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Acute Gastric Dilation Following Trauma: A Case Report

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Abstract

Introduction: Acute gastric dilation following trauma is an unusual event that can occur in different settings, and can cause gastric necrosis as a rare though fatal condition. The present report involves a case of acute gastric dilation following multiple traumas, which caused gastric necrosis and total gastrectomy.

Case presentation: A 19-year-old morbid obese male presented to the emergency department (ED) following a motor vehicle accident. He had a left lower extremity crash injury. In his serial examinations, he was complaining of upper abdominal pain with epigastric tenderness. After nasogastric tube (NGT) reinsertion, due to detecting coffee ground secretions in the drained fluid, the patient was transferred to the operating room. A midline laparotomy was performed that revealed dilation and discoloration of the stomach. Gastric decompression was performed. All the discoloration then disappeared except for that of certain suspicious areas, which necessitated evaluations. On the following day, given the lack of improvement in the patient`s condition, he was transferred to the operating room for a second laparotomy.

Conclusion: The present report emphasized on the importance of NGT insertion in multiple-trauma patients, which is, however, neglected in many cases. Moreover, acute gastric dilation is recommended to be considered in the differential diagnosis of patients with multiple or abdominal trauma and complaints of vomiting or abdominal pains.

Keywords: Case Reports; Gastric Dilatation; Intubation, Gastrointestinal; Multiple Trauma

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INTRODUCTION

Acute gastric dilation following trauma is an unusual event that can occur in different settings, and can cause gastric necrosis as a rare though fatal condition. The present report involves a case of acute gastric dilation following multiple traumas.

CASE PRESENTATION

A 19-year-old male presented to the emergency department (ED) following a motor vehicle accident. He was conscious upon admission with no abnormal symptoms in his airways. The results of his lung examination were also normal. His blood pressure was measured as 130/85 mmHg, his pulse rate as 130 beats per minute. No free fluid were detected in focused assessment with sonography for trauma (FAST) scan. His body mass index (BMI) as 36.3, suggesting morbid obesity. No tenderness to palpation on his spinal column, no symptoms of laceration in his chest and abdomen and no abdominal guarding and tenderness were detected. The results of his perineal and pelvic examinations were also normal. Although his distal pulses were normal, a deformity was observed in the distal third of his left forearm. He had a left lower extremity crash injury. His left leg was nearly amputated below the knee, with severe muscle and skin damage, and the nerves and vessels were all cut. He reported a history of committing suicide, although he had no history of diseases except for psychological disorders treated with valproate. A nasogastric tube (NGT) and a foley catheter were inserted. His chest x-ray (figure 1), pelvic radiograph and brain computed tomography (CT) scan were normal.

Limb amputation was planned in his left lower extremity, and below knee amputation and aggressive soft-tissue debridement were performed due to the severe crash injury. Serial examinations and hydration were also performed to prevent kidney damage. The patient did not tolerate the NGT and pulled it out. After this event, tachypnea, a sinus tachycardia with a heart rate of

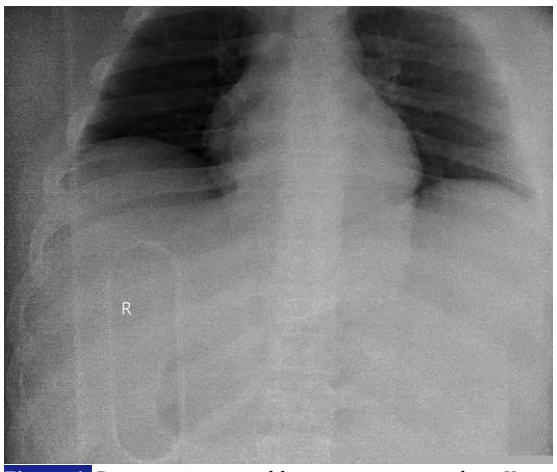

Figure 1: Preoperative portable anteroposterior chest X-ray

150 beats per minute were observed in his serial examinations. He was complaining of upper abdominal pain. After NGT reinsertion, the patient reported pain alleviation, and his situation considerably improved. Thereafter, the patient had a tendency to eating despite his previous lack of appetite. The patient was transferred to the operating room with a suspicion of gastrointestinal bleeding, ischemia and necrosis after detecting coffee ground secretions in the drained fluid. A midline laparotomy was performed. Figure 2 shows the detected dilation and discoloration of the stomach. Gastric decompression was performed with a NGT with the help of external compression of the stomach. All the discoloration then disappeared except for that of certain suspicious areas, which necessitated. On the following day, given the lack of improvement in the patient`s condition, he was transferred to the operating room for a second laparotomy as shown in figure 3. After performing a total gastrectomy with a Roux-en-Y esophagojejunostomy, the patient was transferred to intensive care unit (ICU).

His condition improved during the following three days. Despite performing surgical debridement three times, the infection of the amputation stump was not controlled, which ultimately led to above-knee amputation due to severe infection. On the 5th post-operative day, the patient suffered from tachypnea with a re-elevated heart rate and anuria. Leukocytosis, elevated creatinine levels and metabolic acidosis were also detected in his lab reports. Blood culture and urine culture were performed, and chest radiographs showed bilateral patchy pulmonary infiltrations. Infectious disease consultation was performed, and imipenem, ciprofloxacin and vancomycin were administered to treat sever sepsis adjusting with the creatinine level. The patient underwent hemodialysis due to his creatinine elevation, anuria and lack of response to crystalloid administration.

