Intestinal Bezoar: A Rare Cause of Small Bowel Obstruction in Children

Ab Hamid Wani[1], Abhimanyu Singh[2], Davinder Pal Singh[3], Gurbir Singh[4*]

[1]Assistant Professor, Department of Surgery, Government Medical College, Jammu.

[2]Senior Resident, Department of Surgery, Government Medical College, Jammu.

[3]Postgradaute, Department of Surgery, Government Medical College, Jammu.

[4]Assistant Professor, Department of General Surgery, SMVDIME Kakryal, Katra.

***Address for Corresponder:** Dr Gurbir Singh, Assistant Professor, Department of General Surgery, SMVDIME Kakryal, Katra (email: khalsagurbir2510@gmail.com)

How to cite this article:
Wani A, Singh A, Singh D, Singh G**.** Intestinal Bezoar: A rare cause of small bowel obstruction in children. Iranian Journal of Pediatric Surgery 2024; 10 (2): 193-202.

DOI: https://doi.org/10.22037/irjps.v10i2.44256

Abstract

Introduction: Intestinal obstruction is a common disease encountered in pediatric population and among the most common causes of emergency admissions. Foreign bodies in the intestinal lumen are commonly seen in pediatric population and are mostly swallowed accidentally. Intestinal bezoars are a rare cause of intestinal obstruction in children**.**

The aim of the study was to evaluate the patients of small intestinal obstruction due to a specific phytobezoar-persimmon seeds (date plum or amlook)- in pediatric age group in our region in terms of clinical presentation, management and complications.

received: 11 January 2024
accepted: 17 August 2024
Published online: 15 October 2024

Materials and Methods: Data of 100 patients of intestinal obstruction due to dry persimmon phytobezoar (date plum or amlook) were evaluated retrospectively by clinical presentation, clinical examination, radiological investigations and the management options, and intra-operative finding were noted from hospital records.

Results: Out of 100 patients' records were evaluated, and the commonest presentations were abdominal pain in 92 patients, abdominal distension in 91, nausea and vomiting in 85 and constipation in 30 patients. 18 patients were managed conservatively, 56 patients underwent exploratory laparotomy with milking of food bolus, 20 patients underwent enterotomy with removal of food bolus and in 6 patients' resection with end to end anastomosis (REEA) was done.

Conclusion: Intestinal obstruction due to dry persimmon phytobezoar (date plum or amlook) food bolus should be suspected in all patients where this fruit is commonly used as in our region and mass education of people in the region should be done.

Keywords

- Dry persimmon seed
- Date Plum/ Amlook
- Exploratory Laparotomy
- Food Bolus Milking

Introduction

Intestinal obstruction is a common disease encountered in pediatric population. It is a common cause of emergency admissions in children all over the world.[1] Foreign bodies in the intestinal lumen are commonly seen in pediatric population and mostly swallowed accidentally.[2] Intestinal bezoars are a rare cause of intestinal obstruction in children. Furthermore, plant seeds that pass through the pylorus do not induce intestinal obstruction because swallowed seeds are often small and ovoid shaped.[3-4] Dried persimmon (date plum or Amlook) is a well-known dried fruit in Asian countries

such as Japan, Korea, and China. Small bowel obstruction caused by phytobezoar is a rare but interesting pathogenesis that accounts for 2–4% of all small bowel obstructions. Phytobezoar caused by persimmon is rare, it has been seen in various countries, with about 50 cases reported in the English literature.[5-7]

AIM: To evaluate the patients of small intestinal obstruction due to a specific phytobezoar- persimmon seeds (date plum or amlook)- in pediatric age group in our region in terms of clinical presentation, management and complications.

Materials and Methods

The study was conducted in a tertiary care hospital, and 100 patients up to the age of 18 years were retrospectively included in the study from the hospital records of last 6 years.

Inclusion criteria: All the patients with age up to 18 years with small bowel obstruction due to food bolus.

