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Case Report

Laparoscopy Assisted Management of an Unusual Case of Pomegranate Seed Phytobezoar Causing Small Gut Obstruction in a Child – A Case Report

Kulwant Singh Bhau[1], Mufti Mahmood Ahmad[2]

[1]Associate Professor, Department of General and Minimal Invasive Surgery, Government Medical College, Srinagar, Union Territory of Jammu and Kashmir, India, [2]Professor, Department of General and Minimal Invasive Surgery, Government Medical College, Srinagar, Union Territory of Jammu and Kashmir, India

Abstract

Phytobezoar though uncommon is encountered often by clinicians as a diagnostic dilemma especially in children with improper eating habits. A trial of conservative management can be initiated for allowing passage of phytobezoar spontaneously based on the clinical and radiological parameters but there should be low threshold for intervention if need arises. We operated on a 9 years old boy by laparoscopy assistance who presented to us with obstruction of small gut due to a large stony hard pomegranate seed phytobezoar. Laparoscopy is a useful approach to deal with stony hard phytobezoar obstructing small gut given the benefit of smaller incision and shorter hospital stay.

Key words: Laparoscopy, Phytobezoar, Pomegranate seed, Small gut obstruction

INTRODUCTION

Bowel obstruction is defined as a surgical emergency where a mechanical interruption (either complete or partial) occludes the flow of intestinal contents. And one of the etiologies of such obstruction is phytobezoars defined as solid masses formed due to accumulation of undigested plant and fibrous material within the gastrointestinal system. They account for between 0.4% and 4% of all gastrointestinal obstructions, with the most common sites being the stomach or small intestine.[1] Conservative approaches in uncomplicated cases can be attempted, while surgery is indicated when these measures fail or in the emergency setting. Single seed or "stone" causing partial or complete bowel obstruction in children by watermelon, sunflower, and pomegranate are well documented.[2] Treatment modalities vary according to the clinical scenario and expertise available. A trial of conservative management can be attempted based on the clinical picture and serial evaluation.[3] But sometimes the conservative management fails or the patient presents with complications such as obstruction, perforation, and bleeding. In such cases, the removal of seed phytobezoar has been attempted by either endoscopic, minimally invasive, or by open approach. We present an unusual case of large stony phytobezoar formed due to unchewed swallowing of pomegranate seeds by a 9 years old child who was managed by laparoscopy after a brief period of failed conservative trial.

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CASE HISTORY AND RESULTS

A 9 years old child from a remote village in Kashmir presented to the casualty with pain abdomen associated with vomiting and constipation for last 2 days. The patient was initially admitted and treated at peripheral health center for 2 days but seeing no improvement was referred to our tertiary care institute. Based on the clinical and radiological findings on admission as shown in Table 1 and history of swallowing of unchewed pomegranate seeds in large quantity few days back a provisional diagnosis of sub-acute intestinal obstruction due to phytobezoar was made and child was put on conservative treatment as shown in Table 1 and daily progress of response to management

Corresponding Author: Dr. Kulwant Singh Bhau, Department of General and Minimal Access Surgery, Government Medical College, Srinagar, Union Territory of Jammu and Kashmir, India.

