Case Report

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Idiopathic Gastric Fundal Perforation in a Young Male

Surgery Section

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ABSTRACT

Gastric perforation is a life-threatening condition encountered in surgical emergency. Common conditions that cause gastric perforation requiring emergency exploration include peptic ulcers, trauma, iatrogenic injuries and corrosive burns. Gastroduodenal region is the most common site of perforation but perforation in fundus of stomach is unusual. Acute Gastric Dilation (AGD) is a rarely encountered condition that leads to vascular compromise of stomach wall causing ischaemia and necrosis. Hereby reporting the case of a 26-year-old male, who presented with complaint of abdominal pain following heavy meal. Erect skiagram of chest was diagnostic of hollow viscous perforation peritonitis and the patient underwent emergency exploratory laparotomy. A perforation was noted over the posterior aspect of fundus of dilated stomach. Gastric fundectomy and feeding jejunostomy was done. The surgeon should be aware of such cases of AGD, with fundal perforation for active and appropriate management.

Keywords: Acute gastric dilation, Fundectomy, Pneumoperitoneum

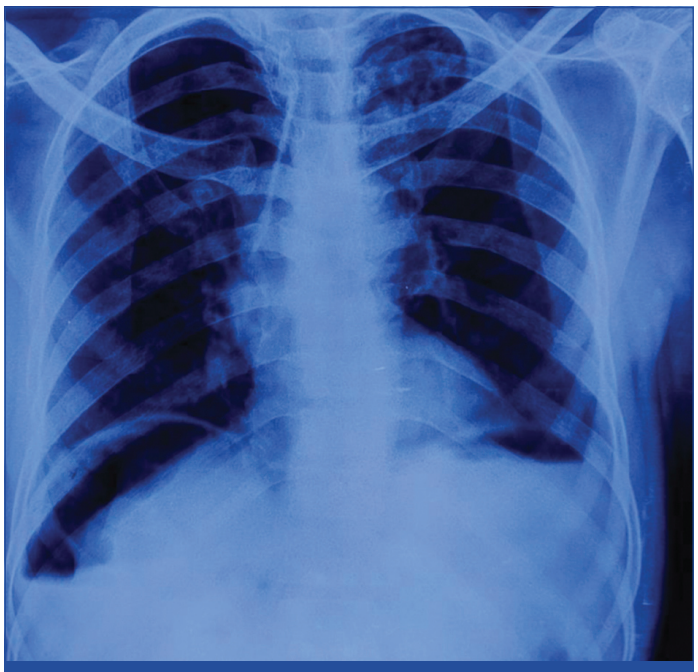
CASE REPORT

A 26-year-old male, presented to the Emergency Department with a history of acute abdominal pain soon after intake of heavy meal the previous day. Pain started in the upper abdomen and later became diffuse. He had abdominal distension, vomiting and decreased bowel movement. There was no history of trauma, fever, black-coloured stools or hematemesis. He had no significant past medical history but habituates tobacco chewing for six years.

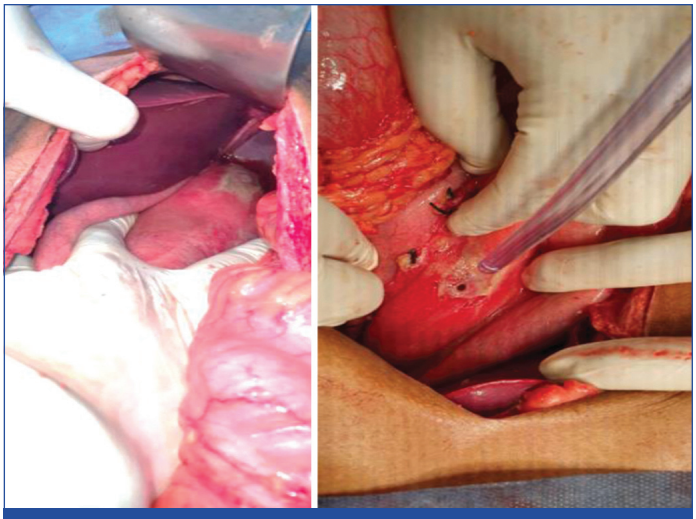
On examination patient was dehydrated, afebrile with tachycardia and hypotension. His abdomen was distended with diffuse tenderness, guarding, loss of liver dullness on percussion and absent bowel sounds. Per rectal examination was normal. Haematological investigations suggested low serum potassium (2.2 mEq/L) with leucocytosis (16x 10^9/L). Subphrenic free gas was noted on erect radiograph of chest [Table/Fig-1], diagnostic of hollow viscus perforation. Patient was resuscitated with intravenous fluids and started on broad spectrum antibiotics, while he was being prepared for emergency exploratory laparotomy.

