International Journal of Innovative Technologies in Social Science

e-ISSN: 2544-9435

Scholarly Publisher
RS Global Sp. z O.O.
ISNI: 0000 0004 8495 2390

Dolna 17, Warsaw,
Poland 00-773
+48 226 0 227 03
editorial_office@rsglobal.pl

ARTICLE TITLE	THE BEZOARS: CLASSIFICATION, DIAGNOSIS, TREATMENT AND CLINICAL CASES - REVIEW
DOI	https://doi.org/10.31435/ijitss.3(47).2025.4062
RECEIVED	10 August 2025
ACCEPTED	21 September 2025
PUBLISHED	30 September 2025
LICENSE	The article is licensed under a **Creative Commons Attribution 4.0 International License.**

THE BEZOARS: CLASSIFICATION, DIAGNOSIS, TREATMENT AND CLINICAL CASES - REVIEW

Magdalena Maria Jakubowska *(Corresponding Author, Email: magdalena.jak97@gmail.com)*
Jan Mikulicz Radecki University Clinical Hospital in Wrocław, Wrocław, Poland
ORCID ID: 0009-0003-0928-3473

Weronika Wawrzynów
Health Care Center in Oława, Oława, Poland
ORCID ID: 0009-0001-9791-0267

Agnieszka Skoczeń
Healthcare Center, Nysa, Poland
ORCID ID: 0009-0007-3181-3169

Aleksandra Dorosz
Lower Silesian Oncology Center in Wrocław, Wrocław, Poland
ORCID ID: 0009-0001-4956-5702

Błażej Kaczmarek
The Provincial Hospital Center of the Jelenia Góra Valley, Jelenia Góra, Poland
ORCID ID: 0009-0006-5540-2076

Adrian Kruk
University Clinical Centre of the Medical University of Warsaw, Warsaw, Poland
ORCID ID: 0009-0001-1749-6159

Dominika Walczak
Wroclaw Medical University, Wrocław, Poland
ORCID ID: 0009-0007-1629-871X

ABSTRACT

Introduction: Bezoars are foreign bodies found mainly in the gastrointestinal tract (but not exclusively) giving non-specific and sparse symptoms, which can contribute to serious complications such as chronic mucositis, intestinal obstruction, peritonitis, sepsis and in some cases can even lead to death. A distinction can be made between trichobezoars, phytobezoars, lactobezoars, pharmacobezoars and urinary tract bezoars. Endoscopic examination plays a major role in diagnosis.[1]
Objective: The aim of this review is to provide information on the origin, classification, diagnosis and treatment of bezoars and to present several clinical cases involving different types of bezoars.
Methods and materials: For the literature review, a Pubmed database and Polish websites of renowned medical journals were used, using keywords such as: bezoar, trichobezoar, phytobezoar, lactobezoar, pharmacobezoar.

KEYWORDS

Bezoar, Trichobezoar, Fitobezoar, Lactobezoar, Pharmacobezoar

CITATION

Magdalena Maria Jakubowska, Weronika Wawrzynów, Agnieszka Skoczeń, Aleksandra Dorosz, Błażej Kaczmarek, Adrian Kruk, Dominika Walczak. (2025) The Bezoars: Classification, Diagnosis, Treatment and Clinical Cases – Review. *International Journal of Innovative Technologies in Social Science*. 3(47). doi: 10.31435/ijitss.3(47).2025.4062

Introduction:

What is 'Bezoar'? The aetiology of the word derives from Arabic or Persian and denotes a substance which, according to medieval alchemists, was considered an antidote to all kinds of poisons. In 1779, Budamet, performing an autopsy, described for the first time the presence of trichobezoar in a patient's stomach, putting an end to magical beliefs.[2]

Bezoar is a conglomeration of various undigested and lingering materials. Ingested and undigested debris remaining in the stomach for a long period of time becomes coated with mucus over time, which conglomerates them even into very hard, compacted structures. In most cases, they produce non-specific and sparse symptoms that can contribute to serious complications such as chronic mucositis, intestinal obstruction, peritonitis, sepsis and, in some cases, can even lead to death.[1]

