ACTA SCIENTIFIC CLINICAL CASE REPORTS

Volume 5 Issue 9 September 2024

Case Report

Ladd's Band Case Presented with Duodenal Obstruction in an Adult with Malrotation of Gut

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DOI: 10.31080/ASCR.2024.05.0576

Received: July 24, 2024

Published: August 26, 2024

Abstract

A 72-year-old female with chronic hypertension and acid peptic disease presented with a 24-year history of intermittent lower abdominal pain, recently worsened. Imaging revealed gut malrotation with duodenal obstruction due to Ladd's band and midgut volvulus, leading to hollow viscus perforation. An emergency laparotomy was performed, including caecum resection, Ladd's band release, appendectomy, ileostomy, peritoneal lavage, and anal dilatation. Postoperatively, she was hemodynamically stable and recovered uneventfully in the post-op ward.

Keywords: Malrotation; CT Scan

Introduction

Malrotation of the gut, a congenital disease is caused by partial or complete failure of 270-degree counterclockwise rotation of the midgut around superior mesenteric vessels in fetal life. Symptomatic presentation of this condition is extremely rare in adults, with an incidence of about 0.2%, often leading to delayed diagnosis. When symptomatic, adult patients may present with acute midgut volvulus or internal hernias caused by Ladd's band. CT scans have a diagnostic accuracy of 80%. Ladd first described this procedure to treat malrotation and volvulus in 1932 and since then it has been the definitive treatment for intestinal malrotation.

Case Discussion

We report a case of a 72-year-old female, who was brought to the casualty department because of lower abdominal pain on and off from the past 24 years that aggravated over the past 8 days with intermittent colicky type of pain. There was a history of burning micturition from the past 10 days and a history of constipation from the past 2 days. She had chronic hypertension for the past 3 years and is on antihypertensives. On examination, the vitals were normal with a blood pressure reading of 150/80 mmHg. On per abdomen examination, tenderness was elicited in the right iliac fossa, hypogastric region, and left iliac fossa and rigidity was present over the lower abdomen-right iliac fossa, hypogastric region and left iliac fossa and umbilical region. Other system examinations were unremarkable. Blood investigations revealed neutrophilia and anisocytosis, predominantly microcytic hypochromic RBCs. The Echo Doppler study showed concentric left ventricular hypertrophy and a dilated left atrium. Ultrasound scan of the abdomen revealed small bowel loops that appeared collapsed, minimal fluid in the abdomen and pelvis, and a defect in the anterior abdominal wall measuring 5.6mm is noted with herniating bowel - umbilical hernia and also a right simple cortical cyst. CT scan of the abdomen and pelvis showed twisting of mesentery with mesenteric vessels and distal dilated jejunal loops with mild pneumoperitoneum and few foci of air in retroperitoneum. Impression of the histopathology report of the received caecum was suggestive of nonspecific inflammation. By considering the clinical examination and investigation findings a diagnosis of midgut volvulus with hollow viscus perforation secondary to acute intestinal obstruction was made. An emergency exploratory laparotomy was performed due to a perforated caecum secondary to acute intestinal obstruction from gut malrotation. The procedure included resection of the perforated caecum, release of Ladd's bands, appendectomy, end ileostomy, total peritoneal lavage, and manual anal dilatation under general anesthesia. The small bowel was repositionedto the right side and the colon to the left side. An ileostomy was created and secured. The surgery and immediate postoperative period were uneventful,

and the patient was stable and transferred to the post-op ward.

Malrotation of the gut, a congenital disease is caused by partial or complete failure of 270 degree counterclockwise rotation of midgut around superior mesenteric vessels in fetal life [1]. Symptomatic presentation of this condition is extremely rare in adults, with an incidence of about 0.2%, often leading to delayed diagnosis [2]. When symptomatic, adult patients may present with acute midgut volvulus or internal hernias caused by Ladd's band [2]. Computerized tomography (CT) scans have a diagnostic accuracy of 80% and can identify specific abnormalities indicative of malrotation [2].

Ladd first described this procedure to treat malrotation and volvulus in 1932 and since then it has been the definitive treatment for intestinal malrotation [1]. Ladd's procedure consists of initial untwisting of the volvulus [1]. Ladd's bands are thick peritoneal bands running from the caecum to the right upper quadrant and to the duodenum and jejunum in this case particularly [1].

Chief complaints

Patient presented to the casualty of Osmania general hospital with lower abdominal pain on and off from the past 24 years, aggravated over the past 8 days with intermittent colicky type of pain.

History of presenting illness

Patient was apparently asymptomatic 24 years ago, then she developed pain in lower abdomen which was insidious in onset and colicky type. This pain has increased progressively in the past 8 days.

- History of burning micturition - 10 days
- History of constipation and obstipation - 2 days
- History of anorexia - 1 day
- No history of vomiting, No history of nausea, No history of fever
- No history of significant weight loss, No history of trauma

Past history

No history of similar complaints in the past, No significant surgeries in the past.

Associated diseases

- Chronic hypertension - since 3 years
- Acid peptic disease on proton pump inhibitors
- No history of diabetes mellitus, asthma, tuberculosis, thyroid, epilepsy, cerebrovascular attack, cardiovascular disease.

Drug history

Antihypertensives, Proton pump inhibitors

Personal history

- Diet: Vegetarian
- Sleep: Disturbed sleep due to pain.
- Appetite: Decreased
- Bowel and bladder: Burning micturition and constipation
- Addictions: Non smoker, Non alcoholic.

Family history

There was no history of similar conditions reported in any of her family members.

