

Case report

Management of a Marginal Ulcer Perforation in a Post-Gastrojejunostomy Patient - A Case Report

Abstract:

Background:

Complications following Gastrojejunal anastomosis are challenging. They frequently occur within the first week or several years after gastric bypass surgery. Anastomotic leakage, post-operative hemorrhage, marginal ulcers and stenosis are well known complications following gastric bypass surgery but perforation of a marginal ulcer is a rare condition.

Comment [U1]: Postoperative

Comment [U2]: Well-known

Case presentation:

We report a case of a 65-years-old male who presented to the emergency department with an acute abdomen. X-ray erect abdomen revealed air under the diaphragm. An emergency laparotomy was planned which revealed a perforation at the jejunal side of gastrojejunostomy anastomosis which was done for gastric outlet obstruction secondary to peptic ulcer disease four years back. Primary closure with omental patch repair was done and the patient had a favorable outcome.

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Comment [U4]: Space the "diaphragm. An"

Conclusion:

This sheds light on the fact that in a patient with a gastrojejunal anastomosis, the index of suspicion for its perforation must be high if the patient presents with similar symptoms.

Keywords: gastric bypass surgery, post-gastrojejunostomy, marginal ulcer perforation, peptic ulcer, case report

REVIEW

BACKGROUND:

Gastric bypass surgery is linked to many complications like anastomotic leakage, post-operative hemorrhage, marginal ulcers and stenosis. These complications can be classified as acute or chronic depending on the time frame. Marginal ulcers are mostly chronic ulcers which present on the jejunal side of the gastrojejunostomy anastomosis. They are frequently encountered by the general surgeon with an incidence of 0 to 16%¹ but perforation of marginal ulcer is rarely reported.

Major factors associated with marginal ulcer formation are smoking, use of nonsteroidal anti-inflammatory drugs (NSAIDs), steroids, stress, and surgery. The use of nonabsorbable sutures in the GJA and co-infection with *Helicobacter pylori* is also associated with marginal ulceration^{2,3}. Marginal ulcers mostly present with symptoms of upper abdominal pain or discomfort, food intolerance, gastrointestinal bleeding¹. Marginal ulcer can be managed conservatively with H-2 blockers, proton pump inhibitors, sucralfate and upper gastrointestinal endoscopy but those who present with complications like bleeding or perforation require surgical intervention¹

Perforation linked to marginal ulcers ~~are~~ is rare and should be anticipated in patients who present with signs and symptoms of acute abdomen. It is truly an emergency which requires prompt surgical ~~exploration~~ examination in order to save the life of the patient.

Comment [U5]: Postoperative

Comment [U6]: Please reference this statement

Comment [U7]: Reference this statement as well

Comment [U8]: Ulcers are

Comment [U9]: Full meaning first before the short forms follows

We report our encounter with such a case, this report was written after obtaining approval from the Ethics Committee and informed consent from the patient. This work has been reported in line with the SCARE and PROCESS criteria^{4,5}

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CASE PRESENTATION:

A 65 years-old male smoker with diabetes and hypertension presented to the emergency department of Benazir Bhutto Hospital, a government-run tertiary care hospital in Rawalpindi, Pakistan. with generalized abdominal pain, abdominal distention and absolute constipation for two days. The patient had multiple episodes of bilious vomiting for two days as well. He had a surgical history of open gastrojejunostomy done for gastric outlet obstruction secondary to peptic ulcer disease four years back. He was an active smoker for 18 pack years. He was on Losartan and Metformin for his hypertension and diabetes respectively. He took triple therapy for eradication of Helicobacter pylori infection and was taking proton pump inhibitors (omeprazole). There was no history of fever, diarrhea, gastrointestinal bleed and dysuria. There was no significant family or psychosocial history.

Comment [U11]: Please rephrase this sentence well

On clinical examination, the pulse was 110/min, blood pressure was 100/70 mm of Hg, afebrile and respiratory rate was 22/min. The patient had a toxic look and was pale. Systemic examination revealed abdominal distention with generalized tenderness. Bowel sounds were absent. A Digital rectal examination revealed that the anal tone was normal and the finger was stained with impacted stool. The rest of the systemic examination was unremarkable.

