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# Phytobezoar by aloe vera as long term complication after oesophagectomy resolved using cellulase



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## ABSTRACT

Bezoars are uncommon diseases caused by the presence of indigestible mass of strange material in the gastrointestinal tract. Gold-standard treatment remains unclear and there are not clinical guidelines to follow. We present a very rare case of 53-year-old man suffering phytobezoar in a gastroplasty after oesophagectomy due to aloe vera ingestion as natural medicine. Finally it was solved with cellulase. Therefore, this is a scarcely complication after esophagectomy. Cellulase is a very good option to treat phytobezoar avoiding reintervention in this kind of patient.

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## 1. Introduction

Bezoars are the presence of indigestible mass of strange material in the gastrointestinal tract. The contents usually are vegetable fibers or phytobezoar (the most common), hair or trycobezoar (normally associated to a psychiatric pathology), lactobezoar and bezoar due to medication (less frequent) [1]. There is currently no consensus about which is the best treatment nor there is a protocol to follow. We present an interesting and very rare case caused by aloe vera in a gastroplasty after oesophagectomy that was resolved with cellulase, avoiding in this way complex surgery. The aim of this paper is to show this very rare cause of bezoar and how we solved it.

## 2. Case report

We present a case of a 53-year-old male who underwent seventh months ago because of an infiltrating carcinoma in the middle third of the esophagus on Barret's esophagus, T1N0M0 Stage I (transhiatal esophagectomy and with the reconstruction of the intestinal transit by gastroplasty and pyroloplasty). Six months after surgery he came to the emergency room with symptoms of hyporexia, dysphagia and dyspnea. He relates that he had been taking a natural medicine (aloe vera with honey) for three months. Thorax

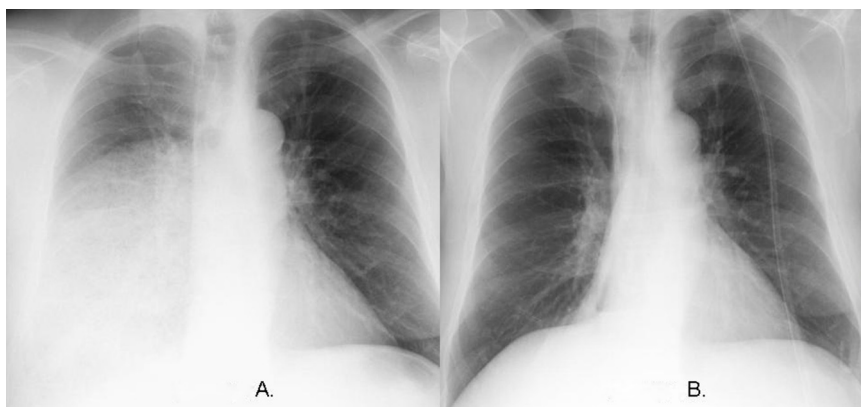
radiography (Fig. 1A) and computerized tomography (Fig. 2) were performed presenting dilation of the gastroplasty with abundant food content that was pressing the right lung. So a treatment based on prokinetics and nasogastric intubation with continuous suction was started without achieving an improvement. In view of the poor evolution, the study was completed with an esophagus gastric transit showing lack of emptying and a great gastric distension, an upper digestive endoscopy discovered abundant dark green colored food traces forming a bolus blocking the progress of the endoscopy, so he was diagnosed with phytobezoar due to aloe vera.

Due to the surgical history of the patient, we decided to start a conservative treatment with prokinetics and Coca-Cola®, two liters per day orally during three consecutive days, without observing any improvement. It was decided to change to a more aggressive treatment with cellulase 5gr (during two hours) through nasogastric tube every 8 h, presenting improvement 48 h later, with a spectacular and complete resolution of symptoms (Fig. 1B). The patient could be discharged 48 h later after tolerating oral tract. Currently he is asymptomatic with normal complementary explorations.

