

# Gastrointestinal fistula due to multiple neodymium magnet ingestions

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## Abstract

Foreign body ingestion (FBI) is one of the critical conditions encountered in pediatric emergency services. FBI can lead to high mortality in children. Neodymium magnets are increasingly popular due to children's great interest in them. In cases of multiple magnet ingestion, the risk of mucosal perforation is higher when compared with other types of FBI. With this case, an attempt to raise awareness of this medical problem was made by sharing the case of a neodymium magnet body in a 24-month-old patient. The magnet was detected incidentally during our fever etiology examination although possible ingestion of a foreign body had previously been reported in her medical history. Our patient presented with abdominal tenderness, agitation, and other symptoms. An abdominal X-ray was taken. A foreign body that resembled a neodymium magnet sphere was observed. During surgery, a gastrocolic fistula in the antrum was observed. Multiple magnets are foreign bodies that present a higher risk of causing intestinal perforation compared to other foreign bodies. It is known that multiple magnet ingestions may cause mucosal ulceration, and it should be emphasized that such ingestion may cause gastrointestinal fistulas. Since pediatric patients in a certain age group tend to put objects in their mouths, each patient with an unclear cause of fever and abdominal sensitivity should be questioned with respect to FBI and then tested radiologically.

**Keywords:** Foreign body ingestion, Gastrointestinal fistula, Magnets, Pediatric

## Introduction

Foreign body ingestion (FBI) is one of the most critical conditions encountered in pediatric emergency services and general outpatient clinics. FBI can lead to high mortality in children. Neodymium magnets are increasingly popular due to children's great interest in them. In cases of multiple magnet ingestion, the risk of perforation is higher when compared with other types of FBI. The incidence of FBI as reported by the American Association of Poison Control Center's National Poison Data System in 2016 is 1,810,030 patients per year [1]. FBI occurs at a rate of 80% in children, especially in children under three years of age [2]. With this case, an attempt was made to raise awareness of this medical problem by sharing the case of a neodymium magnet body in a 24-month-old patient. The magnet was detected incidentally during our fever etiology examination although possible ingestion of a foreign body had previously been reported in her medical history.

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### Informed Consent

The authors stated that the written consent was obtained from the parents of the patient presented with images in the study.

### Conflict of Interest

No conflict of interest was declared by the authors.

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### Case presentation

A 24-month-old girl presented to the pediatric emergency service with a fever of 38.5 °C. Physical examination revealed abdominal tenderness and agitation. Laboratory tests were unremarkable. Complete urinalysis was normal. Due to the sensitivity of the abdominal examination, an abdominal X-ray was taken (Figure 1). A foreign body that resembled a beaded necklace was noted. When the medical history was taken from the family and they were questioned about the foreign body, the mother stated that her daughter had played with her beaded necklace 20 days ago. The appearance on the X-ray was compatible with the metallic object in the foreground.

Figure 1: Metallic foreign body seen in the stomach on the patient's first abdominal X ray



The metallic opacity of the foreign body in the stomach of the patient could be observed, and due to the fact that it was swallowed 20 days ago, the operating room was prepared and gastroscopy was planned. During gastroscopy, a foreign body fragment that had stuck to the gastric antrum mucosa and caused an ulceration underneath was seen (Figure 2). The piece that was removed with the help of a basket was in the form of three small metallic spheres. On the X-ray taken during the procedure, it could be seen that three pieces were still stuck in the mucosa (Figure 3).

Figure 2: The appearance of an ulcerated foreign body stuck in the gastric antrum mucosa during gastroscopy



Figure 3: Remaining pieces of magnet causing fistula in the mucosa after gastroscopically removing the piece



Figure 4: Fistula formed between stomach antrum and transverse colon



It was found that the swallowed object was a neodymium magnet sphere. Surgery with laparotomy was initiated. A gastrocolic fistula between the antrum and the transverse colon was found, and a second fistula was found between the parts beyond the intestine, jejunum, and ileum. (Figure 4). The fistula between the parts of the intestine was repaired, and continuity of the gastrointestinal passage was provided. No complications in the post-operative follow-up of the patient occurred. When she came for the routine control checkup, the patient's examination was normal, and she had no complaints. Informed consent was obtained from the parents.

### Discussion

FBI is an important problem encountered frequently in pediatric emergency departments. While 80% of the swallowed bodies can travel through and be eliminated by the gastrointestinal system without any problem, 10%–20% must be removed endoscopically, and generally, no serious complications are encountered during this process [3]. However, in some conditions, such as button battery ingestion, serious complications can occur even though some children are asymptomatic, whereas others present symptoms. Complications

are most severe in children under four years of age [4]. Symptoms after FBI are nonspecific and can also be seen in other diseases as FBI can mimic a viral infection or cause an infection-related complication [5].

Surgical intervention is performed in 1% of these cases due to obstruction, fistula, and perforation. Multiple magnets are foreign bodies that have a higher risk of intestinal perforation compared to other foreign bodies. Multiple magnet ingestions may cause mucosal ulcerations, and as in our case, it must be emphasized that such ingestion may cause gastrointestinal fistulas. During the procedure, the transition to surgical intervention should be planned, and if possible, removal under operating room conditions should be considered. Perforations have frequently been reported in case reports [6, 7].

### Conclusion

Since pediatric patients in a certain age group tend to put objects in their mouths, each patient with an unclear cause of fever and abdominal sensitivity should be questioned while recording the medical history and should then be tested radiologically if necessary. It is difficult to recognize the correct diagnosis when the ingestion of the foreign body is not witnessed and therefore, not mentioned in the history by the parents. A delay in diagnosis can cause an increase in serious complications.

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