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**Case Report / Приказ болесника**

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# Ileal perforation by accidentally ingested animal bone – rare cause of acute abdomen

# Перфорација илеума узрокована случајно прогутаном животињском кости – редак узрок акутног абдомена

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# Ileal perforation by accidentally ingested animal bone – rare cause of acute abdomen

## Перфорација илеума узрокована случајно прогутаном животињском кости – редак узрок акутног абдомена

**SUMMARY**

**Introduction** In healthy adults, accidental ingestion of foreign bodies is uncommon. Intestinal perforation by ingested bone fragments is rare, but can be presented as life-threatening condition, especially when the diagnosis is delayed.

**Case outline** We present an uncommon case of a 73-year-old female with acute abdominal symptoms due to ileal perforation caused by accidental ingested animal bone. Pneumoperitoneum revealed by abdominal X-ray and abdominal free fluid revealed by abdominal ultrasound as well as the general condition of the patient required an urgent laparotomy, when the diagnosis of ileal perforation was made. A foreign body was removed from the intestine, along with partial resection of the intestine and end-to-end anastomosis.

**Conclusion** Surgical treatment of life-threatening complications arising after ingestion of foreign bodies is the only method of choice in the treatment of such patients.

**Keywords:** ingested foreign bodies; intestinal perforation; surgery

**САЖЕТАК**

**Увод** Код здравих одраслих особа случајно гутање страних тела није уобичајено. Перфорација црева прогутаним коштаним фрагментима је ретка, али може бити стање опасно по живот, посебно када се дијагноза одложи.

**Приказ болесника** Представљамо неуобичајен случај 73-годишње жене са акутним абдоминалним симптомима услед перфорације илеума изазване случајно прогутаном животињском костом. Пнеумоперитонеум потврђен рендгенским снимком абдомена и присуством слободне течности верификоване ултразвуком абдомена, као и опште стање пацијенткиње захтевала је хитну лапаротомију, када је постављена дијагноза перфорације илеума. Страно тело је уклоњено из црева, уз делимичну ресекцију црева и ТТ анастомозом.

**Закључак** Хируршко лечење животно опасних компликација које настају након ингестије страног тела је једини метод избора у лечењу оваквих пацијената.

**Кључне речи:** прогутано страно тело; перфорација црева; операција



## INTRODUCTION

Ingested foreign bodies (IFB) are not uncommon, can be found at any age in both adults and children and are usually asymptomatic and excreted without disturbance. The majority of patients, about 80%, are children, who accidentally swallow foreign bodies [1]. In adults, it occurs more often among the elderly, psychiatric patients, alcoholics and drug addicts, and in some specific professions like tailors, carpenters, etc [2]. Most IFB, > 90%, pass through the intestine uneventfully in a week [1, 2] and among them food particles, such as bones are the most common [3].

Uncomplicated cases are usually managed conservatively, but some of them can develop complications such as abscess, diverticulitis, perforation, obstruction. Perforation of the gastrointestinal tract by IFB is rare. Less than 1% of IFB will cause bowel perforation requiring surgical treatment [2, 4].

 

We present a case of small bowel perforation caused by an ingested animal bone in a patient with no intestinal disease and previously abdominal surgery.

## CASE REPORT

A 73-year-old female patient was admitted to the Department of General Surgery due to abdominal pain, malaise, fever, flatulence, nausea and vomiting. The complaints started 2 days before the admission, with the appearance of severe pain in the epigastrium followed by vomiting. Despite the signs of diffuse peritonism and abdominal sensibility revealed by the abdominal examination, the patient was in a good general condition. Signs of pneumoperitoneum were observed on the X-ray of the abdomen and lungs (Figure 1). Ultrasound of the abdomen revealed free fluid after which the decision to proceed with an emergency laparotomy was taken. Exploratory laparotomy was performed with a medial laparotomy under general anesthesia. A large amount of free fluid in the abdominal cavity was identified - a sample was taken for microbiological analysis. Subphrenic bilateral, as well as interintestinal and small pelvis abscess collections, with fibrin deposits on all organs of the abdominal cavity were found. Perforation of the ileum was identified (Figure 2). A foreign body, an animal bone, was identified in the intestine, which caused necrosis of the wall and perforation of the intestine (Figure 3). A 10 cm long bowel resection was performed, with an end-to-end anastomosis. Abundant lavage of the abdominal cavity with a larger amount of physiological solution was performed. Postoperatively, the patient was treated empirically with antibiotics (Ceftriaxone, Metronidazole, Amicacin) and other supportive therapy. On the 3$^{nd}$ postoperative day, a microbiological analysis of the contents of the abdomen (*Klebsiella* sp.) was obtained and treatment continued according to the antibiogram (Ciprocinal, Metronidazole, Tazocine). There was an improvement in the general condition and a decrease in inflammatory parameters. From the 8$^{th}$ day of hospitalization, the patient was subfebrile with an increase of biochemicaly inflammatory markers. A Computed tomography (CT) of the abdomen found subcapsular liver abscesses and right pleural effusion. Continued treatment with Vancomycin 1g every 12 hours and Meronem 1g every 6 hours for another 10 days and other supportive therapy. The prescribed therapy leads to a complete stabilization of the general condition. Abdominal control CT showed no signs of liver abscess, and the patient was discharged from the ward on the 23$^{rd}$ day of hospitalization. Postoperative ultrasound follow-up for another 3 months, without postoperative complications.



