

Case Report

MULTIPLE LESSER-CURVATURE GASTRIC PERFORATIONS WITH A GANGRENOUS PATCH FOLLOWING BLUNT ABDOMINAL TRAUMA: A RARE CASE REPORT

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ABSTRACT

Background: Blunt traumatic gastric perforation is rare, and multiple perforations are particularly uncommon. We report an 18-year-old male who presented after a two-wheeler skid and fall with abdominal pain, tenderness, rigidity, and sluggish bowel sounds. Extended focused assessment with sonography for trauma (eFAST) demonstrated free intraperitoneal fluid. Contrast-enhanced computed tomography (CECT) of the abdomen showed pneumoperitoneum, trace free fluid, and multiple approximately 2-cm perforations along the lesser curvature of the stomach; a closed fracture of the left femur was also identified. Exploratory laparotomy confirmed multiple lesser-curvature perforations with an adjacent gangrenous gastric patch. The perforations were repaired primarily after thorough peritoneal lavage, followed by broad-spectrum antibiotics and supportive postoperative care, with subsequent clinical recovery. This case illustrates an uncommon pattern of blunt gastric injury and emphasizes that cross-sectional imaging should be interpreted together with serial clinical assessment. When gastric perforation is suspected, timely operative source control and systematic inspection of the entire stomach are essential to identify additional perforations and devitalized tissue.

INTRODUCTION

Blunt abdominal trauma is a common cause of intra-abdominal injury after road traffic collisions, falls, and direct impact. Hollow viscus injuries occur less frequently than solid-organ injuries, and traumatic gastric rupture is particularly uncommon. Contemporary reviews report gastric rupture in fewer than 2% of blunt abdominal trauma cases, a low incidence generally attributed to the stomach's relatively protected position, mobility, and thick muscular wall.^[1,2]

Early diagnosis remains challenging because initial symptoms may be nonspecific and associated injuries can divert attention from evolving peritoneal signs. In hemodynamically stable patients, CECT is the principal cross-sectional imaging modality for suspected hollow viscus injury; however, its sensitivity is imperfect, so imaging must be

integrated with the mechanism of injury and repeated abdominal examination.^[3-6] Delayed recognition of gastrointestinal perforation can increase peritoneal contamination, sepsis, and postoperative morbidity. Multiple gastric perforations are rarer still, with recent case literature describing more than one gastric defect after motorcycle trauma.^[7] We describe an 18-year-old male with multiple approximately 2-cm perforations clustered along the lesser curvature after blunt abdominal trauma. The combination of multiplicity, an uncommon perforation site, and an adjacent gangrenous gastric patch make this case clinically distinctive and highlights the importance of prompt recognition, comprehensive intraoperative inspection, and definitive surgical management.

CASE PRESENTATION

Initial Presentation and Examination: An 18-year-old male presented to the emergency department after a two-wheeler skid and fall. He had sustained injuries to the face, abdomen, and left lower limb and had experienced a brief episode of loss of consciousness of uncertain duration. Abdominal examination revealed tenderness in the umbilical and hypogastric regions, abdominal rigidity, and sluggish bowel sounds, raising concern for intra-abdominal injury with peritoneal irritation.

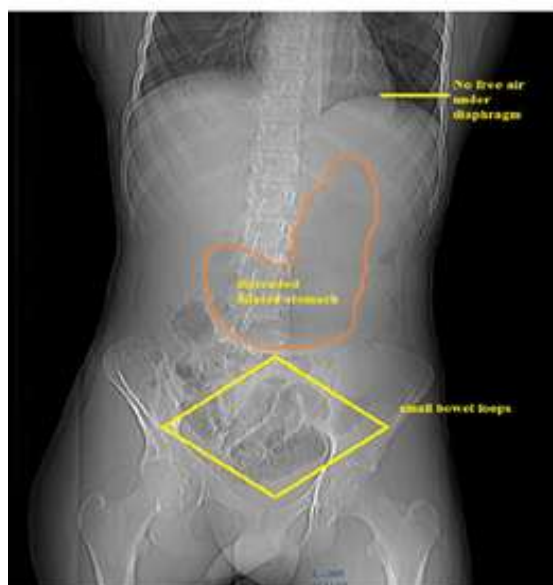


Figure 1: Plain abdominal radiograph showing a distended fluid-filled stomach without obvious free subdiaphragmatic air.

Imaging and Associated Injuries: eFAST demonstrated free intraperitoneal fluid. A plain

abdominal radiograph showed a distended fluid-filled stomach without obvious free subdiaphragmatic air [Figure 1]. Subsequent CECT of the abdomen showed pneumoperitoneum, trace free intraperitoneal fluid, and multiple gastric perforations measuring approximately 2 cm along the lesser curvature. A closed fracture of the left femur was also identified.

Operative Management and Outcome: Exploratory laparotomy confirmed multiple perforations along the lesser curvature of the stomach with an adjacent gangrenous patch, indicating local tissue devitalization [Figure 2]. The perforations were repaired primarily after thorough peritoneal lavage. Postoperatively, the patient received broad-spectrum antibiotics and supportive care and subsequently recovered.



Figure 2: Intraoperative photograph demonstrating traumatic gastric perforation with adjacent devitalized gastric tissue.

