



Case report

Left sided gallbladder and liver without situs inversus and recurrent sigmoid volvulus after alleged previous total sigmoid resection; a case report and review of literatures

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ABSTRACT

Introduction and importance: Acute abdomen is an emergency condition which necessitates urgent management. Obstruction accounts to the majority of causes of acute abdomen. As acute abdomen can lead to a dramatic and fatal complication, rapid diagnosis and management are utterly important. Sigmoid volvulus is the commonest cause of large bowel obstruction in Africa and particularly in Ethiopia. Left side gallbladder and liver without situs inversus is a very rare clinical finding with few reports in the history of literatures.

Case presentation: A 53 years old male patient presented to our emergency department with failure to pass feces and flatus of 6 days duration. He had similar four episodes previously and sigmoid resection-anastomosis was done five years back at a referral hospital. The abdomen was distended to drum like appearance with visible peristalsis and midline previous surgical scar. The distension is more prominent to right upper quadrant resembling a bent inner tube. Upon entering the abdomen, there was 360 degrees clockwise volvulated remnant sigmoid and descending colon. There was small bowel adhesion to abdominal wall which snugs the large bowel at the neck of volvulus. The liver and gallbladder are on the left upper quadrant and right upper quadrant of abdomen is empty. The gallbladder is to the left of the round/falciform ligament.

Clinical discussion: Intestinal obstruction is one of the commonest causes of acute abdomen carrying significant mortality if not intervened timely. Sigmoid volvulus is one of the common causes of large bowel obstruction more happening in the adults and elderly. It is reported that patients with megacolon and mega rectum have risk of recurrence of volvulus even after sigmoid resection. Left side gallbladder without situs inversus is a very rare occurrence and very few reports in the literature to date.

Conclusion: Optimal sigmoid resection in sigmoid volvulus and subtotal colectomy when sigmoid volvulus is associated with megacolon and megacolon are said to reduce postoperative volvulus recurrence. Special care and workup should be a priority during cholecystectomy in left-sided gallbladder to avoid biliary tract and vascular injury.

1. Introduction

Acute abdomen is an emergent condition which necessitates urgent management. It is one of the most encountered surgical problems. Obstruction accounts to the majority of causes of acute abdomen [1]. Pain is the main presentation of acute abdomen. The site and character of pain helps in devising possible diagnosis. As acute abdomen can lead to a dramatic and fatal complication, rapid diagnosis and management are utterly important [2]. In a Finnish study, non-specific abdominal pain accounts for most of acute abdomen cases followed by acute appendicitis but according a study done in a tertiary hospital in Addis

Ababa, Ethiopia, acute appendicitis is a leading cause seconded by intestinal obstruction [3,4].

Intestinal obstruction is still one of the commonest acute abdominal conditions posing significant burden to surgeons. It is still a common cause of acute abdomen globally. Its presentation is nausea/vomiting, colicky abdominal pain, and failure to pass feces/flatus [5]. The cause of small bowel obstruction being adhesion, hernia and volvulus while carcinoma and volvulus are common causes of large bowel obstruction. Adhesion for small bowel and carcinoma for large bowel are commonest causes of obstruction in developed nations but volvulus is commonest cause of obstruction in countries like Ethiopia which may be related to

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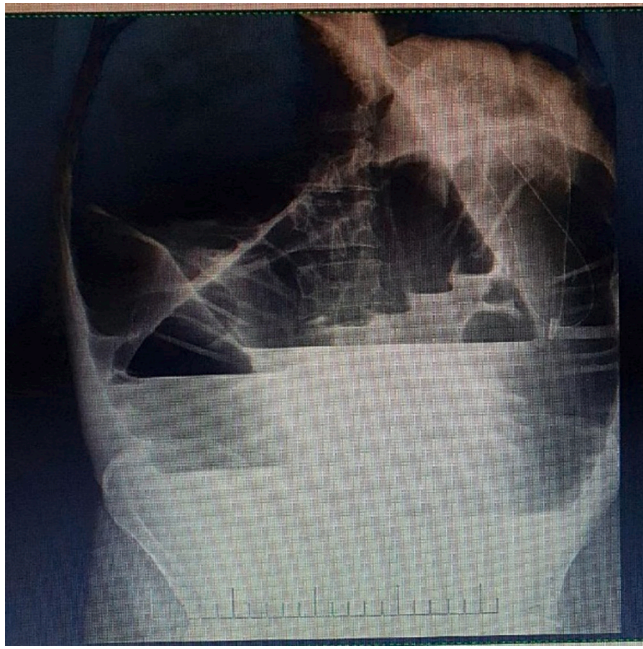


