



# Foreign Body Ingestion in Children Complicated by Duodenal Perforation: Case Report

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## Abstract

Ingestion of a foreign body (FB) is a common accident among children. The majority of ingested foreign bodies are eliminated spontaneously and few of them leads to some rare but serious complication such as complication that requires urgent surgical management. In this article we report the case of an accidental nail ingestion in a 2 years old child complicated with a duodenal perforation. Emergency surgical care was performed, with nail removal and duodenal primary closure. The follow-up was uneventful and the recovery was smooth.

**Keywords:** *Foreign body, nail, duodenal perforation, children*

## Introduction

Foreign body ingestions is commonly encountered in the pediatric population, with a peak incidence in children aged between 6 months up to 3 years <sup>[1]</sup> and are one of the most challenging clinical scenarios facing gastroenterologists physicians. Most of ingested foreign body (90%) pass spontaneously through the gastrointestinal tract; However, serious complications and even fatal outcomes have been described such as perforations, which required surgical intervention (in <1%) <sup>[2]</sup>. The management of foreign body ingestions varies according to the age of the patient, its nature, its location and possible pre-existing mental or physical illness as well as the clinical featuring. When the ingested objects is a nail or any other sharp foreign body, it is more likely to present with associated complications <sup>[3]</sup>. Recently, we experienced a case of 2 years old child, who underwent laparotomy for accidental nail ingestion causing sealed perforation of duodenum.

## Case report

A two years old boy was admitted to the department of pediatric surgery, his mother reported the history of nail ingestion 4 hours ago while her child was playing around. He has no medical history, there was any complaints. Abdominal examination was normal: no pain or signs of peritoneal irritation and examination of other systems gave normal findings. Initially an X-ray was performed and showed a nail projected in right paravertebral level without evidence of free intraperitoneal air (**Figure 1**) Laboratory reports was unremarkable. The decision was to perform an emergency exploration after admission and informed consent. First an upper endoscopy that's showed a metallic nail impacted in 2nd part of duodenum (**Figure 2**) The decision of an urgent laparotomy exploration was planned. Intraoperatively, the nail was impacted through 2nd duodenum with a sealed perforation. Extraction was done through a minim incision measuring ~4cm (**Figures 3,4**) Postoperative recovery was smooth and was uneventful. The child was discharged on day 4.



Figure 1: Abdominal x-ray showing the nail impacted in the duodenum.

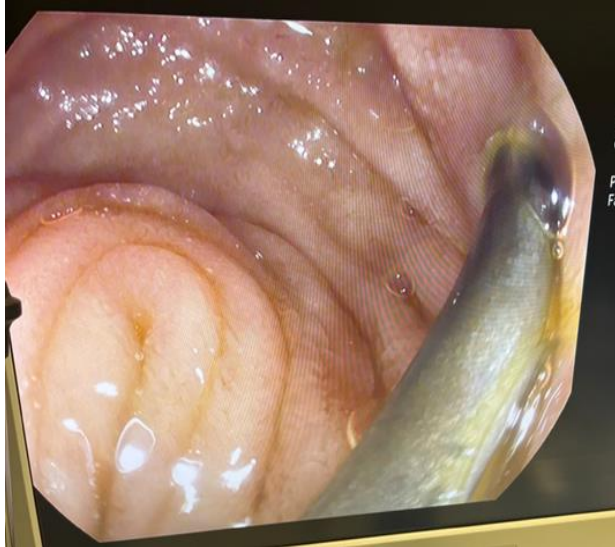


Figure 2: Upper endoscopy showing the nail impacted in the duodenum.

