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Laparoscopic management of primary intestinal trichobezoar

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ABSTRACT

We report a rare case of primary small intestinal trichobezoar in a 5-year-old girl presenting as subacute intestinal obstruction. Clinical, radiological, endoscopic, and laparoscopic investigations suggested the diagnosis. Most reported cases use diagnostic or laparoscopic assisted removal mainly in the adults. We describe the complete laparoscopic removal of a primary intestinal trichobezoar without significant spillage. A retrieval bag allowed the trichobezoar to be removed via a small umbilical incision before closing the enterotomy.

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Trichobezoars are rare in children and typically found within the stomach with or without extension into the small bowel (Rapunzel syndrome) [1]. Primary intestinal trichobezoars are extremely rare and to date, only thirteen such cases of Rapunzel syndrome has been reported in literature in pediatric age group [2]. Minimally invasive techniques have been utilized over the last 20 years to assist in the removal of trichobezoars but due to the size and nature of the swallowed matter, removal without spillage is particularly difficult. Unfortunately surgeons often have to resort to a laparotomy to allow removal of the trichobezoar from the abdomen. We present a case where complete removal through the port site was accomplished preserving the integrity of abdominal cosmesis.

1. Case report

A 5-year-old girl presented to her general practitioner with a 6-day history of central abdominal pain. She had been vomiting since the previous evening with one bilious vomit and constipation of 3 days. Prior to this episode she was well apart from a chronically discharging umbilicus and a history of hair ingestion 3 years ago.

She was admitted to her local pediatric department, where she was found to be afebrile with stable observations. Her abdomen was slightly distended but non-tender. Blood tests revealed a raised white cell count of $30 \times 10^9/L$ and neutrophil count of $24 \times 10^9/L$. Abdominal radiograph demonstrated dilated loops of small bowel (Fig. 1). A fluid bolus and intravenous antibiotics were administered prior to transfer to our regional pediatric surgery unit.

On arrival, abdominal examination revealed a tender ballotable mass in the right upper quadrant. A nasogastric tube was passed which drained 100 mls of dark green bile over 10 h. An ultrasound scan of the abdomen showed dilated loops of small bowel, a moderate amount of free fluid and a heterogeneous mass (Fig. 2).

She was taken to theater and a general anesthetic administered. While asleep, examination revealed the palpable mass on the left side of the abdomen. Given the known history of pica, gastroscopy was performed which showed an empty stomach and proximal duodenum.

Laparoscopic visualization of the abdomen was achieved via a 10 mm port and 5 mm camera placed via a transumbilical incision. Two 5 mm ports were placed under vision in each lumbar region and a fourth port was inserted in the left subcostal region, which subsequently held the camera. The small bowel was then examined carefully from the duodenal-jejunal flexure distally. At the distal jejunum an intraluminal mass was noted. A transverse enterotomy was performed using hook diathermy at a point midway along the length of the mass. This revealed a bile-stained trichobezoar. This was carefully manipulated through the

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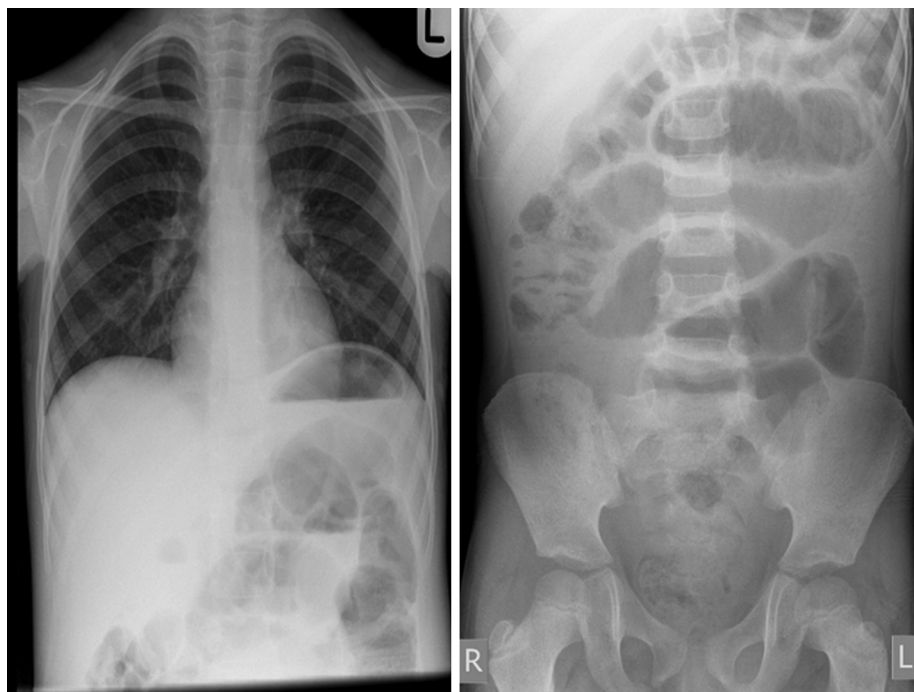


Fig. 1. Chest and abdominal X-rays – note normal air fluid level in the stomach and soft tissue mass in right lower abdomen with bowel obstruction.

enterotomy by stretching the bowel over the end of the hair ball and expelling it into a 10 mm Endo Catch™ (Covidien Autosuture, Dublin, Ireland) retrieval bag inserted via the umbilical port. This incision was stretched slightly allowing the retrieval bag to be partially emptied before complete extraction. The enterotomy was then closed extracorporeally via the same incision with 4/0 polydioxanone suture. The peritoneal cavity was copiously lavaged with 2 L of saline and spilled fragments of bezoar were retrieved prior to closure of the port sites.