Fig. 1. Plain abdominal X-ray showing multiple air-fluid level with coffee-bean appearance.



Fig. 2. Post operative plain X-ray showing empty space on right upper quadrant filled with air.

the dietary habit [6,7]. Sigmoid volvulus is the commonest cause of large bowel obstruction in Africa and particularly in Ethiopia [8]. Sigmoid volvulus can develop years after suboptimal resectional treatment for sigmoid volvulus [9].

Left side gallbladder and liver without situs inversus is a very rare situation with few reports in the history of literatures. Left side gallbladder is defined as when the gall bladder found to the left of the round/falciform ligament [10,11]. Case reporting was done according to the SCARE 2020 guideline [12].



Fig. 3. Hugely distended sigmoid volvulus tried to be untwisted.

2. Case presentation

A 53 years old male patient presented to our emergency department with failure to pass feces and flatus of 6 days duration. Along with this he has significant abdominal distention and intermittent cramping abdominal pain which starts immediately after the initial complaints. He then had frequent episode of vomiting of ingested matter for the last 3 days. He had similar four episodes previously and sigmoid resection-anastomosis was done five years back at referral hospital. He is currently referred from primary hospital after failed attempt of rectal tube deflation. He was quite well after the operation till the current presentation. Otherwise, he has no history of constipation, bloody stools, weight loss or other chronic illness.

Upon presentation he was acutely sick looking with blood pressure of 130/90 mm Hg, pulse rate 108 beats per minute, respiratory rate of 24 breaths per minute and temperature measuring 37.6 °C. He had dry tongue and buccal mucosa with nasogastric tube in place draining bilious content. The conjunctiva was pink and non-icteric sclera. No positive finding on the chest and cardiovascular system.

The abdomen was distended to drum like appearance with visible peristalsis and midline previous surgical scar. The distension is more prominent to right upper quadrant resembling a bent inner tube. The bowel sound was hyperactive, tympanic percussion note but there was no tenderness or palpable mass. The rectum was empty and there was no mass or blood on examining finger. Subsequently patient was put on fluid and workup started. Blood work revealed hemoglobin of 13 g/dL and white blood cell count 7900 cells/ μ L with Neutrophil count of 83.9 %. Creatine was elevated to 2.07 mg/dL and liver function tests were in the normal range. Abdominal radiography revealed distended large bowel and multiple air fluid levels with paucity of rectal air shadow and coffee-bean appearance in right upper quadrant (Fig. 1). Then the

