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Case report

Exploring the uncommon: A case report on localized peritonitis caused by ingested toothpick

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ABSTRACT

Introduction: Bowel perforation is a serious emergency. Occasionally, sharp objects like toothpicks can get stuck in narrow parts of the small intestine, potentially resulting in impaction, obstruction, or perforation.

Presentation of case: A 20-year-old male arrived at our hospital's emergency department with sudden, severe abdominal pain persisting for 24 h. On examination, his abdomen showed tenderness, and bowel sounds were reduced. Contrast-enhanced computed tomography (CECT) indicated possible small intestine inflammation due to a foreign object and a diagnostic laparoscopy revealed a hyperemic terminal ileum.

Discussion: This case involves ileal perforation from an unnoticed toothpick ingestion. Detecting foreign object perforations is challenging, often leading to misdiagnoses and CT scans are the most effective for toothpick detection. Definitive diagnosis is through laparoscopy, and treatment varies between laparoscopic suturing to intestinal resection.

Conclusion: Healthcare providers must consider toothpick ingestion in cases of acute abdominal symptoms to avert treatment delays and potential life-threatening outcomes.

1. Introduction

Acute abdomen, a condition responsible for a significant portion of emergency admissions to surgical facilities, often originates from gastrointestinal perforations [1]. Bowel perforation is a critical emergency, with underlying causes ranging from infections and infarctions to conditions like radiation enteritis, Crohn's disease, and cancer [2]. These perforations can sometimes be attributed to sharp and elongated objects, such as toothpicks, which tend to become lodged within the narrower segments of the small intestine [1]. Ingesting a toothpick carries the potential risks of impaction, obstruction, or perforation of the intestinal wall [3]. This perilous event can mirror the symptoms of an acute abdomen, complicating the diagnostic process. Adding to this complexity, patients frequently lack recollection of the ingestion, further increasing the likelihood of misdiagnoses such as inflammatory bowel disease, appendicitis, or diverticulitis [3]. Although the ingestion of foreign bodies is a familiar concern in emergency care settings, the vast majority, approximately 80 % to 90 %, of ingested foreign objects pass the gastrointestinal tract without causing harm [1]. Surgical intervention is a relatively uncommon necessity for those who accidentally ingest foreign objects [1].

While ingested foreign bodies causing bowel perforation are infrequent, cases involving wooden toothpicks are even more rare [2]. Here, we present the case of a 20-year-old male who presented to the emergency department with generalized abdominal pain. This case report aims to shed light on this uncommon occurrence, emphasizing the importance of early recognition, accurate diagnosis, and timely intervention to ensure optimal patient outcomes.

This case report has been prepared in line with the Surgical Case Report (SCARE) 2020 guidelines [4].

2. Case presentation

A 20-year-old male with an undocumented history of adrenal insufficiency and regular use of hydrocortisone since 5 years came to the emergency department of our hospital with the presenting complaint of sudden onset generalized abdominal pain for 24 h. The patient had been in his usual state of health until approximately 24 h before coming to the ER, when he developed generalized dull abdominal pain which quickly increased in severity. The pain was not associated with nausea, vomiting and fever. He first visited another medical facility where he was treated with IV fluids, antibiotics and analgesics with the suspicion of

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appendicitis. His pain did not get better, so he was transferred to the emergency department of our facility for further management.

Upon clinical assessment, the patient was revealed to be hypotensive. Palpation of the abdomen revealed generalized tenderness (which was greater on the right lower quadrant), guarding, and rigidity, although no detectable mass was identified. In addition, bowel sounds were hypoactive on auscultation. Considering these clinical findings, a provisional diagnosis of peritonitis was made, with suspicion of potential bowel perforation. Subsequently, the patient was referred for radiological testing for further investigation.

Pneumoperitoneum was ruled out after observing absence of air under the diaphragm on erect chest xray. Contrast Enhanced Computed Tomography (CECT) (Fig. 1) of the abdomen revealed mildly thickened distal ileal lops with minimal free fluid in the right iliac fossa. A linear area of hyper density in the mid ileal loops traversing the bowel wall was seen without any adjacent extraluminal air. These findings were suggestive of potential inflammation of the small intestine due to the presence of a foreign body.

The patient proceeded to undergo a diagnostic laparoscopy, which revealed a hyperaemic terminal ileum, along with a redundant cecum going upto right lower quadrant, and an elongated dilated appendix. There was also a moderate amount of purulent discharge in the peritoneal cavity. The situation warranted converting the diagnostic laparoscopy into an open midline laparotomy which unveiled a sharp piece of wood traversing the terminal ileum, causing a 5 cm area of erythema, 20 cm from ileocecal junction. The foreign body, a toothpick, was successfully removed from the terminal ileum and the hyperemic area was resected (Fig. 2). Subsequently, a side-to-side anastomosis using Gastrointestinal anastomosis (GIA) 75 stapler was performed on the terminal ileum.