Aetiopathogenesis:

The main contributors to the formation of bezoars are gastrointestinal motor disorders occurring, for example, in the course of endocrine diseases (thyroid diseases, diabetes) or neurological diseases (Guillain-Barré syndrome, muscular dystrophies). Situations such as pyloric stenosis, conditions after all gastric operations, abnormal secretion of gastric juice, mental illnesses and pathologies in the oral cavity (missing teeth, gingivitis, inadequate dentures that make chewing and biting difficult) also contribute to the formation of bezoars.[3,6]

Different types of bezoars are distinguished according to the origin of the causative factor, e.g. trichobezoars, phytobezoars, lactobezoars, pharmacobezoars, etc.

Trichobezoars:

Trichobezoars (also known as hairy tumours) - are caused by the accumulation of ingested hairs in the folds of the gastric mucosa, their resistance to digestive juices and peristaltic movements contributing to excessive clumping into larger and larger forms. In most cases, they occur in young girls. Their main location is, as already mentioned, the stomach, but there are cases in which these 'tumours' extend as far as the jejunum or colon, in which case we have what is known as Rapunzel syndrome. The main cause of their formation is a compulsive disorder characterised by habitual plucking of hair (trichotillomania) and eating plucked hair or biting off the ends (trichophagia).[4,5]

Phytobezoars:

Phytobezoars - are caused by the deposition of plant fibres and debris from fruit, cereals and vegetables. They occur mainly in the adult population, consuming coconuts, pumpkin, celery, date fruits, raisins and prunes in large quantities.[2,4]

Lactobezoars:

Lactobezoars are formed from mucus and milk proteins (mainly calcium caseinate). They are common in premature newborns[2,4].

Pharmacobezoars:

Pharmacobezoars are a fairly rare example of bezoars. They are formed by the deposition of drug particles (e.g. after ingestion of antacids containing aluminium, calcium, magnesium carbonate).[2,4,6].

Urinary tract bezoars:

There are also cases where spherical structures develop in the urinary tract during the course of a complicated fungal urinary tract infection. Urinary tract bezoars are the result of the deposition and clumping of fungal fragments that have infected the urinary tract. Their main location is the bladder, but they can also occur in the renal pelvis and ureters. Patients complain of non-specific low back pain, lower abdominal pain, scanty urine and cloudy urine. Urinary bezoars most commonly occur in immunocompromised patients.[6]

Diagnosis and treatment:

At the beginning of diagnosis, the patient's history should be carefully taken.[7] A thorough and detailed history can largely guide us to the potential cause of the complaints the patient is suffering from. A decrease in appetite, low haemoglobin levels and malabsorption should arouse our vigilance. A basic physical examination is also important, during which, if there is a large bezoar, it is possible to feel the tumour under the skin. Computed tomography is able to visualise the entire gastrointestinal tract and urinary tract and the obstructions therein. However, gastrointestinal endoscopy is more accurate for the diagnosis and differentiation of a gastrointestinal bezoar from a cancerous tumour. In most cases, it also allows the foreign body, such as a bezoar, to be dissected and removed with forceps. For large and hard bezoars that resist endoscopic defragmentation, surgical treatment is necessary. Bezoars left behind can lead to complications such as gastrointestinal perforation, obstruction or haemorrhage[1,2]. Conservative treatment is only possible in the presence of certain plant bezoars. It consists of the administration of acetylcysteine, papain and cellulase preparations. In some cases, gastric lavage administered via a Coca-Cola® probe allowed the phytobezoar to dissolve. Once the treatment process has been completed, regular follow-up visits to the gastroenterology outpatient clinics should be remembered (follow-up gastroscopy every 6, 12 and 24 months is recommended, unless foreign bodies are visualised in the gastrointestinal tract during any of the visits - in which case the pattern of treatment should be restarted if bezoars are detected). If the bezoars were removed surgically, follow-up visits to the surgical clinics are also recommended. In both cases of treatment, a recurrence-reducing diet is recommended (avoidance of large pieces of hard, undercooked food, avoidance of potentially risky habits). In cases of trichobezoars, it is essential that the patient receives psychiatric care.[1,4,8]. In all cases, intake of large amounts of fluids is indicated.

