



Salvage of a failed open gastrocutaneous fistula repair with an endoscopic over-the-scope clip



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ABSTRACT

Once enteral access via gastrostomy tube (G-tube) is no longer indicated, the tube is typically removed in clinic with a high probability of spontaneous closure. When spontaneous closure is not achieved, the formation of a gastrocutaneous fistula (GCF) is possible. The incidence of GCF is directly related with the length of time the tube has been placed. When conservative management fails, surgical intervention is the standard treatment. Endoscopic techniques have been described for primary closure of GCF in adults including banding and cauterizing of the fistula tract with placement of a standard endoscopic clip. Over-the-scope clips (OTSC) have recently been reported in primary GCF closure in children (Wright et al., 2015). In patients with skin irritation surrounding a GCF making surgical repair difficult, endoscopic OTSC closure provides particular benefit. It is our belief that this is the first case report of endoscopically salvaging a leak from a failed open GCF repair.

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1. Case report

The patient is a 20 year-old female with a complicated gastrointestinal medical history with a gastrocutaneous fistula following gastrostomy tube removal. She was born at 35 weeks with in utero midgut volvulus requiring multiple surgeries. Subsequently, she developed short gut syndrome requiring chronic TPN therapy. She was taken to the OR for a button G-tube placement with Nissen fundoplication during the first year of life. She was TPN dependent until 17 years of age but has been tolerating oral feeds for the past 2 years. At age of 20 years her G-tube was removed. One week after G-tube removal she presented to the emergency room with consistent drainage and discomfort from a gastrocutaneous fistula and localized skin irritation. She was offered surgical repair and was taken to the operating room for an open incision with gastric repair and fascial closure. The case was complicated by extremely friable gastric tissue. Five days after the surgical GCF repair she presented to surgery clinic with persistent drainage and signs of cellulitis on

the left upper abdomen and flank surrounding the fistula (Fig. 1A). She was admitted to the hospital and was placed on IV antibiotics for treatment of the overlying cellulitis. As the fistula drainage continued, on hospital day 4 she was taken to the operating room for endoscopic gastrocutaneous fistula closure using over-the-scope clip.

We delivered a GIF-H180 high-definition gastroscope with a single 2.8 mm working channel (Olympus, Center Valley, PA) through the esophagus into the stomach and the gastrocutaneous fistula was identified on the anterior wall of the stomach. The opening was approximately 5 mm with surrounding sutures that were visualized from the prior surgical closure (Fig. 1B). Using an endoscopic gold probe bipolar hemostasis catheter (Boston Scientific, Boston MA), the mucosa of the 5 mm residual tract was cauterized. The scope was then withdrawn and an Ovesco 11/3 mm t-type over-the-scope clip (Ovesco Endoscopy AG, Tübingen, Germany) was fashioned onto the endoscope. The endoscope was redelivered to the stomach, and using a reusable 2.0 mm alligator grasper (Olympus) the GCF was secured into the cap of the endoscope. The clip was deployed with the grasper fully within the cap in order to prevent entrapment of the grasper. On post-deployment examination the clip was centered over the GCF fistula creating visual closure (Fig. 1C).

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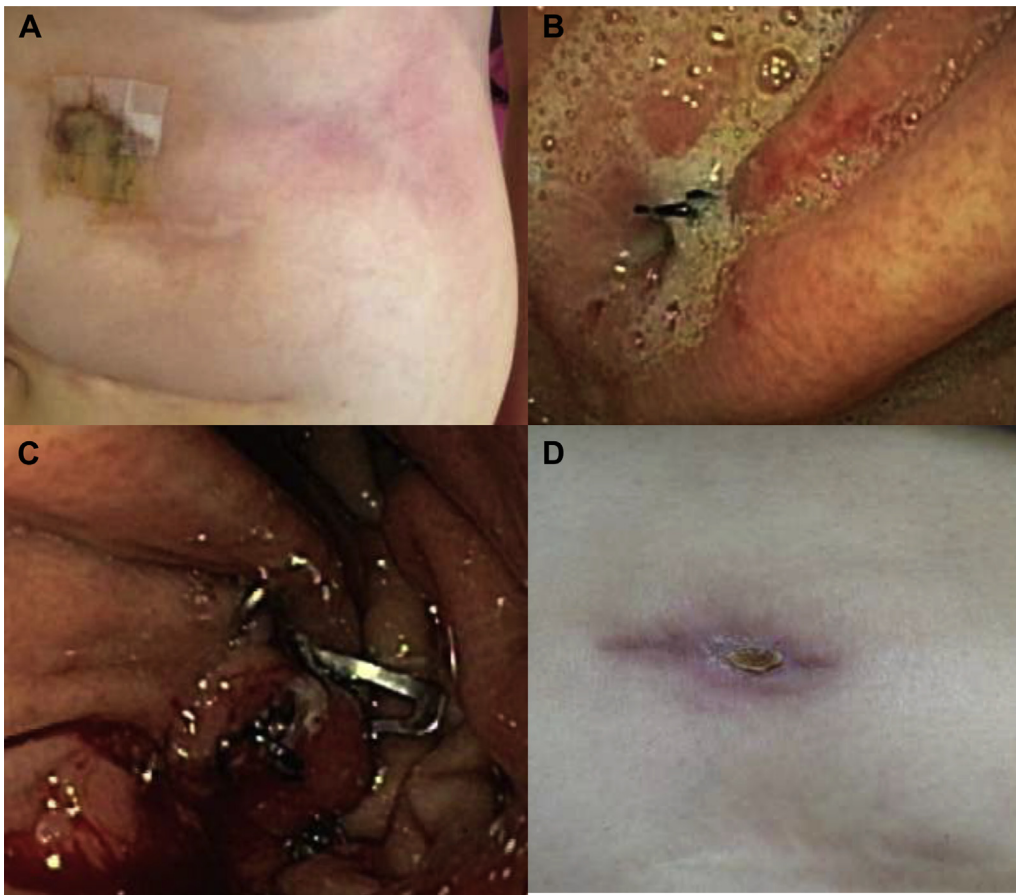


