



Chicken bone-induced ileal perforation peritonitis mimicking duodenal perforation peritonitis: a case report

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Introduction: Foreign body ingestion can lead to bowel perforation and peritonitis. We present a case of a 54-year-old male who ingested a chicken bone, resulting in ileal perforation that mimicked duodenal perforation peritonitis.

Case Presentation: The patient has a history of peptic ulcer disease and regularly used non-steroidal anti-inflammatory drugs over the counter, adding more evidence to the provisional diagnosis of duodenal perforation. Exploratory laparotomy revealed the ileal perforation and the chicken bone was successfully removed. Wedge resection of the perforated segment and ileo-ileal anastomosis were performed.

Discussion: Although history, examination, and investigation were more in favor of duodenal ulcer, our patient had ileal perforation due to chicken bone. Prompt identification and early surgical intervention are crucial to prevent complications and reduce mortality rates. The patient had an uneventful recovery.

Conclusion: Timely referral to a tertiary care center is essential for early surgical intervention and successful management of bowel perforation caused by a foreign body.

Keywords: case report, foreign body, perforation peritonitis

Introduction

Foreign body ingestion is a relatively common clinical occurrence, with the majority of cases passing through the gastrointestinal tract without any complications. However, in rare instances, foreign bodies can perforate the bowel, leading to peritonitis and presenting with an acute abdomen. Foreign bodies that are sharp and pointed carry a higher risk of causing bowel perforation^[1]. Among the commonly encountered foreign bodies associated with bowel perforation are fish bone, chicken bone, and dentures. Patients with bowel perforation by a foreign body present with air under the diaphragm in erect chest X-rays^[2]. The prompt identification and management of bowel perforation caused by foreign bodies are crucial to prevent further complications and reduce mortality rates. Early surgical intervention is recommended as it has been shown to decrease morbidity and

HIGHLIGHTS

- Foreign body ingestion can lead to bowel perforation and peritonitis, and patients with a history of binge alcohol consumption and peptic ulcer disease are at increased risk.
- Prompt identification and early surgical intervention are crucial to prevent complications and reduce mortality rates in cases of bowel perforation caused by foreign bodies.
- In cases of acute abdomen with signs of perforation, such as subdiaphragmatic gas, patients should be timely referred to a higher center for early surgical intervention and improved outcomes.

mortality associated with this condition^[3]. In this case report, we present a case of ileal perforation and peritonitis resulting from the ingestion of a chicken bone, for which a provisional diagnosis of duodenal perforation peritonitis was made based on history, examinations, and X-ray findings. The case highlights the successful management of the patient at our tertiary care hospital. This case report is drafted in line with the SCARE 2023 guidelines^[4].

Presentation of the case

A 54-year-old male presented to the emergency department with a 3-day history of epigastric pain, followed by 24 h of generalized abdominal pain that was sharp and worsened with movement. There was no history of fever, vomiting, cough, diarrhea, or constipation. The patient denied any recent traumatic events. He had a history of frequent binge alcohol consumption and was a former smoker with a 20-pack-year history. He had a history of

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heavy alcohol consumption one day prior to initiation of epigastric pain. The patient had a previous diagnosis of peptic ulcer disease and regularly used non-steroidal anti-inflammatory drugs (NSAIDs) over the counter.

On physical examination, mild abdominal distention with positive guarding and rigidity was observed. Bowel sounds were audible. The blood test showed a total leukocyte count (TLC) of 9400 cells/mm^3 and hemoglobin level of 14.9 g/dl .

An erect chest X-ray, covering the upper abdomen revealed the presence of free subdiaphragmatic gas, suggestive of pneumoperitoneum (Fig. 1). We made a provisional diagnosis of duodenal perforation peritonitis. For this, an exploratory laparotomy was carried out by the Department of General Surgery within 12 h of X-ray diagnosis of pneumoperitoneum.