 

We obtained verbal and signed consent of the patients to publish the case report. This article was planned in compliance with the Patient Rights Directive and ethical rules by considering the principles of the Declaration of Helsinki.

## DISCUSSION

Ingested foreign bodies (IFB) are a common cause of presentation in the emergency room and mostly occurs in children and in the elderly with an incidence of 4% [5]. 80–90% of patients with IFB will not require any intervention, 10–20% of patients who ingest foreign bodies will require endoscopy intervention and up to 1% of patients requiring surgery [6].

In adults, IFB are most often found in patients with psychiatric and addictive diseases as well as and in the elderly with dental prostheses. Accidental ingestion of various foreign bodies, such as toothpicks, teeth, fish and chicken bones, screws, coins, dentures, and spoon handles, has been reported [7, 8]. Foreign body sticking can be seen in any part of digestive tube. IFB sticking in the esophagus depends on: anatomical characteristic of the esophagus, associated pathology and the nature of the foreign body (sharp, spherical, etc.)[5].There are three physiological narrowings in the gastrointestinal tract that can represent the site of foreign body entrapment: pylorus, duodenal C-loop and the ileocecal junction. The most common locations for objects to get stuck in the large intestine are appendiceal lumen, caecal-ascending colon junction, colonic flexures and haustrae [9]. Obstruction, hemorrhage, necrosis and abscess, peritonitis and perforation are the main complications of IFB and may occur in all segments of the gastrointestinal tract. Although perforations were recorded in the duodenum, ileum and the right colon, the ileum is considered the most common perforation site [6] followed by the rectosigmoid junction [6]. According to literature data fish bones are the most common cause of gastrointestinal perforation.

Most gastrointestinal foreign bodies can be removed by gastroscopy or enteroscopy. According to recommendations of The European Society for Gastrointestinal Endoscopy, an emergency endoscopy for IFB causing complete oesophageal obstruction, and for sharp-pointed objects or batteries must be performed within 6 hours and in incomplete obstruction within 24 hours. Urgent endoscopy for IFB in the stomach, such as sharp objects, magnets, batteries, etc is recommend to be performed within 24 h and for medium-sized blunt foreign bodies in the stomach within 72 hours [10].



 

Our patient was without significant comorbidities and previously abdominal surgery procedures, who requested medical help 2 days after the onset of the symptoms with a signs of acute abdomen.

Preoperative diagnosis of IFB bowel perforation can be difficult because the patients are often unaware that they have swallowed a foreign body. The clinical presentation can vary and depends of the site of perforation and the amount of spilled intestinal contents and can include abdominal pain, fever, nausea, vomiting, peritonitis, sepsis, inflammatory mass, fistulas, bowel obstruction and gastrointestinal hemorrhage [6, 11].

In addition to the clinical picture, imaging methods for preoperative diagnosis include plain radiograph (with low sensitivity for radiographically insensitive material ), ultrasonography and CT scan with high sensitivity and specificity . The presence of pneumoperitoneum is not reliable as it is not found in many cases. Nevertheless, definitive diagnosis was reached during laparotomy in more than 90% of the cases [2]. Our patient was without knowing that she had swallowed a foreign body which initially made the preoperative diagnosis difficult. The final diagnosis was made during the surgery.

