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Case Report

Multiple Magnet Ingestion Leading to Intestinal Fistula in an Autistic 13 Year Old Female

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Keywords

- Foreign body ingestion
- Magnets
- Autism
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- Intestinal fistula

Abstract

Introduction: Foreign body ingestion is a common problem in the pediatric population. Specifically, magnet ingestion, which has unique and potentially life-threatening consequences, has increased significantly in the last decade.

Case Presentation: A 13-year-old female with severe autism presented with vague abdominal discomfort and bloating. Abdominal films confirmed multiple foreign bodies in the stomach and small bowel. The gastric foreign bodies were found to be magnets and successfully removed endoscopically. The magnets in the small bowel were found to have perforated into the cecum on colonoscopy and therefore, surgery was deemed necessary.

Conclusion: While foreign body ingestion is most commonly seen in young children, other pediatric populations, such as children with autism, are also at risk. The symptoms of magnet ingestion can be vague, but the complications are life-threatening. Therefore, familiarity with the common symptoms and early recognition are crucial for the management of these cases.

ABBREVIATIONS

CT: Computed Tomography; CPSC: Consumer Product Safety Commission

INTRODUCTION

Foreign body ingestion is a common problem seen in the pediatric population. Over 110,000 cases of foreign body ingestion

were reported in the United States in 2011, with greater than 85% occurring in patients younger than 20 years old [1]. While the majority of ingested foreign bodies pass spontaneously, serious complications such as respiratory distress and bowel perforation can occur [2,3]. Unfortunately, a review has found that only 54% of patients have symptoms at the moment of ingestion and symptoms can be vague at the time of presentation [4]. Common objects swallowed include coins, magnets, batteries, small toys, pieces of plastic, jewelry, buttons, bones, or pieces of food [3]. In particular, ingestion of magnets has become increasingly prevalent and can result in significant complications. Nationally, the incidence of magnet ingestion related emergency department visits in children younger than 18 years (?? Or months??) has increased 8.5-fold from 2002 to 2011 [5].

CASE PRESENTATION

A 13-year-old female with severe autism who was non-verbal presented with three weeks of intermittent abdominal distention and concerns for abdominal pain in the setting of clutching her stomach. Her parents also noted a decrease in appetite and irritability but no vomiting, hematochezia, melena, diarrhea, fevers, or weight loss. The patient had a history of chronic constipation managed with daily fleet enemas that remained unchanged. Her parents denied a history of swallowing non-food items. On exam, the patient was in no apparent distress and vital signs were within normal limits. Her stomach was soft, mildly distended, without masses or organomegaly. Rectal exam could not be performed secondary to the patient's noncompliance. Supine and lateral abdominal x-ray performed a day prior to admission revealed long, tubular, metallic foreign bodies in the upper abdomen and 4-6 small round structures in the lower abdomen (Figure 1). A computed tomography (CT) scan of the abdomen verified that the foreign bodies were in the stomach and distal small bowel. A discussion between the surgical and gastroenterology teams led to an esophagogastroduodenoscopy (EGD), which revealed 26 small, plastic cylinders with metallic cores attached together by magnetic force in the stomach. These foreign objects were successfully removed endoscopically using a snare after 5 passes of the endoscope - (Figure 2).

After further discussion with the family, surgical team, and radiology, the remaining magnets were deemed to be located

in the terminal ileum/cecal area, and a non-invasive approach was pursued. Colonoscopy showed a 2mm long green tubular foreign body protruding at the cecum at a separate orifice from the appendix and ileocecal valve, concerning for perforation and fistula formation (Figure 3). Concerns for intestinal fistula led to immediate exploratory laparotomy where amid-small bowel to proximal cecal fistula was visualized and the three magnets were palpable through the bowel wall. The magnets were successfully removed after electrocautery takedown of the fistula. The ileal and cecal enterotomies were repaired with interrupted 3-0 Vicryl stitches and the abdomen was closed. The patient recovered and was tolerating a full diet by post-operative day number 5.

DISCUSSION

While the majority of foreign body ingestions in the pediatric population occur in children under the age of 5, there is also 20% that occur in older children [1]. Our case demonstrates the importance of keeping foreign body on the differential diagnosis for all pediatric populations. For example, there are reports of foreign body ingestion as a result of using magnets to imitate jewelry such as nose or tongue rings [5]; transporting objects in their mouths; or as a result of impaired judgment from substance abuse. Other groups at risk are children with psychiatric disorders, mental retardation, developmental delay, or autism spectrum disorders, such as in our case [3].

