# An Uncommon Cause of Small Bowel Obstruction: Bezoar

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## Abstract

We report the case of an elderly male who was presented with abdomen pain and diagnosed of small bowel obstruction caused by bezoar and review the literature. The initial presentation was epigastralgia with nausea and vomiting. Plain abdomen film showed diffuse dilated bowel loop. Both abdomen ultrasound and computed tomography all showed an intraluminal mass with bowel dilatation. Due to failure of conservative treatment, laparotomy was performed. Bezoar was fragmented and milked into cecum. The patient was recovered smoothly and discharged from our hospital. Therefore, it is a reminder that if conservative treatment of small bowel obstruction is failure, surgical intervention can be performed smoothly by laparoscopy without enterotomy. Early recognition with typical symptom and image findings play an important role in minimizing the morbidity and mortality. (J Intern Med Taiwan 2012; 23: 119-123)

**Key Words: Bezoar, Small bowel obstruction**

## Introduction

Small bowel obstruction is a common surgical emergent condition especially in elderly. The most common causes of small bowel obstruction are adhesion (73.8%) and hernia (18.5%)[1]. Small bowel obstruction caused by bezoars is rare, and accounts for only 4%[2,3]. There are four types of bezoars: phytobezoars, trichobezoars, pharmacobezoars, and lactobezoars. The most common type is phytobezoars which are composed of vegetable matter, especially persimmons[4]. Trichobezoars, composed of hair, are seen in young female with phsychiatric problem. Rarely, trichobezoars may extend from stomach to cecum as a tail, called Rapunzel syndrome[5,6]. The bezoars are often unrecognized before surgery. We reported a case with bezoar-induced small bowel obstruction early detected by ultrasound and reviewed the literature.

## Case Report

The 82 year-old male patient came to our emergency department because of epigastralgia for one week. Tracing back his clinical history, he had hypertension with regular medical control at our outpatient department. He had received

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laminectomy for C-spine stenosis in 2004, and L-spinal stenosis in 2008/12. He had the usual state of health until one week ago. The epigastralgia aggravated while eating food and then body weight loss about 2kg in one week. Postprandial vomiting occurred one day before admission. The vomitus was initially food content and became greenish gastric juice. Small caliber stool was also found.

The initial abdomen plain film showed segmental distended bowel loops in central abdomen (figure 1). His white cell count was 14,000/ul, hemoglobin 16.6gm/dL, and amylase 208U/L(normal 36-128U/L). The level of lipase, liver enzyme and bilirubin was within normal range. Nasogastric tube was inserted but persisted large amount gastric juice was drainage. A repeated plain film showed progressive diffuse distended bowel loops (figure 2). Abdomen ultrasound showed a distended stomach and small bowel loops with keyboard sign. One hyperechoic mass like lesion about 2.8cm is found at RLQ area by ultrasound, suspecting small bowel tumor with obstruction (figure 3). Abdominal computed tomography was then performed and showed abnormal feces formation in the small bowel with significant proximal bowel dilatation, suspected bezoar impaction with small bowel obstruction (figure 4). We consulted surgeon and laparotomy was performed. There's a bezoar impacted in the terminal ileum at 10 cm from ileocecal junction. The bezoar was squeezed into pieces and then was milked into colon. After surgery, his clinical condition improved. He was smoothly discharged from our hospital 3 weeks after admission.

Fig. 1. The initial plain abdomen film showing segmental dilated bowel loops.

Fig. 2. The repeated plain abdomen film showing severe distended stomach and diffuse distended bowel loops.

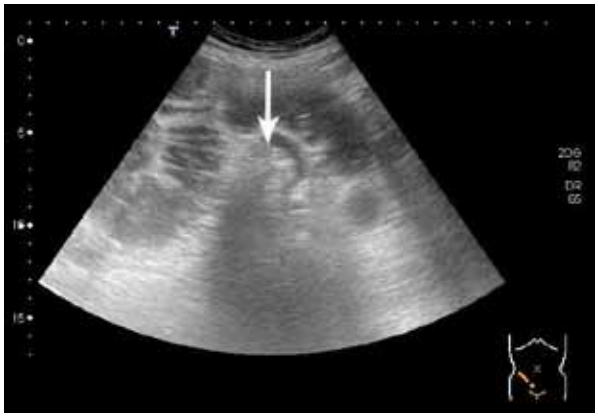

Fig. 3. Abdominal ultrasound showing a hyperechoic mass about 2.8cm(arrow) with distended small bowel loop with keyboard sign.

Fig. 4. Abdominal computed tomography showing abnormal feces formation(arrow) with significant proximal bowel dilatation.