Initially, an upper midline incision was performed to gain access, and a thorough exploration of the duodenum through exploratory laparotomy was conducted in order to identify any perforation. However, despite an extensive search, no perforation was found. As a result, the decision was made to broaden the incision downwards from the umbilicus in order to explore alternative potential sources of perforation. Intraoperatively, $\sim 200 \text{ ml}$ of bilious collection was observed in the peritoneal cavity. A perforation measuring $0.5 \text{ cm} \times 0.5 \text{ cm}$ in size was identified at 90 cm proximal to the ileocecal junction (Fig. 2A). Slightly distal to the perforation, an elongated, sharply pointed chicken bone measuring $7 \text{ cm} \times 2 \text{ cm} \times 1 \text{ cm}$ in size was found (Fig. 2B). The chicken bone was successfully removed. Wedge resection of the perforated segment of the ileum was performed, followed by ileo-ileal anastomosis. The patient had an uneventful recovery, and during the one-month follow-up, he did not report any complaints of acute abdomen.

Discussion

Ingestion of foreign bodies is a relatively common occurrence, with the majority of cases passing spontaneously without any complications. Surgical intervention is required in only 5% of patients who ingest foreign bodies, and less than 1% of cases result in peritonitis due to small intestine perforation^[1].



Figure 1. Erect chest X-ray showing free subdiaphragmatic gas.

Peritonitis is defined as an inflammation of the peritoneum. There are four types of peritonitis: primary (spontaneous), secondary (anatomic), tertiary, and peritoneal dialysis-related peritonitis. Secondary peritonitis is the most common among the four types. Perforation of the gastrointestinal tract leads to microbial inoculation and spillage of chemical irritants into the peritoneal cavity, resulting in secondary peritonitis^[5]. Spillage of the content of the gastrointestinal tract into the peritoneal cavity causes acute chemical peritonitis. Acute chemical peritonitis is followed by a systemic inflammatory response syndrome (SIRS), which can progress to secondary bacterial peritonitis and sepsis^[6].

The symptoms of intestinal perforation peritonitis are abdominal pain, fever, and abdominal distention^[3,7]. In our geographical region, duodenum perforation is the most prevalent, followed by gastric perforation, while ileal perforation is also commonly observed^[7-9]. Studies have identified typhoid ileal perforation, perforated gastric ulcer, perforated duodenal ulcer, and ruptured appendix as common causes of intestinal perforation peritonitis^[3,7]. Intestinal perforation due to foreign bodies is less common, with thin and pointed foreign bodies posing a higher risk. The ileum is the most frequent site of bowel perforation due to foreign bodies, followed by the jejunum and stomach^[1].

Certain patient populations, including the elderly, denture wearers, individuals with a habit of rapid food ingestion, alcoholics, and those with psychiatric conditions, are at increased risk of foreign body ingestion^[2,10]. In our case, the patient was elderly and a binge alcoholic, which may have contributed to the predisposing factors for foreign body ingestion. Commonly ingested foreign bodies that might cause intestinal perforation include chicken bones, fish bones, toothpicks, and dental crowns^[2]. Since the patient generally does not give a history of foreign body ingestion, there may be difficulty in preoperative diagnosis.

Pneumoperitoneum, identified as a gas under the diaphragm on an erect chest X-ray, can be observed in case of bowel perforation. However, not all bowel perforations present signs of pneumoperitoneum in chest X-rays^[2]. Computed tomography (CT) scan findings may not always provide sufficient information for a definitive preoperative diagnosis of bowel perforation due to a foreign body^[11,12]. In our case, a provisional diagnosis of duodenal perforation was made, considering the prevalence of gastroduodenal perforation in our region and the patient's history of peptic ulcer disease and regular use of NSAIDs. However, after extensive evaluation of the duodenum via exploratory laparotomy, no perforation was found. Consequently, we explored other potential sources of pneumoperitoneum. Ultimately, the definitive diagnosis of ileal perforation was established during exploratory laparotomy. It is important for the surgeon to consider a differential diagnosis of foreign body-induced perforation in patients who are binge alcoholics and present with symptoms resembling duodenal perforation.

