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A Small Bowel Phytobezoar in a Child with Down Syndrome: Partial Response to Ultrasound-Guided Coca-Cola Injection

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Abstract

This case report describes the management of an 18-month-old male infant with Down syndrome who presented with small bowel obstruction secondary to a jejunal phytobezoar. The bezoar formed following the ingestion of a traditional home remedy consisting of mashed rice, lentils, and beets, compounded by psyllium powder administration. Initially, the parents refused of surgical intervention, so ultrasound-guided direct injection of Coca-Cola was proposed as an alternative non-surgical therapy. After obtaining written informed consent, 50 mL of Coca-Cola was injected into the bezoar core under real-time ultrasound guidance. This intervention led to partial bezoar transformation and distal migration to the ileum within 12 hours. However, the bezoar ultimately lodged in the terminal ileum, necessitating definitive surgical removal. This case illustrates the challenges of managing small-bowel bezoars in high-risk pediatric patients and highlights both the potential and limitations of non-surgical dissolution techniques.

Key Words: Coca-Cola dissolution, Down syndrome, Pediatric, Phytobezoar, Ultrasound-guided intervention, Small bowel obstruction.

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1- INTRODUCTION

Bezoars are concretions of indigestible material that accumulate in the gastrointestinal tract, most commonly in the stomach. There are four primary types: phytobezoar (the most frequent), trichobezoar, pharmacobezoar, and lactobezoar (1). Individuals with altered gastric motility or anatomy are at increased risk. Notably, people with Down syndrome are particularly predisposed to bezoar formation, often due to hypotonia and dysmotility (2).

After adhesions, hernias, intussusception, and tumors, bezoars are the fifth most common cause of small bowel obstruction (3,4). The first-line treatment for gastric phytobezoars often involves endoscopic techniques or chemical dissolution. Coca-Cola lavage or direct injection has been reported as an effective method, with success rates exceeding 90% (5–7). However, this approach is mostly documented for gastric bezoars.

In contrast, treatment options for obstructive small bowel bezoars are less well-established, and surgery remains the standard definitive management (8,9). This report presents the clinical course, therapeutic challenges, and interventional attempts in managing a jejunal phytobezoar in a toddler- a scenario rarely described in the literature.

2- CASE PRESENTATION

An 18-month-old male infant with Down syndrome and no prior surgical history presented with bilious vomiting and feeding intolerance for two days. Further history revealed that four days prior, the family had administered a mashed mixture of rice, lentils, and beets as a traditional supportive remedy for a common cold, followed by psyllium powder for pre-existing constipation.

Initial abdominal ultrasound demonstrated a proximal bowel obstructive pattern. An upper gastrointestinal series was performed to exclude malrotation or congenital lesions and revealed an intraluminal filling defect suggestive of bezoar (Figure 1).

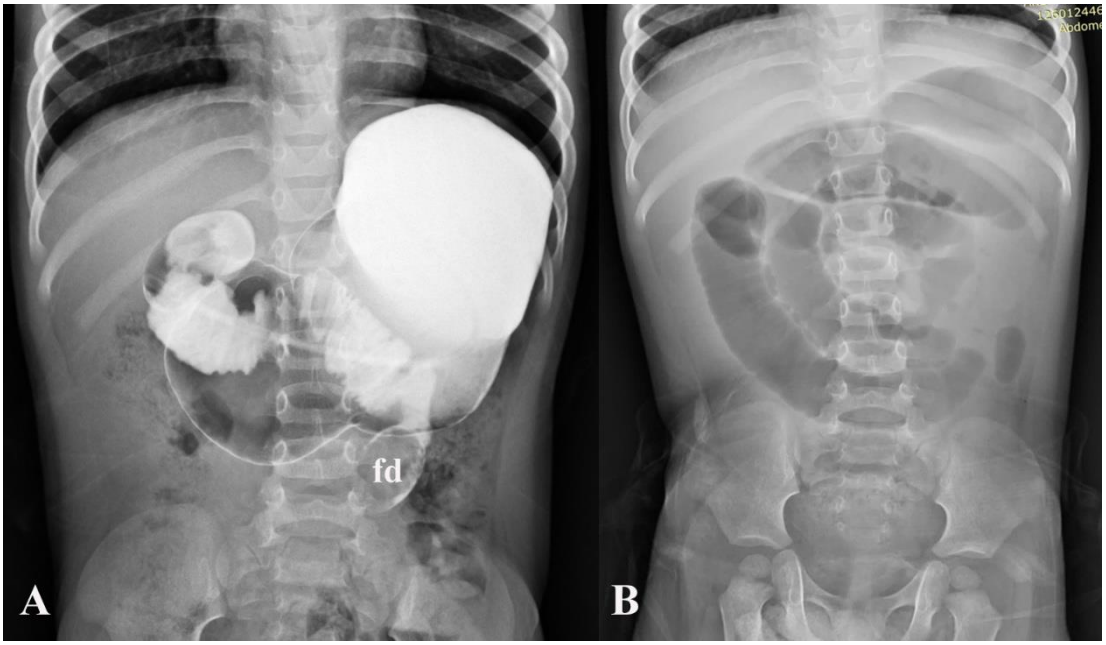

Figure-1: A) Upper gastrointestinal series shows an intraluminal filling defect (fd) in the proximal small bowel consistent with bezoar. B) Abdominal radiograph AP view shows sausage shape dilatation of small bowel and distal migration of obstruction.