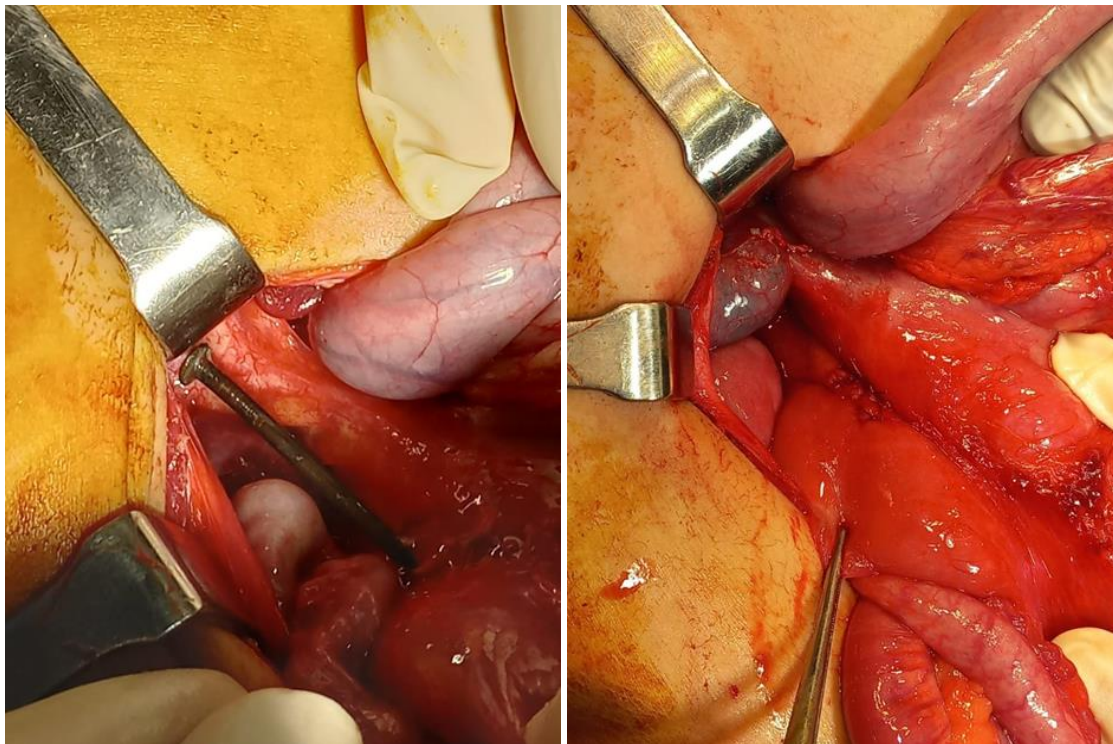


Figure 3,4: Surgical removal of the nail.

## Discussion

According to the American Association of Poison Control Centers documented more than 75% of the reported ingestions were children aged 5 years of age or less [4]. 98% of foreign body ingestions were accidental and involve objects found at home, such as coins, toys, jewelry, magnets, pins, nails, plastic, button, pieces of food and batteries [5]. This high prevalence of foreign body ingestion is due to the exploratory habits among toddlers [6]. Patients are asymptomatic in most cases and when complaint is present this include stridor, pain, drooling, fussiness, chest pain, abdominal pain, fever, feeding refusal, wheezing, hypersalivation, cough, vomiting, bloody saliva and respiratory distress [6,7]. Furthermore, ingestion of nails could be asymptomatic as reported in this case and other studies. And may present some complications as seen in some case reports such as perforation [8,9], duodenocolic fistula [10] abscess, peritonitis [11],

incarcerated umbilical hernia [12]. In general, the physical examination is unremarkable.

A suspicion of an ingested foreign body needs urgent X-ray evaluation which plays the main role both in the diagnosis and the choice of the best therapeutic method. The positive predictive value of radiographs is 100% for metallic objects, but is much lower for objects made of glass and wood, which are completely radiolucent [13,14]. Radiography can show us the change in position of the foreign body in the gastrointestinal tract or it's projecting in the same place over a period of time, and also give direct or indirect clues about signs of complications. Up to 90% of foreign bodies pass spontaneously within 1 week, some may require endoscopic retrieval (10%-20%) and a minuscule number (1%) requires a surgical procedure [15]. Endoscopy retrieval is one of the best diagnostic and therapeutic approach in the management of foreign body in the upper gastrointestinal tract. Extraction should be advocated (within 24 hours) because of to the high risk of

complications (15-35%) [16]. According to the NASPGHAN guidelines, all pointed, large, long and sharp objects should be removed endoscopically within 24 hours post ingestion. After 24 hours, upper endoscopy extraction could be attempted, but failure rates are high [17]. An urgent laparotomy should only be performed in case of signs of peritonitis (perforation), failure of endoscopy, short FB with heavier blunt end, presence of a foreign body in the intestine for more than 10 days. [18]. In our case, the nail was impacted in the 2nd duodenum and endoscopic removal was very difficult and risky, laparotomy was planned with intraoperative findings of an embedment of the head of the nail in the perforated second part of the duodenum.

## Conclusion

Management of FB in children remains one of the most challenging endoscopic problems faced by gastroenterologists this is due to the lack a strong evidence-based guidelines.

tissue, please state “Not applicable” in this section.

## List of abbreviations

FB: foreign body

## Conflicts of interest

The authors declare no conflicts of interest.

## Authors' contributions

All authors contributed to the conduct of this work. All authors have read and approved the final manuscript.

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