On emergency exploratory laparotomy, a 1x1 cm perforation was noted over the posterior aspect of fundus of dilated stomach [Table/Fig-2,3] along the greater curvature around 5 cm from angle of his. Brownish discolouration was noted around the perforation. Around 500 mL of purulent fluid was drained. Gastric fundectomy using 75 mm linear cutting stapler was done followed by Lembert suturing [Table/Fig-4,5] and feeding jejunostomy. Histopathologic examination report of the tissue was suggestive of gastric necrosis around the perforation with inflammatory changes [Table/Fig-6].

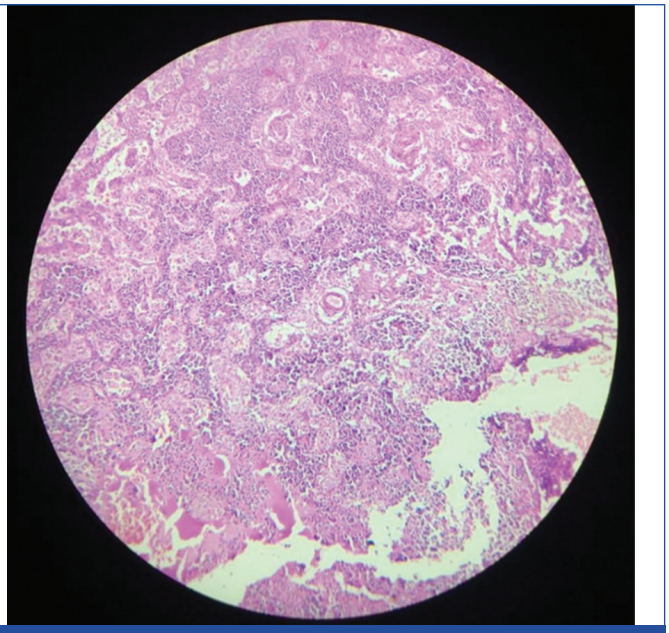
Patient's postoperative period was uneventful. Jejunostomy feeding was started from second postoperative day. Patient was started on clear liquids per oral from fourth postoperative day, followed by liquids and semisolids. He was discharged after one week. Follow-up done after two weeks showed complete recovery.



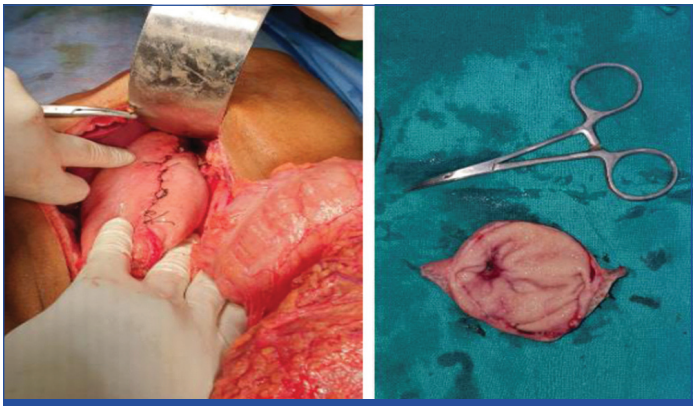
[Table/Fig-1]: Chest radiograph with subphrenic free gas suggestive of pneumoperitoneum.



