CASE REPORT

Isolated Double Gastric Perforation in Blunt Abdominal Trauma—a Case Report

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Abstract Blunt abdominal trauma mostly results from motor vehicle accidents, recreational accidents, falls or assaults with commonly injured internal organs being the spleen, liver, retroperitoneum, small bowel, kidneys, bladder, colorectal, diaphragm and pancreas. Gastric rupture is quite uncommon. Isolated gastric perforations following blunt trauma to the abdomen are mostly seen in paediatric patients. It is uncommon in adult patients and even rarer is the occurrence of double gastric perforations. We report here with a case of isolated double gastric perforation in a 24-year-old male patient following vehicular accident.

Keywords Blunt abdominal trauma · Gastric rupture · Intraabdominal injuries · Traumatic visceral perforation

Introduction

Gastric perforation commonly occurs following penetrating abdominal trauma. Blunt abdominal trauma-related gastric perforations are rare in adults with incidence of 0.02–1.7 % [1], usually associated with other intraabdominal and

extraabdominal injuries [1] with isolated gastric rupture being uncommon. Morbidity and mortality are directly related to other associated injuries, delay in diagnosis and development of sepsis. We present a case of isolated traumatic double gastric perforation following blunt trauma.

Case Report

A 24-year-old male presented with road traffic accident a day prior. He was unconscious with GCS score 7/15 and was intubated. His pulse was 110/min and BP of 90 mm of Hg systolic. The abdomen was distended, tender and guarded. Investigations were as follows: Hb—14 g%, WBC—20,000, platelet—200,000. Chest and abdominal x-rays were normal. The CT scan showed significant hemoperitoneum and pneumoperitoneum with no associated organ injury. The CT brain was normal. On emergency exploratory laparotomy, 3 l of bilious contamination along with ingested food particles was seen along with two gastric perforations. The first gastric perforation was 10 × 4 cm along the greater curvature at the highest portion of the fundus along with a second 0.5 × 0.5 cm perforation in the prepyloric region in the anterior wall (Fig 1).

The larger perforation was closed in two layers with non-absorbable suture after refreshing the edges while the smaller perforation was closed in one layer interrupted suture with omental patch. A feeding jejunostomy was done. The rest of the viscera were normal.

Discussion

The stomach has very strong walls, and it is not injured unless blunt trauma is very severe or the stomach is full, or both

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Fig. 1 Intra operative picture of large greater curvature perforation

factors are present. Anatomical position of the stomach and its high degree of mobility are also the protective mechanisms for preventing injury. Blunt injuries occur commonly in childhood with the head and extremities being more common followed by the abdomen [2]. The abdominal contents are at risk because of thin abdominal wall in children, the diaphragm being more horizontal and the ribs being very elastic [2]. Blunt injuries to the stomach are relatively infrequent in adults and occur in burst type of injuries, which occurs when rapid compressive forces are applied to a filled and distended stomach, without direct mechanical compression [3]. In majority, blunt gastric rupture is a single lesion and can occur anywhere in the stomach. Road traffic accident is the most common cause of gastric rupture accounting around 75 % [4]. Anterior gastric wall is the commonest site, followed by greater curvature, lesser curvature and the posterior wall [5, 6]. The reason for high incidence of anterior wall and greater curvature rupture is a combination of rapid forward motion of these regions during deceleration and relatively immobile lesser curvature and the momentum of a large volume of gastric contents all giving rise to shearing force high enough to cause rupture. In isolated gastric rupture, blood loss is not significant enough to cause hemodynamic instability but it is a result of the chemical peritonitis induced by the spillage of gastric acid, and thus, signs and symptoms of an acute abdomen are usually present. Early diagnosis of gastric perforation following blunt abdominal trauma thus requires high degree of suspicion as free intraperitoneal air on plain abdomen and chest x-ray films is seen in 16–66 % of the cases [7, 8]. It was not seen in our case. CT scan would be helpful in such cases with no free intraperitoneal air [2]. Proper debridement and refreshing of edges is necessary prior to repair. Repair of the stomach with a two-layer suturing is the treatment of choice for blunt injury-associated gastric rupture [9]. Nasogastric drainage and thorough and adequate peritoneal lavage and drainage

are necessary. For assessing the integrity of the repair, the air test is useful. One should then search for any missed perforation. Mortality following blunt gastric perforation is reported in the range of 0–66 % [10] and is mostly due to fatal shock as a result of associated injuries and septic complications.

Conclusion

Gastric rupture following blunt abdominal trauma is rare and even rarer is the occurrence of isolated double gastric rupture. CT scan is useful in hemodynamically stable patients when X-rays do not reveal free gas. Early detection and prompt interventions are the key in preventing septic complication. Although gastric rupture usually occurs at a single site, during laparotomy, surgeons should be aware of the possibility of multiple site perforations and all efforts should be made to look for them.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no competing interests.

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