

CASE REPORT

PERFORATION OF A DUODENAL ULCER IN A 10 YEAR OLD BOY: A CASE REPORT

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ABSTRACT: In this modern era of medicine, perforation of duodenal or gastric ulcer in pediatric patients is very rare. Here we are presenting a 10 year boy presented in emergency department of our rural tertiary care hospital with complaints of diffuse abdominal pain, nausea, vomiting of 36 hours and mild fever of 12 hours duration. O/E he had tachycardia, raised temperature, generalized abdominal tenderness, guarding, rigidity and rebound tenderness. On chest x-ray, free gas under diaphragm was seen. He had undergone exploratory laparotomy showing perforation at the 1st part of duodenum which was repaired by Graham's patch repair. Post-operative recovery was uneventful. We suggested Helicobacter pylori workup on discharge but patient didn't turn up in follow up.

KEYWORDS: Peptic perforation, pediatric patients, Graham's patch, H. pylori.

KEYMESSAGES: This case represents a rare entity in pediatric emergency medicine. The incidence of perforated peptic ulcer in children has been decreasing in industrialized countries. Peptic ulcer disease secondary to H. Pylori infection is particularly important to recognize due to the high reported incidence of recurrence. Perforation from peptic ulcer disease is adequately treated with Graham's patch repair, and medical management of the underlying etiology.

INTRODUCTION: Potential etiologies of the acute surgical abdomen in infants and children are relatively few in number. A diagnosis that additionally accounts for the finding of significant pneumoperitoneum limits the consideration of possible etiologies even further. Care-takers of these patients are more oft to consider perforated appendicitis as a source of free air than the likelihood of a proximal perforation in an otherwise healthy child. The literature on perforated peptic ulcers in children in western countries is vastly outdated, with many case series written several decades ago.¹⁻³ There are more recent cases of duodenal perforation arising from developing countries with diverse endemic exposures, with reported etiologies including malaria, meningitis, gastro-enteritis, and lymphoma.⁴⁻⁷ We present a rare case, in the modern medical era, of a 10 year old male who presented with peritonitis and pneumoperitoneum following the perforation of a duodenal ulcer.

CASE REPORT: The patient is a 10 year-old, previously healthy male, who was brought to the emergency room by his parents with complaints of diffuse abdominal pain, anorexia, nausea and vomiting of 36 hours duration. In the afternoon on the previous day, he noted a sudden onset of abdominal pain, particularly at his epigastrium, as well as his right upper abdomen. After around 6 hours, the pain became diffuse in nature. His pain was exacerbated by movement, there were no alleviating factors. He was admitted to a local nursing home.

There he developed a subjective fever, malaise, progressive discomfort for last 12 hours after which he was transferred to our hospital. Bowel movements were reported to be regular; there was no exposure to sick contacts or pets, or a history of recent travel, trauma, or medical procedure.

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There was no history of chronic abdominal pain or non-steroidal anti-inflammatory drug use. Review of systems was otherwise negative. There was no known family history of inflammatory bowel disease, peptic ulcer disease or gastro-intestinal cancers in the family.

On exam, the patient appeared generally unwell. He was febrile to 101°F, and tachycardic to 127. Blood pressure and respiratory status on room air were normal. Chest and cardiovascular examinations were unremarkable. The patient's abdomen revealed guarding, tenderness, rigidity and rebound tenderness throughout, but particularly noted at the right upper quadrant and epigastrium.

On review of his labs, the patient manifested a notable leukocytosis to 20 with an associated left shift. Other lab works including chemistries, coagulation parameters, and urinalysis were within normal limits. An ultrasound revealed free fluid in the pelvis, and an upright abdominal x-ray demonstrated pneumoperitoneum. [Fig. No.1]

The patient was then taken to the operating room for exploratory laparotomy. Upon entering the abdomen, diffuse fibrinous exudates were noted with purulent, bile stained ascites followed by aspiration of the abdominal cavity. While aspirating, persistent exudate was noted around the gallbladder and liver bed, and with closer inspection, an efflux of bile was noted from the duodenum. Further separation of the fibrinous material revealed a 3 mm perforation [Fig. No. 2] at the first part of the duodenum, immediately distal to the pylorus. The perforation was closed with interrupted 2-0 polyglactin sutures and omental patch (Graham's patch repair) [Fig. No. 3]. The patient's post-operative course was unremarkable. On discharge, we suggested H. pylori work up. But the patient didn't turn up in the follow up.

