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A CASE OF ADULT INTESTINAL OBSTRUCTION WITH HEPATOPTOSIS : A HIDDEN CULPRIT

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CHIEF COMPLAINTS

- 75/F patient, Housewife by occupation came to our centre with complaints of-

1. Pain in abdomen with distension x 5 days.
2. Shortness of breath (dyspnea) x 5 days.
3. Non-passage of stools x 5 days.

CASE CAPSULE

1. **Abdominal Pain with Distension** - Diffuse, colicky in nature, associated with non-passage of stools and flatus since the onset.

- Associated with nausea and 2 episodes of non-projectile bilious vomiting over the past 2 days.
- **History of similar vague pain in abdomen in the past (Multiple episodes)** – **Treated at local Center**

2. **Breathlessness**: Sudden onset, progressively worsening, associated with non radiating, sharp chest pain over right side– **1st episode**
   - No history of similar complaints in the past / significant prior history/ prior surgical history.

COURSE IN OUTSIDE CENTRE

- On visiting an outside centre for the same complaints, the surgeon started conservative line of management with IV fluids and supplemental oxygen.
- Patient then underwent :

- HRCT (Thorax) : B/L gross pneumothorax secondary to large emphysematous bullae in both lung fields – **B/L ICD insertion done**

- USG (Abdomen) : Dilated bowel loops on right side with multiple fluid levels with liver on the left side and free fluid in abdomen
s/o **? Acute Intestinal Obstruction**

- Based on the provisional diagnosis of an **Acute abdomen with ? Sealed off perforation** – **Abdomen drain insertion done in the right iliac fossa under local anaesthesia – Removed after 2 days**
- Furthermore, due to unavailability of resources, the patient was referred to our centre for further management

GENERAL EXAMINATION ON ADMISSION

- Patient was conscious, oriented to time, place and person and tachypnoeic
- No evidence of Pallor, Icterus, Cyanosis, Clubbing, Lymphadenopathy, Edema

On examination

Patient was afebrile

BP- 110/70 mm of Hg

PR- 100/min

SpO2- 92% on 10L O2 with laboured breathing

Systemic Examination

Per Abdomen examination-

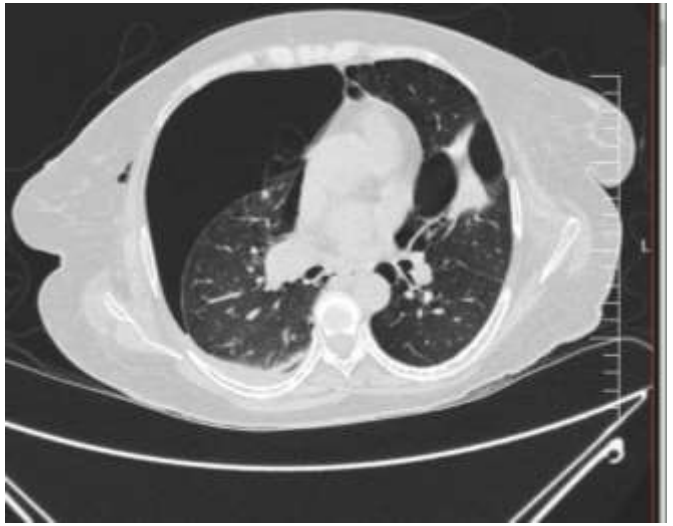
- Abdomen was distended **(Abdominal drain insertion site was noted)**
- Diffuse tenderness present, maximum at the drain site
- Crepitations present over anterior abdominal wall
- No Guarding/Rigidity
- No palpable organomegaly/lump / free fluid
- Bowel sounds absent over all quadrants

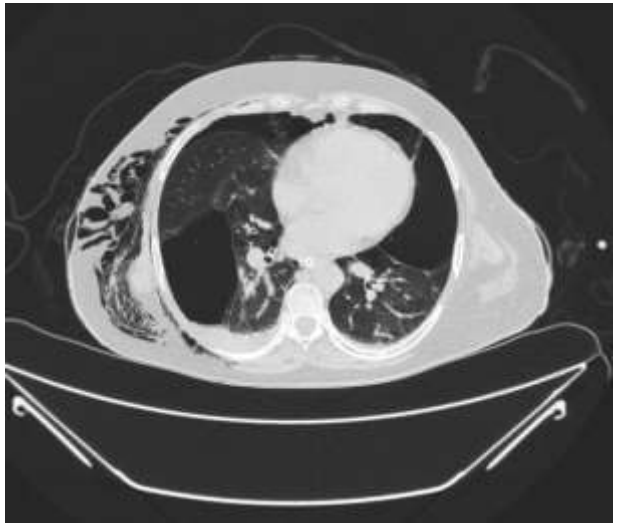
Respiratory Examination-

- Bilateral ICDs in situ, with minimal air bubbling noted in the right-sided ICD compared to Left Side **(? Bronchopleural fistula)**
- Hyper-resonance on the right side on percussion with decreased right sided air entry