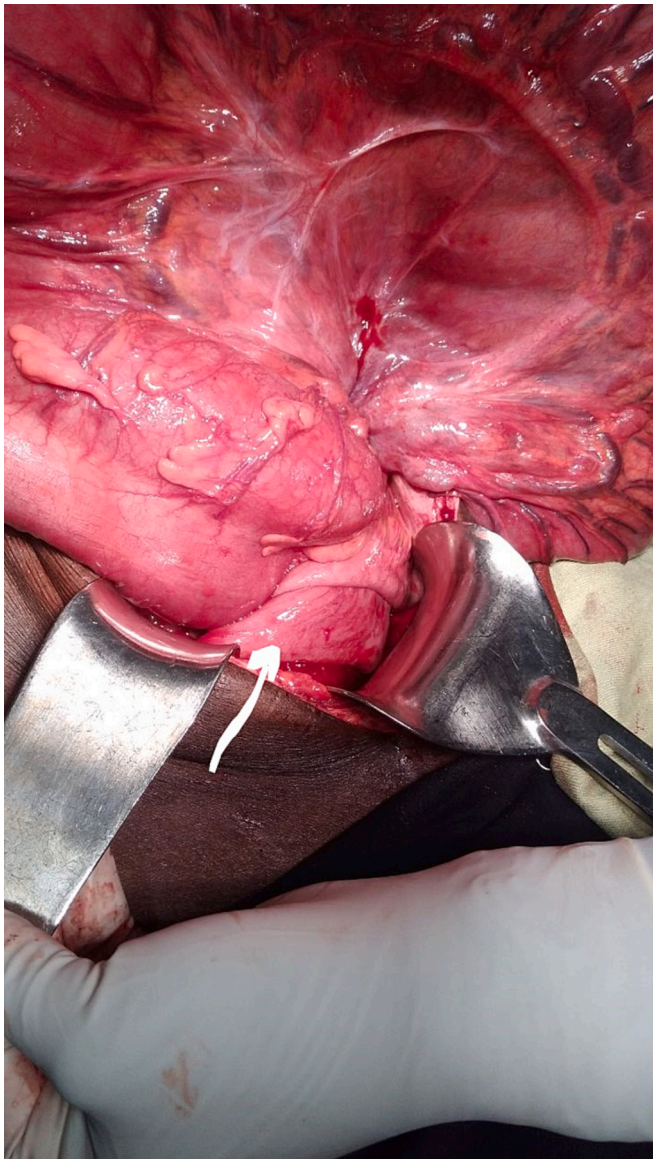


Fig. 4. Small bowel to abdominal wall adhesion snugging the large bowel at the neck of volvulus (white marker).

patient was resuscitated with two liters of crystalloid over 1 h and pulse rate decreased to 96 beats per minute and urine output become 100 mL over 1 h. We prepared the patient for emergent laparotomy with the impression of large bowel obstruction secondary to volvulus.

Upon entering the abdomen, there was 360 degrees clockwise volvulated remnant sigmoid and descending colon (Fig. 3). There was small bowel adhesion to abdominal wall which snugs the large bowel at the neck of volvulus (Fig. 4). The neck of volvulus is at the previous anastomosis site (Fig. 6A & B). The whole large bowel was intraperitoneal. The liver and gallbladder are on the left upper quadrant and right upper quadrant of abdomen is empty (Fig. 7A & B). The gallbladder is to the left of the round/falciform ligament (Figs. 8 & 9). No obvious biliary tract, portal vein or other vascular anomaly seen. Other solid organs are in their normal anatomic position. Adhesion released, the volvulated segment and distal part of transverse colon was resected and Hartman's procedure completed (Figs. 5 & 10). Abdomen lavaged and closed in layer. Postoperatively, patient was stable and started on sips after 1st post-operative day. Post op chest x-ray showed well inflated lungs and normally oriented cardiac silhouette but air-filled empty right upper quadrant of abdomen (Fig. 2). Abdominal ultrasound also revealed left

sided liver and gallbladder with normal biliary tract outline. Post operatively, he has good recovery except low albumin which was corrected by high protein diet. Repeated renal function test become normalized. Subsequently, patient discharged home safely.