## Discussion

The predisposing factors of bezoar formation include previous gastric surgery, poor mastication, bolus intakes of indigestible vegetable foods, loss of pyloric function, loss of gastric motility, peptic ulcer, and diabetes mellitus. Most of the patients had previous operation history, especially for peptic ulcer disease, accounting for 55 to 75 percent. The most common operation is vagotomy plus pyloroplasty and others include distal subtotal gastrectomy or antrectomy with Billroth II anastomosis, and truncal vagotomy + gastroenterostomy[3,7,8]. The surgery may reduce gastric motility and thus delay gastric emptying. Diabetes mellitus, mixed connective tissue disease or hypothyroidism also delay gastric emptying and cause bezoar formation[7]. However, there is still some debate. Some study shows that there is no difference of gastric emptying between patient with and without bezoar. So factors other than the gastric digestive phase are the main contributors to bezoar formation[8].

The most common symptom of bezoar-induced small bowel obstruction is abdomen pain, 96% to 100%. Other common symptoms included abdomen distention, nausea and vomiting[2,7].

Some studies show that the impacted small bowel bezoars is usually found at 50-70cm proximial to ileocecal valve, the narrowest part of the ileum[9]. However, others show that the bezoar may be found more common at upper part of small intestine due to the large size of bezoars[2,7]. However, our patient's bezoar was found in terminal ileum at 10cm proximal to ileocecal valve.

The plain abdomen radiography can show small bowel obstruction but rarely to detect bezoars. However, despite extremely rare, air-containing mass may be seen on plain abdomen radiography.[9] The abdomen ultrasound also detect signs of small bowel obstruction and the appearance of visualization of intraluminal mass with a hyperechoic arclike surface and acoustic shadow[10]. Contrast barium studies show an intraluminal filling defect that does not constant fixed to bowel wall[11]. However, the slow progress of the contrast in the obstruction luman, the long examination time, and the surgery problem of barium make it to be more considered to perform in the acute small bowel obstruction. Therefore, the contrast barium study should be reserved in only partial or intermittent small bowel obstruction[2]. It is useful to use computed tomography for evaluation of small bowel obstruction[12]. The small bowel obstruction caused by bezoar in computed tomography show intraluminal mass, and the small bowel wall or fluid in the small bowel outline the mass. The mass is gas bubbles and soft tissue appearance with dilated small bowel proximal to the mass[10,12].

It is less common to detect intraluminal mass by ultrasound. But in this case, we not only found the small bowel obstruction sign by ultrasound but also an intraluminal mass with fluid surrounding with it. Our patient CT findings were also consistent with the bezoars-induced small bowel obstruction.

Gastric bezoars can be treated by enzymeic dissolution or endoscopic management but small bowel bezoars are less likely. Although some reports showed that intravenous administration of antispasmodic agents may help move distal small bowel bezoars into the colon and thus removed by colonscopy, the treatment of small bowel bezoars are mainly surgery[3]. The surgical management is easily performed by fragmenting the bezoar and milking it down to the cecum without enterotomy[3,4,8]. In a retrospective study[2], fragmenting and milking bezoar was successful in 24 cases (53%). However, enterotomy for bezoar extraction was required in 16 cases (36%). There were five severe cases need segmental bowel resection due to ischemic bowel disease or denuded serosa.

Recently, these procedure can also be performed by laparoscopy. Extramural fragmentation of the bezoar can be achieved by using atraumatic forceps. If the bezoar cannot be milking into cecum, removal of bezoars by minimal laparotomy and enterotomy can be performed[2]. Because bezoar is uncommon in small bowel obstruction, there was less study compared laparoscopic approach with conventional open approach for bezoar induced small bowel obstruction. Only one study showed laparoscopic management had significantly shorter operative time, shorter hospitalization, and less complication than conventional group. There were 3 cases (30%) in laparoscopic group (total ten cases) converted to minilaparotomy. The major difficulty for laparoscopic management are the size of bezoar and the presence of distended and fragile bowel loops.[13]

In conclusion, small bowel obstruction caused by bezoars is uncommon but is still an important issue in the elderly. Surgical approach is the mainly treatment option and can be easily achieving by fragmenting the bezoar into cecum without enterotomy. Although easily management, early recognition with typical symptom and image findings play an important role in minimizing the morbidity and mortality.

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# 糞石造成的小腸阻塞-病例報告

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## 摘 要

我們報告一個病例爲年老男性，以腹痛表現而診斷爲糞石造成的小腸阻塞，並回顧文獻。病人一開始的表現爲上腹痛及噁心嘔吐等症狀。腹部的放射線攝影顯示瀰漫性小腸擴張。腹部超音波及電腦斷層掃描皆看到小腸腔內腫塊及小腸擴張。病人在保守治療失敗後，進行剖腹手術。手術中，糞石成功的被捏碎並順勢擠往盲腸。手術後病人恢復良好並順利出院。因此這個病例告訴我們如果保守治療失敗後，剖腹手術也可以利用腹腔鏡成功的治療，不一定要將小腸切開。且早期辨認出典型症狀和影像對減少疾病死亡率有很重要的角色。