

CASE REPORT

Perforated marginal ulcer following Whipple procedure: A case report

Sabina Rijal¹  | Shila Awal²  | Sunil Basukala³  | Kunda Bikram Shah³¹Western Command Hospital, Nepalgunj, Nepal²Suryabinayak Municipal Hospital, Bhaktapur, Nepal³Department of Surgery, Nepalese Army Institute of Health Science (NAIHS), Kathmandu, Nepal**Correspondence**Sabina Rijal, Western Command Hospital, Nepalgunj, Nepal.
Email: drsabina.rijal@gmail.com**Key Clinical Message**

Marginal ulcers are rare complications of pancreatoduodenectomy. Patient can present with varying symptoms such as epigastric discomfort, pain, dysphagia, or can present in emergency department with complications like bleeding and perforation.

KEYWORDS

marginal ulcers, pancreatoduodenectomy

1 | INTRODUCTION

Whipple procedures are performed for variety of benign and malignant lesions affecting the pancreatic head, duodenum, and distal bile duct.¹ Marginal ulcer, one of the rare long-term complications of pancreatoduodenectomy, is ulceration that occurs at or around the gastrointestinal anastomosis.² Their associated morbidity and mortality have been infrequently described in literature.³ Here we present a case of a gentleman with a 6-year-old history of Whipple procedure who presented in emergency department with acute onset abdominal pain and was later diagnosed with perforated marginal ulcer.

2 | CASE PRESENTATION

A 64-year-old retired soldier who underwent the Whipple procedure for carcinoma head of pancreas (well-differentiated adenocarcinoma) 6 years before presentation, presented to emergency department with complaints of severe abdominal pain for 1 day on the day of presentation. The pain was acute in onset, continuous,

non-radiating, and increasing in severity, which used to be aggravated after ingestion of food and movement. He had three episodes of vomiting since morning on the day of presentation. The patient complained of on and off dyspepsia for past 1 year for which he was prescribed proton pump inhibitor (PPI) and antacids. On his past history, he underwent the Whipple procedure 6 years before this presentation and has received complete six cycles of chemotherapy after surgery. He was under irregular follow-ups for past two years. The patient had no other comorbid illnesses.

On his arrival to the emergency department, his pulse rate was 130 beats per minute, regular; oxygen saturation 85% on room air; blood pressure 110/70 mm Hg, body temperature 38.7°C, and respiratory rate (RR) 22 breaths/min. On his physical examination, there was scar from Whipple's procedure over abdomen. Abdomen was distended with diffuse tenderness. There was diffuse guarding and rigidity all over the abdomen. Bowel sounds were absent. Digital rectal examination revealed a normal sphincter tone with a collapsed rectum and absent fecal stain on the gloved finger. He was immediately administered crystalloids and supplemental oxygen at 4 L/min.

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Nasogastric tube decompression and Foley catheterization were done. His laboratory parameters showed leukocytosis with raised amylase. Liver function test revealed total bilirubin 1.80 mg/dL, conjugated bilirubin 0.8 mg/dL, and alkaline phosphatase 712 U/L. On radiological examination, erect abdominal x-ray showed prominent dilated small bowel loops and free gas under right hemidiaphragm pointing toward hollow viscus perforation (Figure 1). Ultrasonography of the abdomen and pelvis was unremarkable with minimal free fluid in the pelvis.

After an initial fluid resuscitation, an emergency laparotomy was done. Intraoperatively, the findings were 300 mL of bilious fluid in the peritoneal cavity and dense adhesion between the small bowel loops and previous surgical scar. Adhesions were meticulously released and gastrojejunostomy site perforation was there, which was around 1 cm (Figure 2). A thorough peritoneal lavage was done and the gastrojejunostomy site perforation was closed with a well-vascularized omental patch after a biopsy from the ulcer edge. The patient underwent modified Graham's omental patch repair. Vicryl 3-0 round body was used for closure of the ulcer. He received meropenem intravenous (iv) 1 g, vancomycin iv 500 mg twice daily, low molecular weight heparin 60 mg twice daily, and pantoprazole 40 mg iv twice daily the following day. Oral intake was started as sips of liquid from third postoperative day. It was followed by solid food on fifth postoperative day. His condition gradually improved and was discharged on tenth postoperative day. Triple therapy was prescribed along with PPI and antacids for the first 3 months after discharge of the patient. He was followed