3. Discussion

Acute abdomen is a surgical emergency which needs emergent intervention. It is one of the most encountered emergencies in the practice of surgery [1]. The emergency makes the motto "the sun shouldn't rise or set in the presence of acute abdomen" crystal clear in that it needs emergent intervention. Intestinal obstruction is one of the commonest causes of acute abdomen carrying significant mortality if not intervened timely. In a systematic review done among Ethiopian hospitals, the prevalence of bowel obstruction ranges from 18 to 50 % among patients with acute abdomen [8]. Sigmoid volvulus is one of the common causes of large bowel obstruction more happening in the adults and elderly. It is more common in males and elderly people with psychiatric illness. It is due to redundant sigmoid, narrow base while long mesentery which will allow easy twisting [13]. Treatment involves endoscopic detorsion in viable volvulus but surgical resection is important in gangrenous or recurrent volvulus. It is reported that patients with megacolon and mega rectum have risk of recurrence of volvulus even after sigmoid resection. This is usually due to subtotal sigmoid resection. This condition is very rare and it is a reportable finding when it happens [14]. In other study there were three cases of sigmoid volvulus after allegedly total sigmoid resection. All the three patients had chronic acquired megacolon [15]. Our patient had sigmoid resection and primary anastomosis done five years back for recurrent attack of sigmoid volvulus. The patient has significantly dilated and redundant colon most of which is intraperitoneal. Retrospectively, it seems that the patient had megacolon during the initial resection. It is well explained in literatures that megacolon and megarectum are the predictors of recurrence. In this group of patients, sigmoid resection alone will result in recurrence. Subtotal colectomy is advised to be done to decrease recurrence if the patients have megarectum and megacolon [14]. Since the colon was redundant and significantly dilated, we resected the remnant sigmoid, descending colon and distal part of transverse colon and Hartman's colostomy done. The option of doing primary resection and anastomosis versus Hartmann's colostomy should be individualized to the patients' condition and the status of bowel. Male sex, prolonged duration of symptoms (>72 h), edematous megacolon and gangrenous obstruction found to have increased risk of anastomotic leak after primary resection and anastomosis [16,17]. Taking these facts into consideration and the experience in our set up, we did Hartmann's colostomy with a plan for subsequent takedown/ reversal of the colostomy.

Left side gallbladder without situs inversus is a very rare occurrence and very few reports in the literature to date [11]. It is usually an intra-operative incidental finding which can be associated with anomalies in the portal system, biliary tree and hepatic vascularity. The exact cause is mysterious but embryologic incidents are hypothesized. In addition to its rare nature, it is often undetected with preoperative investigations [10]. In one study, among nineteen patients with left side gallbladder, 13 had symptomatic cholelithiasis and only one diagnosed with left-sided gallbladder before cholecystectomy. Two patients were referred with bile duct injuries [18]. Associated ductal and vascular anomaly may increase risk of bile duct and vascular injury during cholecystectomy. Our patient has both the liver and gall bladder on the left side but there was no identified associated ductal or vascular anomaly. The gallbladder was to the left of round/falciform ligament and the right upper quadrant was empty.