Table 1: Clinical course during conservative treatment and surgical management

Case Details	On Admission	Day 1	Day 2
History	Pain Peri-umbilical, Vomiting, and Constipation × 2 days	Pain abdomen diffuse Constipation	Pain abdomen diffuse more severe in intensity; Constipation
GPE	PR – 104	PR – 84; RTA – 200 ml bilious	PR – 98 RTA – 400 ml bilious
Abdominal examination	Flat; Girth – 59 cm Bowel Sounds – Hyper	mild distension; Tender peri-umbilical; Girth– 60 cm Bowel Sounds – Hyper but intensity decreased	Distended; Girth–62 cm Bowel Sounds – sluggish
Laboratory Investigations	Hb - 13.3 gm% TLC -10.5 /mm^3;N - 82.9 % Platelets-3.32 Lacs/mm^3 BUN - 50 mg/dL Creatinine - 0.62 mg/dL Na+126 meq/L; K+ 4.1 meq/L Urine R/e -08-10 Pus cells/HPF; 01-02 RBC/HPF ECG –Normal; Chest skiagram - Normal	Hb - 12.4 gm% TLC -8.6/mm^3; N-73.4% Platelets-3.15 Lacs/ mm^3 BUN - 42 mg/dL Creatinine - 0.67 mg/dL Na+ 132 meq/L; K+ 3.9 meq/L	Hb - 12.7 gm% TLC-11.6/mm^3; N- 78 % Platelets-2.94 Lacs/mm^3 BUN - 47 mg/dL Creatinine - 0.71 mg/dL Na+ 131 meq/L; K+3.6 meq/L Sr Bil – 0.6 mg%, Enzymes normal, BT–1 min 30 s CT –5 min 28 s
Abdominal Skiagram	Few air-fluid levels	Air-fluid levels slightly increased	Air fluid levels increased (8–10)
Abdominal Ultrasound	Bowel loops grossly dilated with maximum caliber of 3.5 cm; inter loop fluid present. Findings suggestive of Intestinal obstruction		
CECT Abdomen	Dilated small bowel with an intraluminal content most likely Bezoar (5 cm ×4 cm) at proximal ileum causing obstruction, moderate ascites, and interloop fluid, mesenteric lymphadenopathy (8–10 mm)		
Treatment	Nasogastric tube and indwelling Foleys catheter was put. Patient was kept nil per os and was started with intravenous fluid, I/V antibiotics, proton pump inhibitors, and analgesics. Two hourly vitals monitoring and input output charting was done Procedure – Diagnostic Laparoscopy under General Anesthesia followed by enterotomy and removal of stony hard 5 cm × 4 cm phytobezoar followed by closure of enterotomy using 2–0 polyglactin suture in two layers. Position – Supine; head down 15º; Access – Open method; Port placement -11 mm infra umbilical, 5 mm midline 1 inch below umbilicus; Findings: Turbid Ascites (500 ml), Jejunum and proximal ileum dilated and congested; Stony hard 5 cm × 4 cm sized phytobezoar seen involving proximal ileum		
Post op care/ follow up	Catheter was removed on 2nd PO day, Ryles tube was removed on 3rd PO day, Orals were started on 3rd PO day and patient was discharged on 4th PO day in a satisfactory condition. Stitches were removed on 1st week follow--up		

GPE: General physical examination, I/V: Intravenous, sec: seconds, min: Minutes, cms: Centimeters, BT: Bleeding time, CT: Clotting time, PO: Post-operative day, mm: Millimeters, N: Neutrophils, TLC: Total leukocyte count, Hb: Hemoglobin; SrBil: Serum bilirubin, meq/L: Milliequivalent per Liter, HPF: High power field, ECG: electrocardiogram; gm%: Grams per deciliter, KCl: Potassium chloride, NS: Normal saline, RTA: Ryle's tube aspiration, BUN: Blood urea nitrogen, Post-op: Post-operative

was assessed. The progressive evolution of symptoms, examination findings, radiological assessment, and response to the conservative management, laparoscopic-assisted procedure done for removal of phytobezoar and follow-up management is shown in Table 1, Figure 1a-d, and Figure 2a-f. The removal of stony hard phytobezoar and closure of enterotomy was done extracorporeal. Both port sites were joined by an incision making it a 3 cm long abdominal incision as shown in Figure 2f.

DISCUSSION

Phytobezoar is uncommon masses, which typically consists of cellulose and hemicellulose from indigestible food residue and are reported to contribute to up to 4% of small bowel obstructions.[4,5] In patients who present with possible complications related to fruit seed ingestion, patient may have symptoms and examination findings which include pain abdomen, vomiting, tachycardia, fever, abdominal distension, guarding, and rigidity.[6] If the decision is made to admit and observe such patient, then monitoring vitals and serial examinations becomes an important part in management. An accurate pre-operative diagnosis is often difficult due to lack of specific symptoms, and clinical presentation of an acute surgical abdomen is very rare, occurring in 1.1% of cases.[5] Most bezoars in the small bowel are found approximately 50–70 cm above the ileocecal valve because of narrowing with slower intestinal motility and significant water absorption that hardens the bezoar. The most common site of obstruction is the terminal ileum.[5] The imaging techniques discussed in the literature ranges from plain skiagram to computed-tomography (CT) scans. CT scan is the gold standard imaging modality for diagnosing small bowel obstruction due to bezoar as false negativity rate of serial abdominal skiagram is almost 47%. Contrast-enhanced CT imaging is the most valuable method for determining the location and etiology of intestinal obstructions.[4] The history provided by the patient in conjunction with CT imaging findings likely give the most complete picture. Role of

