

# Gastro-cutaneous Fistula Following Distal Pancreatectomy Managed with Endo-Clips and Historcryl Glue: Does It Prevent Surgical Intervention?

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## Abstract

Gastrocutaneous fistula (GCF) is a rare but challenging disease to treat surgically. This report presents a case of a 51-year-old woman who had a proximal pancreatic body neuroendocrine tumor (NET), she underwent initially laparoscopic enucleation of pancreatic NET tumor then re-operated for completion of distal pancreatectomy and splenectomy as recommended by multidisciplinary team. She was readmitted with abdominal pain and purulent discharge from the left sided surgical site. She was evaluated and found to have GCF. Endoscopic management using endoclips and Historcryl glue was successfully applied to treat persistent high-out GCF. This case highlights the need for standardized management of GCF post abdominal surgeries and the importance to evaluate co-existing pancreatico-gastro-cutaneous fistula (PGCF) which required additional medical management.

**Keywords:** *Gastrocutaneous fistula (GCF), Distal Pancreatectomy, Endoclips, Pancreaticogastro-cutaneous fistula.*

## Introduction

Management of gastrocutaneous fistula (GCF) post-abdominal procedure is associated with significant complications and morbidity.<sup>1</sup> The treatment of GCF is not standardized yet. However, endoscopic management (stents, clips, and glue) is the best approach to manage GCF after controlling the acute presentations which may include leaks, abscesses, collections, and/or sepsis. Most common causes of GCF are related to post-bariatric procedures, in particular laparoscopic sleeve gastrectomy.<sup>2</sup> Other causes include iatrogenic gastric injury, post-splenectomy, post removal of percutaneous endoscopic gastrectomy (PEG) tube, post distal pancreatectomy as well as complicated gastroenteric anastomoses.

There are evolving endoscopic techniques that emerge along with the challenges encountered during closure of persistent GCF.<sup>3-5</sup> Moreover, the success rate is good for the endoscopic approaches for the closure of GCF, but some conditions can be difficult to manage initially and required multiple endoscopic re-interventions. Surgical management can be considered in selected patients who were not responding to medical and/or endoscopic management. These interventions may include surgical exploration and wedge excision of the fistula site with/out flap which carried high morbidity and mortality.<sup>6</sup>

In this study, we present a patient who developed GCF following distal pancreatectomy plus splenectomy and external drainage of walled off pancreatic fluid collection managed endoscopically by combined endoclips and glue (Historcryl) on follow-up of more than 3 years.

## Case Report

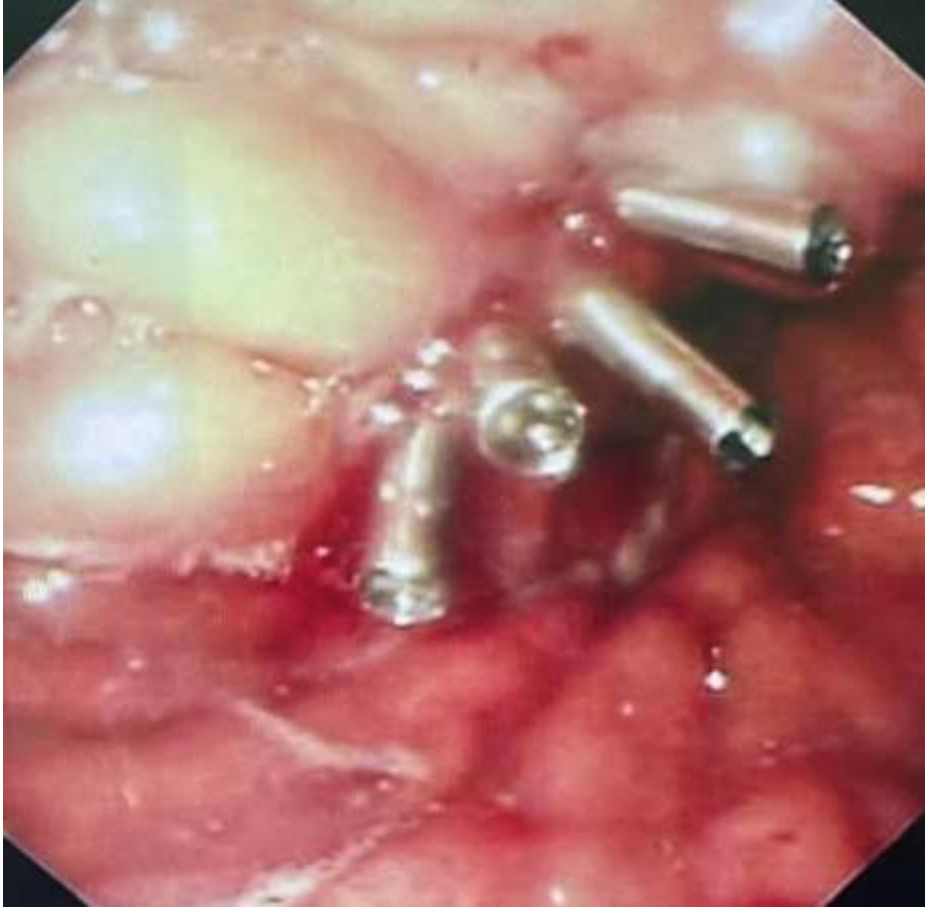
A 51-year-old lady presented with a complaint of abdominal pain for few months ago. Her blood tests (including tumor markers and Gut hormones) were normal. CT scan abdomen showed a proximal pancreatic body mass representing neuroendocrine tumor. Octreotide scan showed no evidence of somatostatin receptor-positive disease. Endoscopic ultrasound showed a well demarcated pancreatic body lesion, and FNAC reported a well-differentiated neuroendocrine tumor.