Review of clinical cases

In the following, clinical case reports on the occurrence of various bezoars and their diagnosis will be presented in summary form:

Case 1 – trichobezoar

A 15-year-old girl was transferred from the haematology department to the paediatric surgery department due to abdominal pain that had been worsening for weeks. The girl had previously been treated by a paediatrician for these abdominal pains and was also under the care of a dermatologist for alopecia-like lesions on her scalp. On physical examination on admission to the haematology department, an area of plaque-like alopecia was found in the temporal and parietal regions of the right, as well as a hard, non-painful tumour located in the left and middle epigastrium. During the interview, the girl's mother provided information that for several years she had noticed that her daughter often twisted her hair around her fingers and played with it, but that she did not notice pulling it out. During her stay in the haematology-oncology department, laboratory tests were performed, which showed abnormalities such as an elevated ESR titer (26/50 mm/hr), and a general urine examination showed erythrocytes of 5-10 in the field of view. An abdominal ultrasound scan showed an elongated left lobe of the liver, as well as a structure with mixed echogenicity located in the stomach. Abdominal CT scan showed a pathological structure measuring 11.5×4.5×11 cm and of variable density. On the other hand, single small lymph nodes were visualised in the epigastrium in the area between the stomach and the elongated left lobe of the liver. After psychiatric consultation, the patient was diagnosed with trichotillomania and emotional disturbance, which required psychiatric treatment even before the surgical procedure was performed. Due to the patient's overall good condition, surgical treatment was postponed until the first stage of psychiatric therapy was completed. Until then, the girl remained under the close constant care of the surgical clinic. After six months of therapy, a gradual regrowth of hair on the head was noticed and the patient was qualified for surgery. During the procedure, the anterior wall of the stomach was opened, which allowed the extraction of a trichobezoar measuring up to 17×12 cm. In the postoperative period, the patient was fed parenterally, antibiotic therapy (10 days) and omeprazole were administered. On postoperative day 14, the girl was discharged home in good condition with recommendations for long-term outpatient follow-up.[4]

Case 2 – phytobezoar

A 72-year-old patient with a history of pyloroplasty due to pyloric obstruction came to the consultation due to epigastric pain, weight loss of approximately 8 kg in 4 months, and early satiety. A diagnostic gastroscopy was performed, which visualised phytobezoar and abundant semi-solid material. During the examination, no attempt was made to remove the phytobezoar, but the patient was advised to consume 1 litre of Coca-Cola® per day for 15 days. After this period, the patient presented no pain symptoms and a follow-up gastroscopy showed only trace amounts of semi-solid material. The patient was recommended a maintenance treatment of 330ml Coca-Cola® per day and the use of metoclopramide.[9]

Case 3 – phytobezoar

A 74-year-old patient was admitted to hospital because of epigastric pain, weight loss of about 6 kg in 3 months and a feeling of rapid satiety. Approximately 5 years previously, the patient had been treated for gastric lymphoma. On physical examination, the abdomen was found to be bloated, painful on palpation in the epigastric and mid-abdominal region with palpable pathological resistance in this area. Laboratory investigations showed anaemia, leukocytosis and dyselectrolitemia. X-ray imaging showed gastric wall distension. Further diagnostics were continued, including abdominal ultrasound and gastroscopy. The diagnostic gastroscopy performed showed a large phytobezoar, which effectively prevented the passage of the endoscope into the duodenum. A successful attempt was made to remove it with the endoscope using a loop and a Dormia basket, as well as a generous water lavage. The flushing procedure was repeated two more times at daily intervals. An improvement in the patient's physical condition and laboratory tests was achieved. The patient was discharged home after several days' hospitalisation with recommendations for continued follow-up in the gastroenterology clinic.[3]