To rule out the high suspicion of anastomosis leakage, a contrast study was performed using gastrografin; nevertheless, the contrast could not be detected even in the intestinal lumen owing to the patient's obesity. Given the failure to rule out anastomosis leakage using imaging modalities, the patient was transferred to the operating room once again, and anastomoses were found to be normal with no leakage. Unfortunately, the patient died three days later owing to multi-organ failure.

Discussion

Acute gastric dilation is a rare condition whose exact etiology is yet unknown (1); nevertheless, several theories have been proposed as the pathogenesis of this disease. The compression of the third segment of duodenum between vertebra, aorta and superior mesenteric artery has been

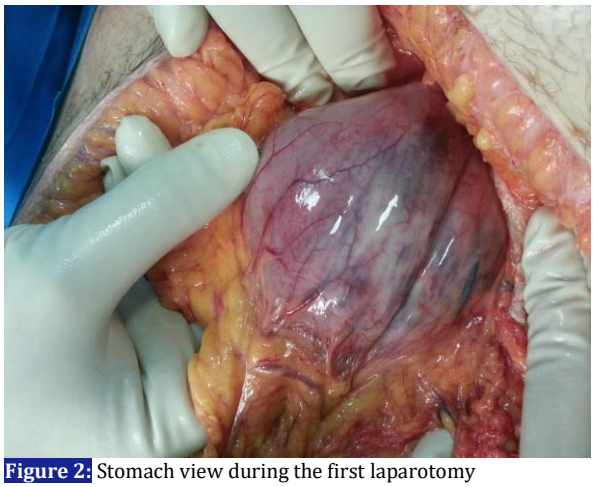

Figure 2: Stomach view during the first laparotomy

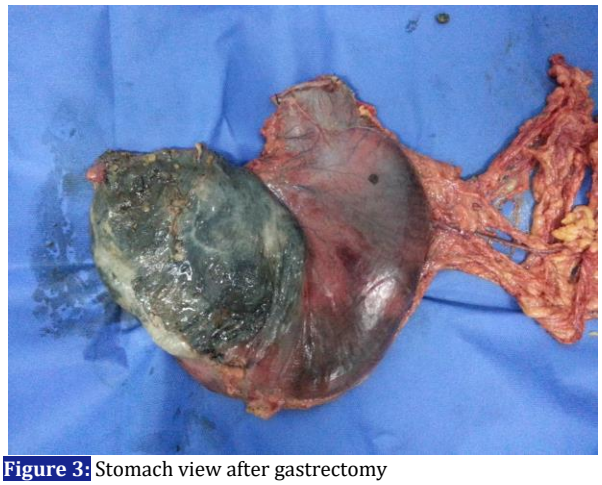

Figure 3: Stomach view after gastrectomy

proposed as the potential cause of acute gastric dilation (2).

Given the rich blood flow of the stomach, gastric ischemia and necrosis are rare (1, 3). These conditions are likely to occur when the intra-gastric pressure exceeds the visceral venous pressure, which is over 20 cmH2O or 14 mmHg. Gastric perforation can also occur at an intra-gastric pressure of over 120-150 mmHg (4). Necrosis of the greater curvature and gastric fundus is highly important and requires treatment.

Vomiting can occur in 90% of these patients. The obstruction of the gastroesophageal junction can prevent the patient from vomiting. This obstruction can be secondary to the dilation of the gastric fundus (4). The other symptoms included abdominal distension and abdominal pain, which were observed in the present case.

Plain abdominal X-ray can display fluid levels in the distended stomach or show free air in the abdomen in the presence of perforation. Abdominal CT scan is the most useful imaging technique that shows gastric distension and helps with the diagnosis of certain underlying conditions such as superior mesenteric artery syndrome (4).

Fluid resuscitation and decompression of the dilated stomach using a nasogastric tube are considered the first-line therapy. Normal size tubes may be ineffective, and a Faucher or Edlich tube may be necessary in the operation room to ensure a thorough gastric drainage (1).

Surgical interventions are required when conservative management fails or in the case of suspected necrosis or perforation (4). Different interventions ranging from surgical decompression to total gastrectomy can be performed based on the findings. In the present case, surgical decompression was performed first followed by total gastrectomy due to the extension of the lesion and fundus necrosis. According to some studies, total gastrectomy is preferred to partial resection, which is accompanied by the poor healing of the remaining gastric tissue and delayed ischemia. Perioperative mortality has been reported as high as 50%-65% (4).

Conclusions

The present report emphasized on the importance of NGT insertion in multiple-trauma patients, which is, however, neglected in many cases. Moreover, acute gastric dilation is recommended to be considered in the differential diagnosis of patients with multiple or abdominal trauma and complaints of vomiting or abdominal pains. Early treatment before the emergence of necrosis can also help decrease mortality.

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Authors' contribution

All the authors fulfilled the criteria of authorship based on the recommendations of the International Committee of Medical Journal Editors (ICMJE).

Conflict of interest

None declared

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