

Acute abdominal distension in an one year old due to ingestion of unknown foreign body

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Introduction

Foreign body ingestion is a significant issue in children and causes morbidity depending on the type and size of the foreign body. Smooth and small foreign bodies are likely to be passed without any problem(1). However, smooth foreign bodies may get stuck in the gastrointestinal tract and result in obstruction, localised pressure necrosis, and ultimately, perforation. In such situations, children require surgical or endoscopic intervention to remove the foreign body¹. Super absorbent polymer beads have emerged as popular product for use as a children's toy or home decoration. These beads absorb water due to the hydrophilic effect and can enlarged by 200 times their original size³. When these small beads (6mm) are swallowed they increases in size within the gastro intestinal tract and may lead to intestinal obstruction(2). The radiolucent nature of these beads makes it difficult to identify on plain radiographs and can result in delayed diagnosis. In this case, the child initially presented with aspiration symptoms and the cause was unknown. Over the following weeks she developed progressive abdominal distension and intestinal obstruction. This case highlights the challenges of diagnosis and provides an overview of literature on such cases.

Case presentation

A one-year-old girl, otherwise fit and well, presented to emergency department (ED) with episodes of choking and vomiting at home. She was assessed, observed and discharged after normal chest X-ray. The following week she developed persistent non-bilious vomiting, anorexia, decrease stool frequency, and abdominal distension. On the 12th day after initial presentation, she presented to ED with tense abdominal distension and low grade pyrexia. She was clinically dehydrated, had a non-tender abdomen without palpable masses and reduced bowel sounds. Her supine abdominal X-ray (Fig 1) showed no free gas, but dilated small bowel loops

consistent with a small bowel obstruction. An abdominal ultrasound scan(Fig 1) was performed that revealed multiple fluid filled bowel loops with a spherical lesion (3cm in diameter) in the left flank of the abdomen that was atypical for a duplication cyst and was likely to be a foreign body. A CT abdomen and pelvis(Fig 2) was performed and it revealed dilated small bowel down to distal ileum with collapsed large bowel distal to the intraluminal circumferential foreign body in the distal ileum.

A laparotomy was performed through right upper transverse incision which demonstrated (Fig 3) grossly dilated small bowel loops down to the distal ileum and a palpable spherical foreign body at the level of a calibre change at the distal ileum. Distally there was collapsed distal ileum and collapsed colon, and at the level of the calibre change the bowel was circumferentially pale, but intact and viable. An enterotomy was made 10cm proximal to the discrepancy and the spherical foreign body was delivered after decompression. Distal bowel patency was confirmed with palpation and the enterotomy site was closed with 5/0 PDS

Discussion

Online retailers highlight the features of absorbent polymer water beads as non-fading, non-toxic, 100% biodegradable, non-flammable, mushy, multi-coloured materials. The beads can help in developing colour recognition, concentration, counting, social and fine motor skills(3). They state that they are safety tested, and they do highlight that they are for children aged 5yrs and older. Parents and teachers who buy water beads should recognise the associated risks and ensure that young children do not use these products unsupervised.

This one year old child has presented initially with choking and vomiting episodes but a foreign body ingestion was not witnessed. The identification of the "Orbeez" bead ingestion only became apparent after the abdominal CT images were shown to the parents and they recalled that the child was playing with "Orbeez" beads in the house two weeks earlier. This case provided diagnostic challenges and highlighted the importance of a thorough history, appropriate imaging, to suspect and define the cause of obstruction. Although the

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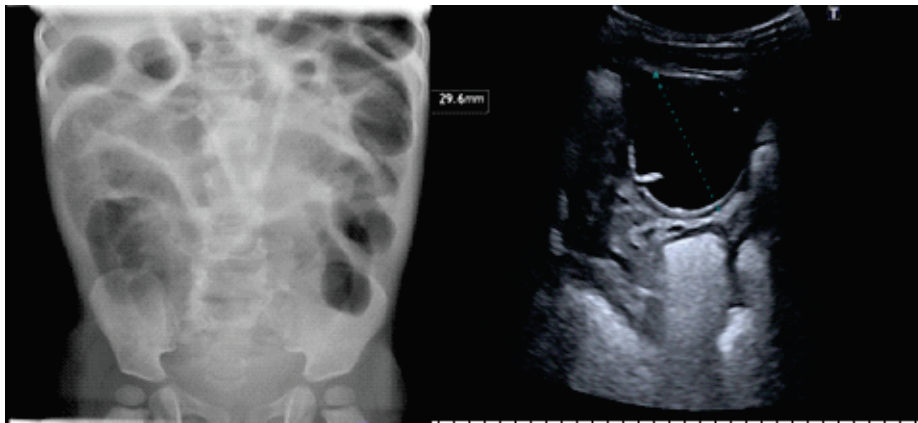


Figure 1. (a)Supine X-ray abdomen and (b)ultrasound scan appearance which raised suspicion of duplication cyst.