HRCT THORAX

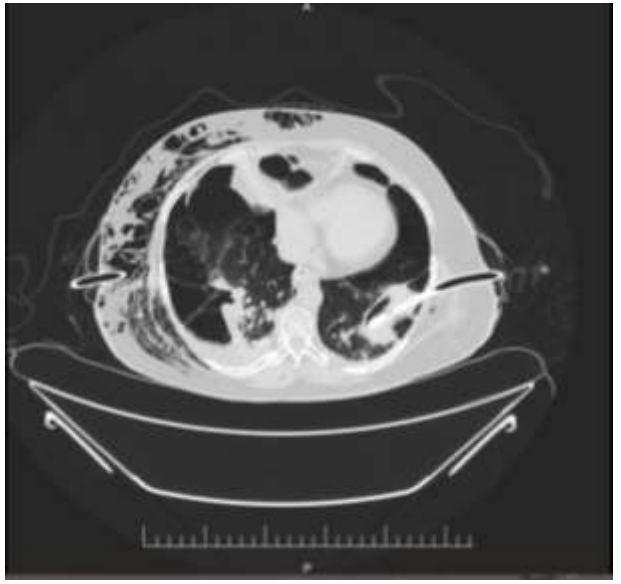
RIGHT LARGE EMPHYSEMATOUS BULLAE





SUBPLEURAL BULLAE IN BILATERAL UPPER LOBES OF LUNG CAUSING LOSS OF LUNG VOLUME

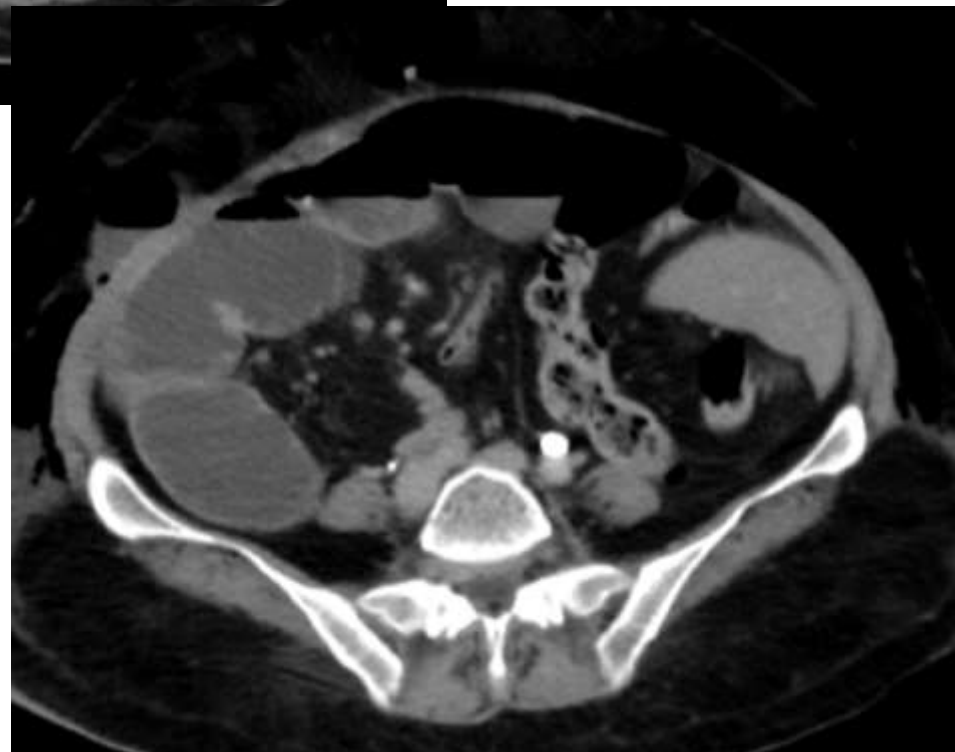
LARGE EMPHYSEMATOUS BULLA NOTED IN THE REGION OF LEFT LINGULAR SEGMENT



B/L ICD NOTED IN SITU

CECT ABDOMEN + PELVIS

- Most of the visualized small bowel loops (jejunal and ileal) and the collapsed large bowel loops are seen in the right side of midline - **SMA-SMV relationship however appears maintained**
- **Wandering liver +** with spleen in normal
- **All small bowel loops appear dilated with normal mural enhancement till the level of mid-ileum (transition point)**
- Extensive surgical emphysema tracking along the anterior, lateral and posterior chest wall bilaterally.



COURSE DURING ADMISSION

- Patient showed improvement with initial conservative management.

- Patient was then transferred to Respiratory Medicine Department for further management of the Ruptured Emphysematous Bullae with ?Bronchopleural fistula (BPF)
- Patient developed swelling over the left lower limb while in the respiratory ward for which venous doppler was done which showed **Extensive left ilio-femoral thrombosis and was started on LMWH**

- **Following this, the patient again showed signs of Small Bowel Obstruction and was taken up for Exploratory Laparotomy.**

