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Case Report

Delayed diagnosis and surgical management of gastric perforation: a case report

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ABSTRACT

Gastric perforation is a life-threatening emergency requiring prompt diagnosis and intervention. However, in resource-limited settings, delayed diagnosis and referral can worsen outcomes. This report presents a case of gastric perforation initially misdiagnosed as perforated appendicitis, leading to delayed treatment and increased morbidity. A 56-year-old male presented with severe, diffuse abdominal pain for one day, accompanied by the inability to pass stool and urine. The patient had a history of chronic knee pain and frequent NSAID and corticosteroid use. He was initially misdiagnosed at a rural hospital due to the unavailability of imaging and referred to a primary hospital with X-ray facilities after a two-day delay. On arrival, he showed signs of sepsis and peritonitis. Abdominal X-ray revealed free air under the diaphragm, confirming gastric perforation. Emergency laparotomy showed a 1×1 cm gastric perforation with extensive peritoneal contamination and omental inflammation. Primary closure with omental patch repair was performed, followed by peritoneal lavage. The patient was managed in the intensive care unit (ICU) for three days before transferring to the general ward. He was discharged after ten days with weekly follow-ups for one month. This case highlights the challenges of diagnosing gastric perforation in resource-limited settings and emphasizes the need for improved access to imaging and timely surgical intervention. Delayed diagnosis increases morbidity, underscoring the importance of efficient referral systems and early detection.

Keywords: Gastric perforation, Delayed diagnosis, Emergency laparotomy, Resource-limited settings, Omental patch repair

INTRODUCTION

Gastric perforation is a life-threatening surgical emergency that occurs due to various causes, including peptic ulcer disease, trauma, malignancy, and prolonged use of non-steroidal anti-inflammatory drugs (NSAIDs) or corticosteroids.[1] It leads to the leakage of gastric contents into the peritoneal cavity, causing peritonitis and systemic inflammatory response syndrome (SIRS), which can rapidly progress to septic shock if not promptly managed.[1,2]

The incidence of gastric perforation varies globally, with a significant number of cases occurring in developing countries where healthcare access is limited.[3] The availability of diagnostic imaging, particularly computed tomography (CT), plays a crucial role in the early detection of perforations. However, in many peripheral healthcare facilities, reliance is primarily on clinical judgment and basic radiographic imaging, such as abdominal X-rays, which may lead to delayed or incorrect diagnoses.[4] The classic finding of free air under the diaphragm on an erect abdominal X-ray is diagnostic, but sensitivity is lower compared to CT.[3-5]

In resource-limited settings, the challenges associated with delayed diagnosis are compounded by factors such as the absence of advanced radiological imaging, transportation difficulties, and limited surgical expertise.[6,7] Delayed intervention in gastric perforation cases increases the risk of sepsis, multiple organ dysfunction syndrome (MODS), and prolonged hospital stays.[8] This case highlights the

impact of these challenges and emphasizes the necessity of strengthening diagnostic and referral systems to optimize surgical outcomes.[6-9]

CASE REPORT

A 56-year-old male was referred to our hospital with severe, generalized abdominal pain for one day. The pain was associated with the inability to pass stool and urine. Initially, he experienced epigastric and right lower quadrant pain, leading to an initial misdiagnosis of perforated appendicitis at a rural hospital. Due to the unavailability of X-ray facilities, no radiological confirmation was performed, and the patient was referred to a primary hospital with X-ray capabilities. However, transportation difficulties led to an additional two-day delay before reaching our facility.

Upon admission, the patient appeared critically ill, presenting with signs of sepsis. His blood pressure was 160/70 mmHg, heart rate 113 beats per minute, respiratory rate 42 breaths per minute, temperature 38.7°C, and oxygen saturation 97% on room air. Physical examination revealed a rigid abdomen with generalized tenderness and absent bowel sounds, consistent with peritonitis.

Laboratory investigations showed leukocytosis (28,000/mm³ with neutrophil predominance of 72.7%), elevated serum creatinine (2.2 mg/dl), elevated blood urea nitrogen (142 mg/dl), and metabolic acidosis. Due to the absence of CT imaging in our facility, an abdominal X-ray was performed, revealing free air under the diaphragm (Figure 1), confirming gastric perforation.

