



## Drinking pineapple juice for undigested food in stomach

To the Editor,

Phytobezoars, concretions of undigested food, are believed to remain silent and resolve spontaneously (1). Patients with symptomatic gastric bezoars usually present with small bowel obstruction (2).

Endoscopic fragmentation and extraction with biopsy forceps, Dormia baskets, and polypectomy snares via overtube, which are the main treatment options in recent years, have many side effects, and large-channel gastroscopes are rarely available in endoscopy units. Most popular methods to dissolve bezoars are making lavages by acetylcysteine or cola (1,2).

Pineapple juice, which contains bromelain, a proteolytic enzyme, was reported as a good choice to dissolve phytobezoars in the literature (3-5). Despite the high success rates and fewer side effects, drinking cola is not always suitable for patients presenting with epigastric discomfort and bloating. For these purposes, we aimed to show the efficacy of drinking pineapple juice in dissolving gastric pre-bezoar formations in seven gastrectomized patients.

All patients who were referred to our clinic to perform upper gastrointestinal (GI) endoscopy due to histories of gastrectomy over 10 years and presenting with undigested food endoscopically were included in the study. Upper GI endoscopies were performed by AA and EF in the outpatient endoscopy unit from August, 2010 to May, 2011.

All of the patients were asked to drink pineapple juice in the next 3 days until the next upper GI endoscopy. To prevent different usages of pineapple juice, 100% pineapple juice, Dimes® (Izmir, Turkey) 1 liter daily between two endoscopic procedures, preferably after each meal, in divided amounts, was recommended to all patients without any change in dietary intake.

The demographic features of the seven patients and the results of the first endoscopic appearances are summarized in Table 1. None of the patients had complaints attributed to undigested food in the stomach, except patient 4, who had a history of surgery due to phytobezoars that induced a small bowel obstruction 6 months before. Other than the second patient, all of the pre-bezoar formations were totally cleaned up. Therapy was unable to go on in patient 2, because he went abroad.

**Table 1.** Characteristics of seven gastrectomized patients treated with drinking pineapple juice

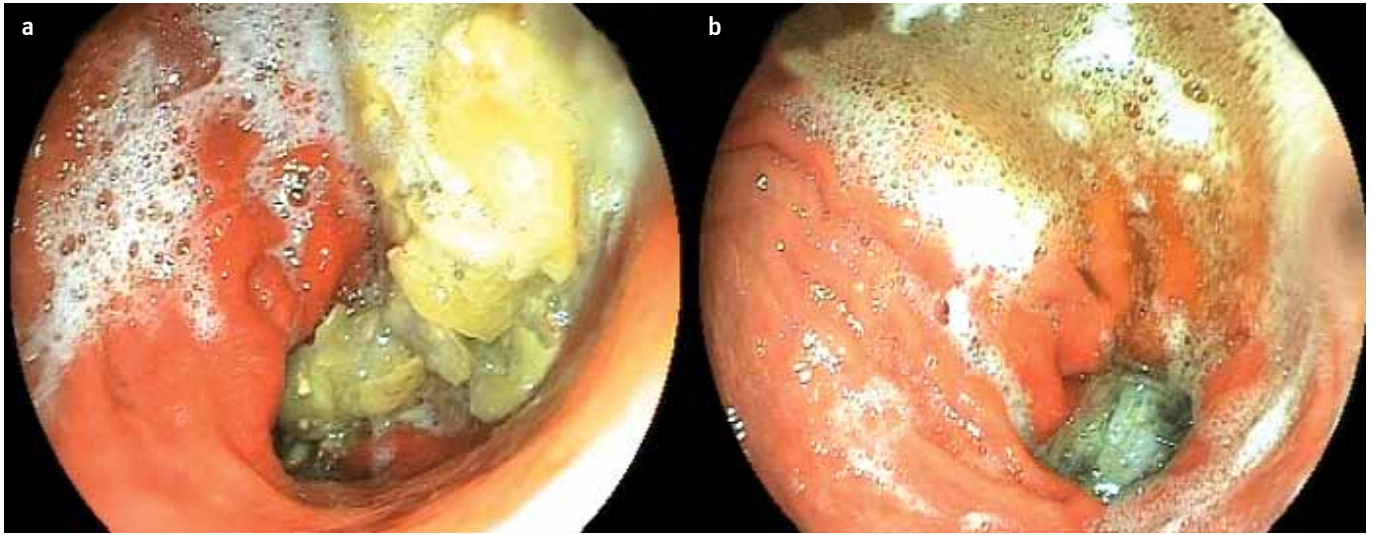
Patient	Age (years old)	Gender (M/ F)	Type of surgery	Location/size of pre-bezoar formations	Success of treatment (Yes/No)
1	75	M	Pylorus-preserving gastrectomy	Below 50%	Yes
2	61	M	Pylorus-preserving gastrectomy	Above 50%	No
3	55	M	Pylorus-preserving gastrectomy	Below 50%	Yes
4	60	M	Pylorus-preserving gastrectomy	Below 50%	Yes
5	54	M	Distal gastrectomy	Distal part of the gastroenterostomy anastomosis line	Yes (Figure 2)
6	65	M	Distal gastrectomy	Below 50%	Yes
7	59	F	Pylorus-preserving gastrectomy	Above 50%	Yes (Figure 1)

