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## A case report of foreign body appendicitis caused by tongue piercing ingestion

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## ABSTRACT

**INTRODUCTION:** Foreign body ingestion is an uncommon clinical problem in healthy adults. Furthermore, it is even less common for an ingested foreign body to cause any obstructive symptoms within the gastrointestinal tract.

**PRESENTATION OF CASE:** Here, we describe an unusual case of acute appendicitis induced by a tongue piercing that was ingested by a 32-year-old woman with a recent history of endotracheal intubation. Abdominal X-ray revealed metallic foreign bodies in the right lower quadrant. The foreign bodies remained in place on serial X-rays despite bowel preparation and they were not visualized on colonoscopy. Computed tomography (CT) of the abdomen and pelvis confirms the location of the foreign body within the appendix. Laparoscopic appendectomy was performed without complications and the tongue piercing was recovered within the lumen of the resected appendix.

**DISCUSSION:** Foreign body ingestion is a rare cause of appendicitis. Most ingested foreign bodies spontaneously pass through the gastrointestinal tract within a week. However, in rare instances, the foreign body becomes lodged in the appendix, often resulting in appendicitis.

**CONCLUSION:** In patients with appendicitis secondary to foreign body ingestion, we suggest surgical management to reduce the risk of peritonitis, perforation, and abscess formation.

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## 1. Introduction

Appendicitis is the inflammation of the vermiform appendix, which classically presents with periumbilical pain that progresses to the right lower quadrant, fever, nausea, and vomiting. The incidence of appendicitis is approximately 233/100,000 people and there are approximately 300,000 annual hospital visits for appendicitis-related issues in the United States [1]. Appendectomy is one of the most common operations performed by general surgeons. The pathophysiology of appendicitis is thought to be an obstruction of the appendiceal lumen caused by lymphoid hyperplasia, fecaliths, parasitic infections, tumors, or extremely rarely by foreign body ingestion.

More than 100,000 cases of foreign body ingestion are reported each year. 80% of these cases occur in children, most commonly between 6 months and 3 years of age [2]. While foreign body ingestion in adults is rare compared to children, the majority of adult cases is related to food (e.g., fish and chicken bones) [3]. Most for-

foreign body ingestion resolve spontaneously without complications. The ingested foreign body passes the gastrointestinal tract in 80% of cases, endoscopy is required in 20%, and <1% requires surgical intervention [4]. Of the common objects that are ingested, rigid and/or sharp objects are most likely to enter the appendiceal lumen and cause inflammation with or without perforation.

Here, we present a rare case of foreign body appendicitis secondary to an ingested tongue piercing that required laparoscopic appendectomy. The work reported here is in line with the SCARE criteria [5].