4. Conclusion

Acute abdomen stems from different acute intraabdominal

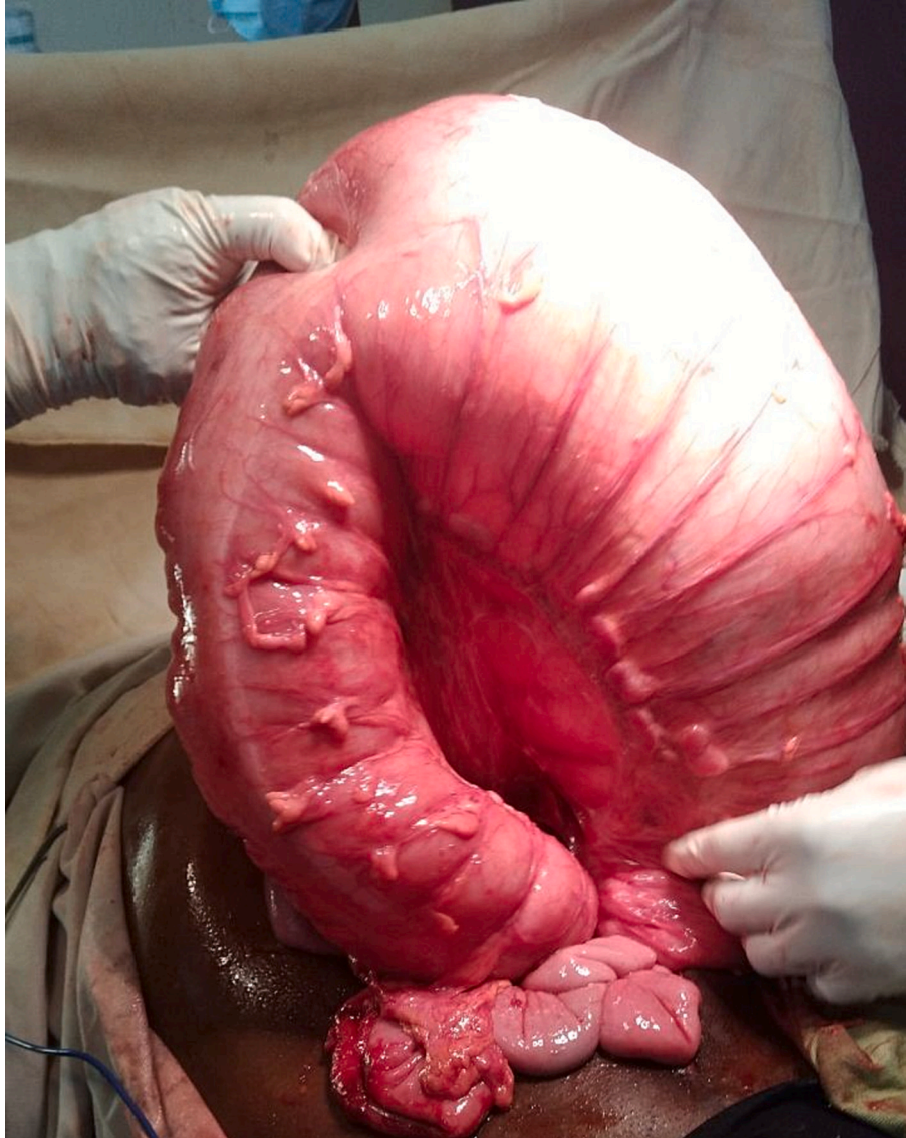


Fig. 5. Small bowel adhesion released and volvulus untwisted.