General examination

Patient was examined in a well lit room after taking due con-sent. she was well oriented to time, place and person.

Patient is moderately built and moderately nourished.

Vitals

- On examination, the patient is conscious, coherent and cooperative. She is afebrile
- Blood pressure: 150/80 mmHg
- Pulse rate: 80 BPM
- CVS: S1 S2 positive
- Respiratory rate: Bilateral airway entry: Equal
- Pallor: Mild pallor
- Icterus: Absent
- Cyanosis: Absent
- Clubbing: Absent
- Lymphadenopathy: Absent
- Edema: Absent

PER abdominal examination

Inspection

- Abdomen - flat
- Umbilicus - central, slit, inverted
- All quadrants of abdomen moving correspondingly with respiration, No visible mass
- No visible organomegaly
- No scars, sinuses, dilated veins
- External genitalia – normal

Palpation

- On palpation, all inspectory findings were confirmed.
- No local raise in temperature.
- Tenderness was elicited in right iliac fossa, hypogastric region and left iliac fossa Rigidity present over lower abdomen-right iliac fossa, hypogastric region and left iliac fossa. and umbilical region.
- No palpable organomegaly,
- No palpable mass.
- Hernial orifices were free
  External genitalia were normal.

Percussion

Tympanic note was heard all over abdomen except for the area of liver dullness.

Auscultation

Both S1 and S2 were positive.

Differential diagnosis

- Constipation
- Intestinal malrotation
- Cecal or sigmoid volvulus
- Intussusception
- Intestinal perforation
- Acute colonic pseudo-obstruction
- Mesenteric artery ischemia.

Investigations

There are no relevant biochemical findings.

Haematology

- WBC: Neutrophilia and shift to left
- RBC: Anisocytosis, predominantly microcytic hypochromic blood picture
- Prothrombin time - 24 seconds.

Echo doppler study

- Mitral valve - MAC +
- Concentric left ventricular hypertrophy with Fair left ventricular systolic function.
- Grade 1 diastolic dysfunction, Good right ventricular function,
- Secure mitral regurgitation ,Mild pulmonary hypertension and Di-lated left atrium.
- No PE/Clot/Vegetation .

Ultrasound scan of abdomen

Visualized small bowel loops appear collapsed, minimal fluid in abdomen and pelvis, defect in anterior abdominal wall measuring 5.6mm is noted with herniating bowel - umbilical hernia, Simple hepatic cysts and Right simple cortical cyst.

CT scan of abdomen and pelvis

Twisting of mesentery with mesenteric vessels and distal dilated jejunal loops with mild pneumoperitoneum and few foci of air in retroperitoneum.

Age Related degenerative changes were seen.

Histopathology report

Received caecum with appendix ; caecum measuring 8.5 x 7 x 2 cm and appendix measuring 7 x 1 cm with mesoappendix, lumen with fecolith.

Multiple sections studied from segment of intestine show colonic mucosa and glands with tall columnar cells. Lamina propria shows mixed inflammatory infiltrate. Submucosa shows collection of lymphocytes, congested blood vessels, muscularis propria is hypertrophied and oedematous. Serosa shows congested blood vessels.

Blood typing was also done for blood transfusion.

Impression

Features of ceacum suggestive of non specific inflammation-volvulus of intestine.

Provisional diagnosis

By considering the clinical examination and investigation findings a diagnosis of midgut volvulus with hollow viscus perforation secondary to acute intestinal obstruction was made.

Management

Operative notes

- Surgery: Emergency Exploratory laparotomy , resection of perforated caecum + release of Ladds band + appendectomy +end ileostomy + Total peritoneal lavage + Manual anal dilatation .
- Indication: Hollow viscus perforation secondary to acute intestinal obstruction due malrotation of gut
- Anaesthesia: General anesthesia
- Position: Supine
- Preparation: 5% betadine.

Procedure

Sterile antiseptic precautions , the above anesthesia, position and preparation are followed. Draping is done. A midline laparotomy skin incision was given. Skin and subcutaneous tissue separated and dissected. Rectus cut and opened. Peritoneum opened. Resection of perforated caecum was done along with primary repair of distal colon with 2-0 vicryl in 2 layers. Adhesolysis was done. Deformation of bowel loops done and small bowel positioned on right side, colon positioned on left side. Proximal ileum after resection of perforated cecum was brought anteriorly through the left side of umbilicus as end ileostomy.

A 3cm circular incision taken. Stromal subcutaneous tissue separated and dissected. rectus opened, terminal ileum is brought out through the incision and fixed to rectus and skin with 2-0 vicryl. Hemostasis is secured. The rectus is closed with loop ethilon in a continuous manner. Skin is closed with surgical staplers. Intra OP and immediate Post OP period is uneventful. Patient is shifted to the post OP ward. Hemodynamically stable.

Medication

- Inj. Magnex Forte 1.5 mg iv BD
- Inj. Metrogyl 500 mg iv TID (replaced by tab cefixime 200 mg on post op day 9)
- Tab Pantop 40 mg OD
- Tab PCM 500 mg TID
- Tab Zofer 4 mg BD
- Inj. Tramadol 100 mg in 100ml normal saline
- Multivitamin tablets OD
- Tab Chymoral Forte TID
- Tab Telma 20 mg OD

Conclusion

This case highlights the need for heightened clinical awareness of gut malrotation in adults, particularly when presenting with non-specific abdominal symptoms. Early diagnosis and intervention are crucial to prevent life-threatening complications. The successful management of this case with Ladd's procedure demonstrates its efficacy in treating symptomatic malrotation in adults.

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