The management of an IFB depends on the patient symptoms, the type and the location of the ingested object. Management of bowel perforation is mostly surgical for cases with peritonitis , abscess, inflammation, bleeding, fistula and ileus and implies surgical repair-suture of the defect, or segmental bowel resection with primary anastomosis or ileostomy/colostomy [2]. Surgical intervention includes laparoscopic or open methods. Some authors recommend Non-surgical management for limited cases. This treatment consists of intravenous fluid, nutrition support, antibiotics, and other supportive therapy and depends on the size and the location of perforation, time of diagnosis, patient condition, and contamination degree [6, 12].

According to literature the morbidity attributable to bowel perforation by IFB is around 24% and the mortality is up to 6.5%. Reported complications include intra-abdominal abscess, intestinal fistula, perianal abscess, respiratory distress, endocarditis, Fournier's gangrene, ileus, wound infection, inflammatory mass, intestinal occlusion and diffuse peritonitis. The cause of death is usually multiple organ failure due to severe sepsis [2].

In conclusion, even the accidental or intentional foreign body ingestion are the rare causes of intestinal perforation, they cannot be ignored as causes of acute surgical abdomen. Endoscopy for sharp and big IFB must be performed whenever is possible to avoid intestinal



 

perforation. When complications occur, surgical solution of the problem is the only way to save the patient.

**Conflict of interest:** None declared.



 

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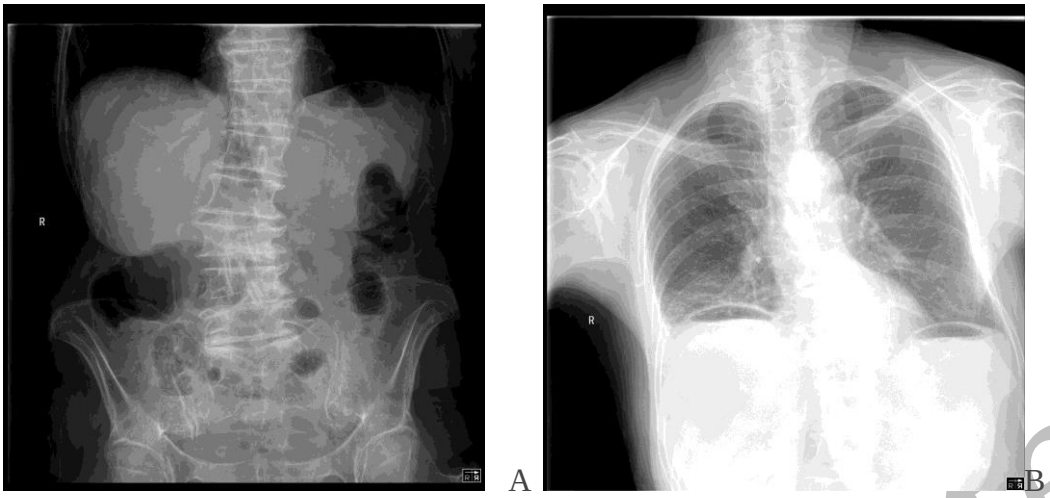

**Figure 1.** Abdominal (A) and chest (B) X-ray



 

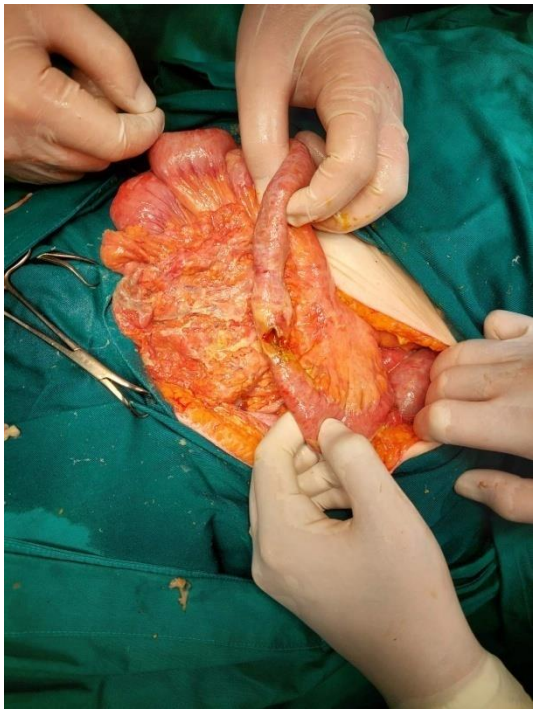

**Figure 2.** Intraoperative finding: bowel perforation



 

**Figure 3.** Extracted foreign body – animal bone



 