Case 4 - cotton bezoar

A 35-year-old woman by profession as a seamstress was admitted to hospital due to abdominal pain, bloating, constipation and vomiting. There had been significant weight loss and a decrease in appetite over the past year. The patient had a history of psychiatric consultation for depressive episodes. On admission, the patient presented with peritoneal symptoms, the abdomen was tender with a palpable tumour in the right mediastinum extending to the right iliac fossa. Laboratory investigations revealed severe anaemia. The patient underwent an exploratory laparotomy during which a ball of stinking cotton thread was removed. The patient's condition improved after the procedure. The woman admitted to swallowing cotton threads due to feelings of depression and insecurity. She admitted that 2 years ago she had a similar pain episode, which passed after provoking vomiting, which also included cotton threads. The patient was referred to a psychiatric outpatient clinic for treatment of depression. After 6 months, a follow-up examination did not show foreign bodies in the gastrointestinal tract.[10]

Case 5 - olibanum bezoar as an example of pharmacobezoar

According to the traditional folk medicine of the Arab countries, olibanum (frankincense) is used in certain gastrointestinal complaints. It is treated as chewing gum, which is then swallowed. The case concerns a 17-year-old Libyan resident with chronic coeliac disease. The patient was admitted to hospital because of epigastric pain and accompanying vomiting, which had been occurring for about five months. From her history, it was known that she had been swallowing large amounts of Olibanum as part of her treatment for a gastrointestinal condition. On physical examination, attention was drawn to a palpable lump. The patient was additionally pale and weak. On X-ray examination, a macular oval-shaped structure located in the left upper quadrant was visualised. Gastroscopy performed revealed a large conglomerate lesion in the gastric fundus region. The detected lesion was hard and therefore biopsy was not possible. The pathological mass was removed by gastrotomy. After surgery, both vomiting and other complaints subsided. It is known from the postoperative report that it was a hard conglomerate measuring approximately 10.5x7.5x5.5 cm and weighing approximately 154.46 g.[11]

Case 6 - pharmacobezoar induced by multivitamins

A 77-year-old man was transported to the ED for generalised malaise accompanied by dark-coloured vomiting, dyspnoea and foul-smelling urine. From the carer's history, the patient was known to have a medical burden (advanced dementia with behavioural disturbances, chronic constipation, hypertension, type II diabetes mellitus, benign prostatic hyperplasia with chronic urinary catheter insertion and hypothyroidism). The list of medications the patient was taking included levothyroxine, terazosinum, buspirone and multivitamins. Physical examination revealed abdominal distension without pathological tenderness. Laboratory investigations showed neutrophilic leukocytosis. Urinalysis showed purulent urine and bacteriuria. The patient was ordered an abdominal X-ray, which showed bowel obstruction, sigmoid dilatation and the presence of multiple foreign bodies in the rectal bulb and right upper quadrant. Intensive intravenous fluid therapy, the use of a stool softener and enemas with surfactant fatty acid salts were administered. Due to the patient's deteriorating condition, he was qualified for an urgent colonoscopy for colonic decompression. Although a bezoar was identified during the procedure, the patient's condition did not allow for its removal. After the procedure, enemas were ordered every 8 hours, but the patient did not cooperate properly. On day 8 of the hospital stay, the colonic distension had resolved allowing colonoscopic removal of the pharmacobezoar. More than 35 tablets were successfully removed. After this procedure, the patient started to have regular bowel movements and the physical examination did not show the abnormalities that were present on admission to hospital. The patient was discharged from hospital in good condition with recommendations to continue laxatives and stool softeners to prevent recurrence of constipation, and to discontinue the multivitamin preparation that was identified as the cause of the bowel obstruction.[12]

Case 7 - pharmacobezoar leading to intestinal ischaemia

A 28-year-old female patient being treated for depression was admitted to the ED after an intentional overdose of venlafaxine (antidepressant and anti-anxiety drug). On admission to the ED, the patient did not show any negative symptoms, intestinal peristalsis was normal. Five hours after admission, the patient developed tachycardia of approximately 130 beats/min and accompanying seizures. Twenty-eight hours after the drug overdose, the patient began to complain of acute abdominal pain in the right lower quadrant, and there was one episode of loose liquid stools. A contrast-enhanced CT scan of the abdomen and pelvis was performed, which showed thickening of the right colon wall and a large mass of pills in the cecum. During the surgical procedure, doctors found a swollen right side of the colon showing features of necrosis of the bowel wall, which required urgent hemicolectomy. The pharmacobezoar was removed, which was caused by more than 80 venlafaxine tablets. The patient underwent psychiatric assessment and left the hospital on the fourth postoperative day in good condition with recommendations for further outpatient psychiatric follow-up.[13]