Features of seven previously gastrectomized patients treated with drinking pineapple juice alone

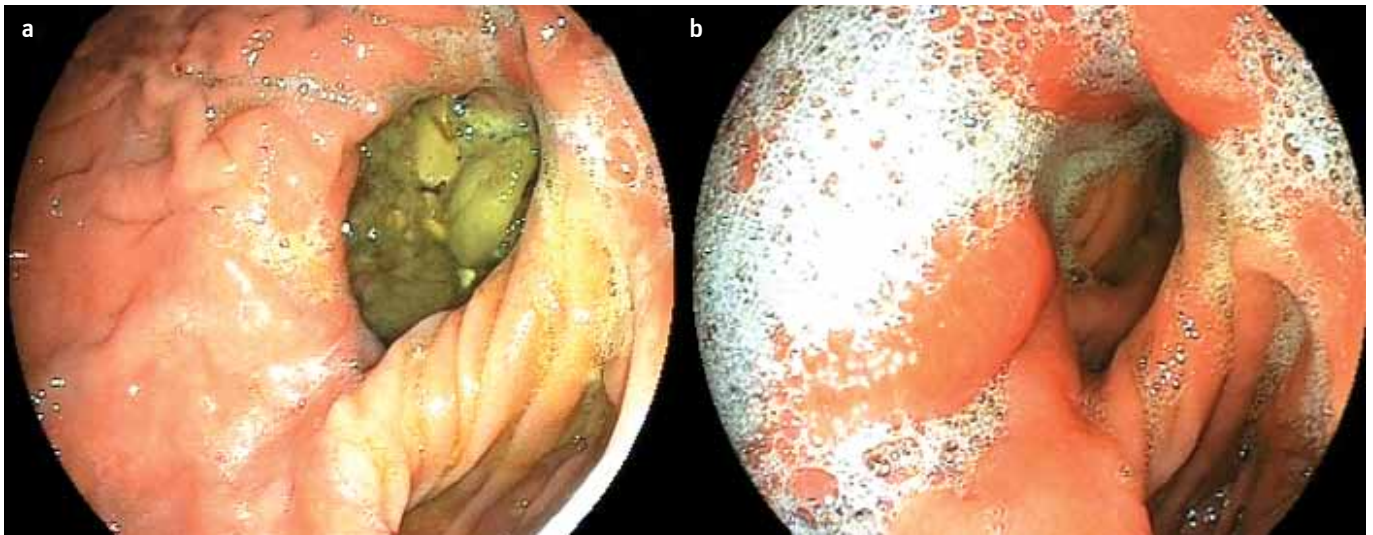
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**Figure 1. a, b.** Upper GI endoscopy shows the success of drinking pineapple juice in patient 4. Before treatment (a), after treatment (b).



**Figure 2. a, b.** Upper GI endoscopy shows the success of drinking of pineapple juice in patient 7. Before treatment (a), after treatment (b).

Gastric phytobezoar formation from undigested food presents with a wide range of symptoms, from non-specific epigastric discomfort to acute abdomen (1,3,4). However, there is huge gap about this point in the literature. We achieved complete dissolution of gastric undigested food in all patients but one.

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**Informed Consent:** Informed consent was obtained from patients who participated in this case.

**Peer-review:** Externally peer-reviewed.

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