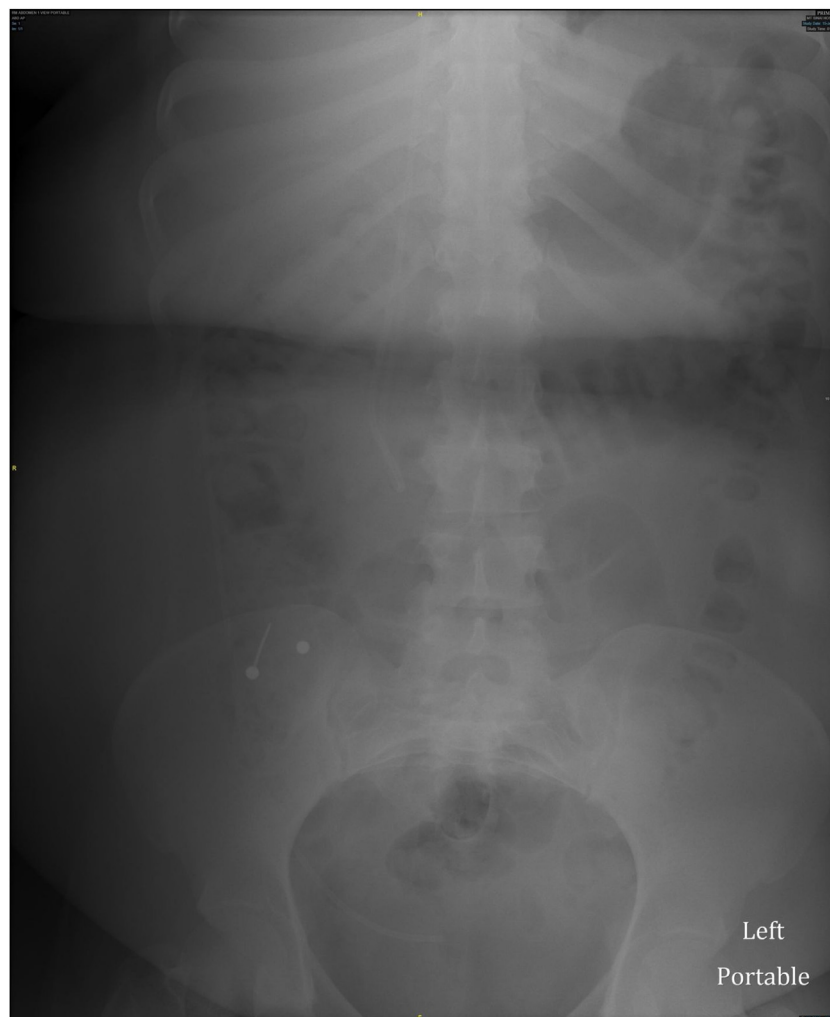
## 2. Presentation of case

The patient is a 32-year-old woman who presented with right lower quadrant abdominal pain and a history of recent intubation for ventriculoperitoneal shunt placement for subarachnoid hemorrhage in the setting of superior sagittal sinus thrombosis. Vital signs and labs were unremarkable. Physical exam demonstrated tenderness in the right lower quadrant. Abdominal X-ray revealed metallic foreign bodies overlying the cecum (Fig. 1). CT of the abdomen and pelvis revealed a metallic structure within the lumen of the cecum and another within the appendix or terminal ileum.

Careful history taking and a close review of the imaging suggested this was likely a dislodged tongue piercing. Serial abdominal

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**Fig. 1.** Plain abdominal X-ray showing two metallic foreign bodies overlying the right lower abdomen, likely within the cecum.

X-rays showed that the foreign body persisted in the cecum despite bowel preparation. Colonoscopy was performed and the scope was advanced as far as 40 cm proximal to the ileocecal valve, but no metallic structures were identified. Subsequent CT clearly demonstrated the foreign body within the appendix (Fig. 2).

As a result, a surgical approach was needed to assess the appendix and remove the foreign body. A laparoscopic appendectomy was performed without complications. Upon opening the resected specimen, the two components of a tongue piercing, measuring 2 cm in length, were found aligned within the lumen of the appendix (Fig. 3).

The patient had an uneventful post-operative course and returned to the acute rehabilitation facility to resume rehabilitation.

### 3. Discussion

Foreign body ingestion is a common clinical problem, especially in the pediatric population. Most foreign bodies that reach the stomach traverse the gastrointestinal tract without causing any complications or requiring surgical intervention. In rare occasions, with an estimated incidence of 0.0005%, these foreign bodies become lodged in the appendix and 75% of these foreign bodies are radiopaque [6,7].

Literature reviews reveals a variety of objects have been reported lodged in the appendix: bird shots, screws, drill bits,

needles, bone fragments, seeds, and toothpicks [8–13]. It is theorized that the heavy weight of the metallic or radiopaque foreign body compared to gastrointestinal content causes its movement to be arrested in the cecum and the object gravitates toward the appendix due to its inferior anatomical position. Once inside the appendix, its peristalsis is insufficient to expel it back into the cecum and the foreign body remains stagnant in the appendix [7]. The foreign body may stimulate an inflammatory reaction with or without perforation or it may remain dormant without causing any inflammation in the appendix.

