Bull Yamaguchi Med School 51(1-2):23-27, 2004

A Case of Safe Endoscopic Removal of a Gastric Bezoar

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(Received April 1, 2004, accepted Jury 13, 2004)

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Abstract Gastric bezoars are relatively uncommon and have a reported incidence of 0.4%. Because of complications such as gastric ulcers, intestinal obstruction, and perforation, gastric bezoars need to be removed in some cases. We experienced a patient with a 5 x 6cm gastric bezoar. We could easily and safely break and remove it using standard endoscopic techniques. It was thought to a persimmon bezoar as the infrared (IR) spectrum was similar to that of tannic acid, which is a main component of the persimmon.

Key words: endoscopic treatment, gastric bezoar, infrared (IR) spectrum examination

Introduction

Gastric bezoars are concretions of various foreign or intrinsic substances found in the stomach and intestine in both humans and animals.[1] They are relatively uncommon and have a reported incidence of 0.4% of patients in two large endoscopic series.[2] Because there can be complications such as gastric ulcers, intestinal obstruction, and perforation,[1] gastric bezoars need to be removed in some cases. Surgery is also considered when there are acute complications such as perforation, hemorrhage, or obstruction. Endoscopic removal has increased with the progress of endoscopic treatment modalities in recent years.[2-5] We herein report a case in which a gastric bezoar could be easily and safely broken and removed by standard endoscopic techniques.

Case report

The patient was an 80-year-old woman who went to a clinic for Alzheimer's dementia. She lived alone and could take care of herself. In 1997 she was found to have a gastric ulcer by esophagogastroduodenoscopy (EGD). However, no significant changes in the stomach were found by EGD in 2000. Her eating habits were normal. From mid-November 2001 she complained of an oppressive epigastric sensation and appetite loss, and she visited the Murashige Clinic. A gastric bezoar was diagnosed by endoscopy, and she was introduced to Yamaguchi University Hospital for treatment.

On the first visit, endoscopic examination revealed a dark-brown gastric bezoar that was elliptical in shape with an irregular surface, 5 x 6cm in size, and a light yellow material was attached to part of it (Fig. 1). Moreover, a gastric ulcer was found at the gastric angle on the lesser curvature. Because of her complaint and the presence of the ulcer, we considered that the gastric bezoar should be removed. Using a double forceps-channeled endoscope (GIF 2T230; Olympus Optical, Tokyo, Japan) with an overtube (Sumitomo Bakelite, Tokyo,

Japan), the gastric bezoar was fixed using forceps of the alligator type, and we tried to break it by using a wire snare (Fig. 2). The gastric bezoar was relatively soft, and could be easily broken. The largest broken piece of the bezoar was approximately 2cm in size, and the others were about 0.5-1cm. We removed it piece-by-piece with the snare, three-legged and five-legged grasping forceps. Finally we removed about 60 pieces, and the cut surface was found to be an irregular complex comprised of various components and a solid part that was ochre mixed with dark brown. We could not observe anything like the skin or seeds of a persimmon or other plants.

At×100 magnification in H&E-stained bezoar sections, it had a honeycomb-like septum structure, comprising a cell wall skeleton (Fig. 3a). In part of it was seen long thick tissue-like plant skin (Fig. 3b). From the above character of the removed bezoar, it was suspected to be a phytobezoar.

The infrared (IR) spectrum of the gastric bezoar was obtained using potassium bromide pellets and a Nicolet Impact 410 spect-rop hotometer (Nicolet, Massachusetts, USA) (Fig. 4). The waveform showed strong absorption against 3442 cm^{-1} and 1644 cm^{-1}. That is compatible with tannic acid,[6] and it was considered that it was a persimmon bezoar consisting mainly of tannic acid. Since the removal of the bezoar she has had no complaint, and recurrence has not been experienced.