## 3. Discussion

Phytobezoars are a scarcely frequent pathology and neither clinic guides nor protocols based on scientific evidence exist for their treatment. There are several methods varying from conservative to surgical. The first option is a conservative management by administrating prokinetics along with substances that dissolve the vegetable fibers. Among the most used are cola beverages,

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**Fig. 1.** (A) Chest X-ray with dilation of the gastroplasty due to aloe vera. (B) Chest X-ray 48 h later showing resolution of phytobezoar.



**Fig. 2.** Huge gastroplasty dilation with alimentary filler (aloe vera) in the preoperative computed tomography.

cellulase, papain, and acetylcysteine (substances with an enzymatic action) [1].

The formation of phytobezoars occur as a result of the impossibility for our organism to dissolve the vegetable fibers due to a lack of cellulase, an indispensable enzyme required to break the leucoanthocyanidin-hemicellulose links in order to break down the cellulose [2,3]. It was acknowledging this that this enzyme was successfully used for the first time for the treatment of this pathology in 1966 [2]. From then on, cellulase has been used for the treatment of this pathology demonstrating its utility in reviews such as Walker-Renard [2] from 1966 to 1993 in which he found a total of 19 patients treated with cellulase, presenting a 100% effectiveness. Bonilla et al. [3] published a prospective study for a year in which they included 7 patients treated with cellulase with a 100% effectiveness. Besides these series (the biggest published), there are several publications of clinical cases proving the utility of cellulase for phytobezoar treatment [3]. In our case, the phytobezoar was resolved with the cellulase guideline. Regarding dosage, it varies from 3 to 5 g dissolved in 300–500 ml of water during 2–5 days [2,3].

Papain is another enzyme in use, but there is less evidence and the Walker-Renard [2] review discovered that out of 15 patients following this treatment 87% were resolved, but with the presence of complications such as esophageal perforation, gastric ulcers and hypernatraemia.

Concerning the use of cola beverages, the action mechanism is unknown but it is believed that the contents of bicarbonate or the carbon dioxide bubbles combined with the acid pH of the beverage would aid the dissolution [4]. Among the greater studies that

support the use of Coca-Cola® is the review by Ladas et al. [4], articles published from 2002 until 2012 in which they found that for 46 patients Coca-Cola alone resolved the symptoms for 50% of the cases and that its efficacy increased up to 90% when connected to endoscopic methods. Lee et al. [5] published another study with similar results in which he found that from a total of 17 patients, 23.5% of the cases were resolved only with the cola beverage and the rest required endoscopic maneuvers. There are other publications with unique cases in which the cola drink has resolved successfully the phytobezoars. For our patient, Coca-Cola® offered an incomplete response with a minimum reduction of the size of the phytobezoar.

Endoscopic techniques provide good results for small bezoars or as a prior method after using enzymatic substances [1]. Surgery is used for cases in which the big bezoars cannot be removed by endoscopy and when the conservative treatment has failed [1].

No case like our patient's (a phytobezoar on a gastroplasty) has been described before, reason why we chose to initiate the management with the less aggressive substance: Coca-Cola®. But it did not break down the phytobezoar, starting therefore the treatment with cellulase, enabling to completely clean the gastroplasty in accordance with the bibliography, which states that as a conservative treatment, cellulase throws the best results and that the rest of substances must only be used when not having cellulase at hand or if there is a reason that contraindicates it.

Phytobezoars are an unfrequent pathology for which conservative treatment should be front line, leaving surgical treatment for cases in which this therapeutic attitude does not resolve them. Besides prokinetics, the best substance for phytobezoar

cases seems to be cellulase, delivering great outcomes and few complications.

#### **Conflict of interest**

No conflicts of interest.

#### **Funding**

None.

#### **Ethical approval**

This case report has the approval of the Investigation and Ethic Committee of our institution.

#### **Consent**

This patient gave us his signed consent to publish this case.

#### **Authors contribution**

Nathalie Pinos: writing the paper.

Sergio Moreno-Merino: collaboration, interpretation and others.

Miguel Congregado: design and review of the case.

#### **Guarantor**

Miguel Congregado

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