Open Journal of Clinical & Medical Images

www.jclinmedimages.org

Case Report

Open Access, Volume 2

Patient's non-disclosure, can be harmful in the management of magnet foreign body swallowing?

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Received: Apr 14, 2022

Accepted: May 09, 2022

Published: May 13, 2022

Archived: www.jclinmedimages.org

Keywords: Intestinal Perforation; Foreign body; Magnet.

Abstract

The ingestion of foreign body is quite common in the daily emergency room practice. The vast majority of patients who visit the emergency room with foreign body ingestion belong to the pediatric age group, the other group of patients have either mental impairment, dementia or psychiatric diseases.

The unusual thing is the voluntary ingestion of a foreign body by a healthy adult person. Although most ingested foreign bodies pass through the gastrointestinal tract without consequences within one week, in up to 1% of cases perforation occurs at some point in the Gastrointestinal (GI) tract.

We present the case of a young male patient who presented to the emergency room with the complaint of persistent lower abdominal pain and low grade fever without any other symptoms. The patient was initially diagnosed with acute surgical abdomen. An emergent diagnostic laparoscopy was done and it was found that he had multiple intestinal perforations due to multiple magnets allocated at different levels of the gastrointestinal tract. The surgery was converted to a laparotomy, the foreign bodies were removed and the perforations were repaired.

Introduction

Accidental ingestion of a foreign body together with food is a common clinical problem at emergency care facilities, but the voluntary ingestion of a foreign body is not common among the adult patients.

The majority of foreign bodies reaching the gastrointestinal tract are harmless and does not need surgical intervention, unless a complication happens [1,2]. This is not the situation with the ingestion of magnets or magnet and concomitant metallic foreign body, which can lead to a serious complications that require an emergent surgical intervention. Magnets in plurality and magnets ingestion together with metallic foreign bodies tend to capture loops of bowel in between them, which leads to localized necrosis and perforation [2,3].

The early diagnosis of a magnet foreign body may be challenging because the magnets may stick to each other and take certain forms and masquerade as another foreign bodies [4,5]. The delay in diagnosis may be aggravated in those patients who does not affirm the ingestion of magnets, especially in children, mentally retarded and psychiatric patients.

Case presentation

A 17 year-old male patient who visited the emergency department complaining of persistent lower abdominal since 4 days previous to the emergency room visit. The pain was associated with low grade fever and constipation. There were no other significant symptoms. The patient had no previous medical, surgical or relevant physiological history.

Physical examination revealed lower abdominal localized tenderness and guarding, the rest of physical examination was normal. The blood investigation showed slightly elevated white blood cells with neutrophilia. The abdominal ultrasound gave the equivocal diagnosis of acute appendicitis. It was obvious that the patient had acute surgical abdomen but the symptoms history, the duration and the signs were not consistent with acute appendicitis, we decided to do an abdominal X-ray and it showed multiple small bowel air fluid levels and a radiopaque shadow seen at the right side of the sacrum (Figure 1).

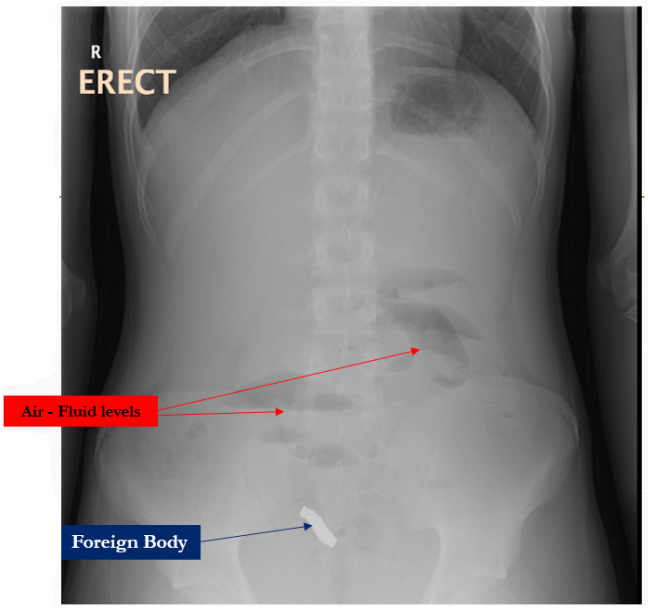

Figure 1: Standing Abdominal x ray.