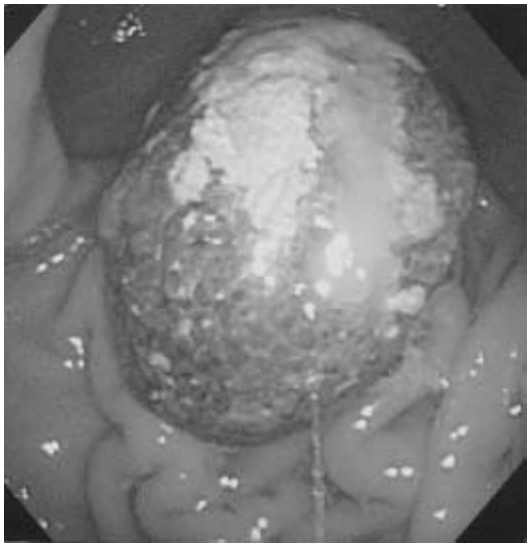

Fig. 1 Endoscopic image of the gastric bezoar.
A dark-brown mobile gastric bezoar, which is elliptical with an irregular surface, 5 x 6cm in size, and has attached light yellow material, is observed in the lower body in the stomach.

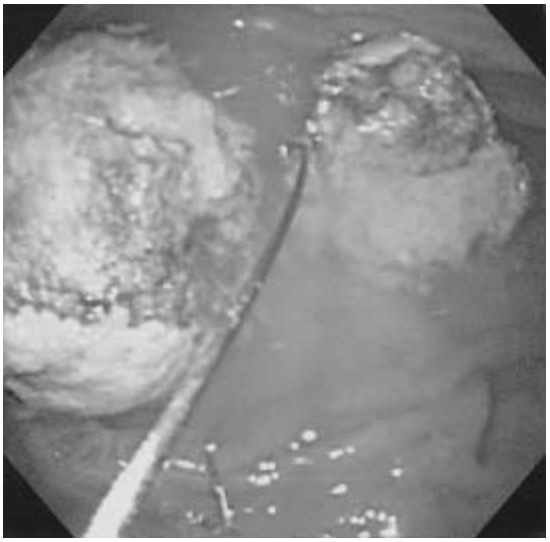

Fig. 2 Endoscopic disruption: The gastric bezoar is fixed by forceps of the alligator type and broken with a snare.

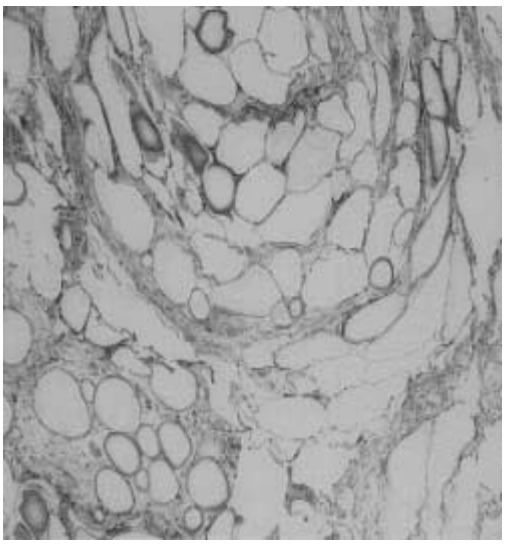

Fig. 3 Microscopic findings for the bezoar
Fig. 3a At×100 magnification, it has a honeycomb-like septum structure, comprising a cell wall skeleton. It was thought to be some kind of plant.

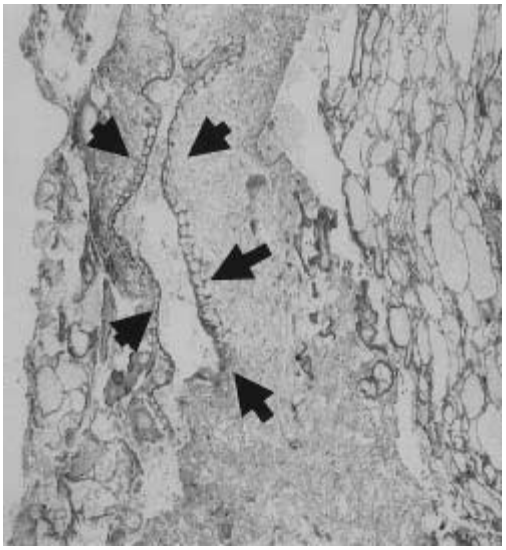

Fig. 3b Long thick tissue like plant skin (black arrows show) can be observed (×100 magnification).

