



## Case report

# Perforation of the cecum from ingested foreign body in a 14 year old adolescent with autism spectrum disorder and epilepsy: A case report

Yoseph Solomon Bezabih<sup>a,\*</sup>, Tewodros Eshete Wonde<sup>b</sup>, Semira Hassen Ebrahim<sup>c</sup>

<sup>a</sup> Debre Markos University, School of Medicine, Department of Surgery, Hepatopancreaticobiliary Surgery Fellow at Addis Ababa University, Debre Markos, PO Box 269, Ethiopia

<sup>b</sup> Debre Markos University, Collage of Health Sciences, Department of Biostatistics and Health Informatics, Debre Markos, PO Box 269, Ethiopia

<sup>c</sup> King's Collage London, London School of Hygiene and Tropical Medicine, United Kingdom of Great Britain and Northern Ireland

## ARTICLE INFO

## Keywords:

Autism  
Cecum perforation  
Foreign body  
Ethiopia

## ABSTRACT

**Introduction and importance:** Although foreign body ingestion is a common medical issue, intestinal perforations following foreign body ingestion are rare. Diagnosing foreign body ingestion is challenging especially in children with neurodevelopmental disorders such as Autism Spectrum Disorder (ASD). It is believed that approximately 80–90% of ingested foreign bodies pass through the gastrointestinal tract without causing any luminal damage, and only approximately 1% of foreign bodies are known to remain lodged within the bowel and cause luminal erosion and perforation.

**Case presentation:** A 14-year-old boy, diagnosed to have Autism Spectrum Disorder was brought in by his parents to our hospital with right lower quadrant (RLQ) abdominal pain and fever. On examination, he was tachycardic and there was direct tenderness over the RLQ of the abdomen. Acute appendicitis was entertained and the patient was examined with ultrasound. The ultrasound reported, “The tip of the appendix was dilated (0.62cm) and there is minimal RLQ intra-peritoneal fluid collection”. With the impression of acute appendicitis, the patient was explored and he was found to have a cecum perforation due to an ingested foreign body (twig). Initially we did tube cecostomy but later we did right hemicolectomy because the cecostomy tube had leaked.

**Conclusion:** Foreign body ingestion should be taken into account during the evaluation of children and adolescents with neurodevelopmental disorders who presented with acute abdominal pain. Since diagnosis is difficult clinicians who are involved in acute care medicine should take a thorough history with a high index of suspicion for foreign body ingestion.

## 1. Introduction

Children with intellectual disability are prone to ingesting foreign bodies [1,2]. Approximately 80–90% of ingested foreign bodies are thought to transit through the gastrointestinal tract without producing any luminal harm, but about 1% of foreign bodies are known to remain lodged inside the colon and cause luminal erosion and perforation [3–5]. An ingested foreign body can lodge in the proximal esophagus, distal esophagus, stomach, and distal ileum. Perforation of the gastrointestinal tract is most commonly caused by sharp and elongated objects like a fishbone, chicken bone or tooth picks [3,6].

Below we present a 14-year-old male adolescent with Autism Spectrum Disorder (ASD) and epilepsy who arrived with signs and symptoms

of acute abdomen that mimic acute appendicitis. Intra-operatively, a cecum perforation caused by an ingested foreign body (twig) was detected. This case is reported in line with the SCARE criteria [7]. We hope that by sharing this case report, clinicians will be more aware of the importance of taking a thorough history and will be reminded to keep a high index of suspicion for serious surgical problems in children with neurodevelopmental disorders like ASD.

## 2. Case presentation

A 14-year-old boy with autism spectrum disorder and epilepsy, who was on oral carbamazepine 200 mg every 12 h, was brought in by his parents to our hospital (Debre Markos Comprehensive Specialized

\* Corresponding author at: Debre Markos University, School of Medicine, Department of Surgery, Hepatopancreaticobiliary Surgery Fellow at Addis Ababa University, Debre Markos, PO Box 269, Ethiopia.

E-mail address: [Joseph.Solomon@dmu.edu.et](mailto:Joseph.Solomon@dmu.edu.et) (Y.S. Bezabih).

<https://doi.org/10.1016/j.ijscr.2021.106580>

Received 21 October 2021; Received in revised form 3 November 2021; Accepted 3 November 2021

Available online 6 November 2021

2210-2612/© 2021 Published by Elsevier Ltd on behalf of IJS Publishing Group Ltd. This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Hospital) with right lower quadrant abdominal pain associated with loss of appetite and low-grade intermittent fever of three days duration. Getting adequate history was difficult due to the communication barrier resulted from the ASD. Except for neurodevelopmental abnormality and epilepsy, he has no any history of other chronic medical illnesses. He has no family history of similar illness.