Case 8 – Lactobezoar

A female neonate born prematurely at 30 weeks gestation in good condition with a birth weight of 1308 g, was admitted to the Neonatal Intensive Care Unit with spontaneous breathing. On admission, the baby was noted to be excessively drooling and having difficulty inserting an intragastric tube. A chest X-ray was performed, which suggested suspected oesophageal atresia. The child was operated on the second day of life confirming the suspicion of atresia. The postoperative period was uneventful, enteral feeding with fortified breast milk and modified milk was started on the 7th postoperative day. On the 47th postoperative day, the girl started to be restless during feeding and cried persistently. On examination, the abdomen was tender with a palpable mass in the left upper quadrant. An abdominal ultrasound showed echogenic gastric contents. Conservative treatment was ordered for 48 h (including fluid therapy, domperidone, oral ranitidine), which had no positive effect. A decision was made to perform an exploratory laparotomy, which revealed a gastric lactobezoar with damaged gastric mucosa. A gastrotomy was performed allowing removal of the lesion. The postoperative period was without complications. On the 5th postoperative day, enteral feeding with infant formula and pumped breast milk was started, followed by feeding with a highly hydrolysed formula one week after surgery. Fifteen days after surgery, discomfort began to appear after feeding. A gastric aspiration was performed, which revealed flocculent milk clots. A suspicion of newly formed lactobezoar was raised. For this reason, her own saliva was started through a gastrostomy tube during meals. After 2 days there was an improvement. The decision for enteral feeding with modified milk was upheld and saliva infusions were discontinued after one month. No other gastric complaints were noted. At approximately 14 months of age, the girl was diagnosed with coeliac disease.[14]

Case 9 - urinary tract bezoar

A case of urinary tract bezoar of yeast aetiology was described in 2014. A 60-year-old patient (on dialysis for 13 years due to extreme renal failure and progressive IgA nephropathy) was qualified for and underwent renal transplantation and received immunosuppressive therapy consisting of mycophenolate mofetil, methylprednisolone and tacrolimus. Two months after transplantation, the patient developed oliguria. Laboratory investigations revealed an elevated plasma creatinine level and on physical examination a slight tenderness in the suprapubic region. Diagnostic Doppler ultrasound examination visualised hydronephrosis. A percutaneous nephrostomy was performed and total ureteral obstruction was confirmed by descending pyelography. Cloudy urine was collected through the nephrostomy for microbiological examination, which showed Candida albicans. Magnetic resonance imaging visualised a structure in the renal pelvis that could suggest a fungal bezoar. Antifungal therapy with oral fluconazole and local irrigations with amphotericin B was administered. After 4 days, the amount of urine flowing out through the nephrostomy decreased and the amount of urine excreted through the urethra increased. The nephrostomy was removed after a control pyelographic examination, which confirmed complete patency of the ureter. The case represents a classic example of opportunistic infection during immunosuppressive treatment.[6]

Summary:

In the above paper, we have presented cases of atypical gastroenterological complaints and haematological disorders in the course of bezoars. Various types of bezoars are distinguished according to their origin. However, most of them produce non-specific symptoms and are not among the most common non-specific causes of obstruction, which delays correct diagnosis. A large role, as in any diagnosis, is played by a well-collected, detailed history with the patient and their relatives. When dealing with a patient with symptoms of gastrointestinal or urinary tract obstruction, always bear in mind that the cause of the complaint may be non-specific, such as bezoars. The treatment of these patients requires the involvement of multiple specialists and mainly a Patient-Doctor collaboration. Patients remain long-term or permanently under the care of Gastroenterology, Surgery, Psychiatry, Neurology, Endocrinology etc. clinics. Lack of cooperation with the attending physicians results in recurrence and complications during treatment.