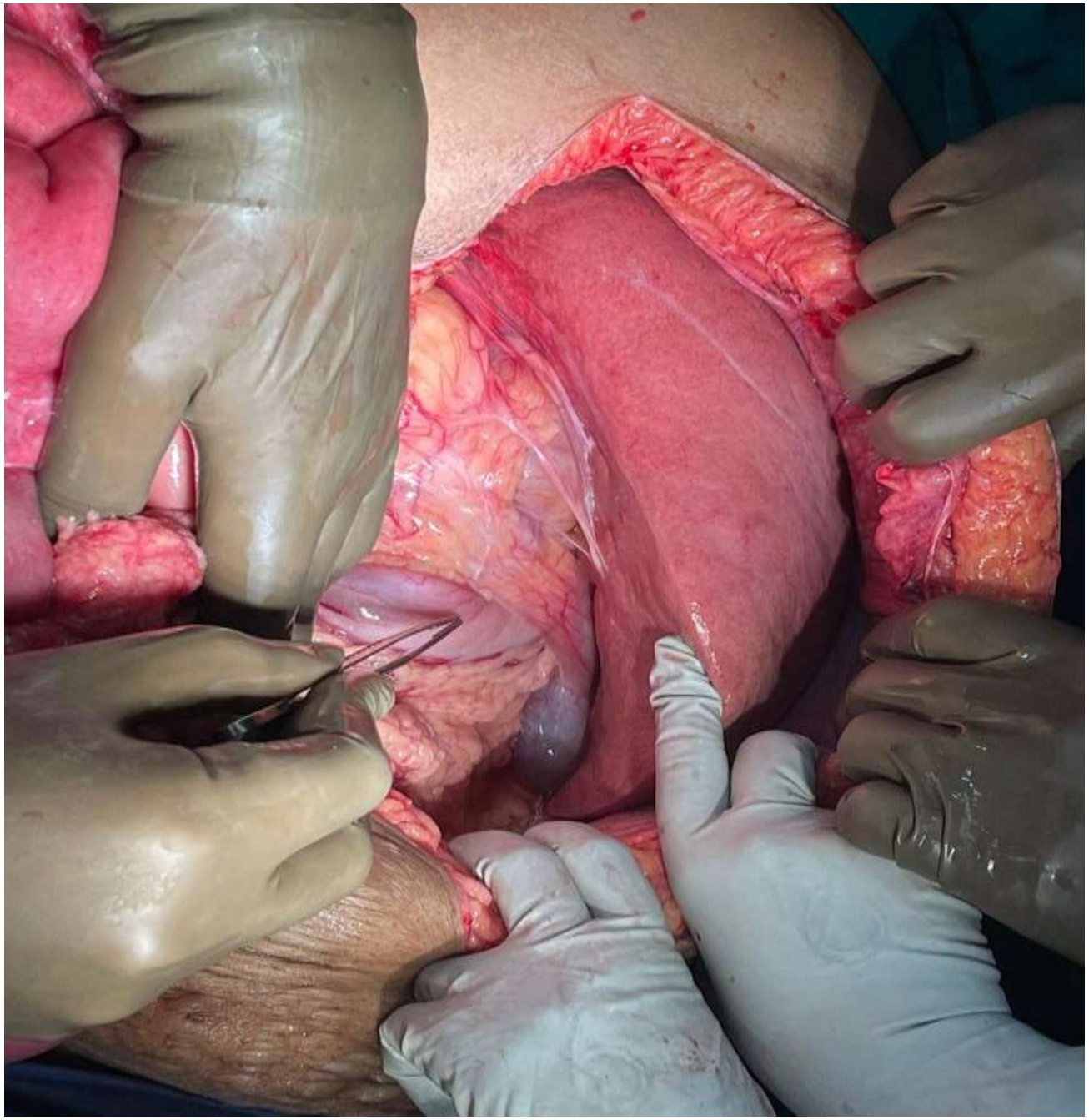
Intra Operative Findings

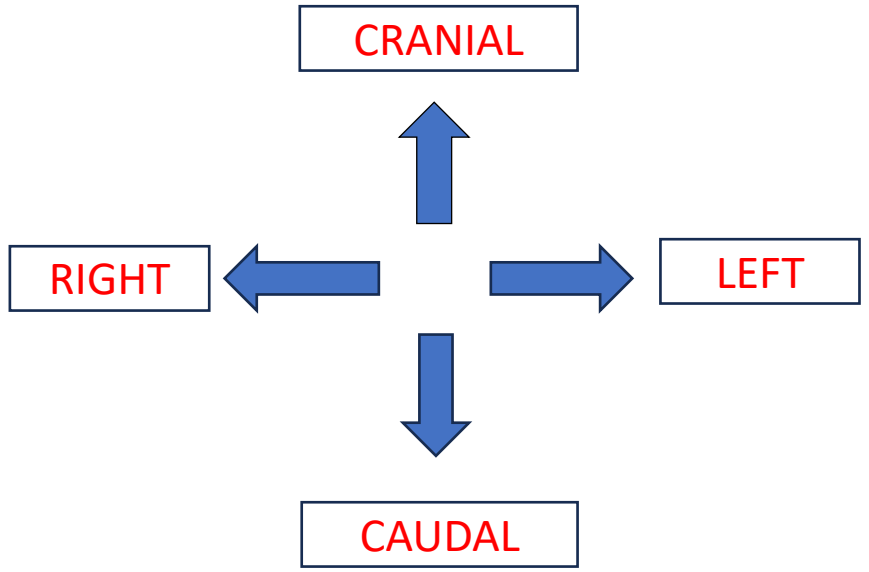
- Multiple discreet diverticuli were noted in the transverse colon without any abscess/perforation.

- **Loop of ileum had herniated into the peritoneal defect created by the drain placement at outside centre – Leading to obstruction**
- **Small bowel loops were dilated proximal to the site of obstruction with collapsed large bowel.**
- **Ileal loop was adherent to the hernial sac and reduced to peritoneal cavity and obstruction relieved.**

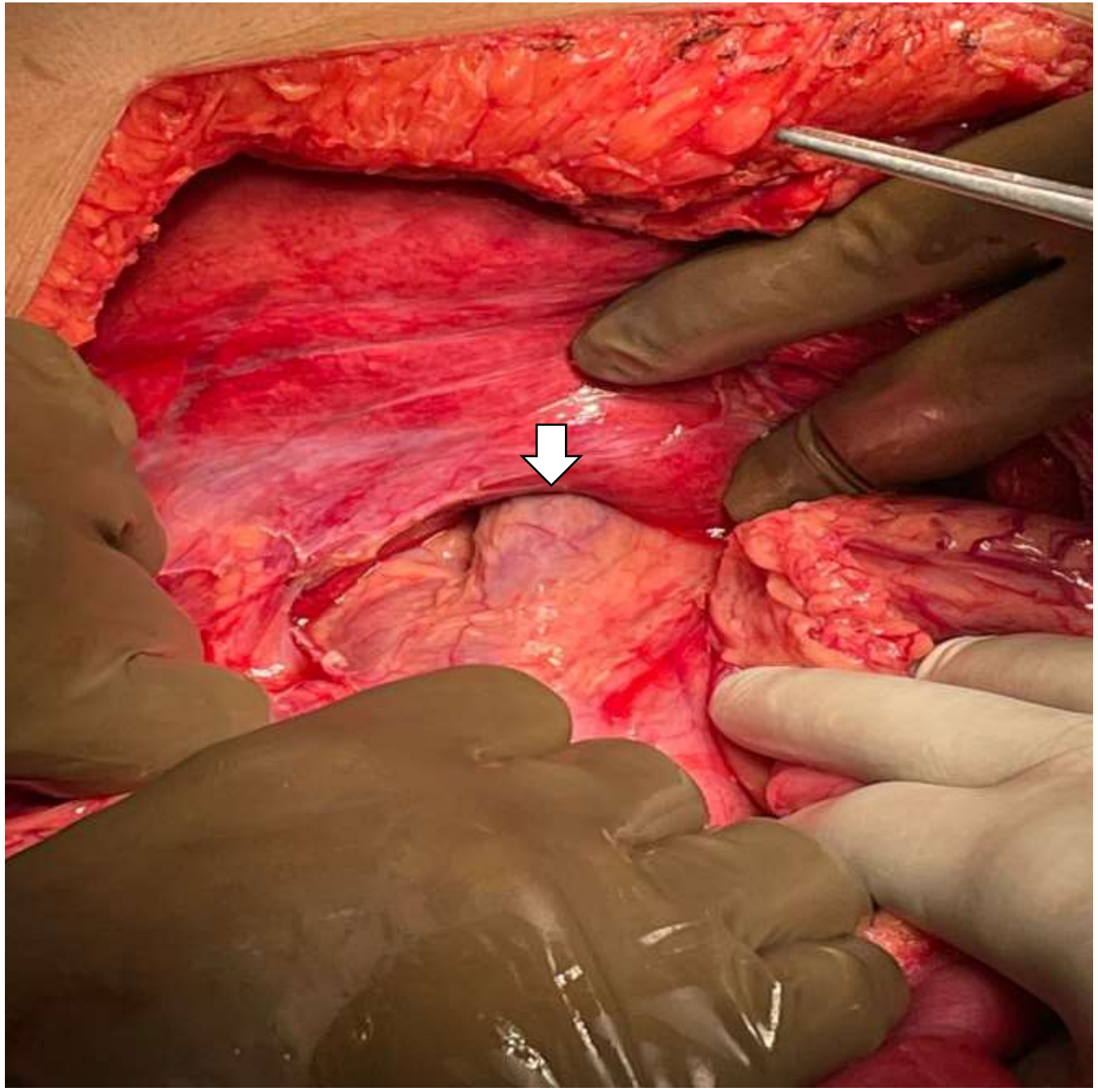
- **Wandering liver was situated in the left upper abdomen with no significant twisting of the bilio-vascular pedicle.**
- **The duodenum with the DJ flexure was on the left with a higher up cecum in the right hypochondrium with Ladds bands and few flimsy adhesions– Type IIIC**

