

## Penetrating Antral Straight Pin Injury Following Accidental Ingestion: A Case Report

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**Received:** March 21, 2019; **Published:** April 03, 2019

### Abstract

Foreign body ingestion is a common pediatric problem. Ingested objects vary greatly in composition and shape and are managed accordingly. Small, non-caustic, non-toxic objects are considered low-risk for complication after passing the lower esophageal sphincter and are, therefore, allowed to pass spontaneously. This recommendation applies to straight pins less than 5cm in length or with a weighted blunt end because evidence suggests that these items have a low probability of puncturing the gastrointestinal tract. Here, we present the case of a 3cm, blunt-ended straight pin ingestion by an adolescent patient. In this case, the ingested foreign body resulted in penetration of the gastric antrum and required endoscopic removal.

**Keywords:** Foreign Body; Endoscopy; Gastrointestinal; Gastroenterology; Pediatrics

### Introduction

Ingested foreign bodies such as coins, toys, and sharps are a common presenting complaint at pediatric emergency departments. If lodged in the oropharynx or esophagus, these items are retrieved via grasper or endoscope, respectively, if proximity allows. However, once foreign bodies pass the lower esophageal sphincter, most foreign bodies, including small sharps, pass spontaneously without need for endoscopic removal [1-5]. During spontaneous passage, many authors recommend close observation and temporary cessation of contact sports for these patients [6]. However, even with these precautions, not every sharp object is benign. Here we present the case of an accidental straight pin ingestion causing a gastric antral penetration injury and required endoscopic removal.

### Case Report

A 14-year-old Caucasian female presented to the emergency department with her mother after accidentally ingesting a 3 cm sewing pin. The patient was holding the pin between her lips when she tripped and swallowed the pin. The patient reported no discomfort initially but awoke the following morning with diffuse epigastric abdominal pain. She presented to a local emergency department. Upon presentation, she denied nausea, vomiting, hema-

temesis, dysphagia, or fever but was found to have mild epigastric tenderness to palpation noted at the local emergency room. Screening radiographs revealed a straight pin in the stomach without evidence of free intraperitoneal air.

The patient was immediately transferred to our institution, where a single follow-up abdominal radiograph revealed a persistent gastric foreign body that was unchanged in position. Given the patient's symptoms and the pin's confirmed stationary positioning on admission radiograph, the decision was made to pursue endoscopic evaluation. Upper endoscopy revealed a penetrating injury with the straight pin protruding from the pre-pyloric mucosa of the antrum (Figure). The round, plastic end of the pin was grasped using a Roth retrieval net, and the pin was successfully extracted from the pre-pyloric mucosa without complications. Post-procedural follow-up radiographs were again negative for the presence of free air. Follow up physical examination revealed a benign abdomen with no physical evidence of peritonitis. Endoscopic removal was complete approximately 24 hours after our patient's foreign body ingestion. The patient was held for observation after foreign body removal and was discharged home the following day after tolerating a regular diet, approximately 48 hours after foreign body ingestion.

**Figure****Discussion**

Eighty percent of all foreign body ingestions occur in children, with a reported intestinal perforation rate of less than 1% [2,3,7]. It is the current standard of care to allow objects to pass spontaneously if they have traversed the lower esophageal sphincter and are less than 5 cm long in adolescents or less than 3 cm in infants, as was the case with our adolescent patient who ingested a 3 cm pin [1,2]. The proposed physiologic mechanisms promoting safe passage of these objects include axial flow of the straight pin inside the intestinal lumen, reflex relaxation of the intestinal wall to allow the pin to rotate so the sharp end trails, and encasement of the pin in mucus and stool in the distal bowel, facilitating passage through the colon and out the anus [3]. Although intestinal perforations are rare, ingestion of sharp objects such as straight pins account for 15% - 35% of foreign body-related intestinal perforations and, therefore, receive additional consideration [3,12-14].

In 2015, the NASPGHAN Endoscopy Committee updated the recommended management of ingested foreign bodies in children. According to these new guidelines, ingested sharp objects that reach the stomach should be removed endoscopically unless the object is short with a heavier blunt end [6]. This definition again includes objects such as our patient's straight pin.

**Conclusion**

Although most ingested straight pins pass benignly through the gastrointestinal tract, this case highlights the potential for gastrointestinal perforation even among sharps that are considered low-risk. This suggests that there may be a role for prophylactic endoscopic retrieval of even small sharps that have safely traversed the lower esophageal sphincter. Careful patient selection and evaluation of foreign body positioning within the stomach will likely contribute to positive patient outcomes.

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**Volume 2 Issue 3 May 2019**

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