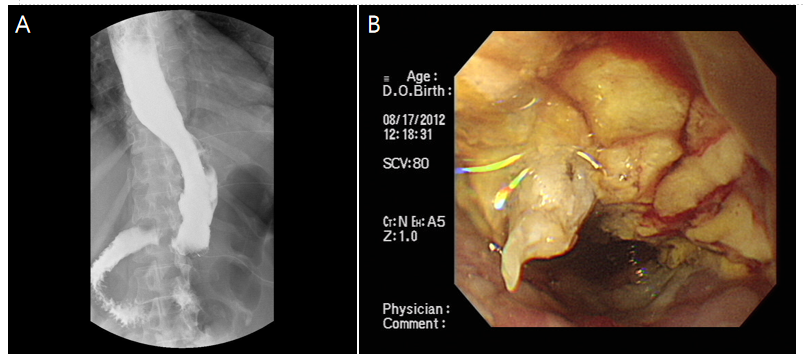
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**Figure Legends**



**Figure 1 Anastomotic leak after gastrectomy and subsequent histoacryl injection using fluoroscopy and catheter after failed stent application.** A: A 4 mm diameter leak was identified at the esophago-gastric anastomotic site; B: A leak (arrow) still existed 3 d after stent application; C: Estimating the location using previous radiocontrast study, the catheter was introduced into sinus tract after puncturing stent membrane (arrow), then it was filled with histoacryl.



**Figure 2 Contrast examinations finding after 1 mo after injection of histoacryl to the leak after puncture the stent membrane.** A: The leak was obliterated with histoacryl; B: Endoscopy after stent removal showed remnant histoacryl (arrow) and complete closure.