Patient underwent staging laparoscopy, intra-operative ultrasound, enucleation of pancreatic neuroendocrine tumor, and cholecystectomy. There were no suspicious lesions in staging laparoscopy. A 1.5 cm hypoechoic lesion was found in the pancreatic body close to the splenic vein, unrelated to the pancreatic duct. There was evidence of an atrophic tail of the pancreas and frozen section showed negative resection margins.

Histopathology showed neuroendocrine tumor (nonfunctional), grade 1 with free resection margins. Patient was referred to an oncologist. A multidisciplinary team suggested complete distal pancreatectomy, splenectomy, and splenic vein resection because of proximity of free resection margins. Patient underwent second operation and found to have walled off pancreatic fluid collection, adhesions and absent pancreatic tail (congenital). The distal part of the pancreas was dissected and transected at the body; splenectomy was done as well. Size 19 French drain was placed at the surgical bed and brought on the patient left side, another drained was kept at the pelvis and brought on the patient right side. Postoperatively, patient developed abdominal pain with raised inflammatory markers and blocked drains with no output. Post-operative day five, CT abdomen reported a left side upper abdomen fluid collection 7x5 cm, suspected internal hematoma as well as infected collection at the right side of the abdomen extending to the pelvic. Patient underwent image-guided drainage (pigtail) of the left abdominal collection. Dark blood was obtained initially and was attached to free drainage. Patient was improving and the right sided drain and pigtail were removed, the left drain was kept inside stoma bag. Amylase fluid from the stoma post-operative day 30 and 35 was 6000 IU/L and 6019 IU/L, respectively. At that time patient was labeled as a pancreatic fistula and was started on short acting octreotide, proton pump inhibitor (PPI) as well as total parenteral nutrition. Repeated CT abdomen with oral and IV contrast post-op day 30 showed GCF without collection, followed by a gastrograffin follow through study which showed contrast leak from the gastric fundus tracking out to subcutaneous tissue through a fistula. Then, patient was continued on medical management. Her nutritional status built up as well as her GCF output reduced from more than 800ml/day to 200 ml/day with medical management. Patient and her relatives initially were not keen for endoscopic closure, but later they were convinced. She underwent OGD which showed large opening approximately 2cm width at the mid-gastric body on the greater curvature (**Figure 1**). Four endoscopic clips (INSTINCT ENDOSCOPIC HEMOCLIP) were used to approximate the opening edges (**Figure 2**). An 8 ml of Historcyl mixed with lipiodol was injected to hold the clips together (**Figure 3**). Patient continued PPI and Octreotide which was bridged to long-acting octreotide treatment (total of three doses with four weeks' interval). Two months post endoscopic closure of GCF patient had gastrograffin meal which showed an evidence of contrast leak from the stomach into the fistula tract. However, there was no free spillage of the contrast into the rest of abdominal cavity or even into the skin through the anterior abdominal wall (Figure 4). Five months post endoscopic closure of GCF patient was complaining of mild purulent discharges from the previous GCF, with soft abdomen and no subcutaneous collection or distension. There was mild raise in inflammatory markers. OGD done on same admission showed complete closure of GCF. Deployed clips were still in place, and no filling defect was observed (**Figure 5**).



