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Successful endoscopic management of gastric perforation caused by ingesting a sharp chicken bone



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ABSTRACT

INTRODUCTION: Gastrointestinal perforation related to foreign body ingestion is uncommon. Surgical interventions aiming at removal of the offending agent and restoration of bowel continuity are sought when perforations occur.

Presentation of case A 68 year old male presented with epigastric abdominal pain and anorexia for 2 days. On examination, he was febrile and had localized epigastric tenderness. Laboratory investigations revealed marked leucocytosis with no other abnormalities. Computed tomography revealed the presence of a foreign body penetrating through the full thickness of the gastric wall with its tip lying adjacent to the pancreatic head. Endoscopic trial to extract the foreign body was successfully carried out. The gastric defect was sealed by applying an endoscopic metallic clip.

DISCUSSION: Gastric perforations secondary to foreign body ingestion usually follow an elusive clinical course and are rarely diagnosed early in its course. Early diagnosis allows for the utilization of minimally invasive management. Unfortunately, Most reported cases were diagnosed after intra-abdominal processes, such as abscesses, have ensued.

CONCLUSION: This case illustrates the importance of early diagnosis of foreign body related gastrointestinal perforations and emphasizes the role of therapeutic endoscopy.

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1. Introduction

Foreign body ingestion does not usually necessitate aggressive surgical interventions as most foreign bodies pass through the gastrointestinal tract without causing harm. Nonetheless, gastrointestinal perforation remains a potential major complication of foreign body ingestion reported to occur in around 1% of cases [1]. Dietary foreign body ingestion – such as fish bones, chicken bones and shell fragments – causing gastrointestinal perforations have been reported. Unfortunately, the clinical presentation can be long and elusive [2]. Surgical intervention aiming to remove the offending foreign body and to restore gastrointestinal continuity remains the mainstay of management [3].

This case represents early diagnosis followed by successful endoscopic management of gastric perforation caused by an ingested chicken bone, potentially avoiding more invasive surgical interventions.

2. Presentation of case

A 68 year old complained of a 2-day history of a non-remitting localized epigastric pain associated with anorexia and night time sweating. The patient denied any difficulty swallowing, lasting heartburn, nausea, vomiting or recent changes in bowel habits or having similar pain episodes in the past. No reported family history of gastrointestinal malignancies or inflammatory bowel diseases. The patient was otherwise known for hypertension, coronary artery disease and a recent cerebrovascular accident on appropriate medications including Aspirin® and Plavix®.

The patient was febrile at 38.1 °C while the rest of his vital signs were within normal limits. His abdominal exam revealed a well localized area of tenderness in the epigastric region associated with voluntary guarding. Initial laboratory investigations were unremarkable except for a markedly elevated white blood cell count to 23.9×10^9 . An ultrasound of the liver ruled out the presence of biliary diseases that can explain the patient's signs and symptoms. A CT scan of the abdomen revealed the presence of a radiopaque elongated structure that penetrates through the full thickness of the gastric wall, close to the pylorus, reaching the head of the pancreas with surrounding inflammatory changes (Fig. 1). Although there was no evidence of extra-luminal air, free fluid was noted to

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Fig. 1. Serial reconstructed sagittal computed tomography images showing full penetration of the gastric wall by the ingested foreign body (white arrow).

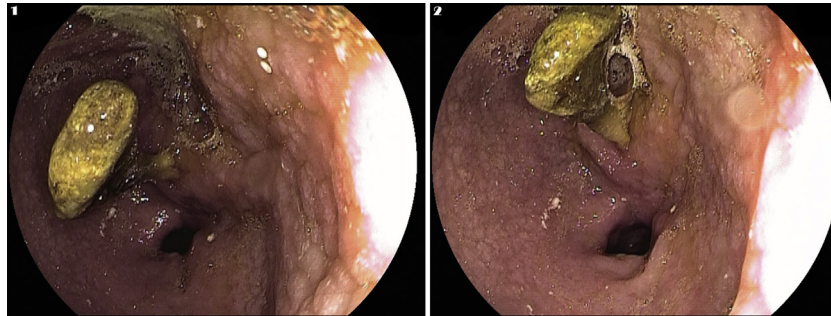


Fig. 2. Endoscopic images demonstrating the chicken bone penetrating the gastric wall near the pylorus.

surround the head of the pancreas extending to Gerota's fascia on the right side.