DISCUSSION: Pneumoperitoneum and peritonitis following the perforation of a peptic ulcer is a rare cause of an acute abdomen in children and often results in a significant delay in diagnosis and subsequent operative management. This increases the likelihood of developing complications post-operatively.^{1,8} Hua et al., describes a series of 52 patients with perforated peptic ulcer disease in the pediatric population. 90% of such patients were adolescents, emphasizing the unusual occurrence of this disease process in our patient, a 10 year old male⁸. Another series, published in 1988, reviewed the management of 36 patients with peptic ulcer disease from ages 6 to 18. It was noted that in children under 10, all peptic ulcers were secondary in etiology; attributed to drug therapy or severe underlying illness, or increased intracranial pressure.

Patients over 10 with primary duodenal pathology had a high incidence of recurrent symptoms (67%)⁸. Possible etiologies of perforation in Western countries implicate chronic steroid administration, NSAIDs, severe underlying illness, trauma, iatrogenic perforations from EGD, and air enemas in the radiologic reduction of intussusception.⁹⁻¹⁴ Countries such as Nepal, West Africa, and India have reported cases secondary to H. pylori, meningitis, malaria, lymphoma, and gastro-enteritis.^{4-7,15} Surgical management of children with perforated peptic ulcers has historically involved the use of open surgery.

Laparoscopy has since been shown to be safe and effective in the treatment of children with complicated peptic ulcer disease.^{16,17} In the adult population, there is some debate on the role of including an acid reducing procedure for a stable patient at the time of initial surgery for a perforated peptic ulcer. The role of acid lowering procedures in children has not been studied extensively. Edwards et al. reported a series of 29 pediatric patients with complicated peptic ulcer disease, 5 were managed with an antacid procedure at the time of initial operation. However these were performed

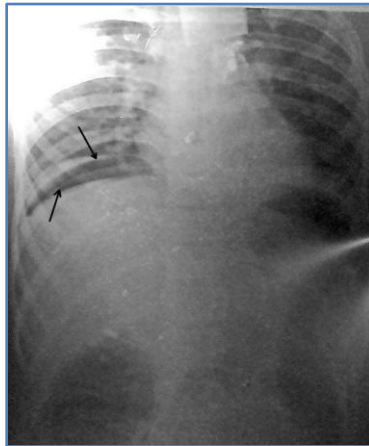
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in instances of bleeding or gastric outlet obstruction, and may have been required to adequately treat the area of obstruction or bleeding. All patients in this series with perforation¹⁸ were treated with simple repair with or without omental patch.¹¹

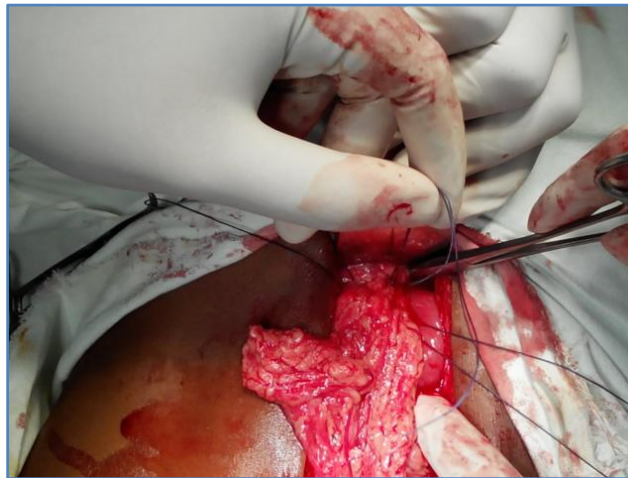
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Chest X-Ray showing free gas under the Right dome of diaphragm



Intraoperatively perforation repaired by Omental Patch



Perforation at the first part of duodenum shown intraoperatively

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