Furthermore, an open appendectomy was performed due to its abnormal position in right upper quadrant secondary to redundant cecum and its morphological features (long and dilated). A thorough washout was performed, followed by the closure of the sheath using loop PDS stitches. The wound was left open to be closed with secondary healing by daily dressings. The patient recovered well post-operatively without encountering any complications and was discharged on the fifth post-operative day.

Final histopathology revealed focal serosal inflammation (ileitis) in resected small bowel segment with small area of perforation 0.4 × 0.3 cm (site of tooth-pick). Sections examined from appendix also showed serosal inflammation.

Fig. 1. CT Scan Abdomen showing a foreign body in the distal ileal loop traversing the bowel loops without any adjacent extraluminal air. To be noted is the thickening of distal ileal loops with a small amount of free fluid in the right iliac fossa.

3. Discussion

We encountered this unique case involving the perforation of the ileum due to an accidental ingestion of a toothpick that went undetected. Our clinical differentials included peritonitis secondary to acute appendicitis or bowel perforation secondary to typhoid perforation. Our patient did not recall ingesting a toothpick. Ingestion of a toothpick, whether it's a result of an accident or a deliberate action, is a rare occurrence [5]. Dementia, extremes of age, or the presence of dentures, are factors that make individuals more susceptible [5] although none of these were present in our patient.

While foreign objects typically pass the gastrointestinal tract without any adverse outcomes, documented complications include: obstruction, perforation, bleeding, fistula development, and septic conditions. Specifically, when dealing with sharp items like toothpicks, there is a chance of perforation or other intestinal injuries, often leading to a high morbidity and mortality [5].

One of the most frequent reported symptom is pain in the abdomen. The clinical and laboratory results lack specificity, and imaging tests might not show anything abnormal since wood is radiolucent [5]. Moreover, perforations resulting from ingested foreign objects are often challenging to diagnose since only a small percentage (5 %–15 %) of cases can be identified through standard imaging techniques leading to frequent misdiagnoses like diverticulitis or appendicitis [5,6]. In the vast majority of cases, patients seek medical attention due to generalized abdominal discomfort and typically the management relies on radiological imaging or surgery. Regular X-rays or Ultrasound scans often fail to detect the toothpick while CT scans offer a more effective detection method [5,6]. A definitive diagnosis is typically achieved through laparoscopic exploration while the treatment approach can range from laparoscopic suturing to intestinal resection, depending on the extent of contamination and the seriousness of the injury [5].

Although uncommon, similar occurrences have been documented in literature. Majjad et al. reported a case of a 9-year-old boy who presented with worsening right iliac fossa pain and was misdiagnosed as acute appendicitis. In reality the pain was due to an ileal perforation from the accidental ingestion of a toothpick which was incidentally found during appendectomy [1]. Similarly, our patient was treated conservatively at another facility with the suspicion of appendicitis. Ossola et al. described a case of a 45-year-old man with abdominal pain and fever, initially suspected to have acute appendicitis. A diagnostic laparoscopy revealed a toothpick perforating both the sigmoid and small bowel, prompting its immediate removal and subsequent repair of the perforations through direct suturing [6].

Depoorter et al. described the case of a 50-year-old female patient presenting at the ER with pain in the lower right abdomen. CT scan revealed obstruction with no evident root cause. The initial thought was non-strangulating intestinal adhesions and the patient was managed conservatively and discharged. Yet, reappearance of symptoms after three weeks unveiled terminal ileitis on CT scan. Endoscopy exposed a perforating toothpick in the terminal ileum which was subsequently extracted [3].

Similarly, Ito et al. outlined two cases who were diagnosed with ileal perforation caused by an ingested foreign body and underwent laparoscopic treatment accompanied by a mini laparotomy [7] Both patients had a shorter recovery period owing to the decreased invasiveness of laparoscopic surgeries compared to laparotomies [7]. Another patient with right lower abdominal pain who was misdiagnosed as acute appendicitis was reported by Yao et al. where a swallowed wooden toothpick was discovered in the ileocecal region through abdominal CT scan. The toothpick was removed via colonoscopy, swiftly alleviating the patient's pain within 2 days [8].