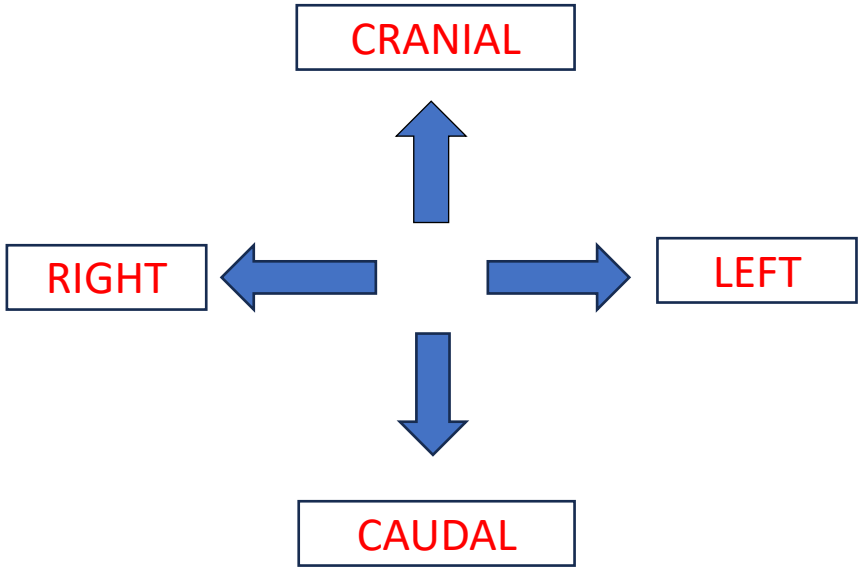
- The Ladd's Band were cut.
- Defect at drain site was closed.



