JEJUNOILEAL PERFORATION AND VOLVULUS CAUSED BY MULTIPLE MAGNET INGESTION

Serkan Arslan, Erol Basuguy, Hikmet Zeytun, Mehmet Hanifi Okur, Bahattin Aydogdu and Mehmet Serif Arslan

Department of Pediatric Surgery, Medical Faculty, Dicle University, Diyarbakir, Turkey

SUMMARY – Foreign body ingestion is a common problem in children, but magnet ingestion is relatively rare. However, when it occurs, it tends to have a high rate of complications. This is a case report of a 3-year-old child who swallowed multiple magnetic toys, subsequently developing jejunoileal perforation and volvulus. This case report indicates that it is best to surgically remove multiple ingested magnets without delay to avoid intestinal perforation, fistula, and other complications such as volvulus.

Key words: Foreign body, swallowing; Foreign body, migration; Intestinal perforation; Intestinal volvulus; Child

Introduction

Foreign body (FB) ingestion is common in children, especially those between 6 months and 3 years of age. Of these, approximately 80% pass without intervention and 10%-20% are removed endoscopically; only 1% of patients present with complications such as obstruction, volvulus, perforation or fistula1. Magnetic FB ingestion is seen more rarely. Magnetic FBs may cause intestinal perforation, fistulas, and volvulus, which have been reported rarely2. This case report describes small intestinal perforation and volvulus that developed in a pediatric patient.

Case Report

One week prior to presentation, a 3-year-old male had been playing with small magnetic beads and then developed restlessness, abdominal distension, and bilious vomiting. On the standing direct abdominal x-ray, a large number of aggregated magnetic FBs were seen. Abdominal ultrasonography revealed dense abdominal fluid. Physical examination revealed widespread tenderness and rigidity of the abdomen, so he underwent emergency surgery. The surgeon observed multiple foreign bodies that had adhered together distributed at different points throughout the intestine. Consequently, jejunoileal perforation and volvulus were present along with necrosis at four sites. The primary perforation was repaired and 32 magnetic beads were removed. One week after surgery, the patient recovered and was discharged.

Discussion

Foreign body ingestion is a common problem in children, but magnet ingestion is relatively rare. When it does occur, it tends to have a high rate of complications. A single ingested magnet can often be removed without significant damage, but multiple magnetic FBs can often cause serious intestinal damage. Very few cases of multiple magnetic FBs have been reported. Gastrointestinal FBs are observed most commonly in children aged 6 months to 3 years. For any patient with a sudden onset of bilious vomit-
ing, especially those in this age group, standing direct abdominal x-rays should be performed to check for FBs$^{1,2}$. Magnetic FB complications are typically observed between days 1 and 7 after ingestion$^1$. In the case reported by Nui et al., overt symptoms developed by day 2 following ingestion$^2$, and by day 4 in the cases described by Cauchi et al.$^4$ and Pryor et al.$^5$. In our case, symptoms began on day 7 following ingestion.

The literature contains several case reports of gastrointestinal complications due to ingestion of magnetic FBs. Cauchi et al.$^4$ report on ileal perforation, while Lee et al.$^6$, Honzumi et al.$^7$, and Kubota et al.$^8$ observed jejunojejunal fistula and obstruction. Tay et al.$^9$ also report on perforation and obstruction, Nagaraj et al.$^{10}$ on ileal perforation, and Pryor et al.$^5$ on ileal perforation at three sites and fistulas at two sites. In our case, jejunoileal perforation and volvulus developed at four separate sites.

In any patient who has ingested multiple magnetic FBs, standing direct abdominal x-rays should be obtained. If the FBs have entered the small intestine, they must be immediately surgically removed to avoid serious complications$^{1,6}$. Nui et al.$^2$ agree that laparotomy should be performed before complications arise in patients that have ingested multiple magnetic FBs$^{2,11}$. Cases of magnetic FBs with various intestinal complications (perforation, fistulas, volvulus, etc.) have been reported$^{1-4}$. Our case supports those in the literature. On day 7 after ingestion of multiple magnetic beads,
necrosis and perforation developed due to adherence of the magnets to each other in the small intestine. In addition, volvulus and obstruction developed and the patient’s general condition deteriorated rapidly. Once complications have developed, the morbidity and mortality increases. Thus, any magnetic FBs should be immediately surgically removed.

**Conclusion**

In children, most ingested FBs tend to pass through the gastrointestinal tract unaided. This is also possible following ingestion of a single magnetic FB, but if multiple magnetic FBs have been ingested and are present in the upper gastrointestinal tract, they should be removed endoscopically. However, if they have moved into the lower gastrointestinal tract, they must be surgically removed immediately. Otherwise, complications such as perforation, fistulas, volvulus, and obstruction can result, increasing the morbidity and mortality in these cases.

**References**


10. Nagaraj HS, Sunil I. Multiple foreign body ingestion and ileal perforation. Pediatr Surg Int, 2005 Sep;21(9):718-20


**Sažetak**

JEJUNO-ILEALNA PERFORACIJA I VOLVULUS UZROKOVANI VIŠEKRATNIM GUTANJEM MAGNETNIH STRANIH TIJELA

*S. Arslan, E. Basuguy, H. Zeytun, M. H. Okur, B. Aydoğdu, M. S. Arslan*

Gutanje stranog tijela čest je problem u djece, no gutanje magneta je relativno rijetko. Međutim, kad se to dogodi obično je praćeno visokom stopom komplikacija. U ovom prikazu slučaja opisuje se trogodišnje dijete koje je progutalo mnoštvo magnetnih igračaka, što je uzrokovalo jejuno-ilealnu perforaciju i volvulus. Ovaj prikaz slučaja pokazuje da je najbolje bez odlaganja kirurški odstraniti takve progutane magnetne kako bi se izbjegla perforacija crijeva, fistule i druge komplikacije kao što je volvulus.

Ključne riječi: Strano tijelo, gutanje; Strano tijelo, migracija; Perforacija crijeva; Crijevni volvulus; Dijete