**Figure 1:** GCF initial Gastroscope.



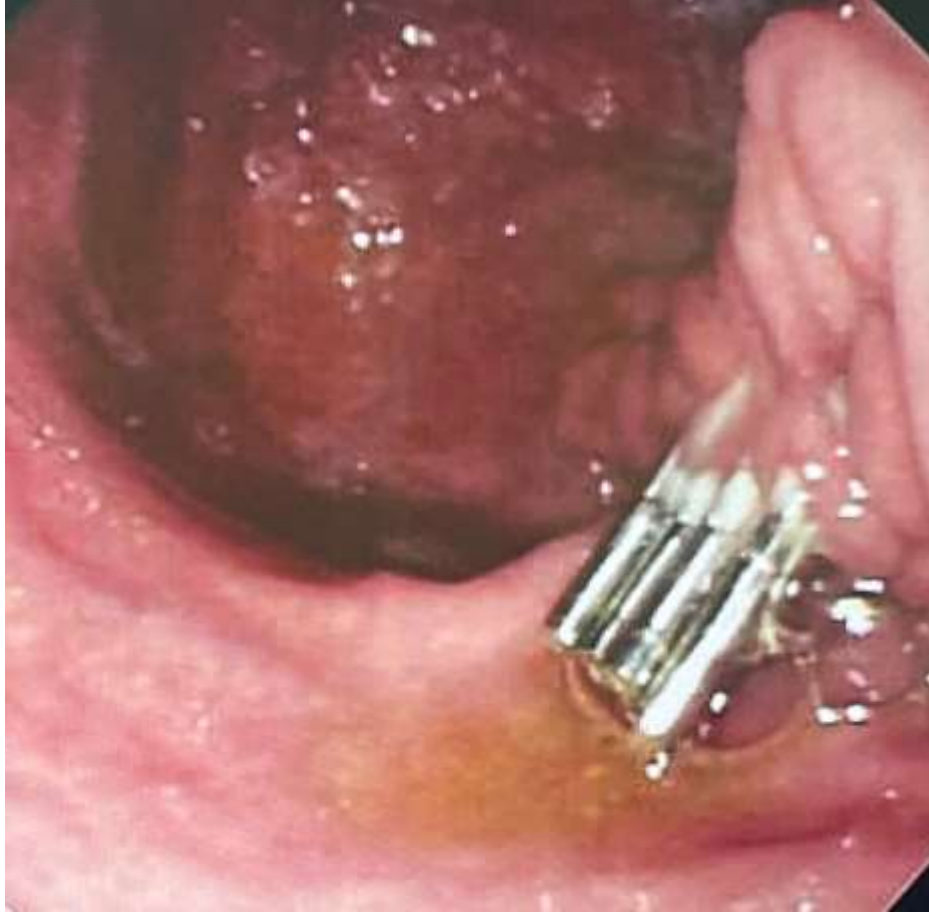
**Figure 2:** GCF initial Gastroscope after clips.



**Figure 3:** GCF initial Gastroscope after clips and glue.



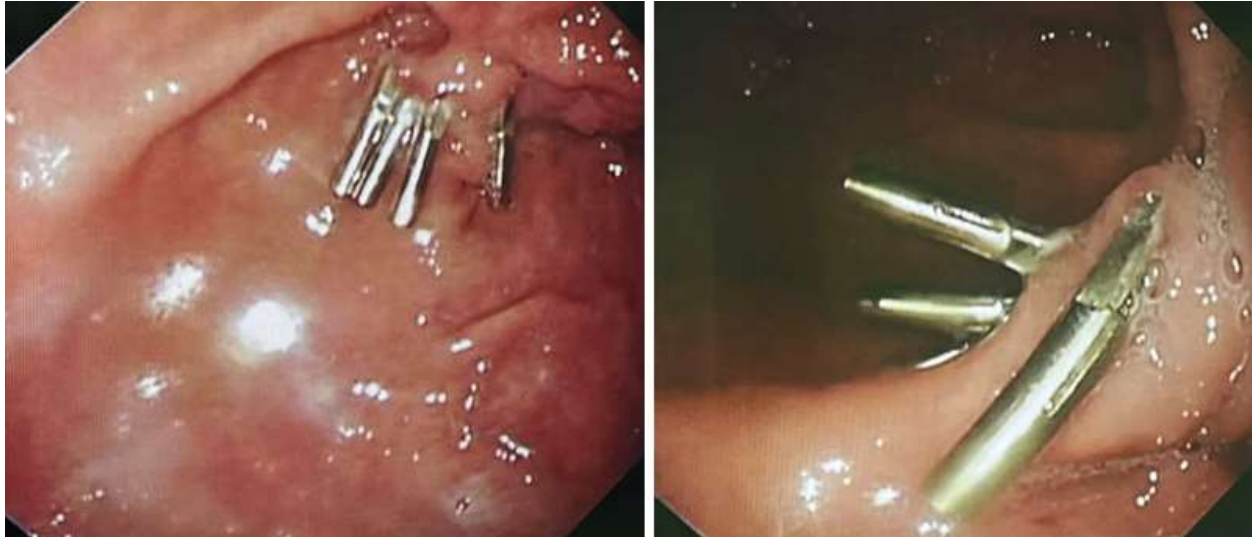
**Figure 4:** Gastrograffin meal showed mild leak with no free spillage of the contrast into the rest of abdominal cavity or even into the skin through the anterior abdominal wall.