The presence of a foreign body was not expected and the patient was asked again in details if he had ingested any foreign body but he denied it. This misinformation from the patient forced us to repeat the abdominal X-ray to exclude possible artefacts. The second X-ray showed the same radiopaque shadow and the patient maintained his resignation of foreign body ingestion.

Despite the patient gave us a misleading information, the shape and characteristics of the visualized foreign body does not explain the acute surgical abdomen, as usually the intestinal perforations happens with sharp and elongated foreign bodies. In order to avoid time wasting and unnecessary complications no further investigation were ordered, the patient was scheduled for an emergent diagnostic laparoscopy after obtaining a proper consent for the surgery.

Intraoperative, the patient was found to have a normal appendix. The whole small intestine was explored in a retrograde fashion from the ileocecal valve to the duodeno jejunal junction as well as the entire colon. We found that multiple small and large bowel loops were conglomerated at one point (Figure 2). After mobilization and pull apart the conglomerated bowel loops, three perforations were seen with underlying foreign bodies (strong magnets), one perforation in the distal jejunum, another one in the proximal ileum(Figure 3) and the last one in the sigmoid colon (Figure 4).

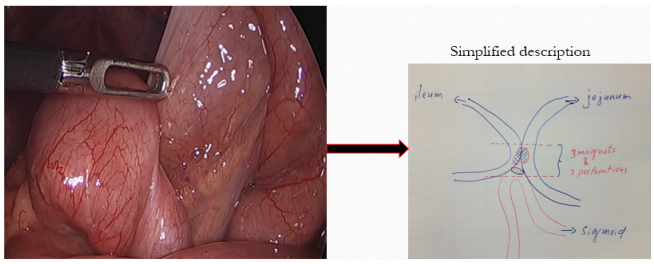

Figure 2: The point of conglomerated bowel loops.

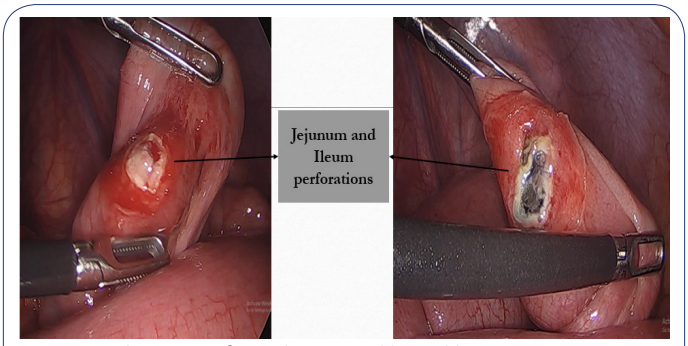

Figure 3: The point of conglomerated bowel loops.

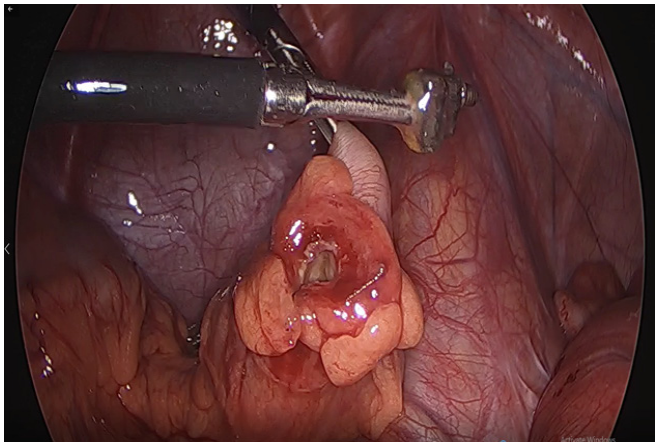

Figure 4: Sigmoid perforation.

Three factors forced us to abort the laparoscopy and to convert to open surgery; the dilated bowel loops, the limited space and the strong magnets which were being stacked to the laparoscopy forceps limiting the mobility and increasing the risk of iatrogenic injury (Figure 5).

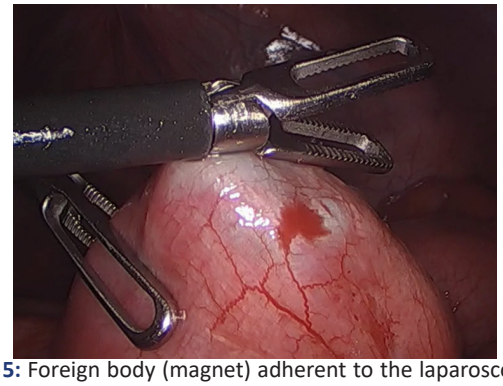

Figure 5: Foreign body (magnet) adherent to the laparoscopy forceps.