In one worldwide review of magnet ingestion cases, autism was a known condition in 9.4% of ingestions for all ages and 16.2% of ingestions for children 4 years and older [6]. Due to difficulties in communication and behavior, patients can present with variable symptoms. Common symptoms of acute foreign body ingestion in the pediatric population include dysphagia, vomiting, drooling, gagging, coughing, respiratory distress, and food refusal [3]. Chronic symptoms may include weight loss, vomiting, melena, abdominal distention, diffuse abdominal pain, and agitation [3,7-9]. However, 50% of patients can be initially asymptomatic [4].

Early recognition of these symptoms is important since urgent intervention is always indicated in multiple magnet ingestions. When magnet or foreign body ingestion is suspected, abdominal x-ray should be obtained for diagnosis. If magnets

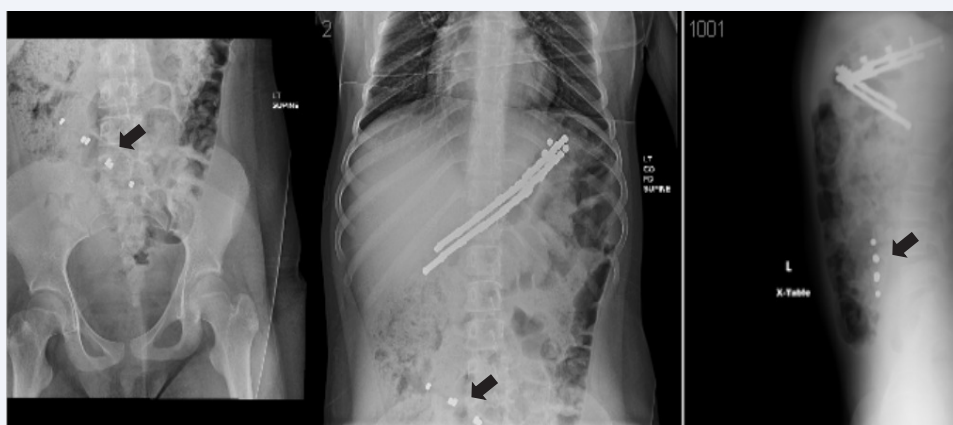


Figure 1 Large radio-opaque rods in the stomach and smaller radio-opaque foreign bodies in the bowel (arrows).



Figure 2 The contents removed from the stomach endoscopically.



Figure 3 Left: gastric foreign bodies visualized during endoscopy. Right: Green tubular foreign body protruding from cecal wall.

or metallic foreign body suggestive of magnets are discovered, removal by pediatric gastroenterologist and/or pediatric surgery is indicated [10]. Serious complications associated with multiple magnet ingestion results from the attraction of magnets at different points within the bowel that can cause entrapment and damage to the bowel wall. Complications reported include intestinal fistulas, ulcerations, bowel perforation, obstruction, peritonitis, pneumoperitoneum, sepsis, which can in rare cases lead to death [3,5,6,11].

It is important to note that there has been a concerning rise in the number of emergency room visits due to magnet ingestion. The rate has specifically increased by 75% annually from 2002 to 2011, coinciding with the increase in popularity of small and strong rare-earth magnets as desk toys [5]. In 2009, the US Consumer Product Safety Commission (CPSC) issued a ban on the sale of rare-earth magnets to children younger than 14 years [10]. However, the number of magnet-related emergency department visits continue to trend up from 2009 to 2011 [5]. More recently, in 2012, CPSC sued makers of Buckeyballs and Buckycubes,

popular brands of consumer rare-earth metal desk toys, due to the hazardous nature of their products [12]. However, presently, small rare-earth metals are still on the market and available to order.

In conclusion, multiple magnet ingestion is a rising issue in the pediatric population, coinciding with the increase in popularity of strong and small rare-earth magnets as desk toys. While foreign body ingestion is most commonly seen in young children, other pediatric populations, such as children with autism, are also at risk. The symptoms of magnet ingestion can be vague, but the complications of magnet ingestion are serious. Therefore, early recognition is crucial and foreign body and magnet ingestion should always be in the differential diagnosis for patients with GI complaints, especially high risk groups such as young children and children of any age with autism.

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