Thus, the time course of clinical presentation ranges from hours to years. Symptoms may vary from asymptomatic to abdominal pain with or without associated nausea, vomiting, or fever. Abdominal tenderness on exam may range from mild to severe with or without rebound tenderness. While radiopaque objects are identified on X-ray, the diagnosis of foreign body appendicitis needs to be confirmed on CT.

Appendicular foreign bodies may cause appendicitis, peritonitis, abscess formation, bleeding, and perforation. Sharp, long, or pointed objects are more likely to cause perforation compared to round, blunt objects. Given the risk of complications, laparoscopic appendectomy should be performed to remove the foreign body if the foreign body remains in place on serial abdominal X-rays and endoscopy fails to retrieve the object, such as our case.

We present a rare case of appendicitis secondary to accidental tongue piercing ingestion in the setting of recent intubation. It

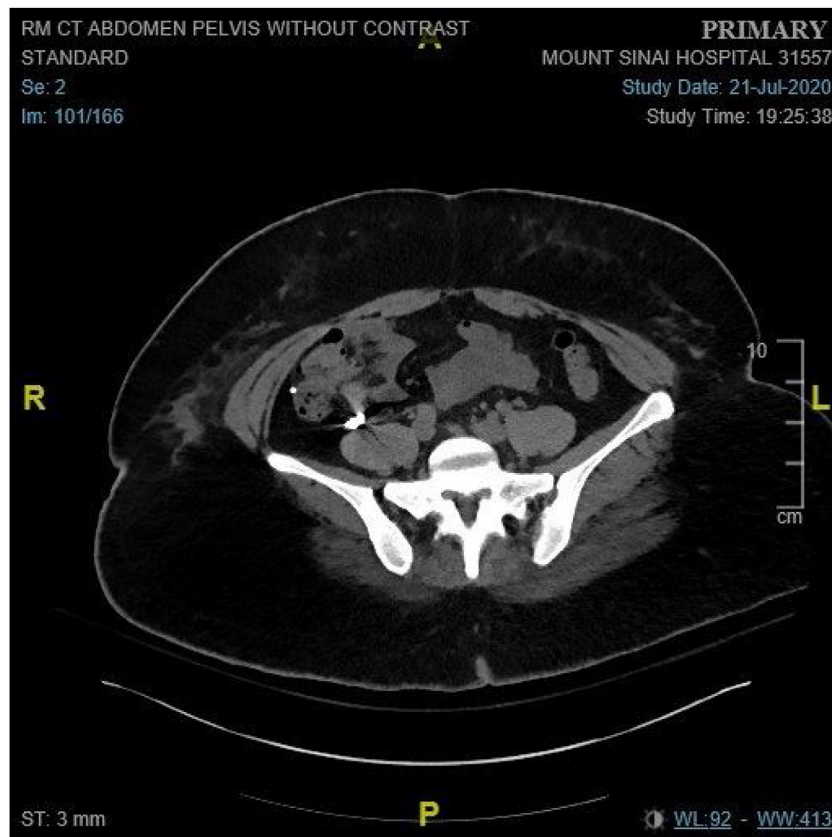


Fig. 2. CT abdomen and pelvis reveals a metallic density structure in the right lower quadrant within the lumen of the appendix.



Fig. 3. Surgical specimen of the resected appendix containing two components of a metallic tongue piercing measuring 2 cm in length within the lumen.

highlights the importance of considering foreign body ingestion as a differential diagnosis for appendicitis. For foreign bodies lodged in the appendix, appendectomy should be performed to ameliorate the risks of serious complications.

**Declaration of Competing Interest**

None.

**Sources of funding**

None.

**Ethical approval**

The study is exempt from ethical approval in our institution.

**Consent**

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

**Author contribution**

Rossana Cheng He: data collection and analysis, writing the paper.

Tamar Nobel, MD, MPH: study concept, data collection and analysis.

Alexander J. Greenstein, MD, MPH: study concept, data collection and analysis.

**Registration of research studies**

Not applicable.

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Alexander J. Greenstein, MD, MPH.

**Provenance and peer review**

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