

Case report

Multiple magnet ingestion causing intestinal obstruction and entero-enteric fistula: Which imaging modality besides radiographs? A case report

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ABSTRACT

Ingested foreign bodies occur in children younger than 3 years and pass uneventfully through the gastrointestinal tract. However, multiple magnet ingestion are associated with serious complications. A 9-year old male with abdominal pain and vomiting 3 days prior to admission, underwent abdominal radiographs showing radiopaque foreign bodies. Ultrasonography (US) independently discovered one magnet floating in the jejunum. Preoperative Computed Tomography (CT) confirmed the presence of two neighbouring magnets causing obstruction and beaking of an adjacent jejunal loop. Laparotomy led to uneventful recovery of transmesenteric fistula formation following pressure necrosis in two jejunal loops. We present the first case of multiple magnet ingestion managed in our institution, where the prevalence of magnet ingestions is low due to unpopularity of magnet toys. **Conclusion:** Awareness of the potentially devastating effects of multiple magnets passing the pylorus and the contribution of different imaging modalities for the diagnosis are emphasized and discussed.

1. Introduction

Foreign body ingestion is a potentially serious problem that peaks in children aged six months to three years, however only 1% of cases require operative management of associated complications [1] [21]. Because many patients who have swallowed foreign bodies are asymptomatic, physicians must maintain a high index of suspicion for the possibility of multiple magnet ingestion, a condition that invariably requires some form of intervention and may ultimately lead to laparotomy [2,3]. The risk associated with magnet ingestion by children has been emphasized in the literature and its incidence is not negligible due to the commercial availability of magnets in toys, especially in some European countries and in the US [4,5]. In our country magnet toys are not very popular, therefore this condition is rarely encountered. Proposed management algorithms for magnet ingestion in children are based on clinical circumstances and the presence of non-advancing radiopaque magnets in serial abdominal radiographs [4,6].

We report the first case of enteroenteric fistula and consequent small bowel obstruction due to two ingested magnets treated in our Department, emphasize awareness of the hazardous condition associated with multiple magnet ingestion and discuss the complementary

role of serial AP/lateral radiographs, US and CT in decision making.

2. Case report

A 9-year-old boy was admitted to our hospital in the pediatric ward, with a 3 days history of vomiting and abdominal pain. On admission his abdomen was tender and distended and the laboratory values were within normal limits. An abdominal x-ray showed clearly signs of proximal obstruction and a bi-lobed radio-opaque foreign body at the right mid-abdomen (Fig. 1). The family did not report anything unusual, however the child recalled that ten days ago he ingested two spherical magnetic balls of the size typically seen in magnet sets, during playing.

The child was admitted for observation and underwent an ultrasound scan of the abdomen 1 day later, that showed small bowel dilatation with lack of peristalsis and the presence of an echogenic intraluminal focus looking like a stone, moving inside a bowel loop, consistent with an ingested foreign body. Bowel wall thickening and free fluid were also present (Fig. 2). It was not possible to say by ultrasonography whether there was an additional foreign body located elsewhere or whether the two magnets were stuck against each other. Repeat abdominal radiographs up to 72 hours later, with the child being

Abbreviations: AP, anteroposterior; CT, Computed Tomography; FBI, Federal Body Investigation; US, Ultra Sonography

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Fig. 1. Abdominal radiograph on admission showing a radiopaque foreign body without completely rounded margins, exhibiting an hourglass shape, consistent with two magnets in close proximity (arrow). Air-filled jejunal loops with air-fluid levels (arrowhead) with paucity of bowel gas distally, suggest early obstruction.