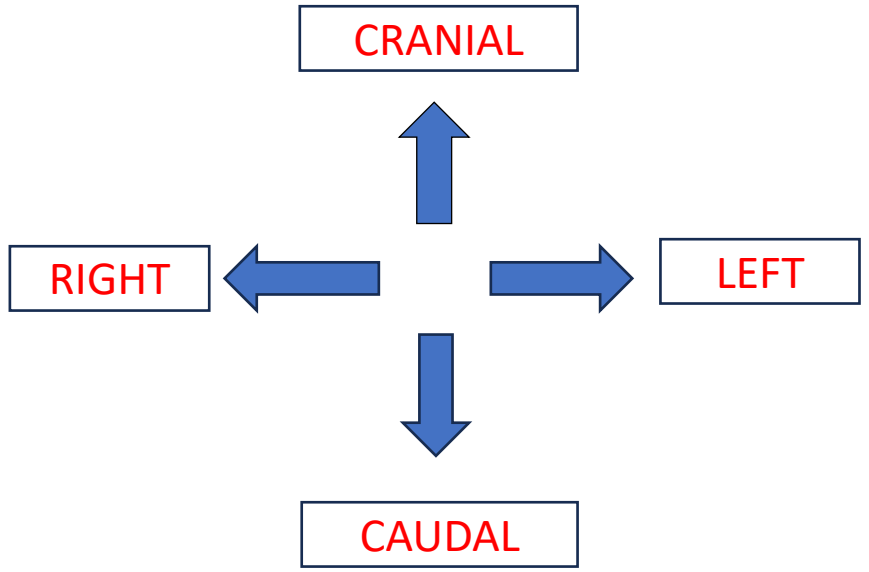


Liver and gallbladder in LHC with peritoneal attachment going to RHC

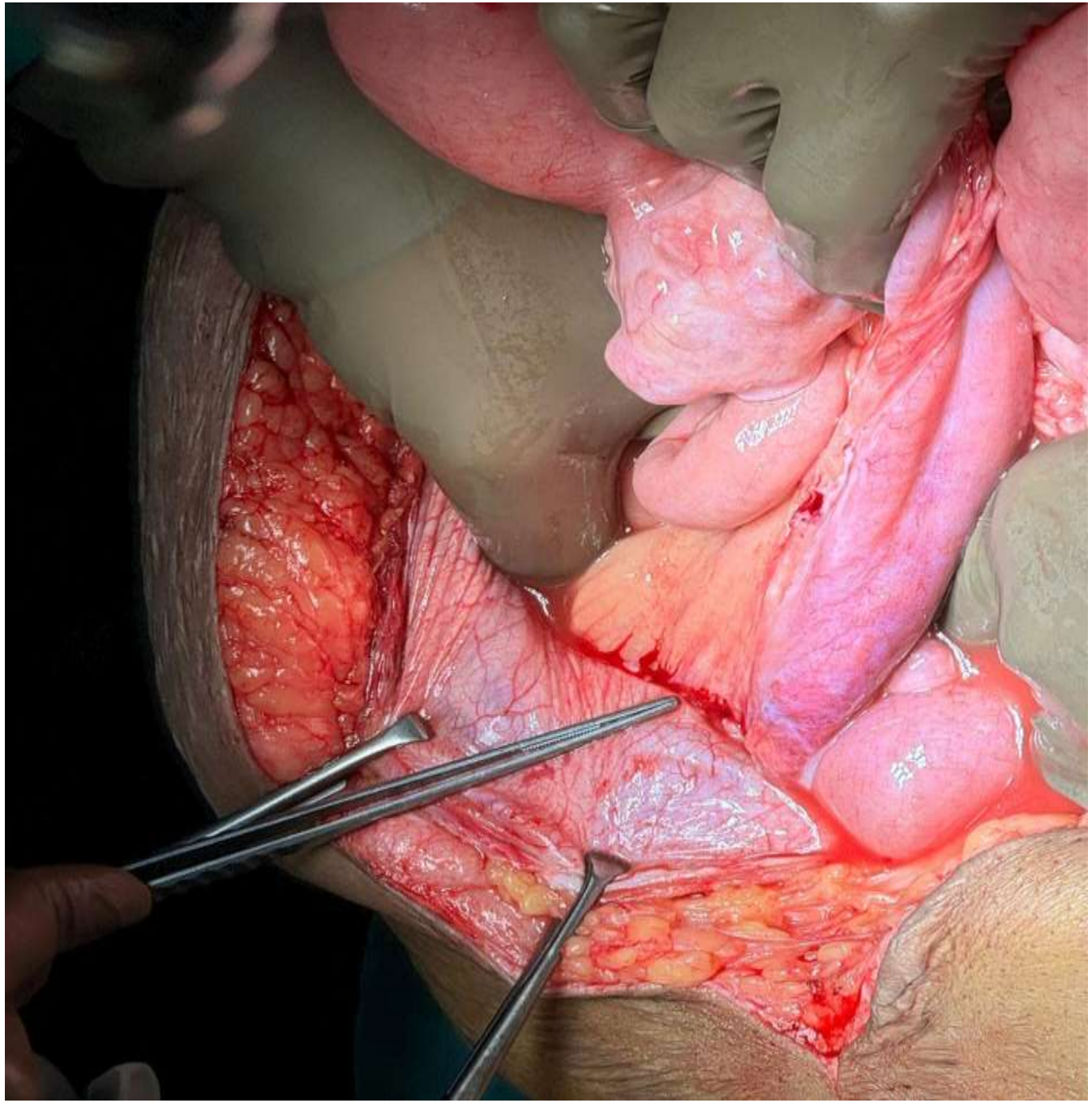


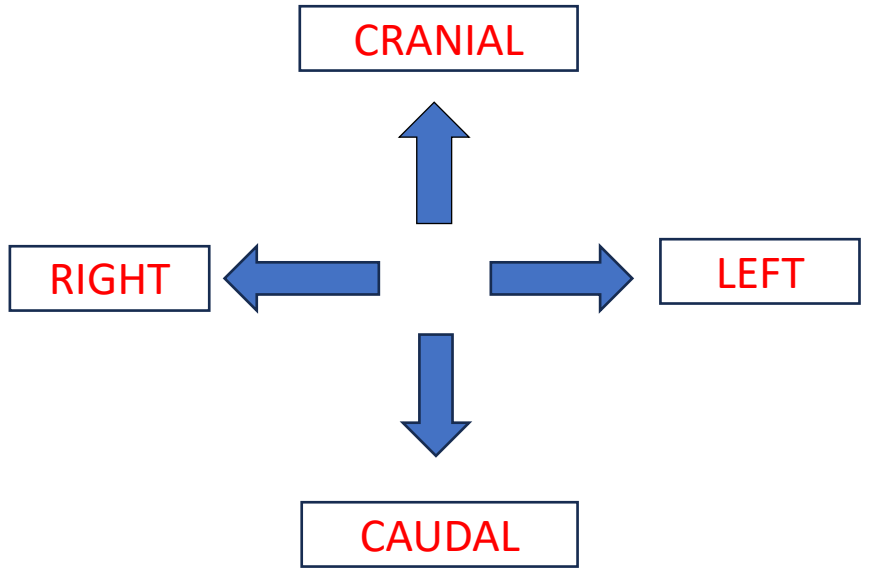