Lab investigations revealed that hemoglobin was 9 mg /dl, total leucocyte count (TLC) was 11,500/mm³, and platelet count was 150,000 /mm³. Liver function test (LFTs), renal

function test (RFTs), serum electrolytes (SE), partial thromboplastin time (PTT) and activated partial thromboplastin time (aPTT) were normal. Hepatitis B and C profiles were negative. C reactive protein was 115mg/L. Radiological investigation showed air under diaphragm on X-Ray erect abdomen as shown in figure 1.

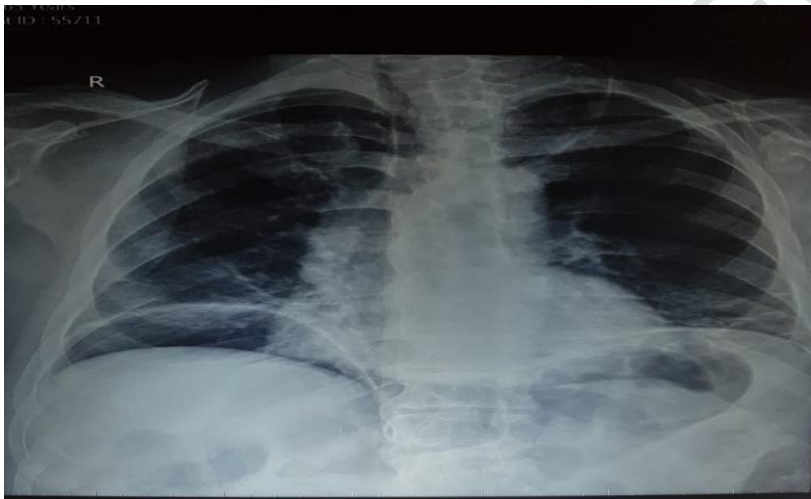


Figure 1: X-ray erect abdomen showing free gas under the diaphragm.

This confirmed our diagnosis of bowel perforation hence emergency laparotomy was planned. The Patient was optimized before surgery with intravenous Ringer's Lactate and antibiotic Ceftriaxone. Intravenous tramadol was given for pain relief. Laparotomy revealed a 1 x 1 cm perforation at the jejunal loop of the previous gastrojejunal anastomosis (Figure 2) with 1.5 liters of bilious fluid in the abdomen. The Rest of the viscera were unremarkable. The perforation was primarily closed in a double layer with an omental patch and biopsy taken from the margins of the perforation. The Abdomen was irrigated with copious amounts of warm normal saline. A drain was placed and the abdomen was closed.