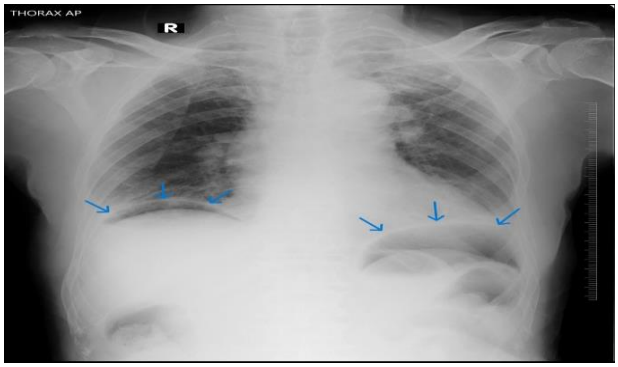

Figure 1: Abdominal X-ray (supine, anteroposterior view) demonstrating radiological findings suggestive of gastrointestinal perforation. Free intraperitoneal air is observed as a radiolucent area beneath the diaphragm (blue arrows), consistent with pneumoperitoneum. Additionally, distended bowel loops are present, indicating paralytic ileus. These findings confirm the diagnosis of gastric perforation, necessitating urgent surgical intervention.

The patient was immediately taken for emergency laparotomy. Intraoperative findings included a 1×1 cm perforation on the anterior gastric wall, extensive peritoneal contamination, and thick fibrinous exudate. Additionally, the omentum exhibited significant inflammation, likely resulting from prolonged exposure to gastric acid over 3–4 days before surgery (Figure 2). A cito exploratory laparotomy was performed, and the perforation was surgically managed by refreshening the wound edges, performing a primary closure, and reinforcing the area with an omental patch (omentopexy). Extensive peritoneal lavage was conducted using warm saline, and a subhepatic drain was placed.

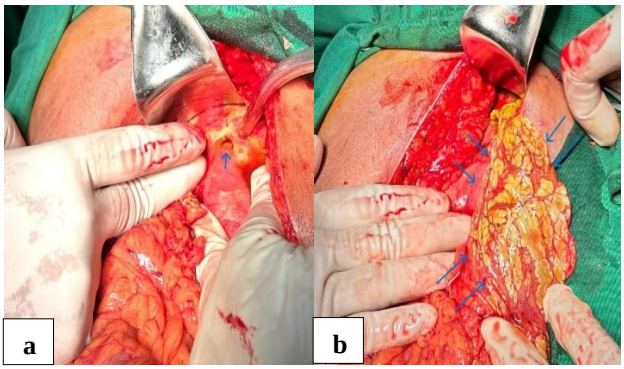

Figure 2: Exploratory laparotomy procedure for gastric perforation, (a) intraoperative image showing a 1×1 cm perforation on the anterior gastric wall (blue arrow). The surrounding tissue exhibits inflammation and fibrinous exudate, likely due to prolonged exposure to gastric acid leakage, contributing to chemical peritonitis; and (b) intraoperative image depicting inflamed and thickened omentum (blue arrows), suggestive of severe irritation and inflammation, possibly resulting from extended exposure to gastric acid for more than 72 hours before surgical intervention. The hyperemic and edematous omentum highlights the consequences of delayed diagnosis and treatment.

Postoperatively, the patient was admitted to the ICU for sepsis management. He remained in the ICU for three days, receiving intravenous antibiotics, fluid resuscitation, and pain management. The patient gradually stabilized and was transferred to the general ward for further supportive care. He was discharged after a total hospital stay of 10 days and was scheduled for weekly outpatient follow-ups for one month.

DISCUSSION

Delayed diagnosis and treatment of gastric perforation are associated with a high risk of morbidity and mortality.[10] In this case, the patient experienced a delay of more than 48 hours due to initial misdiagnosis and transportation barriers, which worsened his clinical condition. Studies have demonstrated that patients with delayed surgical intervention beyond 24 hours have increased rates of peritoneal contamination, sepsis, and postoperative complications.[10,11]

NSAID and corticosteroid use are well-known risk factors for gastric mucosal injury and subsequent perforation.[12] Chronic consumption of allopurinol, dexamethasone, and diclofenac sodium in this patient may have contributed to gastric ulceration and perforation.[13] Several studies indicate that combining NSAIDs with corticosteroids significantly amplifies the risk of gastrointestinal complications.[2,12-14]

Surgical intervention for gastric perforation typically involves primary closure with an omental patch (Graham patch) to reinforce the defect and prevent recurrence.[15] This technique remains the gold standard due to its simplicity and effectiveness.[2] In cases of severe peritoneal contamination, extensive peritoneal lavage is essential to reduce the risk of postoperative abscess formation and sepsis. [2,15-16]

The absence of CT imaging in our setting limited preoperative assessment, relying solely on clinical evaluation and abdominal X-ray.[17] Although CT scans offer superior sensitivity, abdominal X-ray remains a valuable tool, particularly in resource-constrained environments.[3,17]

CONCLUSION

This case underscores the critical role of early diagnosis and surgical intervention in managing gastric perforation. In resource-limited settings, reliance on clinical judgment and basic radiographic imaging is necessary for timely diagnosis. Strengthening referral systems and improving access to imaging and emergency surgical care can significantly enhance patient outcomes.

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