Bilio-vascular pedicle of the wandering liver

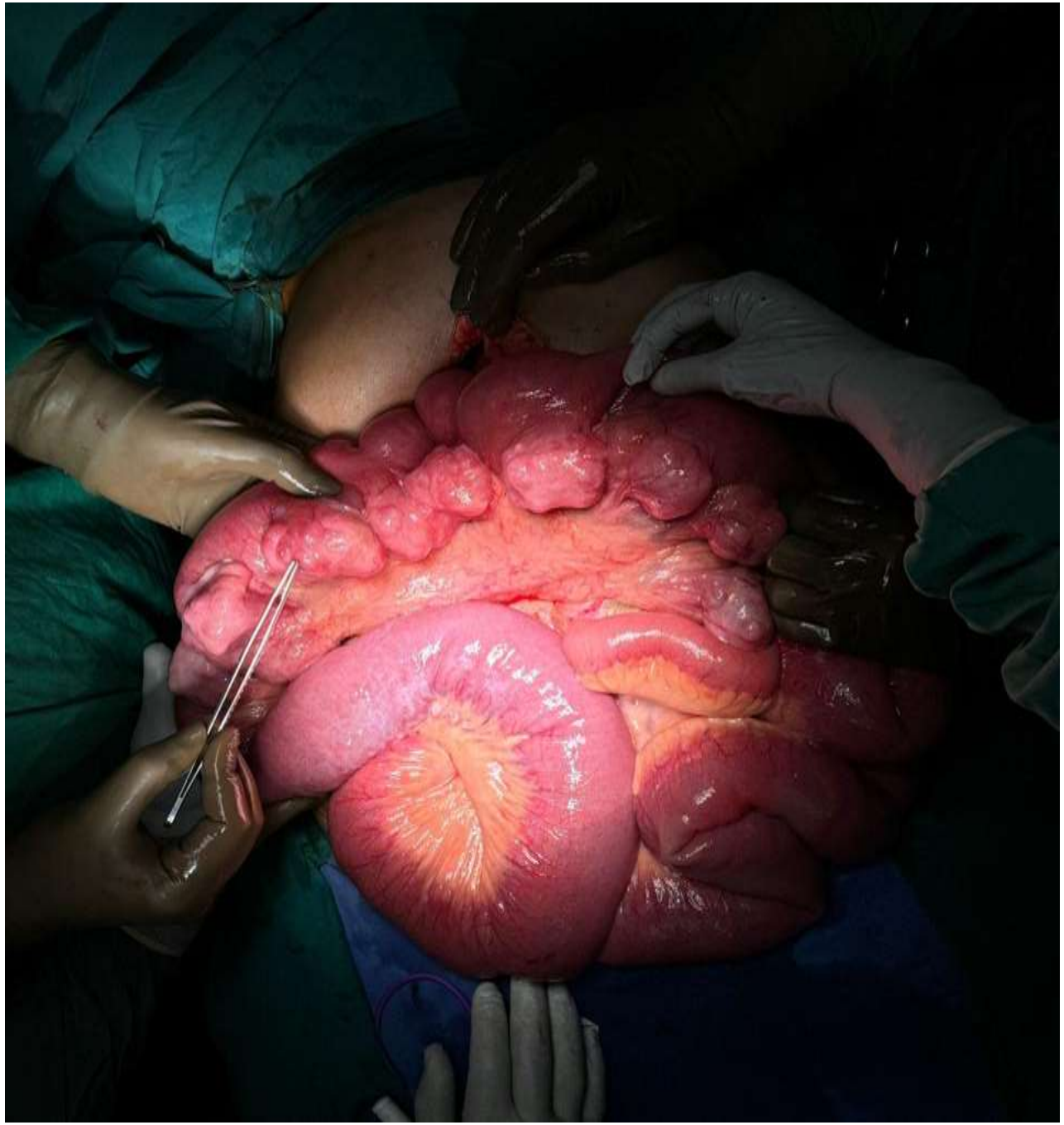


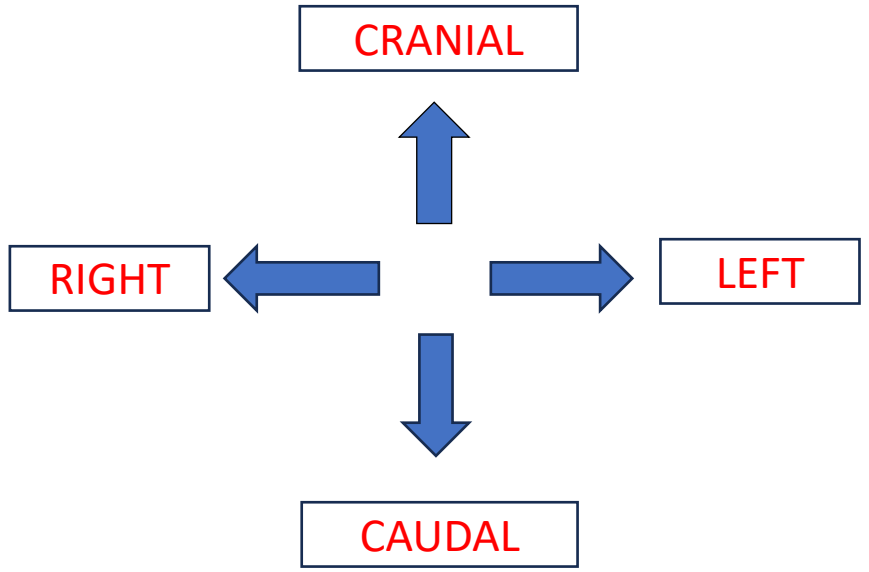
Ladd's Band were identified, cut and released.