Clinical Timeline

Clinical stage	Key finding / intervention
Trauma	Two-wheeler skid and fall; facial, abdominal, and left-leg injuries; brief loss of consciousness.
Emergency assessment	Umbilical and hypogastric tenderness, abdominal rigidity, and sluggish bowel sounds.
Initial imaging	eFAST showed free intraperitoneal fluid.
CECT abdomen	Pneumoperitoneum, trace free fluid, and multiple approximately 2-cm lesser-curvature gastric perforations; associated closed left femur fracture.
Surgery	Exploratory laparotomy confirmed multiple lesser-curvature perforations with a gangrenous patch; primary repair and peritoneal lavage were performed.
Postoperative care	Broad-spectrum antibiotics and supportive care, followed by clinical recovery.

DISCUSSION

Traumatic gastric perforation is a rare hollow viscus injury after blunt abdominal trauma, with contemporary reports describing an incidence below 2%.^[1,2] Multiple perforations are even less common.^[7] The stomach is relatively protected by the lower thoracic cage, adjacent viscera, mobility, and a thick muscular wall. Proposed mechanisms include direct compression against the vertebral column, deceleration-related shearing, and a sudden rise in intraluminal pressure.^[1,2] In this patient, the multiple

lesser-curvature defects and adjacent gangrenous patch are compatible with focal compression-related tissue devitalization, although the exact mechanism cannot be proven from the available record. Diagnosis requires integration of clinical examination and imaging. Abdominal tenderness and rigidity suggested peritoneal irritation, while eFAST demonstrated free fluid without identifying the injured viscus. CECT subsequently showed pneumoperitoneum and the gastric defects. CT is highly useful but not completely sensitive: a 2024 meta-analysis reported pooled sensitivity and

specificity of 85% and 94%, respectively, while a 2021 meta-analysis reported 67.8% and 96.9%.^[5,6] These findings support continued clinical reassessment when symptoms or peritoneal signs persist despite equivocal imaging. Management depends on lesion number and size, tissue viability, contamination, physiological status, and associated injuries. Limited injuries with viable margins can often be treated by primary repair with adequate peritoneal lavage, whereas destructive injuries may require gastric resection.^[1-3] WSES guidance emphasizes timely operative source control when perforation or peritonitis is present.^[3] In this case, laparotomy allowed identification of all lesser-curvature perforations and devitalized tissue, followed by primary repair and thorough lavage. The case highlights three practical points: gastric injury should remain in the differential diagnosis when peritoneal signs or pneumoperitoneum follow blunt trauma; identification of one defect should prompt inspection for additional perforations; and tissue viability should be assessed carefully before repair. The patient's recovery after operative management supports prompt source control once perforation is recognized.

CONCLUSION

Multiple gastric perforations after blunt abdominal trauma are rare but potentially life-threatening. This case demonstrates an unusual pattern of multiple approximately 2-cm perforations along the lesser curvature with an adjacent gangrenous patch. CECT was valuable in defining the injury, but the presence of peritoneal signs remained clinically important because CT sensitivity for hollow viscus injury is not absolute. Timely operative exploration, identification of all perforation sites, assessment of tissue viability, primary repair when feasible, and thorough peritoneal lavage are central to effective management.

Learning Points:

- Gastric perforation is an uncommon consequence of blunt abdominal trauma, and multiple perforations are particularly rare.
- Peritoneal signs and pneumoperitoneum should prompt urgent evaluation for hollow viscus perforation even when other traumatic injuries are present.
- CECT is central to diagnosis in appropriate patients but should complement, not replace, repeated clinical assessment.
- At laparotomy, the entire stomach should be inspected for additional perforations and devitalized tissue before definitive repair.

REFERENCES

1. Maltese Zuffo B, Lucarelli-Antunes PS, Pivetta LG, Assef JC. Blunt gastric rupture: a plural clinical presentation and literature review. *BMJ Case Reports*. 2021 Jun;14(6):e239942.
2. De Martino C, Della Corte M, Smaldone P, Pollio A, Armellino MF. Gastric perforation in blunt abdominal trauma. Report of two cases and review of literature. *Annali Italiani di Chirurgia*. 2021 Jan 20;10(January):1-5.
3. Smyth L, Bendinelli C, Lee N, Reeds MG, Loh EJ, Amico F, Balogh ZJ, Di Saverio S, Weber D, Ten Broek RP, Abu-Zidan FM. WSES guidelines on blunt and penetrating bowel injury: diagnosis, investigations, and treatment. *World journal of emergency surgery*. 2022 Mar 4;17(1):13.
4. Abdel-Aziz H, Dunham CM. Effectiveness of computed tomography scanning to detect blunt bowel and mesenteric injuries requiring surgical intervention: a systematic literature review. *The American Journal of Surgery*. 2019 Jul 1;218(1):201-10.
5. Granieri S, Altomare M, Bonomi A, Panagini G, Frassini S, Cioffi SP, Basta G, Spota A, Sammartano F, Bini R, Renzi F. Contrast-enhanced CT scan (CECT) for the detection of hollow viscus and mesenteric injuries in blunt trauma-an updated systematic review of the literature and meta-analysis of diagnostic test accuracy. *European Journal of Trauma and Emergency Surgery*. 2024 Dec;50(6):2709-19.
6. Hsia CC, Wang CY, Huang JF, Hsu CP, Kuo LW, Ouyang CH, Liao CH, Chen HW. Diagnostic accuracy of computed tomography for the prediction of the need for laparotomy for traumatic hollow viscus injury: systematic review and meta-analysis. *Journal of Personalized Medicine*. 2021 Dec 1;11(12):1269.
7. Cho IS, Park CH, Lee JW. Double-sided gastric perforation after a motorcycle accident in Korea: A case report. *World Journal of Clinical Cases*. 2025 Jun 16;13(17):98529.