Exclusion criteria:

1. Patients with 18 years or older ages.
2. Any other etiology identified on imaging or intra-operatively.

Patients with history of abdominal distension and abdominal pain after ingestion of dry persimmon were admitted and treated in our hospital as per protocol. Confirmed cases of small intestinal obstruction due to persimmon seeds were studied. Findings related to detailed history of disease and history of ingestion of dry persimmons (date plum /amlook) were recorded, examination including general physical examination, abdominal examination and digital rectal examination (DRE), CBC, blood grouping, RFT, blood glucose and abdominal X- ray were recorded for all patients. Patients of sub-acute intestinal obstruction were kept under observation, patients were kept NPO, on intravenous fluids, input/ output monitoring, and 4-hourly abdominal examination was done. If any patient's clinical condition deteriorated or were not responding to conservative treatment, they were taken for an operation. All patients of acute intestinal obstruction were taken for emergency surgery. CECT of abdomen was done in selected patients. Patients who were managed non- operatively, underwent BMFT after 3 weeks to look for any small bowel pathology. Intraoperative finding of patients and operative procedures were recorded from the patient record.

Result

100 patients presented with history of consumption of dry persimmon (date plum /amlook) and presented with symptoms and sign of intestinal obstruction, 64 were male and 36 were female and age ranges from 4 year to 18 years. Most common symptom was abdominal pain in 92 patients, nausea and vomiting in 85 patients, abdominal distension in 91 patients, and obstipation in 35 patients. The most common sign was abdominal distension in 91 patients, abdominal tenderness in 74 patients, exaggerated bowel sounds in 81 patients, dehydration in 49 patients and fever in 12 patients **(Table 1).**

Table 1: Clinical presentation of patients with food bolus obstruction

S. No.	Clinical presentation	No. of patients	Percentage
1	Pain abdomen	92	92%
2	Abdominal distension	91	91%
3	Nausea and Vomiting	85	85%
4	Exaggerated bowel sounds	81	81%
5	Tenderness	74	74%
6	Dehydration	49	49%
7	Obstipation	35	35%
8	Fever	12	12%
9	Absent bowel sounds	6	6%

DRE was normal in 51 patients, 47 patients had ballooning and rectal polyp seen in 2 patients. X-ray of the abdomen in supine and upright positions were taken to confirm clinical findings. Patients with SAIO were managed conservatively, but in patient were the condition deteriorated abdominal CECT was done. of 31 patients 12 patients relieved after CECT of the abdomen and the rest were operated. All patients with acute intestinal obstruction were operated. Among the operated patients, 68 had obstruction in ileum, 23 had obstruction in ileocaecal junction, and 9 patients had obstruction in jejunum **(Table 2).**

Table 2: Site of obstruction

Site of obstruction	Number of patients	Percentage
Ileum	68	68%
Ileocaecal junction	23	23%
Jejunum	09	8%
Total	100	100%

Exploratory laparotomy with milking of food bolus from small gut into large gut, peritoneal lavage and peritoneal drainage was done in 56 patients. Small gut at the site of obstruction was normal in these patients **(Figure 1).**

Figure 1: Food bolus obstruction with normal small bowel**.**

Small bowel was showing pre-gangrenous changes just proximal to the site of obstruction in 12 patients and 6 patients among them require REEA. Enterotomy, removal of food bolus and closure of enterotomy were done in 20 patients **(Figure 2 & 3).** 18 patients were managed conservatively **(Table 3).**

These Post-operative complications were observed: wound infection in 10 patients, wound dehiscence in 2 patients, anastomotic leak in 02 patients, post-operative prolonged ileus in 13 patients, chest infection in 03 patients, and thrombophlebitis in 2 patients.