Septicemia is a significant complication of perforated peritonitis due to a foreign body and is a major cause of mortality. Early surgical intervention is crucial to prevent further contamination and reduce the likelihood of septicemia^[8]. Following the removal of the foreign body, two main surgical interventions are performed: simple closure of small bowel perforation or resection with anastomosis^[2]. In our case, wedge resection of the ileum was performed, followed by an ileo-ileal anastomosis. This approach was chosen due to the visibility of the perforation and the presence of minor exudates. In case of late presentation and patients

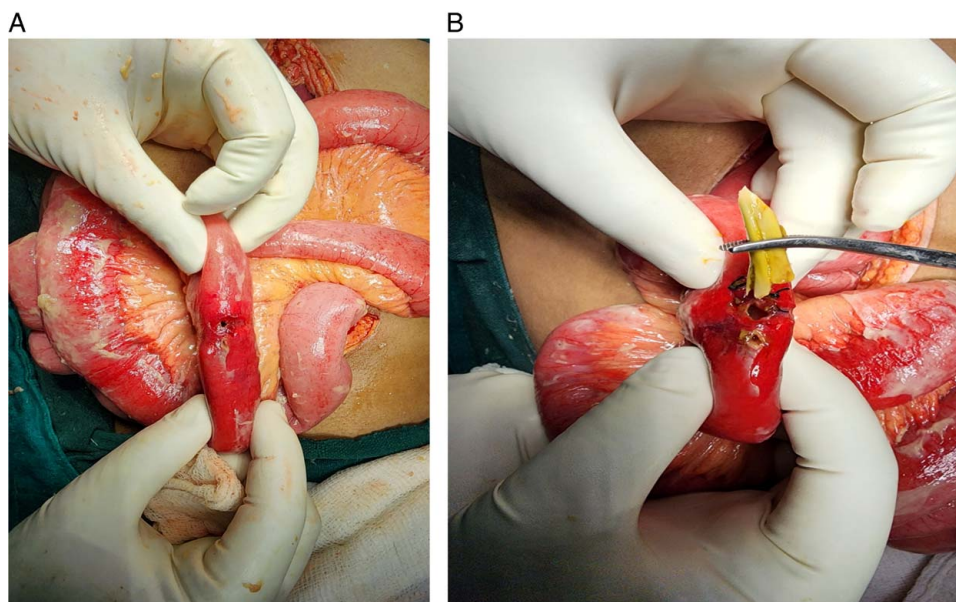


Figure 2. (A) Perforation in the ileum and (B) removed chicken bone.

with friable gut, primary closure of perforation with proximal ileostomy can be considered^[7].

The mortality rate associated with perforated peritonitis is high, ranging from 7 to 26%^[3,7,13]. Elderly patients and delayed presentations are associated with worse prognosis^[3,8]. Major postoperative complications include sepsis, respiratory complications, and electrolyte imbalance, which are associated with higher mortality rates^[3,8,13]. Other postoperative complications may include abdominal collections and wound infections^[7,13]. In our case, the patient had an uneventful postoperative period and exhibited no complaints during the one-month follow-up. Therefore, patients presented with acute abdomen with signs of perforation, such as subdiaphragmatic gas, should be timely referred to higher center for early surgical intervention and improved outcomes.

Conclusions

Foreign body ingestion can lead to bowel perforation and peritonitis, presenting as acute abdomen. Prompt identification and early surgical intervention are crucial to prevent complications and reduce mortality rates. In our case, a 54-year-old male with a history of peptic ulcer disease and regular NSAIDs presented with signs of bowel perforation and pneumoperitoneum on chest X-ray. Based on history and prevalence, we made a provisional diagnosis of duodenal perforation. Exploratory laparotomy revealed a perforation in the ileum caused by a chicken bone, which was successfully removed. Wedge resection of the perforated segment and ileo-ileal anastomosis were performed, resulting in an uneventful postoperative recovery. The surgeon should have a differential diagnosis of foreign body-induced perforation in the patient who is a binge alcoholic who presents as duodenal perforation. This case emphasizes the importance of timely referral to a tertiary care center for early surgical intervention and highlights the successful management of bowel perforation caused by a foreign body.

Ethical approval

This case report did not intervene with the patient's treatment plans, and hence, it did not require ethical approval.

Consent

Written informed consent was obtained from the patient for the publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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Author contribution

S.D. and K.M.P.: conceptualization; A.B., S.D., S.D., K.M.P., and U.M.: patient management; S.D., K.M.P., U.M., and B.D.: writing – original draft; S.D., K.M.P., U.M., S.D., B.D., and A.B.: writing – review and editing; S.D. and K.M.P.: visualization and supervision. All authors have read and agreed to the final version of the manuscript.

Conflicts of interest disclosure

There are no conflicts of interest.

Research registration unique identifying number (UIN)

Case reports do not need to be registered.

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Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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