To Bead or Not to Bead: Use of Ultrasound and a Conservative Approach to Water Bead Ingestion in an Infant

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Purpose

- Recognize that water bead ingestion can cause bowel obstruction
- Highlight ultrasound as a modality to detect size and location of water beads in the GI tract

Background

Water beads are expanding, non-toxic toys made of water-absorbing polymer primarily used for sensory play and decoration. Ingestion of these beads has the potential to cause bowel obstruction due to its ability to continually expand. Because water beads are radiolucent, they may be difficult to detect on X-ray; however, the use of ultrasound may have an advantage in localizing water beads due to its ability to detect fluid-filled structures. There are few case reports of ingestion of water beads in infants. Due to intestinal obstruction, surgical intervention has been reported in children. Here, we describe an infant with water bead ingestion whose symptoms resolved with conservative management, using ultrasound as a supportive imaging modality.

Figure 1. Water beads pre and 2 hours post water absorption

Case Presentation

A 7-month-old male presented to the emergency department with gagging and poor intake after playing with water beads approximately 16 hours prior to presentation. Physical exam was normal. No foreign body was noted on nose-to-rectum Xray. Pediatric gastroenterology was consulted for esophagogastroduodenoscopy (EGD). No water beads were visualized on emergent EGD. An ultrasound confirmed a circular anechoic structure in the right upper quadrant, likely the small bowel (Figure 2A). He was admitted for observation and made NPO due to the potential for developing bowel obstruction. A second ultrasound 16 hours later revealed an increase in size from 2.2cm to 2.5cm and progression to the left lower quadrant, unclear if located in the colon or small bowel (Figure 2B). With a benign abdominal exam, the decision was made to resume breastfeeding. Soon after, he passed two stools containing multiple fragments of ruptured water beads and one fully intact bead measuring 2 cm (Figure 2C-D). He was discharged home with no further reported problems.

Figure 2. Water Bead(s) on Ultrasound and Defecated Water Beads
A. Initial ultrasound, showing 2.2 cm anechoic cyst-like structure B. Second ultrasound, showing increased size of structure to 2.5 cm C. Intact water bead found in feces, 2 cm in diameter
D. Additional water bead fragments in feces.

Discussion

- The use of ultrasound, while helpful, is not a widely recognized modality for detection of ingested water beads because it may not accurately depict the number, size, or location.
- The gastrocolic reflex from breastfeeding most likely contributed to our patient's ability to pass the water bead without further medical or surgical intervention.
- Future considerations for management include the utilization of osmotic agents, such as gastrografin or polyethylene glycol, to osmotically impact the bead's ability to enlarge further and thus avoid surgical intervention.

Conclusion

- Water bead ingestion may resolve without intervention, but one must recognize and prevent the possibility of bowel obstruction.
- While an ultrasound may be useful in detecting the presence and progression of ingested water beads, it may not accurately detect the bead number, size, or location.

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