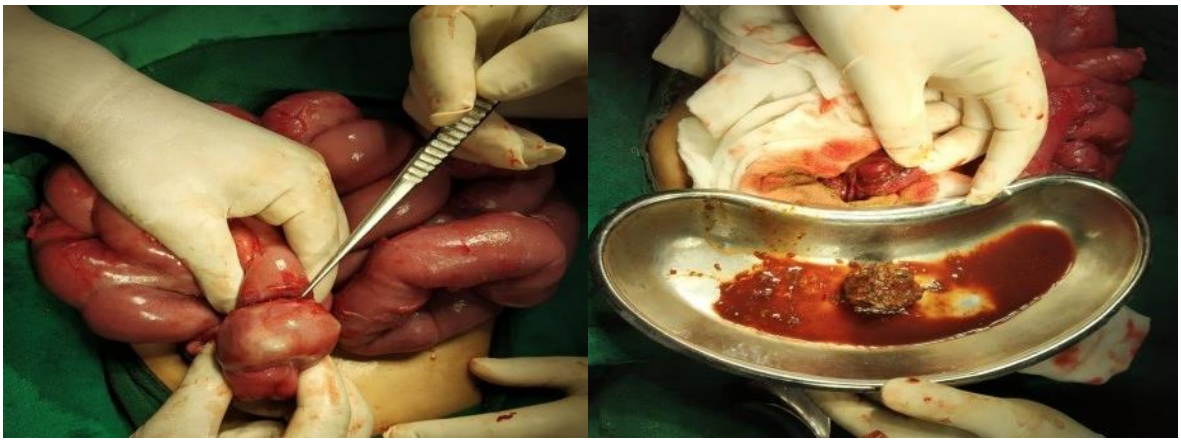

Figure 2 & 3: Enterotomy and removal of food bolus.

Table 3: Management of patients with food bolus obstruction

S.No.	Management	No. of patients	Percentage
1	EL with milking of food bolus from small gut into large gut, Pl and PD	56	56%
2	Enterotomy, removal of food bolus and closure of enterotomy, PL and PD	20	20%
3	REEA	06	6%
4	Non operative management	18	18%

Discussion

Dried persimmon (date plum / amlook) is eaten primarily in Asian countries and is made from *Diospyros kaki*. This fruit is so bitter that it is unsuitable for being eaten raw. By drying the astringent persimmon, the tannins shift from soluble to insoluble form, and the bitter taste turns sweet. Phytobezoars due to persimmons are generally attributed to over ingestion of dried astringent persimmons. As dried astringent persimmons are rich in soluble tannin, this tannin is susceptible to polymerization of the cellulose, hemicellulose, and protein in the presence of the dilute hydrochloric acid in the stomach, forming the basis of the bezoar [6, 8]. Unsupervised ingestion of large number of persimmons and other fruit/plant matter is one of the major reasons for phytobezoar formation in children.[8] Depending on the location of the phytobezoars, clinical manifestations may vary from no symptoms to acute abdomen.[6-10-11] Children with food bolus obstructing the small bowel may present with vague symptoms such as vomiting, feeding intolerance and obstipation, and require surgical intervention. Presentation may be delayed in pediatric population; with nonspecific signs, necessitating a high level of suspicion.[13] The most common site for phytobezoar formation is stomach. However, it is not uncommon to find phytobezoar in small bowl, especially in jejunum and proximal ileum, where they get impacted and cause obstruction; the commonest site being the terminal ileum followed by jejunum. In our study the most common site of obstruction was ileum. The treatment options for bezoars can be medical, endoscopic and surgical methods. Medical therapy includes diet, prokinetics and enzymatic dissolution agents of phytobezoars, like cellulose, and can be complementary to endoscopy.[13] Conservative treatment includes endoscopic removal, drugs and gastric lavage and dissolution agents. However, diospyros bezoars are more resistant to drugs than other phytobezoars. Sometimes the partial dissolution may occur and bezoar may pass into small bowel and cause obstruction. When the conservative measures fail or the patient at presentation is in frank obstruction, the surgical treatment is preferred. The surgical treatment can be done by open surgery or laparoscopic depending upon availability and expertise in the emergency.

Conclusion

Dry persimmon diospyros bezoar is an uncommon phytobezoar which can cause small intestinal obstruction but it is common in the regions where this fruit (Amlook) is consumed as in our region especially in rural areas. Educations regarding fruit consumption and eating habits should be given widely, especially in our region, because most of the cases of the intestinal obstruction are due to the over-consumption of dry fruit Amlook.

Ethical Consideration

Approval was obtained from the ethics committee of Government Medical College, Jammu. (No: IEC/GMC/Cat C/2021/447- dated:13/02/2021)

Acknowledgment

Not applicable

Funding/Support

Not applicable

Conflict of interests

There is no conflict of interest

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