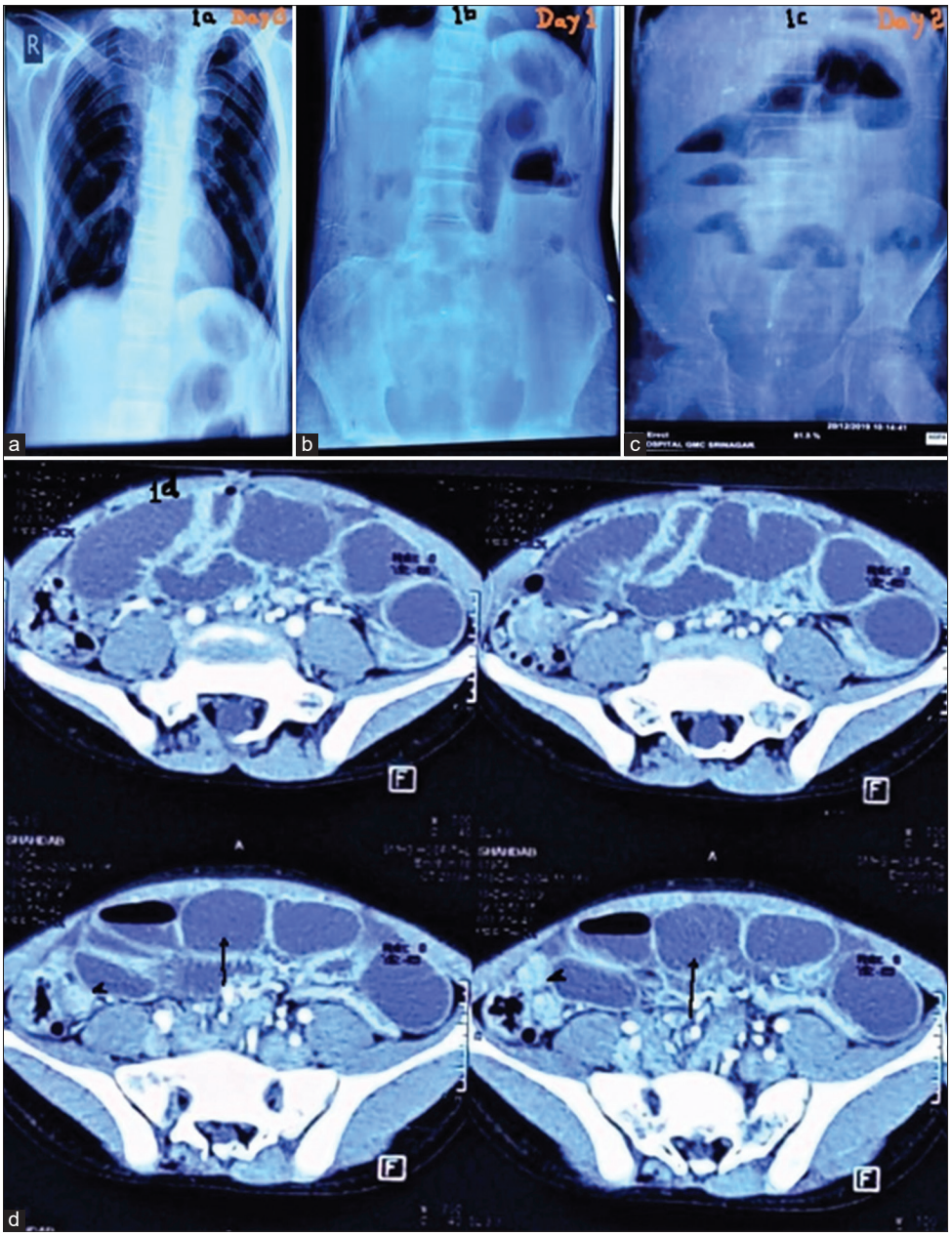

Figure 1: (a) Day 0 skiagram erect abdomen and chest showing few air fluid levels. (b) Day 1 skiagram erect abdomen showing slight increase in air fluid levels. (c) Day 2 skiagram erect abdomen showing increased air fluid levels. (d) Day 1 contrast enhanced computed tomography abdomen revealing dilated proximal small bowel loops (arrow) and small bowel obstruction with possibility of hyper to iso-dense lesion most likely Bezoar (arrowhead) of size 5 cm × 4 cm at transition point in proximal ileum with no evidence of mesenteric ischemia, gut loops normally enhancing, multiple enlarged mesenteric nodes (8–10 mm)

abdominal ultrasound (diagnostic rate of 88–93%), is limited by operator expertise, patient's body habitus, gas accumulation, and location of the obstruction.