Through a midline laparotomy the three foreign bodies were removed, the small bowel perforations were primary repaired in 2 layers. The dilemma was with the sigmoid colon perforation and the need of diverting colostomy or not. Because the sigmoid colon was healthy, the perforation was small, the blood supply after debridement of the edges was appropriate and the absence of significant intraabdominal contamination, we decided not to do a diverting colostomy and to do sigmoid perforation repair in 2 layers. Profuse abdominal irrigation was done, intra-abdominal drain was inserted and the abdomen was closed.

The patient had a satisfactory post-operative course and he was discharged in day four in good general condition.

Discussion

The use of magnetic materials in the children's toys have been widely used during the last decades, it may be related to the revolution in the toys industry and the need to create more complex and more attractive products in order to be market competitive. This revolution has an adverse effects in children's safety, as we can notice that the reports of swallowed foreign bodies have increased, not in the magnets type of foreign body, but also in plastic pieces, batteries etc. Among those foreign bodies, the magnets have special harmful effect and negative impact once enter the GI tract, especially if more than one piece of magnet is swallowed or if it is combined with a metallic foreign body [3,6]. Magnets in plurality or magnets ingestion together with metallic foreign bodies tend to capture loops of bowel in between them, which leads to localized necrosis, perforation and subsequent peritonitis and sepsis if not diagnosed and treated early [1-3].

As we mentioned previously, the ingestion of magnet foreign bodies could be quite common among the pediatric age group for the reasons; that children have access to such foreign bodies, the curiosity of exploration and the lack of safety knowledge. The surprising thing is to report a case of multiple magnets swallow in an adult patient without a history of mental impairment or psychiatric diseases. Although the patient in this case report is 17 year-old and is mentally fit, he denied the ingestion of foreign body and this misinformation could lead to a misdiagnosis or delay in diagnosis. Fortunately, we had a high index of suspicion and the patient was transferred immediately to the operating room for prompt surgical management of his perforations.

Plain abdominal x ray could be useful if we suspect magnet or metallic foreign body swallowing. However, we do not expect to see free gas under the diaphragm in the majority of cases with perforation, this is justified due to bowel conglomeration and adherence, which create a contained rather than free perftaions in the majority of cases [7]. On the opposite site, the abdominal ultrasound could not be helpful in the majority of cases. In patients with no signs of peritonitis or sepsis, the abdominal CT scan is the gold standard diagnostic modality which can identify the site and the cause of perforation. But, in the emergent setting, the study should not be delayed trying to administer oral contrast, moreover the use of oral contrast during CT can make more difficult to detect a radiopaque foreign body.

One of the most challenging issues in an acute surgical abdomen is to identify the etiology in order to plan a proper surgical intervention. We were suspecting that the cause of his acute surgical abdomen was the foreign body, but we were not certain. During the diagnostic laparoscopy we confirmed the diagnosis and acted according to the findings. It was difficult to handle the bowel due to the limited space secondary to the bowel distention, but the most difficult part was to maneuver the laparoscopic forceps in the presence of those strong magnets adherent to it.

The decision was to abort the laparoscopy and to convert the surgery to open approach, through a midline laparotomy the three magnets were removed and the jejunal and ileal perforations were repaired in two layers. In relation to the sigmoid perforation, the initial decision was to do diverting colostomy, but after proper exploration and debridement of the perforation edges we found that the wall was healthy and there was no intrabdominal sepsis, so we decided to do a primary repair in two layers and avoid the stoma.

There is currently no guidelines on how to deal with a single misingested magnetic foreign body. At present, Clinicians generally agree that conservative management and dynamic follow-up of abdominal X-rays is the best choice for those patients [8,9]. On the opposite side, the vast majority of physicians agree on the prompt intervention in case of multiple magnets ingestion either by endoscopy or surgical intervention [6,8,10].

Conclusion

Intestinal perforation secondary to a foreign body is quite rare and the surgeon needs a high index of suspicion to do a proper diagnosis. Those foreign bodies which contain magnets should have special and strict management .No rules for the management of magnetic foreign body, but multiple magnets ingestion or magnets combined with metallic foreign bodies need prompt intervention. Surgical management of intestinal perforation depends on the site, size of the perforation and the grade of intra abdominal contamination, in addition to the healthiness of the tissues.

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