On physical examination, he was acutely sick looking. His Pulse Rate (PR) was 112 beats per minute, Respiratory Rate (RR) was 24 breaths per minute, and axillary temperature was 38.2°C. There is direct tenderness over the right lower quadrant of the abdomen with guarding and rigidity. Based on the above findings a clinical diagnosis of acute appendicitis was entertained and the patient was investigated with complete blood count (CBC) and abdominal sonography. White blood cell (WBC) count was  $10.2 \times 10^3/\text{mm}^3$  with 84.2% granulocytes; and according to the abdominal sonography, the apex of the appendix was dilated (0.62 cm) and there was minimal right lower quadrant intraperitoneal fluid collection, and it was concluded as early appendicitis.

With the diagnosis of acute abdomen secondary to acute appendicitis, the patient was put on intravenous fluid and broad spectrum antibiotics. After written consent was taken from his parents, he was explored under general anesthesia through a right lower quadrant transverse incision and the intraoperative finding was 3 mm by 3 mm cecum perforation due to an ingested foreign body (twig) (Fig. 1A). There was also minimal gastrointestinal (GI) content in the right iliac fossa and the appendix was secondarily inflamed. After removing the foreign body, we did appendectomy and tube cecostomy by refreshing the perforation, and we lavaged the peritoneum locally. Broad-spectrum intravenous antibiotics were continued postoperatively. He started taking sips on his first post-operative day and feeding was advanced then after. From retrograde history, according to his parents, whatever food was offered to him, he refused to eat from a plate but rather threw it on the ground and ate from it (Fig. 2).

On his 3rd post op day, the patient started to develop abdominal distention and his condition deteriorated. His PR was 136 and he had diffused abdominal tenderness which was more pronounced in the lower abdomen. With the assessment of peritonitis secondary to failed cecostomy, patient was explored through a midline laparotomy and there was intra-peritoneal leak from the cecostomy. We performed a right hemicolectomy (Fig. 3) with end-to-side ileotransverse anastomosis. Both procedures are performed by the same general surgeon with three years of expertise at the same Referral Hospital. The patient was then

discharged five days after surgery with stable vital signs.

On his 12th post-operative day, he was examined at the surgical referral clinic and he was able to tolerate oral feeds, with no abdominal pain, swelling, fever, or vomiting. Two months following the surgery he was re-examined at the surgical referral clinic and his exams were uneventful. We advised his family about the prevention of future similar events, and we linked the patient with the psychiatry referral clinic for further follow-up.

### 3. Discussion

Foreign body ingestion can happen to anyone at any age; However, it is most common in children aged six months to six years, as well as adolescents and adults with developmental and intellectual disabilities [4,8]. Coins, batteries, toys, marbles, erasers, and bones were among the most commonly ingested items. Depending on the type of foreign body ingested and how long it remained in the body, patients with foreign body ingestion can appear asymptotically or with a variety of symptoms. Abdominal discomfort, nausea, and vomiting, hematemesis, rectal bleeding, fever, and diarrhea are some of the symptoms seen in patients who swallowed a foreign body. Because of the risk of bowel perforation and infection, batteries and sharp items should be removed as soon as possible, either endoscopically or surgically [2].

In a survey of 21 cases, Sarmast et al. found that the average period from ingestion of a foreign body to presentation to a clinician was 9.3 days. On the same review, it is fairly uncommon to get a conclusive history or diagnosis of foreign body ingestion prior to surgery. Because clinical symptoms are sometimes non-specific and mirror other acute abdominal conditions like appendicitis, further intestinal perforation may not be recognized preoperatively [2]. Our patient had signs and symptoms of acute appendicitis, but no history of foreign body ingestion was discovered before surgery. Since he had *pica* (patients who are unable to differentiate between nutritive and non-nutritive items exhibit this unusual behavior), his parents were unable to determine the date the patient ingested the foreign body. Patients with neurodevelopmental abnormalities, such as autism spectrum disorder, have been associated to this [8].

Intestinal perforation following ingestion of foreign body occurs most frequently at points of physiological angulation or narrowing within the digestive tract, with the ileal loops accounting for up to 83% of all cases. Inadvertently ingesting a fishbone is the most prevalent



Fig. 1. (A) Cecum perforation from a sharp elongated twig, (B) 3mmx3mm cecum perforation after removal of the twig (arrow).