The findings seen on radiologic imaging were discussed with the patient as well as the therapeutic options that can be offered. These therapeutic options included laparoscopic versus open exploration of the abdomen with planned removal of the foreign body and closure of the gastrointestinal defect. A trial of endoscopic removal of the foreign body was also offered acknowledging that outcomes cannot be guaranteed given the uncommonness of the situation. The patient willingly consented for an endoscopic trial prior to a more invasive surgical intervention understanding the risks and benefits of his choice. The patient had been started on broad-spectrum antibiotics besides an intravenous continuous infusion of Pantoprazole® and he was shortly wheeled to the operating room.

In the operating room, the patient was given intravenous sedation with 2.5 mg of Midazolam® after applying topical lidocaine to the back of the throat. The gastroscope was introduced under direct visualization with minimal inflation of air and advanced carefully. The chicken bone was then clearly seen penetrating the gastric wall in the prepyloric area with surrounding inflammation and swelling of the gastric mucosa (Fig. 2).

Using the snare device, the chicken bone was encircled and removed along its long axis. Initially, we tried retrieving the chicken bone by encircling its blunt end leaving the sharp end to trail to minimize the chance of oesophageal injury. However, due to the structure of the bone, the bone kept on retaining a certain angulation. We then decided to encircle the sharp end with the snare device putting it in close proximity to the gastroscope's camera. Using this method, we safely retrieved the chicken bone with the gastroscope. The chicken bone was 4.8 cm long with a rounded blunt end which tapers down to a more pointed end (Fig. 3). The oesophagus and stomach were re-examined by the gastroscope ensuring the absence of iatrogenic injuries. The site of perforation was clipped using an endoscopic metallic clip (Figs. 4 and 5).

The next day, the patient reported no pain and was allowed to drink then was rapidly progressed to full diet. His epigastric ten-



Fig. 3. Picture of the extracted chicken bone measuring 4.8 cm in length.

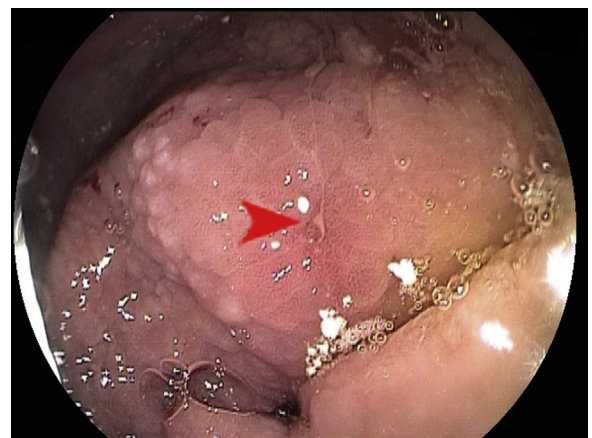


Fig. 4. Picture of the mucosal defect caused by the chicken bone (red arrow) after removal of the offending foreign body.



Fig. 5. Picture of the distal stomach after applying a metallic endoscopic clip to ensure closure of the perforation site.

derness dissipated and his white cell count dropped dramatically reaching 9.1×10^9 by the second day. The patient was discharged home with a 10 day course of oral antibiotics and Pantoprazole®. He was seen free of symptoms 2 weeks later during his clinic visit.

3. Discussion

It has long been observed that foreign body related perforations occurring in the stomach, duodenum and large intestine tend to follow a subtle clinical course leading to their delayed presentation, diagnosis and subsequent management. This phenomenon is thought to be due to the characteristic thick muscular wall of these hollow organs and the presence of surrounding omentum and solid organs. Consequently, a more gradual perforation occurs coupled by a simultaneous sealing effect from nearby tissue eventually yielding – in most cases – intra-abdominal abscesses [2,4,5]. Hence, having a high degree of suspicion can aid in reaching an early diagnosis and instilling appropriate management.

Endoscopic procedures have played a major role in retrieval of ingested foreign bodies that can potentially lead to gastrointestinal complications if left unattended [6]. Yet the rule of endoscopic management when perforations occur is not well defined but is certainly gaining recognition [7,8].

Although not common, gastrointestinal perforations secondary to chicken bone ingestion have been reported [9,10]. Similar to the presented case, two reported cases have demonstrated successful endoscopic management of gastric perforation caused by ingested chicken bone [11,12]. The main culprit in successful endoscopic management seem to be related to early diagnosis prior to the development of intra-abdominal abscesses.

4. Conclusion

High degree of suspicion is important in diagnosing foreign body related gastrointestinal complications as the clinical presentation can be elusive.

Early diagnosis allows for the utilization of less invasive therapeutic interventions, subsequently leading to faster recovery.

In the right context, therapeutic endoscopy can help to avoid more aggressive surgical interventions.

Conflict of interest

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Author contribution

Both authors contributed in the clinical care of the patient and subsequent follow up as well as writing up the case report.

Consent

Written consent obtained.

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