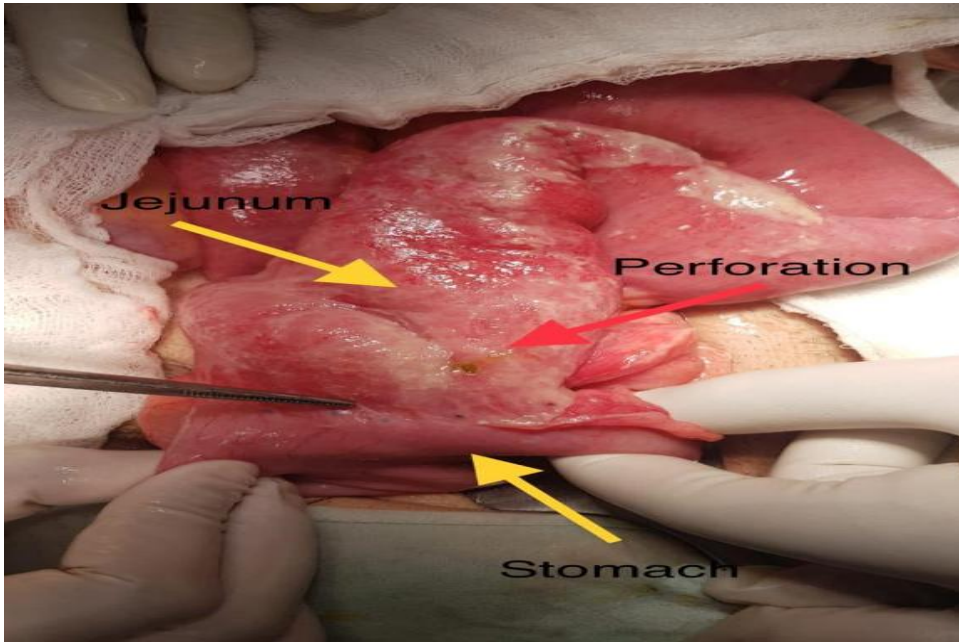


Figure 2: Intra-operative photo showing a loop of jejunum and stomach (yellow arrows). The loop of jejunum shows a 1 x 1 cm perforation (red arrow)

The patient had an uneventful postoperative stay at the hospital. The drain was removed on the third postoperative day after minimal output. The patient was started on triple therapy and was discharged on the fourth postoperative day with instructions for follow-up after 1 week. The patient was also advised for upper GI endoscopy after 6 weeks for surveillance. Both follow-ups were uneventful.

DISCUSSION:

In normal conditions, there is a physiologic balance between gastric acid secretions and gastroduodenal mucosal defense. Peptic ulcer disease occurs when the balance between defense mechanisms and insults is disturbed. Peptic ulceration itself can lead to a host of complications one of which is gastric outlet obstruction secondary to the scarring and fibrosis. Nowadays, gastrojejunostomy is considered the treatment of choice for gastric outlet obstruction⁶

Marginal ulcers appear to follow a bimodal distribution with peaks occurring immediately following the surgery (early marginal ulcer) and a few years after the surgery (late marginal ulcer). As in our case perforation of marginal ulcer is a rare complication due to direct acid exposure of gastric secretions in the jejunum loop of the anastomosis as it has been described in different studies. Regardless of factors causing the marginal ulcers (early and late), medical treatment remains the same for them including 3-6 months of Proton Pump Inhibitors, eradicating of the associated factors (H.pylori, NSAIDs and smoking) and continuous endoscopic monitoring^{7,8}

The time duration between the complication (perforation) and previous surgery is 48 months in our case. Felix *et al.* identified 35 cases of perforation (1%) with a median time to perforation of 18 months (range 3–70 months)⁹. Wendling *et al.* have recently described the most delayed instance of a perforated ulcer occurring 98 months after original surgery¹⁰

Comment [U12]: Please add the year

Definitive treatment along with prevention is very important. Patients should be educated to reduce factors for perforation, as prolonged proton pump inhibitors therapy may not prevent this complication even with a lone risk factor. In the study done by Fringelli *et al.*⁷, 75% of patients developing marginal ulcers were persistent smokers at the time of diagnosis. Despite being compliant on with PPIs, the patient's continued smoking with a history of peptic ulcer disease predisposed him to this outcome¹¹. The authors recommend patients to stop smoking after a diagnosis of peptic ulcer is made and especially after gastrojejunostomy.

Surgical treatment can be open or laparoscopic omental patch repair. Both are considered to be safe and the procedure of choice for this treatment. Obviously in this era of minimally invasive techniques, the laparoscopic repair with omental patch closure appears safe and effective therapeutic option⁷

Limitations: We could not obtain more detailed images of the patient during surgery. We also recommend a laparoscopic approach to repair if the resources, time and competency of the surgeon allows.

CONCLUSION:

Perforation of a marginal ulcer secondary to gastrojejunostomy is a serious complication which can be prevented by lifestyle modifications and medical management. Prompt diagnosis and treatment can save the patient from a morbid outcome. Open and laparoscopic approaches both can be used to repair the perforation. Once repaired, regular surveillance with upper gastro duodenal endoscopy is advised.

Comment [U13]: Please is a joint word

Consent: Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal ~~on~~ upon request

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