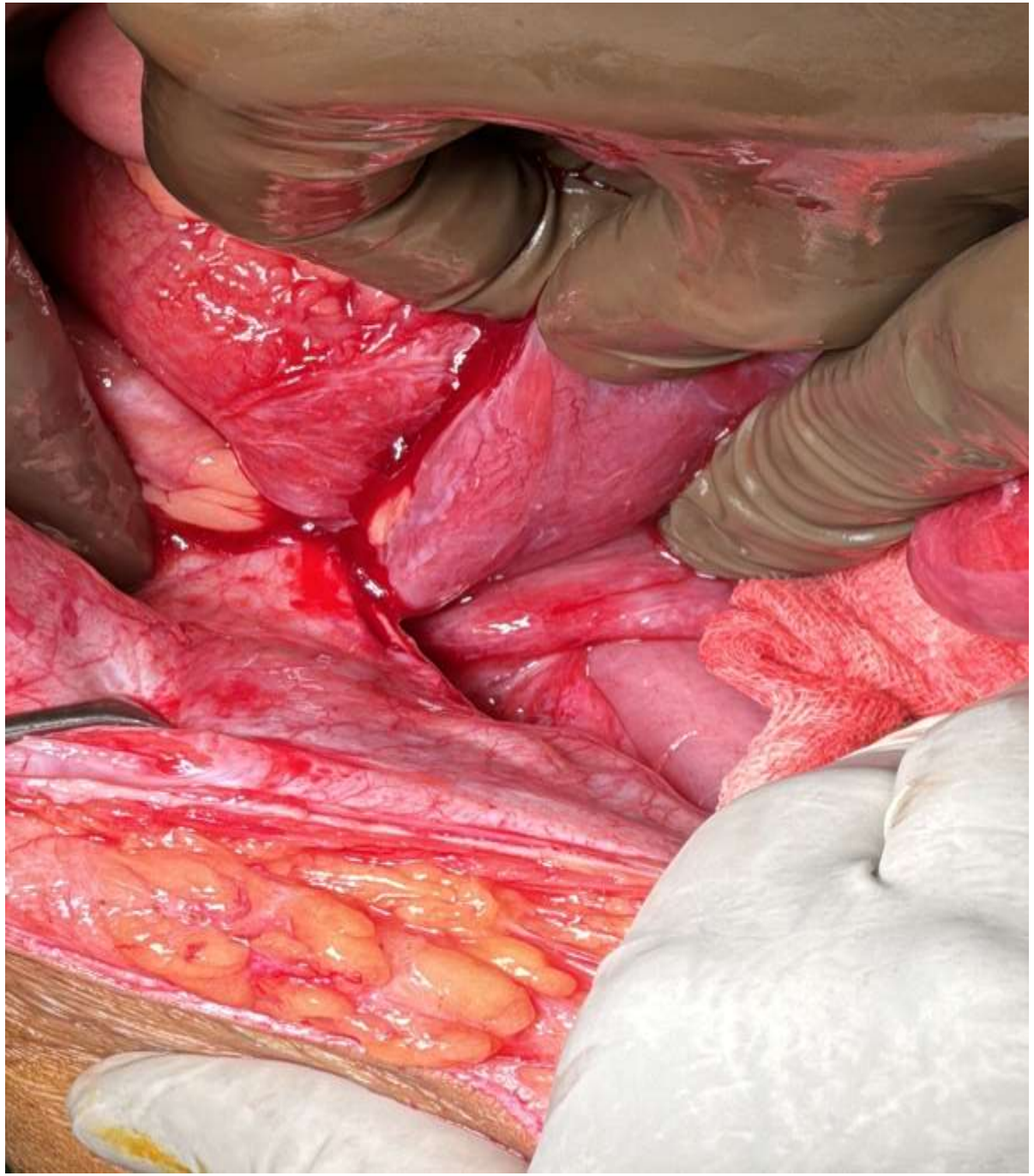


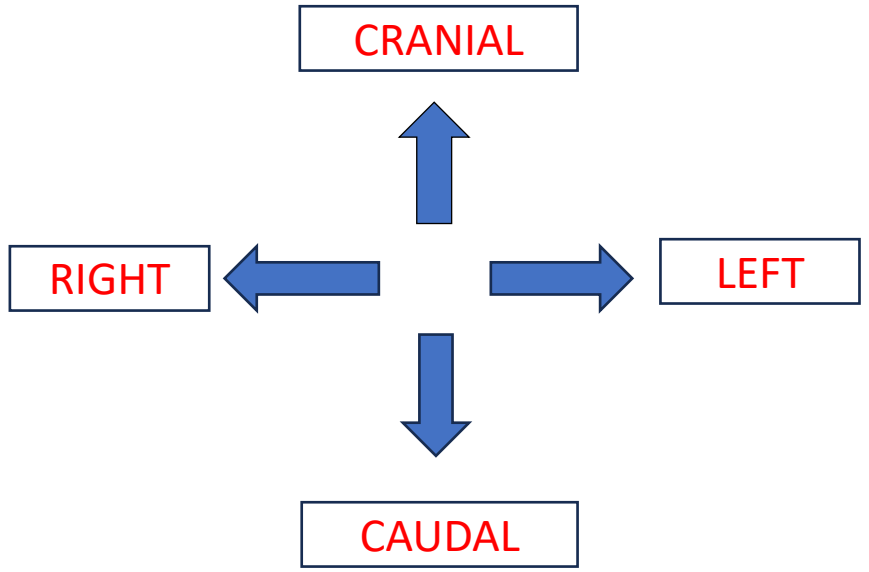
Multiple adhesions present, adhesiolysis was done



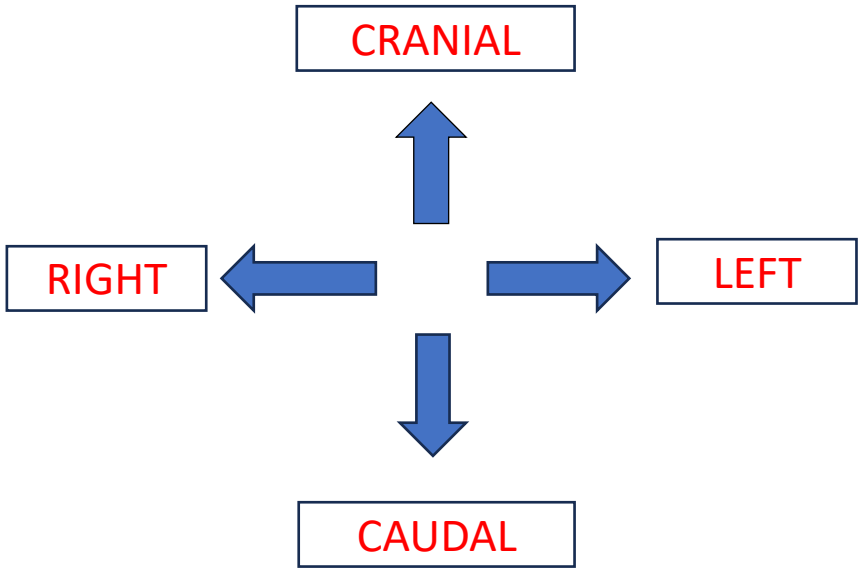


Transverse colon showing multiple large, discrete diverticuli – Hinchey's class 0 (uncomplicated)





Site of drain insertion with 2*3 cms defect and herniation of terminal ileum – Site of obstruction



Obstructed segment of ileum after reduction of the contents – No perforation/stricture

POST OPERATIVE COURSE

- Post Operatively patient was kept intubated and shifted to the SICU.
- Intra-operatively, the patient was stable and showed no respiratory distress.
- RT output was minimal with reduction in the abdominal girth.

- Post Operatively on Day 3 there was a sudden drop in blood pressure with drop in saturation
- Patient was started on Ionotropes but without improvement.

- 2 cycles of resuscitations were attempted but not successful
- **Cause of death : Massive Pulmonary Embolism secondary to Left Extensive Ilio-femoral DVT**

SURGICAL PATHOLOGIES AT HAND DURING MANAGEMENT

- **Intestinal malrotation type IIIC**
- **Wandering liver**
- **Incidental diverticulosis**
- **Obstructed iatrogenic hernia**
- **Pneumothorax secondary to emphysematous bullae**

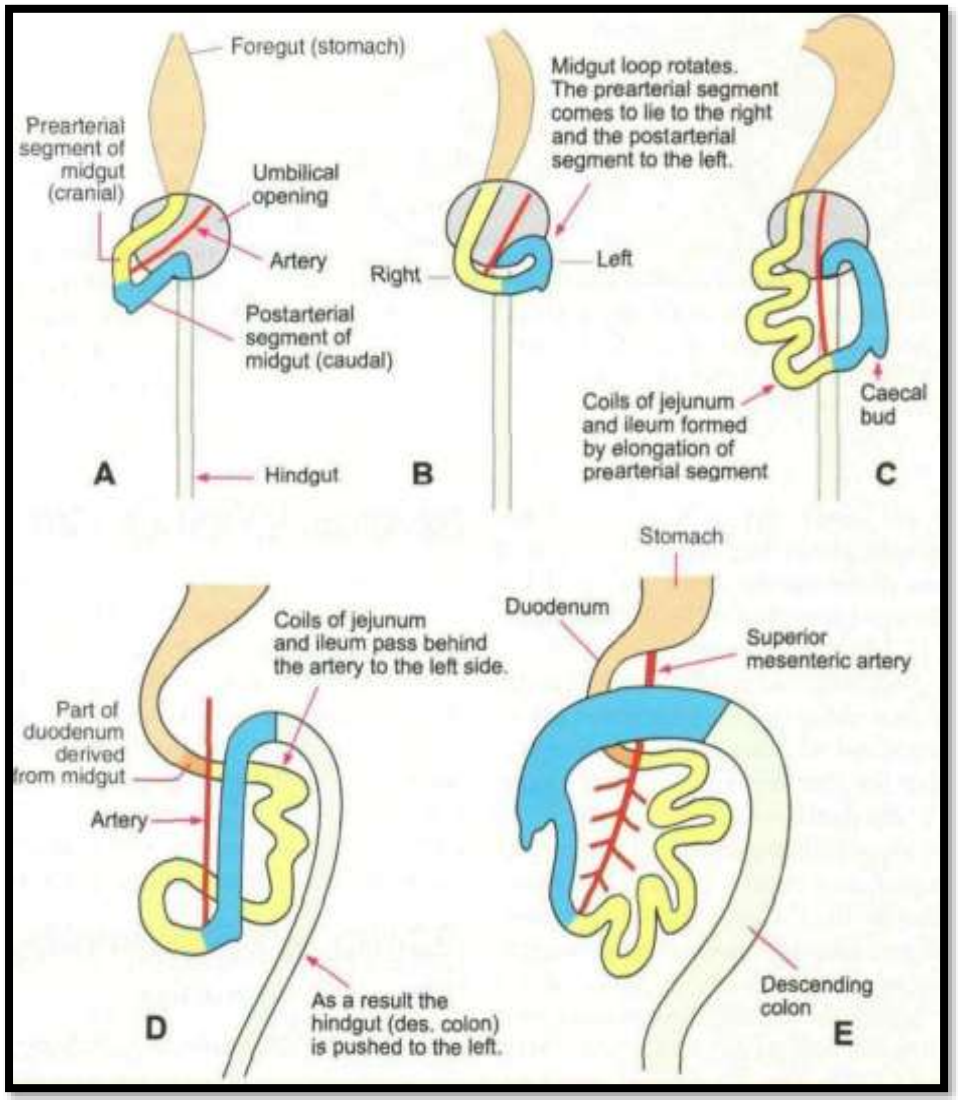
PRIMITIVE MIDGUT MALROTATION

- Intestinal malrotation represents a spectrum of congenital rotational anomalies of the intestines, with typical presentation in infancy and early childhood.

