

# Foreign Body Ingestion: A Case of Magnetic Balls Ingestion in Pediatric

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## ABSTRACT

**Introduction:** Foreign bodies ingestion is a very common worldwide health problem in children below 3 years of age. Delayed diagnosis may cause fatal complications and mortality.

**Case presentation:** A 2-year-old boy patient presented to hospital with the chief complaint of vomiting. Parents admitted history of vomiting every time he eats, transient abdominal pain, and constipation for 3 days. The patient ingested several magnetic balls while he was playing. Abdominal radiography showed well-defined chain of beaded magnets representing foreign body. Abdominal CT scan also confirmed the diagnosis. Laparotomy exploration was done to evacuate the foreign bodies. Surgical findings showed perforation of ascending colon, cecum, and ileum, as well adhesion intrabdominal.

**Discussion:** Asymptomatic children can be closely observed using serial x-rays to monitor the progression of the foreign bodies. While symptomatic children with one or more magnets in any location of the digestive system or a single magnet with a metallic foreign body should be planned to undergo surgery.

**Conclusion:** Foreign bodies ingestion is more common in children. It warrants a thorough anamnesis and examinations. Misdiagnosis may lead to significant complications that may result in unwanted outcome of mortality and morbidity.

**Keywords:** Foreign body, ingestion, pediatric, magnetic balls

## INTRODUCTION

Foreign bodies ingestion is a very common worldwide health problem in children below 3 years of age and more than 25% of them is younger than 1 year [1]. Foreign bodies ingestion affects children especially infants that evaluate objects by tasting and swallowing [2].

About 90% of esophageal foreign body are removed spontaneously without complications [3]. However, some cases cannot easily pass through the pylorus, stomach, duodenum, ileocecal valve, Meckel's diverticulum, and/or anus and therefore, 10% of ingested foreign bodies may remain in the GI tract [4].

The object swallowed, the location, and the amount of time before treatment all affect the consequences and their severity. In rare cases, problems might arise from the intervention itself. Furthermore, if treatment for esophageal perforations is postponed or the problem is not identified, fatal complications may arise [5]. For this reason, it's critical to diagnose the condition and start the proper therapy as soon as possible in situations of foreign bodies ingestion.

We present a case of ingestion of several ball magnets by a 2-year-old boy in a private hospital in Bali, Indonesia.

## CASE PRESENTATION

A 2-year-old boy patient presented to hospital with the chief complaint of vomiting. He was constipated in the last 3 days. Parents admitted history of vomiting

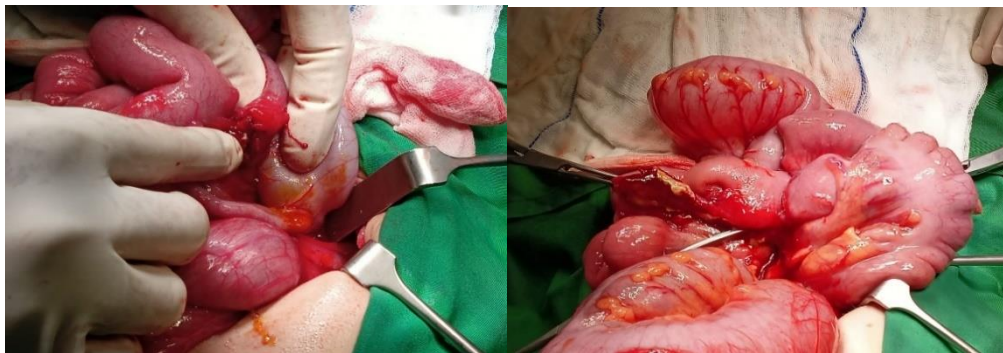
every time he eats and transient abdominal pain. The patient ingested several magnetic beads while he was playing.



**Figure 1. Supine radiography showing well-defined chain of beaded magnets representing foreign body**

Initial investigations of blood work showed increased white blood cell level and other parameters were within normal limit. Abdominal radiography showed well-defined chain of beaded magnets representing foreign body, projecting in the distal ascending colon. No sign of bowel perforation or ileus obstruction.

CT whole abdomen without contrast demonstrated foreign bodies (magnetic toy) in distal ascending colon (near hepatic flexure) with dilatation of transverse colon. He was planned to undergo laparotomy exploration to evacuate the foreign bodies.



**Figure 2. Ischemia and perforation of the bowel**



**Figure 3. Surgical finding of foreign bodies**

Surgical findings showed perforation of ascending colon, cecum, and ileum, as well as adhesion intrabdominal. Resection was done from the middle of the transverse colon to approximately 15 cm of ileum, partially removed part of the Ileum – ileocecal, appendix, cecum, ascending colon, part of the transverse colon. Anastomosis was made from the ileum to the transverse colon. On postoperative day 12, lower abdominal ultrasonography showed normal findings. The patient was then discharged and instructed to follow up in outpatient ward.

## DISCUSSION

While 80-90% of gastrointestinal foreign bodies are spontaneously egested, 10-20% require endoscopic removal, and less than 1% require surgery to remove the foreign body or treat associated complications [6]. Endoscopic foreign body removal has been reported to have a success rate of 88.5–100% [7].

The frequency of magnet ingestion has increased in children. That is because of toys that consist of magnetic beads. Ingesting a single magnet should result in its spontaneous passage if the magnet is not too big. Surgical removal is necessary in cases where multiple magnets or a single magnet with a metallic foreign body has been ingested because the contact between the ingested magnet or the magnet and the metallic foreign body, and the mucosal surfaces of various body parts can result in mucosal pressure necrosis, intestinal obstruction, fistula, and/or perforation [2,8]. Dysphagia, odynophagia, retrosternal discomfort, stridor, foreign body sensation, hypersalivation, irritability, chest or stomach pain, unwillingness to eat, wheezing, and dyspnea are among the symptoms that patients who ingest foreign bodies may experience [4,9]. A physical examination should come after a thorough anamnesis addressing the nature, quantity, timing, and cause of foreign body ingestion and symptoms.

In asymptomatic children, an X-ray is required to determine if the magnets they ingested are single, numerous, or have a metallic component. Occasionally, two or more magnets may be attached to each other and may appear like one piece, and misdiagnosis of multiple magnets as solitary magnet ingestion can lead to delayed institution of treatment and cause significant complications. CT scans are recommended for those patients with suspected perforations or other complications that may require surgery [7,10].

Endoscopic removal of the magnets or magnets with a metallic foreign body situated in the stomach or esophagus is necessary [8]. Symptomatic children with one or more magnets in any location of the digestive system or a single magnet with a metallic foreign body should be consulted to a pediatric surgeon to plan surgery. Asymptomatic children can be closely observed using serial x-rays to monitor the progression of the foreign bodies [9].

## CONCLUSION

Foreign body ingestion is more common in children. It warrants a thorough anamnesis and examinations. Misdiagnosis may lead to significant complications that may result in unwanted outcomes of mortality and morbidity.

### *Declaration by Authors*

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