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Endoscopic forceps removal for complicated magnetic beads impaction

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CASE REPORT

A 2-year-old girl was transferred to our center after witnessed swallowing a magnetic toy two days prior. Abdominal x-ray at a community hospital revealed multiple foreign bodies in the gastric region, and close observation was advised. However, next-day radiography demonstrated the magnets' persistence in situ. When admitted, the child remained asymptomatic without positive abdominal signs. Urgent esophagogastroduodenoscopy was performed, unexpectedly, showing magnets were separately located in the lower esophagus and cardia (Fig. 1), trapping adjacent esophagogastric tissue. Repeat radiography indicated no perforation (Fig. 2), and endoscopic removal was attempted. A rat-toothed forceps was used to separate magnets from either the esophageal or gastric side, but it failed due to the magnets' smooth surface and magnetism (Fig. 3a). Then we adjusted the applied force's direction, and the two magnets impacted in the esophagus were smoothly pushed into the stomach, separating all magnets from the tissue (Fig. 3b-c). Eventually, magnets were attracted to the forceps and retrieved simultaneously (Fig. 3d-e).

DISCUSSION

Prompt endoscopic removal is critical for magnets ingestion to prevent complications(1,2); however, given the magnets' magnetism, it could be sometimes difficult to manipulate endoscopic retrieval devices(3). Endoscopic forceps removal technique we presented may be a choice for specific cases.

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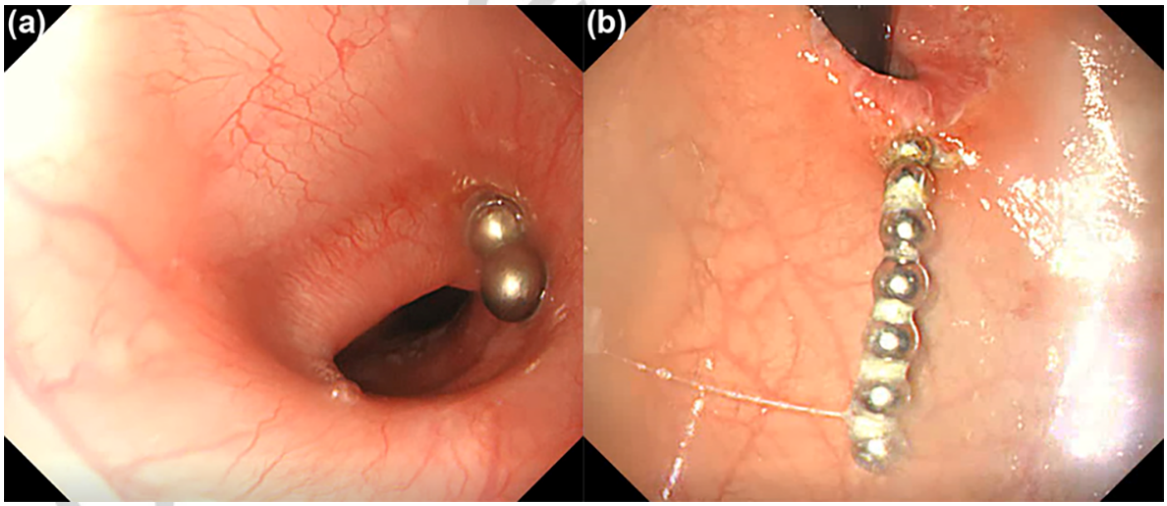

Figure 1. Esophagogastroduodenoscopy showed that the proximal two magnetic beads were impacted in the lower esophagus (a), and the remaining seven were located in the cardia (b).

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Figure 2. Abdominal X-ray revealed nine high-density round objects close approximately to each other in the left upper abdomen.

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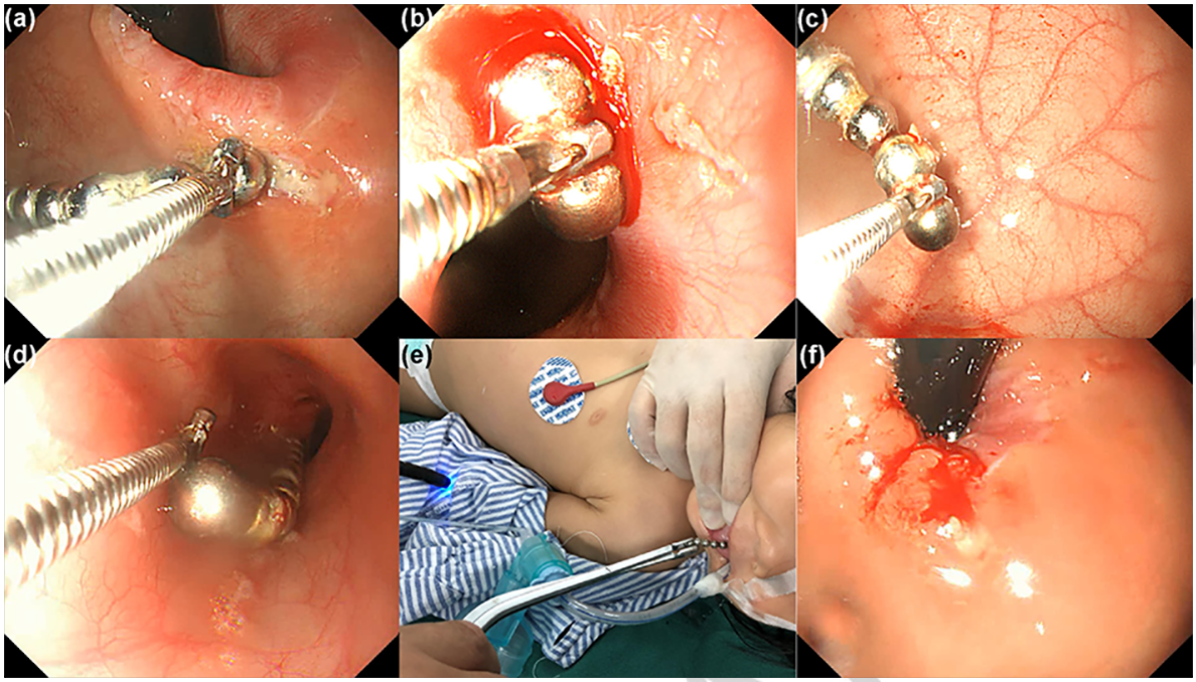

Figure 3. (a) Separating the magnets from the gastric side was attempted using a rat-toothed forceps but failed. (b) The forceps was inserted into the gap between the two magnets in the lower esophagus. (c) Then the two impacted magnets were smoothly pushed into the stomach making all magnets free from the esophagogastric tissue. (d) The magnets were magnetized to each other in line and, were simultaneously removed through the attractive force with forceps. (e) The magnets were retrieved from the oral cavity. (f) Erosion and superficial ulceration were observed at the previously incarcerated site after removal.