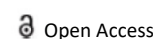




CASE REPORT



Prepyloric Perforation Following Blunt Trauma Abdomen

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ABSTRACT

Introduction: Gastric perforation following blunt trauma abdomen is a very rare presentation.

Case Report: 35 year male presented with acute abdomen following road traffic accident, which had undergone exploratory laprotomy, and there was prepyloric perforation, with no solid organ injury which was repaired.

Discussion: Mainly gastric perforation is associated with other solid organ injuries like liver, spleen, pancreas, lungs. Diagnosis by x-ray and CT scan, free gas under diaphragm and the repair can be done as routine. Mortality is due to sepsis.

Conclusion: Gastric rupture is a rare presentation following blunt injury abdomen. Commonly traumatic gastric rupture is associated with other injuries like splenic injury and fractures.

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KEYWORDS

Blunt trauma abdomen;
Gastric perforation; solid organ injury

Introduction

Blunt abdominal trauma due to Road Traffic Accident is one of the leading causes of death from pediatric age group to old age. The abdomen is the third most commonly injured anatomic region after Head and Extremities. In blunt trauma abdomen solid organ (liver, spleen and kidney), diaphragmatic, pancreatic and retroperitoneal injury are mainly injured. Hollow viscera injuries to duodenum, jejunum, urinary bladder and the colo-rectum are also common with an incidence that varies between 4%-15% [1,2]. However, by contrast, gastric perforations following BAT have an incidence of between 0.02%-1.7% only. A multi-centre retrospective analysis of blunt gastric injuries from four trauma centers in Brazil over a 14 year period yielded only 33 cases of gastric perforation [3]. The rarity of gastric perforation developing following BAT in civilian practice together with the inconsistent diagnostic yield from standard investigations has led to this condition being invariably recognized at laparotomy. In this case report we describe an anterior gastric perforation following BAT due a motor vehicle accident.

Case report

35 year male, referred from District Hospital presented in our emergency with Allied history of trauma due to road

traffic accident 2 wheeler versus truck 3 days back. Patient had a chief complaint of abdominal pain since then, fever and decreased appetite since 2 days. There was no history of vomiting, bleeding per rectal. Patient was passing motion and flatus normally. There was no Nervous System involved.

On Examination, patient was vitally stable. On auscultation of chest there was bilateral decrease in basal lungs. On per abdomen examination, there was distension, generalized tenderness, guarding was present. Per rectal Examination was normal.

Investigation

WBC count was raised to 18600. X-ray Showed, Free Gas Under diaphragm (Figure 1). USG showed, Mild to moderate amount of ascites with moving echoes. On aspiration, there was Pus (Figure 2). Intervention, Exploratory Laprotomy was performed. There was 1000 ml pyoperitonium and a 1 × 1 cm prepyloric perforation. There was no solid organ injury. Modified Graham's patch repair with Ryle's tube insertion was done with bilateral drain placement (Figure 3).

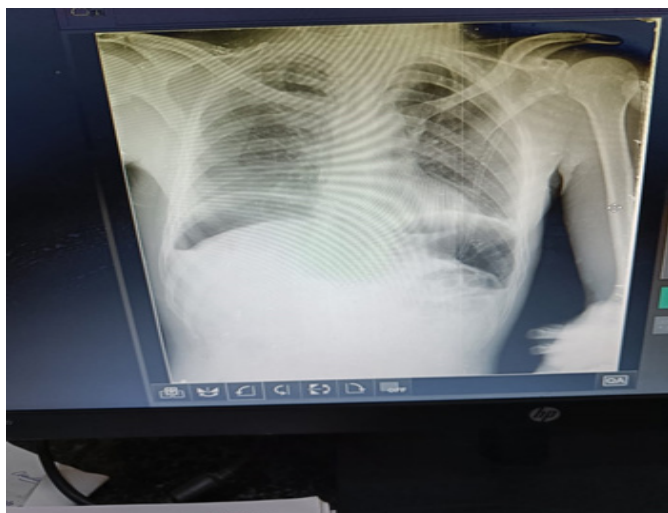


Figure 1. X-ray: Free gas under diaphragm.

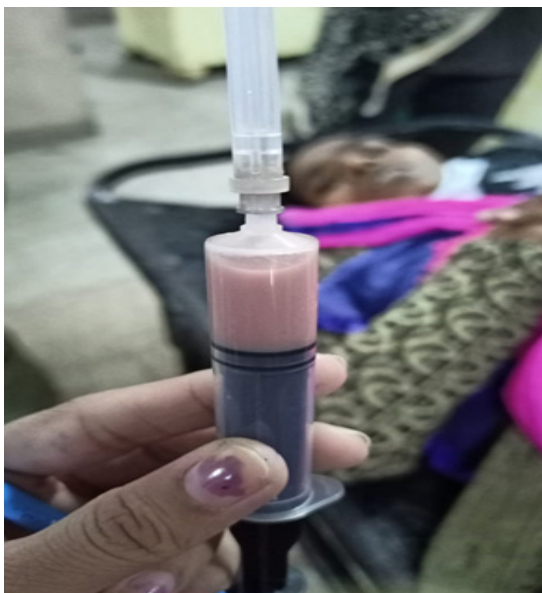


Figure 2. Diagnostic ascitic tap.



Figure 3. 1 × 1 cm prepyloric perforation.