**Figure 5:** Post GCF follow up after 5 months.

After 10 months endoscopic closure of GCF patient was complaining of small amount of purulent discharge from the external GCF wound without evidence of subcutaneous collection. Blood investigation showed mild elevation of CRP, and a swab test revealed growth of staphylococcus aureus which was treated with an antibiotic. OGD was done at this time to check for leaks. Clips were found in place; no defect was seen despite total stomach inflation (**Figure 6**). Patient was followed up and evaluated by MRI pancreas 15 months post endoscopic treatment and showed no MRI evidence of abnormality enhanced lesion in the remaining pancreas as well as no sizable collection could be appreciated. After three years post-endoscopic treatment, patient was asymptomatic with no discharge from the surgical scar. Latest repeated Abdomen US showed no evidence of collection.





**Figure 6:** Post GCF follow up after 10 months.

## Discussion

This patient had unfortunate event of pancreatitis following her 1<sup>st</sup> operation which was laparoscopic enucleation of NET of pancreas and led her to have collection. This was further complicated with gastric erosion following her second surgery and prolonged drains placement post distal pancreatectomy. Studies showed that intra-peritoneal drains increased risk for fistula especially if closed suction system was used.<sup>7,9</sup> On the contrary, early removal of intra-peritoneal drains with low amylase fluid level reduce the incidence of intra-abdominal abscess and pancreatic fistula.<sup>8</sup> In this report, patient had intra-operative external drainage of Walled-off pancreatic fluid collection (PFCs) and had distal pancreatectomy in the same setting, which added risk factors of external pancreatic fistula.<sup>11</sup> Her presentation with post-operative collections and high fistula output (more than 800 ml/day) was not acute, instead of that was progressing gradually over 30 days. In additional, she was not peritonitic or in sepsis which make iatrogenic injury to the gastric wall as a cause of GCF is less likely. The diagnosis of post-operative pancreatic fistula (POPF) was confirmed when the drained intraperitoneal fluid contained high amylase level in two different occasions.<sup>12</sup> Initial management of POPF is by initiating octreotide treatment and proton pump inhibitor. Confirmed diagnosis of GCF by CT abdominal scan, oesophageal-gastro-duodenoscopy as well as gastro swallow study with high amylase level in the drained intra-peritoneal fluid raise the suspicion of combined pancreatico-gastro-cutaneous fistula (PGCF).<sup>13</sup>

PGCF is a rare post-abdominal surgery complication. Systemic review showed two published case reports of combined PGCF post-splenectomy and post-distal pancreatectomy. These cases were managed successfully by endoscopic stenting,<sup>12</sup> and percutaneous trans-gastric diversion<sup>13</sup> respectively. In our patient, Oesophago-gastroduodenoscopy (OGD) was done after clips deployed with glue which showed successful closure of GCF after five- and ten-months post closure. This also was assessed by gastrograffin study which showed reduced leak and no extravasation of the contrast to the intra-abdominal cavity or subcutaneous space. However, patient had recurrent admissions with persistent purulent discharges from the subcutaneous wound with localized surgical site infection. This finding explained by the fact that patient initially presented with combined PGCF which is closed partially with endoscopic clips and glue. Our patient received octreotide treatment via short and long acting within periods of 4 months which benefits patient course of treatment.

## Conclusion

Endoscopic management of GCF is well-known for excellent response in selected patients. It benefits patients with GCF by reducing fistula output, shorten hospital stays, improve wound healing, reduce morbidities and bridging

patients to surgical management in refractory cases. The combination of over-the-scope clips and Historcyl glue is considered a practical, simple, and safe endoscopic technique for managing high GCF output.<sup>15</sup> Combined cases of PGCF do exist and required early recognition to initiate octreotide treatment along with the treatment of GCF.

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