Majority of phytobezoar pass through gastro-intestinal track without complications and in only 10–20% of cases some kind of intervention is required. In majority especially stable patients these can be managed endoscopically and in only 1% patients who are unstable or those at high risk for complications such as obstruction, perforation, or bleeding require surgical intervention.[3] Laparoscopic enterotomy and retrieval should be considered for any obstructions not amenable to endoscopic treatment. Open surgical management is usually reserved for patients in extremis, with perforation and contamination, or based on the availability of experienced endoscopic and laparoscopic surgeons and resources. The recent trend toward minimally invasive surgery has been supported by many factors such as shorter hospital stay and a lower rate of complication when compared to laparotomy. Most of the information on laparoscopic management of intestinal obstructions related to phytobezoar is anecdotal, with few studies being

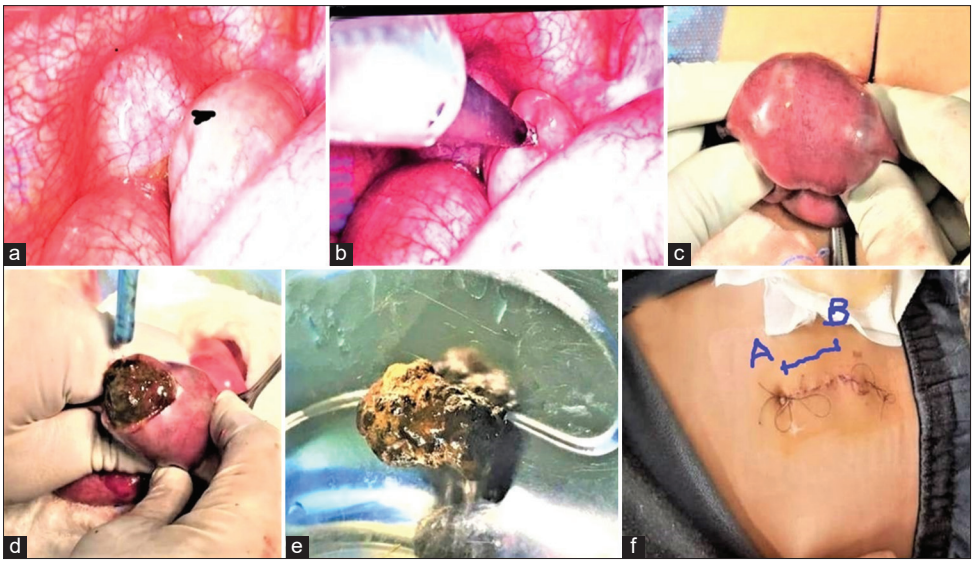

Figure 2: (a) Intra-abdominal view on diagnostic laparoscopy; straw colored ascites (arrow) approximately 500 ml aspirated and offending lesion identified (arrowhead). (b) Phytobezoar obstructing small gut confirmed by atraumatic bowel grasper. (c) Phytobezoar brought out of the abdomen by joining both port site incisions making an incision of 3 cm long. Vitality of gut assessed and was found to be viable. (d) Enterotomy made in the ileum using electrocautery in longitudinal fashion to retrieve stony hard phytobezoar. The enterotomy was closed in horizontal fashion in order to avoid narrowing of lumen. (e) Picture of stony hard pomegranate seed phytobezoar. (f) Incision length (3 cm) from point A to point B after closure

performed to date.[7] Few case reports have reported similar methods and results, with some describing enterotomy and repair after retrieval.[8]

CONCLUSION

Seed phytobezoar may present as diagnostic dilemma especially in children with improper eating habits. A trial of conservative management can be initiated for allowing passage of phytobezoar spontaneously based on the clinical and radiological parameters but there should be low threshold for intervention if need arises. Assistance of laparoscopic approach is a useful adjunct to deal with large and stony hard phytobezoar obstructing small gut in a child given the benefit of smaller incision and shorter hospital stay.

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