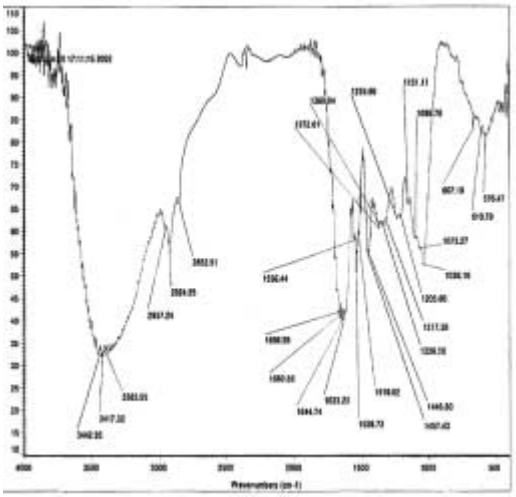

Fig. 4 Infrared spectrum of the bezoar: The waveform shows strong absorption against 3442 cm^{-1} and 1644 cm^{-1}. That is compatible with tannic acid.

Discussion

Bezoars can be classified into three types depending on their constitution as follows: a) phytobezoars, consisting of fruit and vegetable fibers; b) trichobezoars, consisting of hair; c) trichophytobezoars, a mixture of hair and vegetable fibers.[7] In 73% of the reported cases the collected phytobezoars were caused by persimmons.[1] Tannin, the main component of the persimmon, forms a tannin-cellulose-hemicellulose-protein complex in the presence of gastric acid, and gives rise to a solid glutinous mass.[8] In this case, it was interesting that the composition of the bezoar was determined by the IR spectrum.

The etiology of phytobezoars is also related to gastric hypomotility caused by conditions such as diabetes gastropathy,[10] hypothyroidism,[11] mixed connective tissue disease,[12] vagotomy and partial gastric resection.[13][14]

Trichobezoars are common in children and adolescents and usually associated with pica, serious psychiatric illness or mental retardation. It is estimated that 80% of patients are less than 30 years of age, and more than 90% of patients are women.[1] In 73% of the cases it is seen on plain films of the abdomen as amorphous, calcified, granular, or whirlpool-like configurations within the stomach.[9]

Most bezoars are hen-egg sized. Radiographs show them as filling defects with an irregular round shape and a surface with an irregular mottled density is revealed by using a well-controlled compression method with an appropriate volume of barium meal. If it moves, the diagnosis is easy.

The symptoms caused by gastric bezoars are anorexia, a bloated sensation, early satiety, dyspepsia, malaise, weight loss, nausea, vomiting, and abdominal pain. The most common complications of bezoars are gastric ulcers (26%).[15] This is presumably a result of pressure necrosis and most such ulcers are located at the anterior and posterior wall of the antrum.[16] Other complications are obstruction, the possibility of which is high when the bezoar is more than 4cm in diameter, upper gastrointestinal hemorrhage, perforation, and peritonitis.

In our case we found a 5-6 cm diameter bezoar by EGD with the complication of a gastric ulcer. Since the risk of perforation or obstruction was highly present, the bezoar was removed endoscopically. Because the bezoar was mobile, we fixed it using forceps of the alligator type, and broke it using a snare. We succeeded in safe and complete endoscopic removal of the bezoar using standard endoscopic techniques.

A variety of treatment modalities have been

employed for the management of phytobezoars, including gastric lavage,[17] enzymatic dissolution,[2)4)13)18)] endoscopic disruption or retrieval and surgical extraction. Gastric lavage and enzymatic dissolution are only useful for removing bezoars of small size and soft consistency.[19] Enzymatic dissolution takes several weeks. Endoscopic disruption by electrohydraulic lithotripsy (EHL),[3)20)] an Nd:YAG laser,[20] endoscopic drill[22] and gallstone lithotriptor[23] have been reported to be useful in the treatment of bezoars. However, for such treatments, a dedicated device or special equipment is necessary. Endoscopic directed suction removal,[24] the use of a polypectomy snare,[25] and the tripod forceps[16] can also be employed using standard techniques. This is easy and safe because we commonly use these devices. Using an overtube minimizes the pain of the patient. On the other hand endoscopic fragmentation[26] and enzymatic dissolution[18] may result in distal migration and cause small bowel obstruction, which requires surgery.[27] Thus, complete endoscopic removal is best, and there is a report that bezoars smaller than 2cm in diameter can be discharged from the body.[6]

Acknowledgments

We thank Dr. Yasunori Miura and Dr. Toshihiro Murafuji of the Department of Science, Yamaguchi University for their IR spectrum examination of the bezoar.

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