REFERENCES

1. Marlicz.K, update Kudłacz P. Bezoar (article) https://www.mp.pl/pacjent/gastrologia/choroby/zoladek/50791, bezoar
2. Woynarowski M., Lipiński P. Trichobezoar in a 12-year-old girl - a case report https://www.standardy.pl/artykuly/id/828#przypisy
3. Dyrla P., Wojtuń S., Jałocha Ł., Wojtkowiak M., Gil J. Gastric phytobezoar - a case report. Pediatr Med Rodz 2011, 7 (2), p.164-167 https://pimr.pl/index.php/issues/2011-vol-7-no-2/fitobezoar-zoladka-opis-przypadku#overlay
4. Broen B., Gubała-Kacała M., Mandat K., Niedzielski K. Trichobezoar in a 15-year-old girl - case report. Przegląd Pediatryczny 2013, vol. 43, nr 2; 89-93. https://przegladpediatryczny.pl/a2809/Trichobezoar-u-15-letniej-dziewczynki-----opis-przypadku--Trichobezoar-in-a-15-year-old-girl-----case-report---.html/
5. Woynarowski M., Lipiński P. Trichobezoar. Polish Society of Gastroenterology, Hepatology and Child Nutrition - endoscopic section May 2015 https://ptghizd.pl/sekcje/sekcja-endoskopowa/trichobeozar/
6. Jonczyk P., Potempa M., Kandefer B., Szczerba K., Tynior W., Kajdaniuk D. Bezoars - is it the problem of only nephrologist? Forum Nefrol 2016, vol 9, no 2, 83–91 https://journals.viamedica.pl/renal_disease_and_transplant/article/view/47982/37368
7. Albrecht P. Paediatric Gastroenterology. A Practitioner's Handbook. Czelej Publishing House, 2nd revised edition 2023.
8. Wolski M, Gawłowska-Sawosz M, Gogolewski M, Wolańczyk T, Albrecht P, Kamiński A. Trichotillomania, trichophagia, trichobezoar – summary of three cases. Endoscopic follow up scheme in trichotillomania. Psychiatria Polska. 2016;50(1):145-52. https://doi.org/10.12740/PP/43636
9. Martínez de Juan F, Martínez-Lapiedra C, Picazo V. Disolución de fitobezoar con Coca-Cola [Phytobezoar dissolution with Coca-Cola]. Gastroenterol Hepatol. 2006 May;29(5):291-3. Spanish. doi: 10.1157/13087468. PMID: 16733034.
10. Chintamani, Durkhure R, Singh JP, Singhal V. Cotton Bezoar--a rare cause of intestinal obstruction: case report. BMC Surg. 2003 Sep 4;3:5. doi: 10.1186/1471-2482-3-5. PMID: 12956890; PMCID: PMC194753.
11. El Fortia M, Badi H, Elalem Kh, Kadiki O, Topov Y. Olibanum bezoar: complication of a traditional popular medicine. East Mediterr Health J. 2006 Nov;12(6):927-9. PMID: 17333843.

12. Burgos-Torres MDM, Molina-Lopez VH, Perez Cruz NM, Perez Del Valle C, Sorrentino J. Multivitamin-Induced Pharmacobezoar: A Rare Entity of Large Bowel Obstruction. Cureus. 2023 Jul 11;15(7):e41688. doi: 10.7759/cureus.41688. PMID: 37441102; PMCID: PMC10334454.
13. Lung D, Cuevas C, Zaid U, Ancock B. Venlafaxine pharmacobezoar causing intestinal ischemia requiring emergent hemicolectomy. J Med Toxicol. 2011 Sep;7(3):232-5. doi: 10.1007/s13181-011-0144-8. PMID: 21373970; PMCID: PMC3151403.
14. Castro L, Berenguer A, Pilar C, Gonçalves R, Nunes JL. Recurrent gastric lactobezoar in an infant. Oxf Med Case Reports. 2014 Jul 12;2014(4):80-2. doi: 10.1093/omcr/omu031. PMID: 25988036; PMCID: PMC4399510.