Fig. 1. A) GCF at admission with abdominal and flank cellulitis. B) Endoscopic view of gastrocutaneous fistula with sutures from failed surgical repair. C) Endoscope view of over-the-scope clip in position sealing GCF. D) Healing GCF site at 6-week postoperative clinic visit with resolved cellulitis.

There were no postoperative complications. She was placed on IV antibiotics postoperatively to treat the surrounding cellulitis. The patient was placed on a clear liquid diet on postoperative day 1, which was well tolerated and showed no signs of leakage. She was advanced to a regular diet on postoperative day 2 and was discharged 3 days after the procedure with oral antibiotics. At two and six weeks after the operation, she was seen in clinic with resolution of the drainage and a healing fistula (Fig. 1D). At one year after the operation the fistula maintained permanently closed.

2. Discussion

Gastrocutaneous fistula with surrounding skin irritation and infection has significant morbidity and can cause wound complications in surgical repair predisposing the patient to fistula recurrence [1]. In such cases, endoscopic GCF closure using over-the-scope clip is an additional tool in the armamentarium of the surgeon to manage a GCF.

Multiple endoscopic interventions of primary GCF closure have been described in adult populations. Deen et al. reported that 3 of 4 patients with persistent GCF after PEG removal were successfully treated with endoscopic banding [2]. Kolkhorst et al. used cauterization of the GCF tract with placement of standard endoscopic clips with success in 4 of 5 patients [3]. Cases of GCF closure in adults by over-the-scope clip have been described in both Europe [4] and North America [5]. A study by Wright et al. showed that primary GCF closure using over-the-scope clip was feasible in

a pediatric population reporting successful closure in 5 of 6 patients [6].

Pierog et al. reported endoscopic GCF closure of 8 out of 11 pediatric patients (1 patient required repeat clipping) using hemoclips. The modest success observed by Pierog demonstrates that the over-the-scope clip is a potentially better alternative as it provides both tighter and more complete closure, especially as fistulas can be quite fibrotic and difficult to close with standard hemoclips [7].

In conclusion, this case highlights the ability of endoscopic surgery to provide an alternative approach to a failed open GCF repair that would otherwise lead to re-operation.

References

- [1] Stringel G, McBride W, Sweny A. Extraperitoneal closure of gastrocutaneous fistula in children. *JLS* 2013;17(1):1–4.
- [2] Deen OJ, Parisian KR, Harris 3rd C, Kirby DF. A novel procedure for gastrocutaneous fistula closure. *J Clin Gastroenterol* 2013;47:608–11.
- [3] Kolkhorst K, Hill E, Brady P. Efficacy of endoscopic clips in the treatment of gastrocutaneous fistulas following gastrostomy tube removal. *Pract Gastroenterol* 2013;37:10–6.
- [4] Manta R, Manno M, Bertani H, Barbera C, Pigò F, Mirante V, et al. Endoscopic treatment of gastrointestinal fistulas using an over-the-scope clip (OTSC) device: case series from a tertiary referral center. *Endoscopy* 2011;43:545–8.
- [5] Kothari TH, Haber G, Sonpal N, Karanth N. The over-the-scope clip system- A novel technique for gastrocutaneous fistula closure: the first North American experience. *Can J Gastroenterol* 2012;26(4):193–5.
- [6] Wright R, Abrajano C, Koppolu R, Stevens M, Nyznyk S, Chao S, et al. Initial results of endoscopic gastrocutaneous fistula closure in children using an over-the-scope clip. *J Laparoendoscopic Adv Surg Tech* 2015;251:69–72.
- [7] Pierog A, Martinez M, Mencin A. Outpatient endoscopic closure of persistent gastrocutaneous fistula with hemoclips in pediatric patients. *Gastrointest Endosc* 2014;80(6):1190–3.