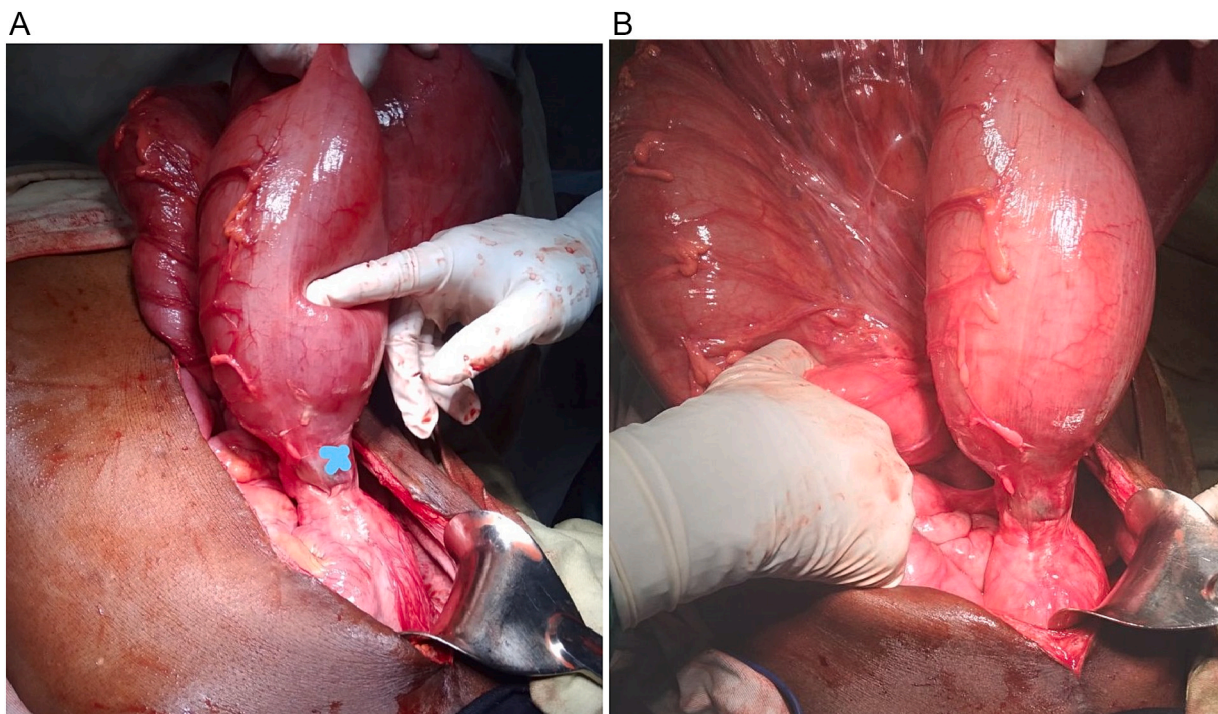


Fig. 6. A & B. Previous anastomosis site and volvulus mark (A-asterisk), above is distended megacolon and below is distended megarectum (B).

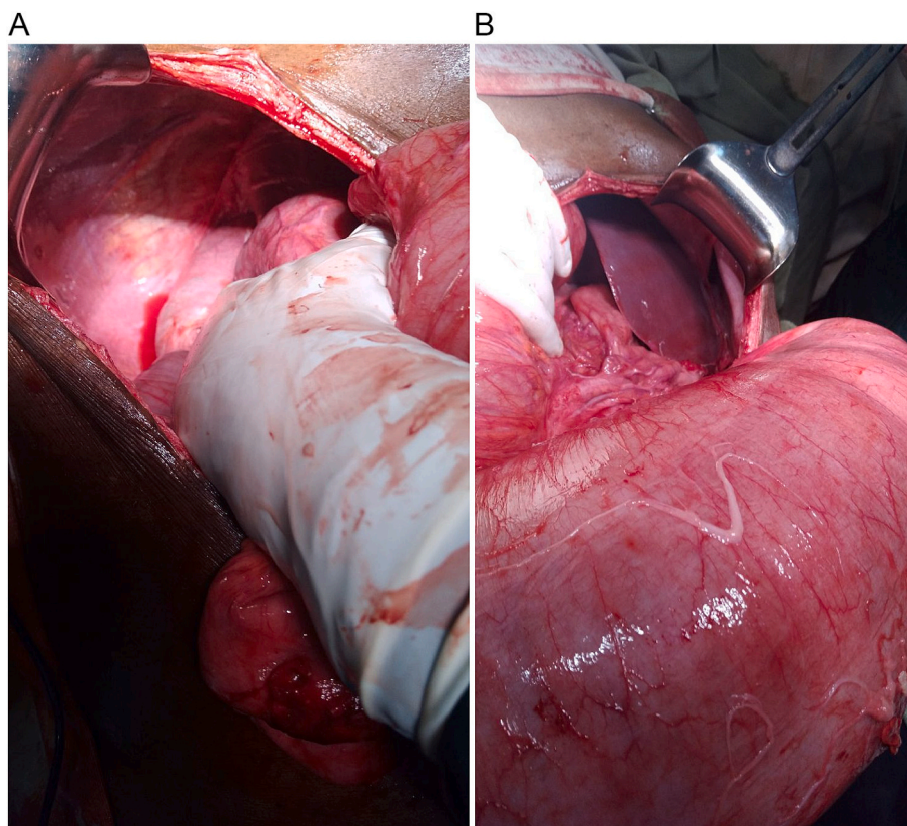


Fig. 7. A & B. Empty right upper quadrant (A) and liver to the left of the midline (B).