Finally, Quynh Vo et al. reported the case of a 55 year old man with right lower quadrant abdominal pain over a span of 2 weeks. A radiopaque foreign body within the terminal ileum was revealed on CT scan of the abdomen and pelvis. The patient subsequently underwent

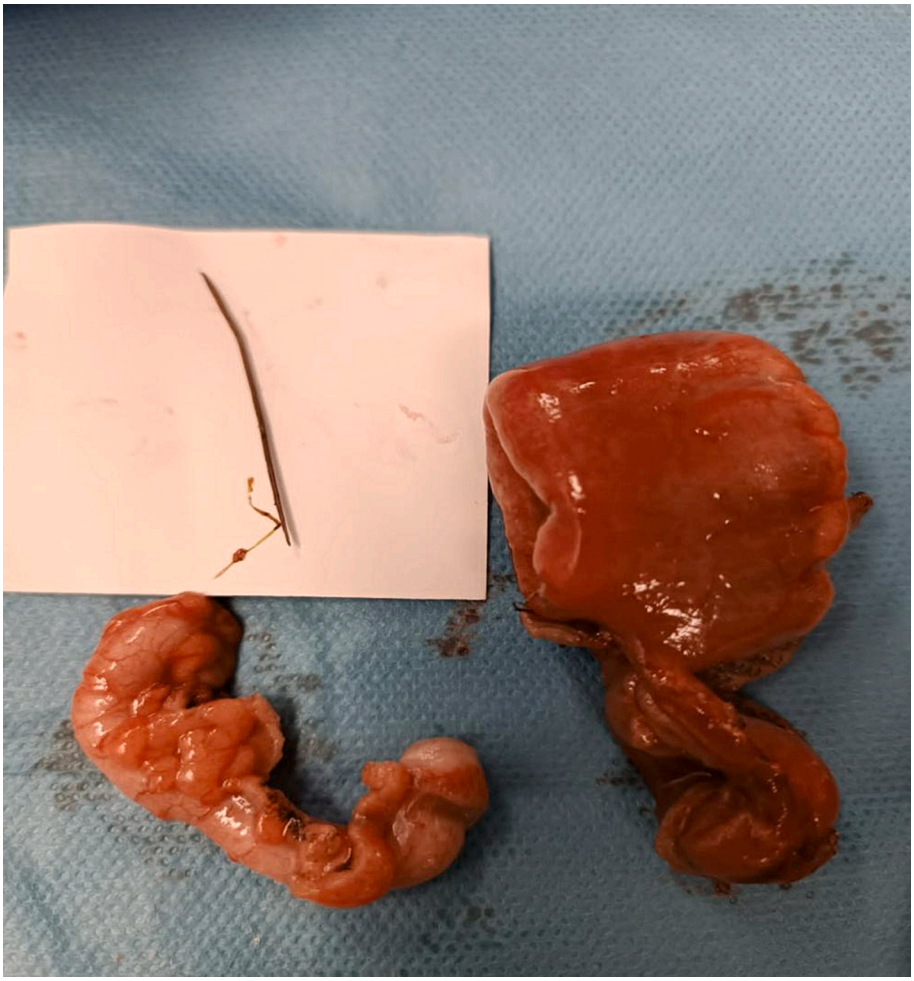

Fig. 2. Toothpick on white paper with resected appendix and hyperemic part of distal ileum.

diagnostic laparoscopy which was later converted to open laparotomy due to dense adhesions which unveiled a wooden toothpick causing ileal perforation [2] After extraction of the toothpick, the affected portion of the small intestine was resected [2].

Hence, laparoscopy enables us to simultaneously integrate both diagnostic and therapeutic strategies, while also capitalizing on the well-established benefits of minimally invasive surgery. These include advantages such as enhanced magnification, decreased post-operative complications, minimized pain after surgery, and accelerated recovery. The entire peritoneal cavity becomes accessible for exploration, facilitating procedures like intra or extra-corporeal repairs, intestinal resections, and the option to switch to laparotomy if circumstances require [5].

Even though instances of accidental toothpick ingestion leading to intestinal perforation are rare, it is imperative to consider it as a potential diagnosis when a patient presents with signs of acute abdomen. The aim of this report is to emphasize the necessity of factoring in the possibility of toothpick ingestion in the list of differential diagnoses when encountering a patient exhibiting signs of acute abdomen.

4. Conclusion

Ingestion of toothpicks causing small bowel obstruction and perforation is an uncommon occurrence in clinical practice. Despite its rarity, healthcare providers need to consider the possibility of foreign body ingestion to prevent delays in treatment and the subsequent life-threatening sequelae, as this situation can ultimately result in perforation. In this context, radiological imaging such as the utilization of CT can play a crucial role in achieving an early diagnosis. Furthermore, it is imperative to swiftly carry out surgical intervention to ensure effective management.

Consent

Written informed consent was obtained from the patient's parents/legal guardian for publication and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Ethical approval

Our case report has been exempted by Ethical Review Committee of our institute.

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Author contribution

1. Narmeen Asif: Was involved in conceptualization, critical review, editing and finalizing the case report.
2. Salva Shariq: Was involved in writing the initial draft, data collection, literature search and finalizing the case report.
3. Abdul Rehman Alvi: Was involved in critical review, editing and finalizing the case report.

Guarantor

Narmeen Asif.
Abdul Rehman Alvi.

Research registration number

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Conflict of interest statement

N/A.

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