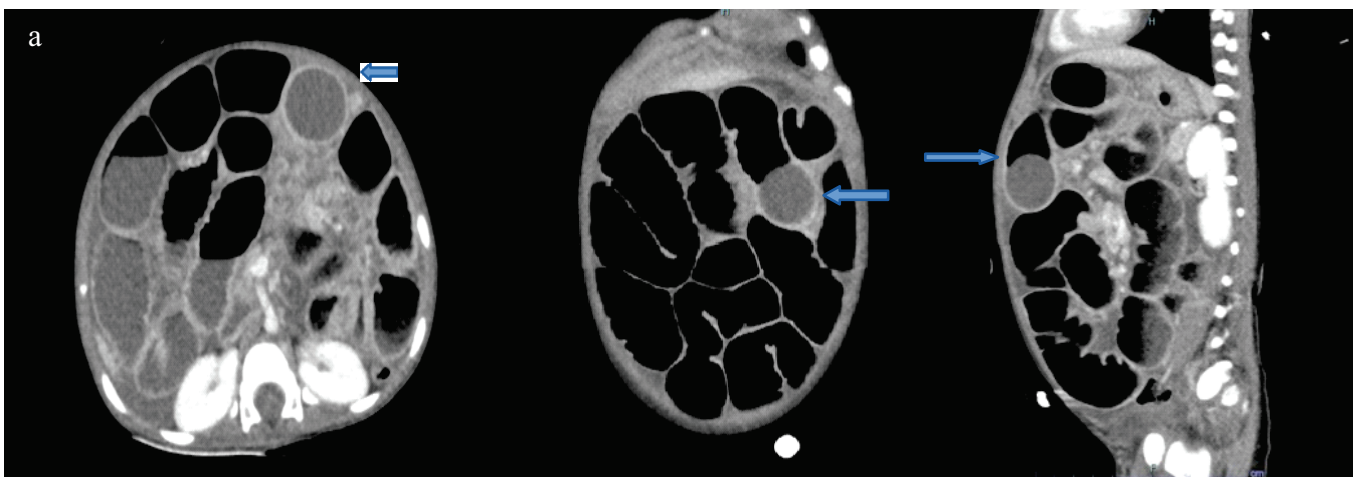


Figure 2.CT abdomen and pelvis showed the small bowel obstruction with spherical foreign body.



Figure 3. Laparotomy shows (a)grossly dilated small bowel and collapsed distal bowel and (b)delivering of the foreign body through enterotomy

radiological imaging clearly demonstrates the foreign body, the exact nature of the sphere was better understood by a preoperative search on polymer beads and intraoperative findings.

According to the literature, there are several cases reported related to these water beads. In a similar case to ours it was initially suspected that the spherical lesion was a duplication cyst but at laparotomy “Orbeez” balls were identified and a small bowel resection with anastomosis was performed(2). Another case describes a child who aspirated a water bead and suffered recurrent chest infections before the bead was removed by bronchoscopy after a year(4). A further case report describes a water bead that blocked the external auditory canal and was removed urgently but required followed up with myringoplasty for tympanic membrane damage(5). The majority of incidents occur in young children in outdoor settings with boys being affected more often(6). Therefore, parents and teachers should supervise children regardless of their age when they are playing with these beads and they should be kept away from young children to help prevent associated morbidity.

Conclusions

Water beads or super absorbent polymer ingestion and aspiration can cause serious morbidity in children. Parents and teachers should have adequate knowledge about the associated risks and these cases should be reported in order to raise awareness.

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Learning Points:

- There are few cases reported in the literature about the outcomes of super absorbent beads but in this case the child presented with choking but developed intestinal obstruction. Therefore, this should be recorded to raise awareness.
- When otherwise well children present with unusual or acute symptoms, consider appropriate imaging as an adjunct to ensure prompt diagnosis.
- Appropriate imaging and a pre operative literature search enabled a simple enterotomy, rather than small bowel resection.
- There should be raised awareness of the harms of such beads, for both parents and schools. Dangers should be displayed clearly on such manufactured goods/toys.