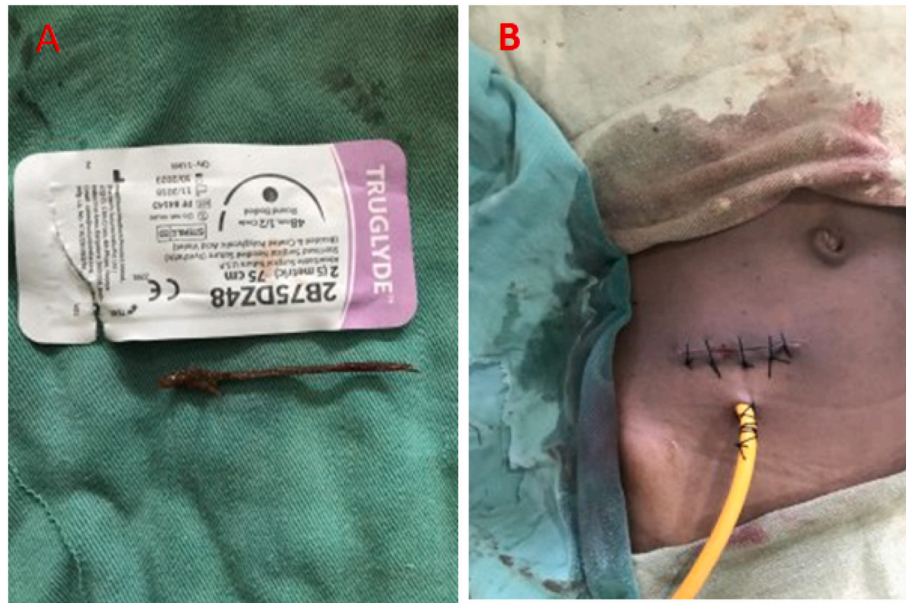


Fig. 2. (A) Sharp elongated ingested twig, (B) Tube cecostomy using a Foley catheter.



Fig. 3. A resected specimen of the distal ileum, cecum, ascending colon, and proximal transverse colon after right hemicolectomy.

cause of gastrointestinal perforation [3,9,10]. Treatment of intestinal perforation following foreign body ingestion depends on the site of the perforation. The most common therapy is intestinal resection, while simple suturing of the lesion has been reported in certain cases [2]. A similar case was reported by Tzu-Yi Chuang et al., in which the foreign body was removed laparoscopically and the 3 mm cecum perforation was repaired intracorporeally using 3–0 PDS suture [6]. In our patient, the perforation was at the cecum and the foreign body was a twig (a small shoot or branch usually without its leaves) and we tried a tube cecostomy at first, but it failed, therefore we had to do a right hemicolectomy.

This case exemplifies the difficulties in addressing individuals with several mental illnesses who present with acute abdominal pain. When symptoms are complex, it might be challenging to interpret and communicate with this population. This case reminded us that in a child

who appears with atypical abdominal discomfort, we should have a high index of suspicion for foreign body-induced viscus perforation, especially in young patients with ASD. Because individuals with ASD have delayed language development and poor non-verbal communication abilities, taking an accurate history and doing a thorough physical examination is difficult, making clinical diagnosis problematic.

#### 4. Conclusion

Foreign body ingestion should be considered when evaluating children and adolescents with neurodevelopmental disorders who present with acute abdominal pain. Because individuals with autism spectrum disorder have uneven language development and poor non-verbal communication skills, getting an adequate history and doing a comprehensive physical examination can be difficult, making clinical diagnosis more challenging. As a result, clinicians who work in acute care medicine should have a high index of suspicion for foreign body associated viscus perforation in patients with neurodevelopmental disorder who have acute abdomen.

#### Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

#### Ethical approval

Ethical approval was obtained for the publication of this case report from the Research Ethical Review Committee of School of Medicine, Debre Markos University. IRB file number is S/R/C/12/01/21.

#### Consent

Written informed consent was obtained from the patient's mother for 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.

#### Research registration

N/A.

**Guarantor**

Yoseph Solomon Bezabih

**Provenance and peer review**

Not commissioned, externally peer-reviewed.

**CRediT authorship contribution statement**

The authors contributed equally to this work.

**Declaration of competing interest**

None.

**References**

- [1] C. Sugawa, et al., Endoscopic management of foreign bodies in the upper gastrointestinal tract: a review 6 (10) (2014) 475.
- [2] A.H. Sarmast, et al., Gastrointestinal tract perforations due to ingested foreign bodies; a review of 21 cases 5 (3) (2012).
- [3] G.C. Nicolodi, et al., Intestinal perforation by an ingested foreign body, *Radiol. Bras.* 49 (2016) 295–299.
- [4] R. Thees-Laurenz, Covered perforation of the ileum caused by an ingested blister pill pack—A rare sonographic diagnosis, 2020.
- [5] J. Cohen, et al., Novel approach to endoscopic foreign body retrieval from the gastric body (p. 23247096211040631) 9 (2021).
- [6] T.-Y. Chuang, S. Samuel, H. Malik, A caecal perforation from foreign body ingestion in a child with autistic spectrum disorder 9 (2018) (p. 100968Z01TC2018).
- [7] R.A. Agha, et al., The SCARE 2020 guideline: updating consensus Surgical Case REport (SCARE) guidelines, *Int. J. Surg.* 84 (2020) 226–230.
- [8] A. Yu, et al., Foreign body ingestion in an adolescent—a case report and literature review 10 (3) (2017) 229 (Online).
- [9] P. Ambe, et al., Swallowed foreign bodies in adults, *Dtsch. Arztebl. Int.* 109 (50) (2012) 869.
- [10] R. Wyllie, Foreign bodies in the gastrointestinal tract, *Curr. Opin. Pediatr.* 18 (5) (2006) 563–564.