Post op and Recovery: Patient was vitally stable and active RT suctioning Patient accidentally pulled out RT on POD 3 Patient was kept NBM for 7 days. Then slowly oral diet was allowed, and then on POD 14 patient was discharged.

Discussion

Traumatic stomach rupture following blunt injury abdomen is a very rare presentation. Stomach being mobile with strong walls and being protected by ribs usually escapes injury in blunt trauma, however if the stomach is distended due to food, liquid or gas it is more likely to get injured than when it is empty [4]. Grading of gastric injuries is shown in Table 1.

Gastric perforations due to BAT may develop in any location of the stomach. The most common location for gastric perforation is the anterior wall (40%) followed by the greater curvature (23%), lesser curvature (15%) and posterior wall (15%). Such perforations are invariably solitary; to date only 3 cases of a double gastric perforation following BAT have been described [3].

In blunt trauma abdomen, there are three different mechanisms of causing injury to gastrointestinal organs are described. Firstly, the burst injury, which occurs, when rapid compressive forces are applied to a filled and distended hollow viscous, without direct mechanical compression. Second, is the crush injury that occurs when an organ is compressed violently against the spine? Third is the shear injury, caused by rapid acceleration-deceleration of an organ at one point of fixation [5].

Studies show that rise in intraluminal pressure can cause a sequential rupture of the wall of the stomach, firstly the seromuscular coat, then the mucosa, and finally the submucosa [6]. Partial rupture of the stomach wall can occur and it may progress to full thickness rupture at a later stage. The anterior gastric wall is the most common site of rupture, followed by the greater curvature, the lesser curvature and the posterior wall [7]. Gastric rupture is usually associated with solid organ injuries like liver, pancreas, spleen and lungs [8].

Gastric perforations can be diagnosed with x-ray and CT scan by identifying free gas. Mortality is mainly due to sepsis. Morbidity and mortality increases parallel with time to operative intervention (intervention within 8 h is associated with a 2% mortality, intervention within 8 to 16 h with a 9% mortality, intervention within 16 to 25 h, a 17% mortality and intervention after 24 h over 30% mortality). The overall reported mortality ranges from 0%–66%. Management of gastric trauma shown in Figure 4.

At laparotomy it is mandatory to exclude a separate gastric laceration (for example, along the posterior gastric wall). Grades 1 to 3 gastric injuries (the majority of gastric injuries) are amenable to primary repair; a 2 layer closure is advocated to effect haemostasis. Grade 4 (tissue loss with devascularisation affecting b50% of stomach) and Grade 5

(tissue loss with devascularisation affecting N50% of stomach) gastric injuries are uncommon, associated with other organ and major vascular injuries; affected patients rarely reach hospital alive.

In the light of the extent of the injuries, primary repair will not be feasible in patients with Grades 4 and 5 gastric inju-

ries. Depending on the location of the tissue loss (proximal vs. distal stomach) and extent of devascularisation, sub-total or rarely total gastrectomy may have to be undertaken. The options to restore gastrointestinal continuity will be influenced by the presence of associated injuries (to duodenum, bile duct and pancreas) and include a gastro-duodenostomy, gastro-jejunostomy or a Rouxen-Y reconstruction.

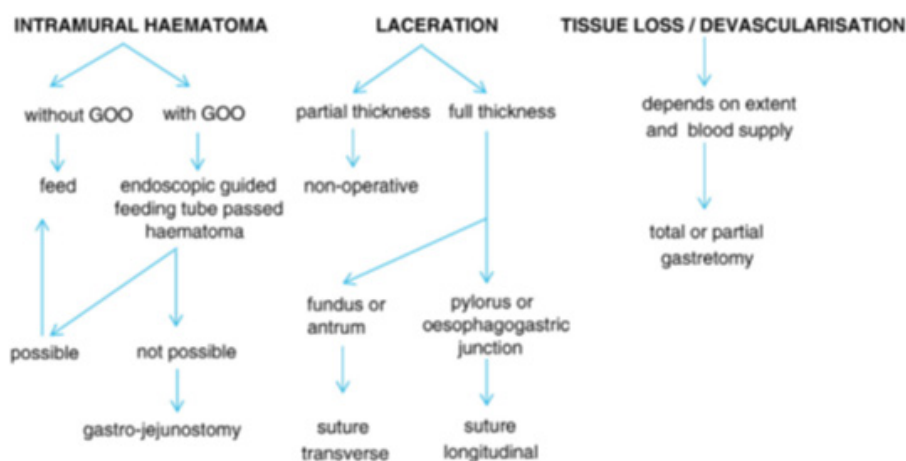


Figure 4. Management of gastric trauma.

Table 1. Grading of gastric injuries.

Grade I	Intramural hematoma b 3 cm Partial thickness laceration	Day
Grade II	Laceration	2 cm in GE junction/pylorus 5 cm in proximal one-third 10 cm in distal two-third
Grade III	Laceration	2 cm in GE junction/pylorus ≥ 5 cm in proximal one-third ≥ 10 cm in distal two-third
Grade IV	Vascular	Tissue loss/devascularisation ≤ two-third stomach
Grade V	Vascular	Tissue loss/devascularisation ≥ two-third stomach

Conclusion

Gastric rupture is a rare presentation following blunt injury abdomen. Commonly traumatic gastric rupture is associated with other injuries like splenic injury and fractures. Prompt diagnosis and early intervention reduces mortality and morbidity. Hollow viscus injuries after blunt trauma, though uncommon, can have serious consequences if the diagnosis is missed or delayed.

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