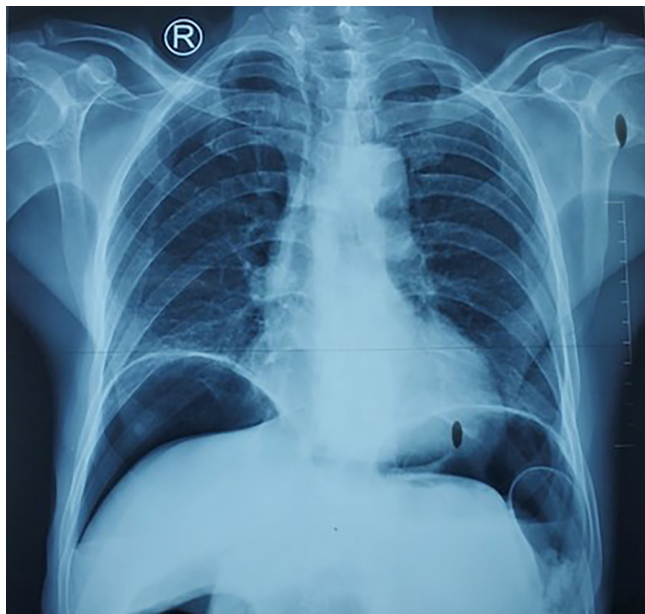


FIGURE 1 Erect x-ray of abdomen showing gas under right hemidiaphragm.

up 2 weeks following discharge. Histopathological report was collected during this follow-up. The biopsy result did not show evidence of dysplasia or malignancy. There was no postoperative complication during this period. The patient is advised for three monthly follow-up for a year.

3 | DISCUSSION

Whipple procedures (pancreatoduodenectomy) are complex surgical procedures performed for variety of benign and malignant lesions affecting the pancreatic head and perampullary region.^{1,4} Various complications of Whipple procedure have been described in literature.



FIGURE 2 Intraoperative picture showing marginal perforation in gastrojejunostomy site along with previous rooftop incision done for Whipple's procedure.

Although short-term complications such as pancreatic fistula, hemorrhage, and abdominal sepsis are among the most dangerous complications after pancreatectomy, long-term complications also need to be monitored; some of them include marginal ulcer, reflux esophagitis, diabetes mellitus, and biliary stricture.^{1,4,5}

Marginal ulcers that occur at or within 3 cm of the gastroduodenal or duodenojejunal anastomosis are well known long term complication of the surgery³ and they tend to occur at a time varying from 1 month to 6 years after surgery.⁶ The incidence of marginal ulcer following pancreatoduodenectomy ranges from 5% to 14% while that of perforated marginal ulcer is rarer. The incidence rate of perforated cases varies from 2% to 8%.⁵ In our case, patient presented with the condition after 6 years of surgery.

Patients may present with varied symptoms. They can present with epigastric pain, gastrointestinal upset, and dysphagia owing to stricture. They can also land up in emergency department with complications such as severe bleeding, perforation, and peritonitis.^{1,6,7} Our patient also presented with perforation with peritonitis which is considered to be fatal unless promptly treated.^{5,6}

While several mechanisms have been proposed for the etiology of these ulcers, the commonly believed mechanisms include gastric acid, inflammation, angulation, foreign bodies, and ischemia on the gastroduodenal anastomosis.^{1,2,6} Risk factors include smoking, use of alcohol, Nonsteroidal anti-inflammatory drugs (NSAIDs), immunosuppressive medications, and discontinuation of PPI, *Helicobacter pylori* infection among others.^{3,5,8} Our patient probably had poor compliance to prescribed PPI.

Treatment of marginal ulcer consists of elimination of risk factors, PPI, and regular endoscopic monitoring.⁹ They are rarely refractory to medical management which brings up the necessity of revision surgery that includes resection and reconstruction of anastomosis.^{9,10} Emergency laparotomy is necessary when patient presents with perforation of marginal ulcer; perforated ulcer can be managed with simple closure and omental patch closure.^{1,9} In our case, the patient also presented with perforated ulcer and it was closed with omental patch. Recurrence of marginal ulcer has been noted. Postoperative treatment with PPI and antacids for longer term is advocated once marginal ulcer has occurred.⁵ In our case, patient was prescribed with PPI and antacids to address the challenge.

AUTHOR CONTRIBUTIONS

Sabina Rijal: Conceptualization; data curation; formal analysis; supervision; validation; visualization; writing – original draft; writing – review and editing. **Shila Awal:** Conceptualization; data curation; supervision; validation; visualization; writing – original draft; writing – review and editing. **Sunil Basukala:** Conceptualization; formal

analysis; validation; visualization; writing – original draft; writing – review and editing. **Kunda Bikram Shah:** Conceptualization; formal analysis; supervision; validation; writing – review and editing.

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CONFLICT OF INTEREST STATEMENT

The authors have no conflict of interest to declare.

DATA AVAILABILITY STATEMENT

The authors confirm that the data supporting the findings of this report are available within the article.

ETHICAL APPROVAL

Written informed consent was obtained from the patient for publication of case report and associated images. Since this report involves no experiments, the ethical approval is waived.

CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

ORCID

Sabina Rijal  <https://orcid.org/0000-0003-3867-2761>

Shila Awal  <https://orcid.org/0000-0001-5587-8759>

Sunil Basukala  <https://orcid.org/0000-0001-9853-3160>

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