Post-operatively she received intravenous antibiotics for a further 48 h and recovered uneventfully. At follow-up 4 year

later she had a good appetite and had refrained from ingesting her hair.

2. Discussion

Trichobezoars are formed by swallowed hair, they are rare, and occur mostly in the stomach or rarely can extend into the intestine in the form of Rapunzel syndrome. A primary small intestinal trichobezoar in children is particularly unusual [3]. It is mainly seen in young girls with trichophagia psychologically associated with early childhood deprivation [4–7].

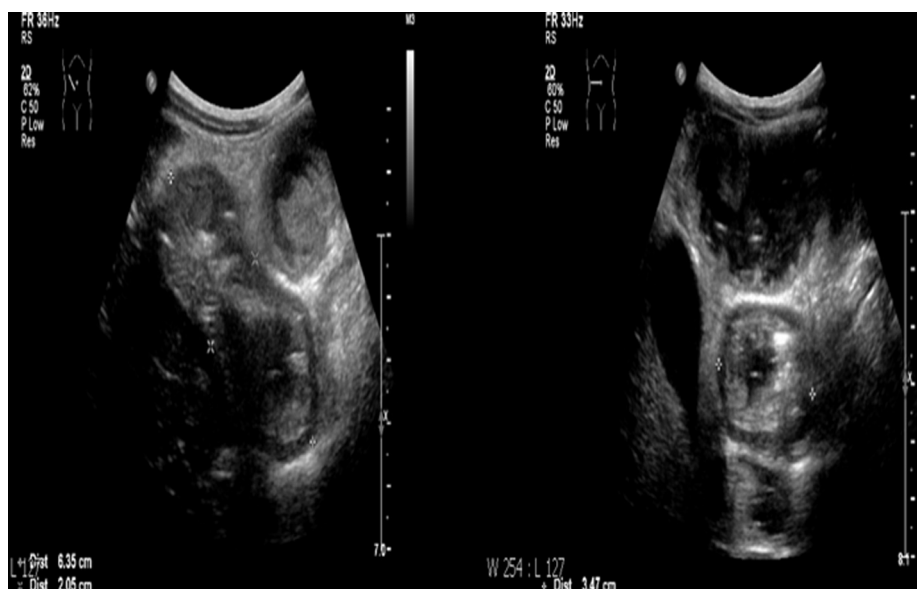


Fig. 2. Ultrasound showing intraluminal heterogeneous mass in the bowel lumen.

The symptoms are non-specific and may mimic those of other pathologic gastrointestinal conditions. They may present with malabsorption, weight loss, abdominal pain, and signs of gastrointestinal obstruction, or even perforation. Clinical characteristics are a mobile mass within the abdomen and alopecia.

Primarily one should distinguish basic differences of gastric versus small bowel primary trichobezoars. The necessity for laparotomy to remove bezoars on size alone is usually for gastric bezoars, which reach enormous size and anatomically stomach is relatively fixed structure as opposed to small bowel, which is freely mobile. Likewise the concern for spillage is with gastric bezoars, which must be moved across the abdominal cavity as opposed to intestinal bezoars, which can be mobilized to the umbilicus. The intestinal bezoar should be limited to a size where an endocatch bag should hold it easily. Large gastric bezoars have been reported with endocatch bags and even innovative mini laparotomy with polar delivery of large gastric or Rapunzel syndrome bezoars have been delivered with ease [3].

Due to the frequently large size and inaccessibility, endoscopic removal is usually not feasible for gastric lesions. Likewise, the size often has forced surgeons to remove these lesions via open laparotomy. Laparoscopic removal has been reported, but the concern with this technique is that the complete removal of a large bezoar without significant spillage of hairs in the peritoneal cavity may be difficult. As such, most of the reports are laparoscopic assisted, but still utilize an extended incision to facilitate direct removal from the peritoneal cavity.

In this case, we describe the complete laparoscopic removal of a large primary intestinal trichobezoar in a 5-year-old girl without significant spillage, utilizing an Endo Catch™ retrieval bag. Careful positioning of the enterotomy along the length of the intraluminal mass allowed manipulation and expulsion of the bezoar directly into the bag, with only minor spillage. Minimal stretching of the umbilical incision allowed removal of the bag and extracorporeal closure of the enterotomy.

Nirasawa et al. described laparoscopic removal of a gastric trichobezoar following failed laser fragmentation and endoscopic retrieval [7]. As in our case a gastrotomy was performed with diathermy and the bezoar placed in a bag. This was then removed from a suprapubic minilaparotomy, extending an assisting port site. Closure of the enterotomy was performed laparoscopically.

Prognosis is good in most cases but fatal outcomes are reported in cases with gross neglect [3].

3. Conclusion

We report a case of primary small intestinal trichobezoar treated with complete laparoscopic removal with uneventful recovery. Primary small intestinal trichobezoars are very rare and the laparoscopy is very helpful, safe, and effective diagnostic and therapeutic tool in such a case.

Conflict of interest

None.

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