[Table/Fig-2,3]: Intraoperative photograph showing perforation at the gastric fundus. (Images from left to right).



[Table/Fig-6]: Haematoxylin-Eosin (H&E) staining of edge biopsy from perforation at 10X magnification showing inflammatory changes.



[Table/Fig-4]: Postfundectomy stomach.
[Table/Fig-5]: Resected specimen with perforation. (Images from left to right).

DISCUSSION

Gastric necrosis followed by perforation is a rarely encountered entity [1]. Intrathoracic herniation, volvulus, corrosive ingestion, acute necrotising or emphysematous gastritis, mucormycosis and rarely AGD are amongst the reported causes of gastric necrosis [2,3]. The rich vascular collateral network and abundant blood supply of stomach makes ischaemia unlikely [2]. Gastric perforations usually present in the duodenum or in the antropyloric region of stomach, but are extremely rare in the fundal region [1].

The AGD is one among the rare causes of gastric fundal perforation. It may compromise the vascular supply leading to ischaemia, necrosis and finally perforation. Even though the real incidence is unknown, not more than 50 cases of AGD with ischaemia and necrosis have been reported in existing literature [4]. Bulimic episodes in anorexia nervosa, Prader-Willi syndrome and psychogenic polyphagia may result in AGD, but it is unusual without any eating disorders [5]. In the present case, patient had no eating disorder, but the symptoms started after a heavy meal.

The AGD is defined as gastric dilation with increased intragastric pressure above 30 cm of water [5]. The pathogenesis and pathophysiology of the same is not well understood. The stomach has rich blood supply and collateral networks. However, acute increase in intragastric pressure more than gastric venous pressure may reduce the local blood flow to the mucosa and subsequently to the general venous flow, leading to congestion and ischaemia due to decrease in arterial supply [3,5]. Lunca S et al., described a case of AGD due to binge eating in a 22-year-old male [6]. Extrinsic or intrinsic obstruction of the stomach or impaired gastric motility due to muscular dystrophy or diabetes are the common aetiologies of AGD. However, in the present case, there was no evidence of such aetiology.

The condition presents clinically with acute progressive abdominal pain, distension and vomiting. Diagnosis can be made by radiographic investigations. Computed Tomography (CT) abdomen can suggest gastric distension with air fluid level in cases of AGD [7]. In cases of perforation as in the current case, plain radiograph of abdomen can reveal subphrenic free gas.

Turan M et al., reported the case of an 18-year-old, mentally retarded boy, who had features of peritonism after eating a heavy meal. He was operated, in view of perforation peritonitis. Total gastrectomy with oesophago-jejunostomy was performed for gastric infarction and perforation due to gastric dilation [8].

Dewangan M et al., reported the case of a 17-year-old boy, who presented with acute abdomen after a binge eating. He was operated in view of pneumoperitoneum. Primary repair after excision of necrotic tissue in a dilated perforated stomach with feeding jejunostomy was done [5]. In cases where gastric perforation is small and confined to para-oesophageal area, gastro-oesophageal stenting can be used as a temporising measure in emergency [9]. Steen S et al., proposed total gastrectomy as the safest treatment option, despite being the most invasive one [10]. Once ischaemia and perforation occur, exploratory laparotomy with resection of the devitalised segment is needed.

There are controversies, whether a partial or total gastrectomy with or without feeding jejunostomy should be performed in cases with fundal perforation [11]. Partial gastrectomy results in a better quality of life for the patient and thus, it is the preferred approach [12].

CONCLUSION(S)

Gastric fundal necrosis and perforation have been reported as a lethal complication of AGD. Early recognition is essential to allow appropriate intervention and to prevent complications. In most cases, surgery is necessary to manage this condition. Though several cases have been reported, further studies are required to analyse the pathophysiology, as well as, to determine the best therapeutic strategy.

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