If it looks pretty, it’s a toy, and if it’s little, it might be candy. Young children will put anything in their mouths, including shiny, highly powerful magnets smaller than a pea.

A recent case demonstrates how dangerous these rare earth (neodymium) magnets can be if swallowed.

A 22-month-old, previously healthy and active toddler from Mississippi had two vomiting episodes. The parents thought he might have an intestinal virus. Later that day, the child was pale, weak and continued to vomit, resulting in an admission to the emergency department. At the hospital, the child was diagnosed with dehydration, and an X-ray revealed the presence of eight magnets in the right side of his abdomen. He was transferred to a children’s hospital in New Orleans where he was stabilized.

A second X-ray appeared to show some movement of the magnets, and he was observed in the hospital during his rehydration and stabilization. A subsequent X-ray failed to show any further signs of movement, thus requiring surgical removal of the magnets. During the surgery, a bowel perforation was found and repaired.

Three days later the child developed a fever and abdominal swelling and was taken back into surgery, where bowel perforation was found. The injured bowel was surgically removed. The majority of his small intestine was removed. The child was left with only 4 to 6 inches of healthy small intestine.

The patient is recovering in the intensive care unit, being fed by vein as his only source of nutrition. It is very likely that this child will be dependent on intravenous nutrition for the foreseeable future. There is a high likelihood that he will need an intestinal transplant to eat again.

Number of cases grows

The issues with swallowing neodymium magnets began to surface around 2002, with isolated case reports. Since then, the numbers have increased. In 2006, 20 cases of magnet ingestion and injury in children were reported in the Centers for Disease Control and Prevention’s Morbidity & Mortality Weekly Report.

The U.S. Consumer Product Safety Commission (CPSC) issued the first warning in 2007, noting the possibility of high-powered magnets detaching from children’s toys, causing injury and even death if swallowed. At that time, the CPSC was aware of the death of a 20-month-old child who swallowed such magnets, as well as 33 other cases. By 2008, the CPSC had documented more than 200 reports, many of those cases requiring emergency surgery to remove the magnets (“Magnet Ingestion in Children and Teenagers: An Emerging Health Concern for Pediatricians and Pediatric Subspecialists.” http://journals.lww.com/jpgn/Citation/2012/06000/Magnet_Ingestion_in_Children_and_Teenagers_An.26.aspx).

In 2009, the CPSC issued a ban on the sale of rare earth magnets to children under age 14. After manufacturers failed to comply, a recall was ordered by the CPSC on 175,000 packages. Within months, manufacturers of these products had relabeled their products “for adults only.” Sales continued.

How the magnets cause injury

The injuries, including bowel perforation, twisted bowel and severe infection, have continued despite the relabeling. Current cases involve magnets that are marketed as desk toys and “stress” relievers for adults. The magnets are sold in sets of 200 or more on the Internet and in retail outlets. Adolescents and teenagers also are using these high-powered magnets to mimic piercings by placing two or more on their earlobes, tongue or nose.

The attractive force of these neodymium magnets is remarkable. After a child swallows more than one magnet or another piece of metal, the attractive force allows the magnets in the intestine to find each other, regardless of the bowel wall, and stick together with great strength. Although the tissue of the intestinal tract is tough, it’s no match for these powerful magnets.
magnets. Once magnetically attached across bowel wall, they do not break apart. If the magnets stay attached for long enough, perforation of the bowel can and often does occur.

**What pediatricians can do**

Pediatricians need to be aware of the danger of these powerful magnets and educate their patients’ families.

If a child is suspected of swallowing more than one magnet or a magnet and another piece of metal, emergency evaluation is required. Initial X-ray evaluation cannot determine the exact location or whether the bowel wall is compressed between the magnets. As such, if the magnet location is amenable to endoscopy, it should be removed. Surgical backup should be available when endoscopy is performed, as the risk of bowel perforation is high.

Serial X-rays may be employed if the magnets are moving through the gastrointestinal track. However, failure to document free movement necessitates emergent endoscopic or surgical removal.

A survey of members of the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition this spring identified more than 60 magnet ingestions in two years, requiring 26 surgeries and resulting in 23 bowel perforations.

Despite several well-publicized national efforts to keep these dangerous magnets out of the hands of children, the ingestions continue, many with serious, life-long and costly consequences. It is clear that greater effort is needed to protect our children and prevent these unnecessary injuries.

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