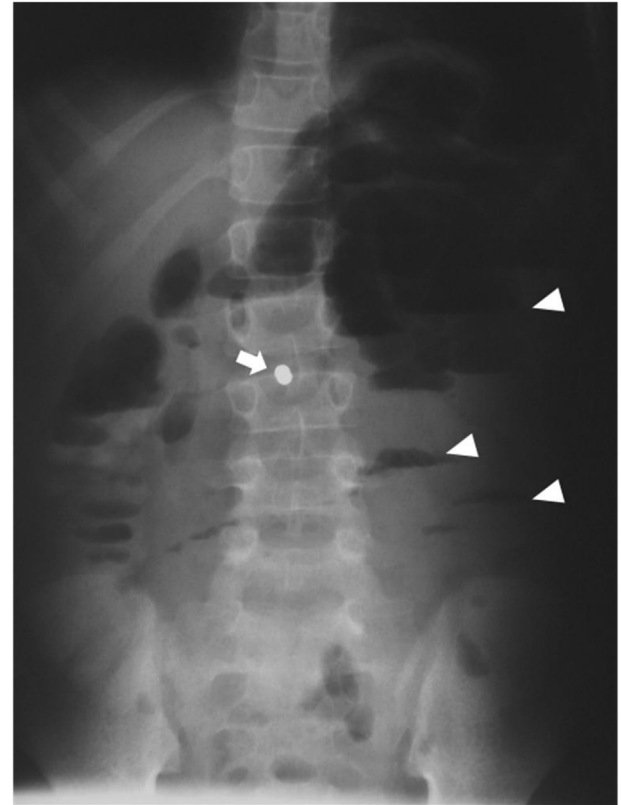


Fig. 3. Follow-up abdominal radiograph showing slight movement of the radiopaque foreign body (arrow) without significant progression into the ileum. Note established small bowel obstruction with multiplication of air-filled jejunal and ileal loops containing air-fluid levels (arrowheads) and persistent paucity of bowel gas distally.

in a good general condition, showed lack of foreign body progression (Fig. 3), persisting pain and the patient was referred to the Surgical ward of our Hospital with a nasogastric catheter in place. Laboratory values remained within normal limits, there was no improvement of abdominal distension, pain recurred and became continuous. Surgery

was planned and a CT scan was performed preoperatively. On the lateral scout view the two magnets were closely opposed to each other (Fig. 4). Magnets casted a large star-like artefact, hampering the visualization of adjacent structures (Fig. 5). Small bowel obstruction without a definite point of transitions but with beaking of adjacent loops was noted, in relative vicinity with the metallic foreign bodies

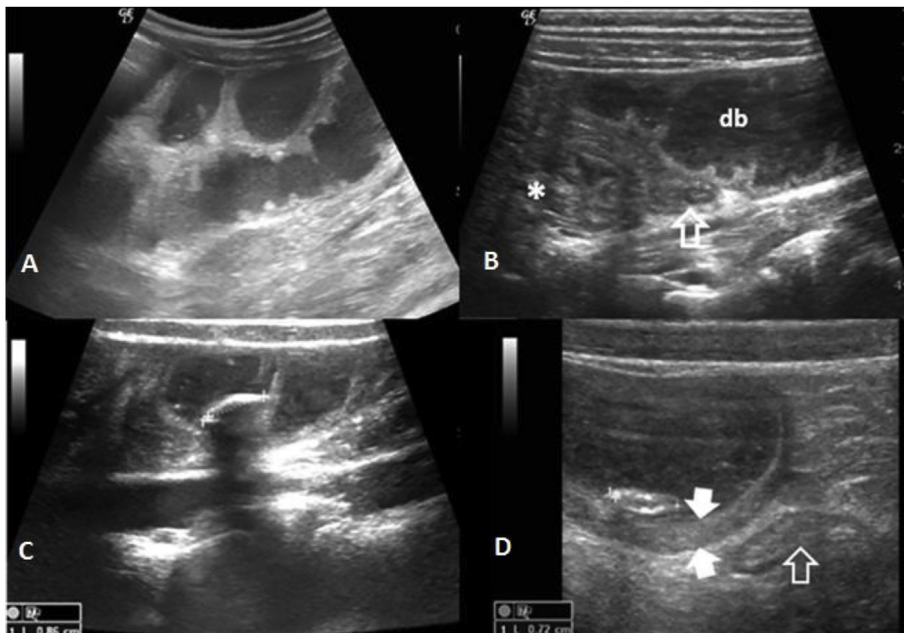


Fig. 2. Ultrasonography requested for non-specific abdominal pain.

A. Longitudinal scan through the left upper abdomen showing fluid-filled, distended bowel loops without any peristalsis.

B. Longitudinal scan at the right iliac fossa showing a distended ileal loop (db), the mucous pattern of collapsed bowel (*) and a normal appendix (arrow).

C. Longitudinal scan at the epigastrium showing an echogenic intraluminal foreign body (between cursors) casting an acoustic shadow (arrow). The loop containing the “stone-like” lesion, is anterior to the aorta (Ao).

D. Repeated scan of the area 10 minutes later with the patient standing showed that the foreign body had dislodged in another distended loop with a thickened wall (open arrow). Note an adjacent normal loop (white arrow).

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