- On the other hand, intestinal malrotation can also present in **adult** life with an incidence of around **1 in 1,000 cases**.

- **The cases presenting in adulthood, however can be usually remain asymptomatic throughout life** with acute presentation only in cases with volvulus, ischaemia, obstruction or perforation.

- **The incidence of malrotation requiring an emergent procedure in the form of a midgut volvulus or small bowel obstruction is as high as 1 in 500 cases**.



Common types of Intestinal Malrotation requiring emergency surgical intervention

Type	Defect	Clinical effect
IA	No rotation	Volvulus of middle intestine
IIA	No duodenal rotation; normal colon rotation	Duodenal obstruction due to bands
IIB	Inverse rotation of duodenum and colon	Transverse colon obstruction due to duodenal mesentery
IIC	Inverse duodenal rotation; normal colon rotation	Right mesenteric sac (obstruction)
IIIA	Normal duodenal rotation; no colon rotation	Volvulus of middle intestine
IIIB	Incomplete fixation of the hepatic angle of colon	Obstruction due to Ladd bands
IIIC	Incomplete fixation of the cecum and its mesentery	Volvulus of the cecum; invagination (Waugh's syndrome)
IIID	Internal hernias	Paraduodenal hernia

Stringers Classification of Intestinal Malrotation

- Types IA, IIA, IIIA usually warrant emergency intervention due to acute presentations with obstruction due ladd's bands or bowel ischaemia secondary to midgut volvulus.

- Types IIB. IIIB and IIIC may or may not warrant an emergency intervention, depending on the degree of obstruction due to ladd's bands.

- **Our case being a type IIIC without caecal volvulus was decided for an elective intervention**
- **In our case, only division of a few transverse ladd's bands was performed as there was normal rotation with only a relatively unfixed caecum and no volvulus.**

SPECTRUM OF WANDERING LIVER

(Defect in Hepatic Suspensory ligament)

MILD GRADE

Rotation without any significant rotation of the hepatic bilio-vascular pedicle

Hepatopexy – Only SOS

MODERATE GRADE

Rotation with less than 180 degree rotation of the hepatic bilio-vascular pedicle

SEVERE GRADE

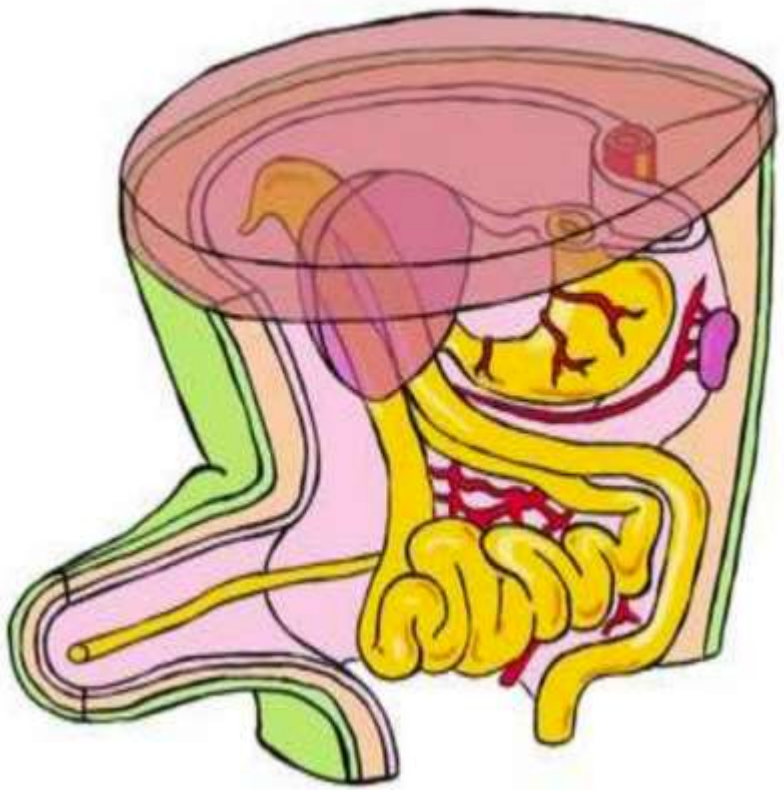
Rotation with more than 180 degree rotation of the hepatic bilio-vascular pedicle

De-rotation with hepatopexy and SOS resection of ischemic segments

WHAT'S UNIQUE IN OUR CASE

- Simultaneous presentation of multiple surgical entities in the patient **- ? Syndromic association – Ehler Danlos Syndrome**
- Incidental Type IIIC intestinal malrotation without any complication / vascular compromise
- **An iatrogenic inscional hernia as the cause of intestinal obstruction secondary to blind drain insertion**
- Mild wandering liver and its surgical implications

SUSPECTED REASONING FOR SYNCHRONOUS ASSOCIATION OF MULTIPLE SURGICAL VARIABLES IN OUR CASE



- **Secondary to the lack of fixation, the liver is relatively mobile with displacement to the left subphrenic space.**
- **This allowed the cecum to remain undescended, which until then was in a subphrenic position due to midgut rotations followed by its fixation on the right diaphragmatic dome, causing its malrotation.**

TAKE HOME MESSAGE

- **In any case of adult intestinal obstruction with obscure etiology, intestinal malrotation should always be kept in mind.**
- **Though rare in its occurrence, a general surgeon should be aware of wandering liver (Hepatic suspensory ligament alterations) and its surgical implications – To avoid any surgical mishaps**
- **Furthermore, the threshold for hepatopexy should be relatively higher due to higher risks than benefits (Except in severe cases)**
- **Multi-disciplinary intervention is paramount in effective management of such complicated cases.**

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THANK YOU