Targeted abdominal ultrasound identified an approximately 4cm echogenic intraluminal bezoar with posterior acoustic shadowing in the proximal jejunal loops, causing obstruction and proximal dilatation (Figure 2A).

Due to the jejunal location and severity, endoscopic intervention was not feasible and surgical removal was recommended. However parents declined surgery. Therefore, an alternative non-surgical approach was proposed: ultrasound-guided direct injection of Coca-Cola. After obtaining written informed consent, ultrasound-guided percutaneous injection of 50 mL regular (non sugar-free) Coca-Cola directly into the bezoar core was performed under general anesthesia and sterile conditions (Figure 2B).

Prophylactic antibiotics (metronidazole and cefixime) were administered, and immediate changes in echo-texture were observed. A follow-up ultrasound approximately 8 hours later showed distal migration to the ileum with trace free peritoneal fluid (Figure 2C). Mild clinical improvement was noted.

At 18 hours post-procedure, repeat imaging (ultrasound) confirmed resolution of free fluid, but there was obstruction in the terminal ileum due to a bezoar.

Surgical exploration was then undertaken with parental consent. The bezoar was successfully milked from the terminal ileum into the cecum without enterotomy. Postoperative recovery was uneventful.

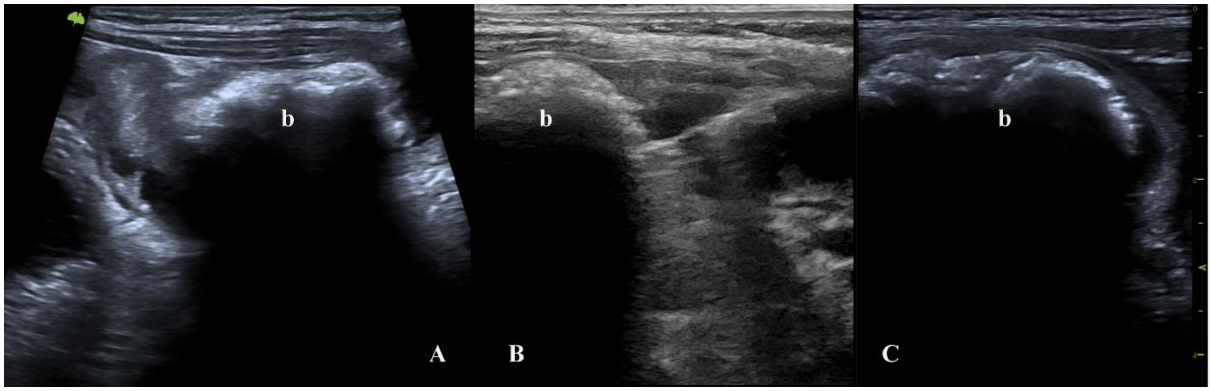

Figure-2: Serial l ultrasound images of the bezoar (b): A) Initial ultrasound image: the bezoar at proximal jejunum demonstrating an echogenic curve with clear posterior shadowing. B) Ultrasound guided needling of bezoar during Coca-Cola injection. C) Follow up ultrasound demonstrating migration of the bezoar into more distal ileal loops with minimal free fluid.

3- DISCUSSION

This case highlights key aspects of the etiology, diagnosis, and management of bezoar-induced small bowel obstruction in children. The bezoar was formed from a mashed mixture of rice, lentils, and beets combined with psyllium, consistent with reports of psyllium-related bezoars throughout the gastrointestinal tract (10). In this child, a high-residue diet, together with probable Down syndrome-related dysmotility, likely predisposed to bezoar formation.

In children with bilious vomiting, life-threatening causes such as midgut volvulus must be promptly excluded. The diagnostic approach appropriately prioritized an upper GI series, followed by targeted ultrasound that identified the intraluminal lesion.

Chemical dissolution has primarily been described for gastric phytobezoars, where low pH, carbonation, and mucolytic effects help disrupt the bezoar matrix (5,6,11). Reports of cola lavage via enteral tubes exist, but there is no scientific literature describing direct Coca-Cola injection into

the small intestine (8,9). Additionally, conservative treatment of small bowel obstruction remains controversial, as large bezoars (>4 cm) causing complete obstruction often require surgery. While combination therapies have shown efficacy in gastric bezoars (7,1,12), their role in obstructing small bowel bezoars is unproven.

When surgery was initially declined and endoscopic access was unavailable, an ultrasound-guided direct Coca-Cola injection was attempted. Partial success was observed, including altered echo-texture, distal migration into the ileum, and mild clinical improvement. However, persistent distal obstruction necessitated surgery. Migration allowed for a less invasive procedure, as ileal bezoars are generally easier to manage than jejunal ones.

Targeted ultrasound proved valuable for both diagnosis and follow-up, demonstrating the characteristic appearance of an intraluminal echogenic mass with posterior shadowing in the setting of SBO (Figure 2) (13). Although echo-texture changes suggested partial dissolution, the relatively low injected volume (50 mL) may have limited effectiveness.

A theoretical risk of bowel perforation exists; however, the small amount of post-procedural free fluid resolved spontaneously. Prior interventional experience similarly reports no significant complications related to bowel needling (14).

Overall, while direct Coca-Cola injection is effective for gastric bezoars, its role in obstructive jejunal bezoars remains investigational. Earlier diagnosis, higher-volume injection, and adjunctive oral administration may improve outcomes, but further studies are required to establish safety and efficacy.

4- CONCLUSION

Ultrasound-guided direct injection of Coca-Cola into a jejunal phytobezoar resulted in partial fragmentation and migration but ultimately did not eliminate the need for surgical intervention.

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