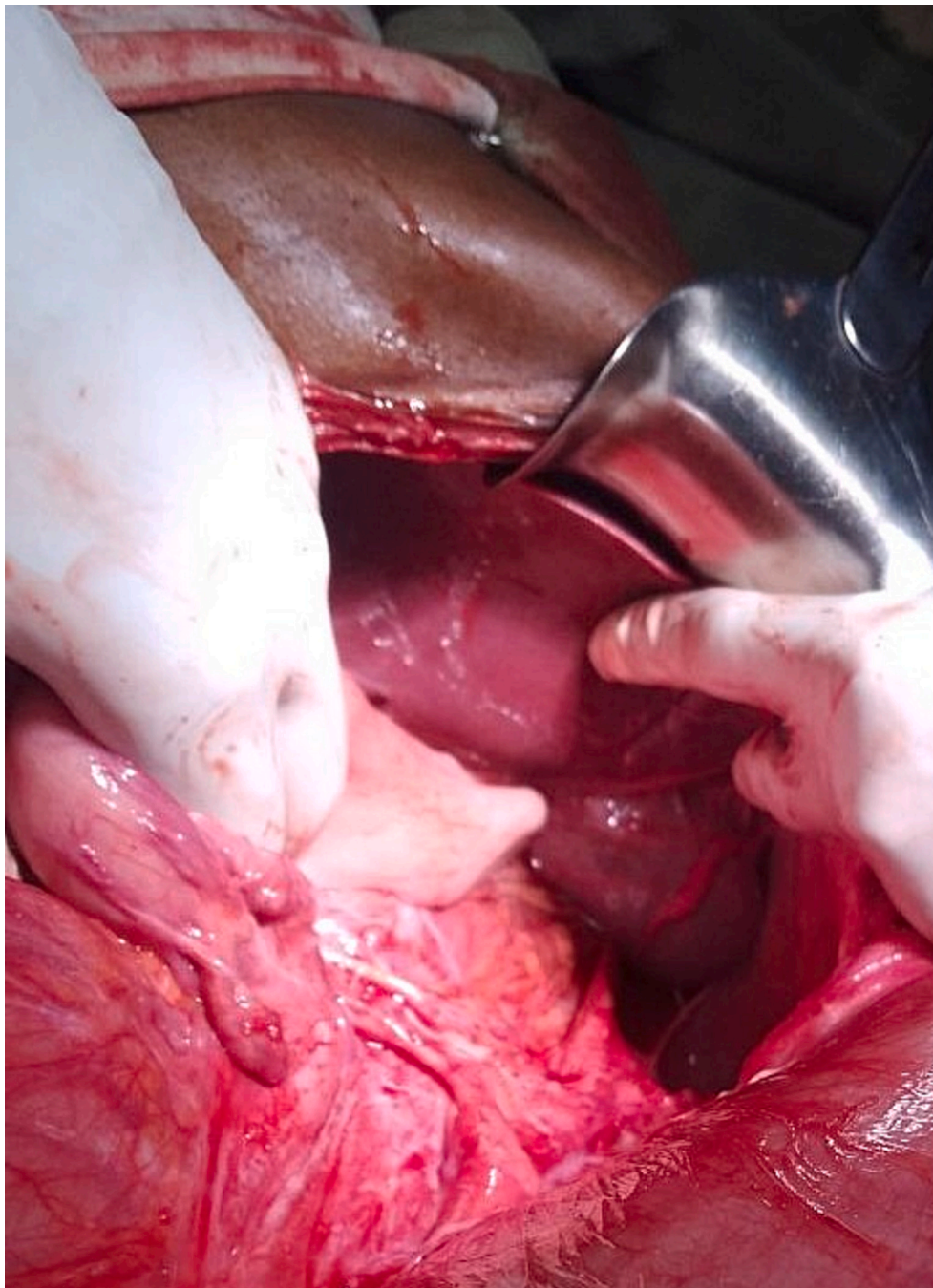


Fig. 8. Gallbladder found to the left of round ligament under the left-sided liver.

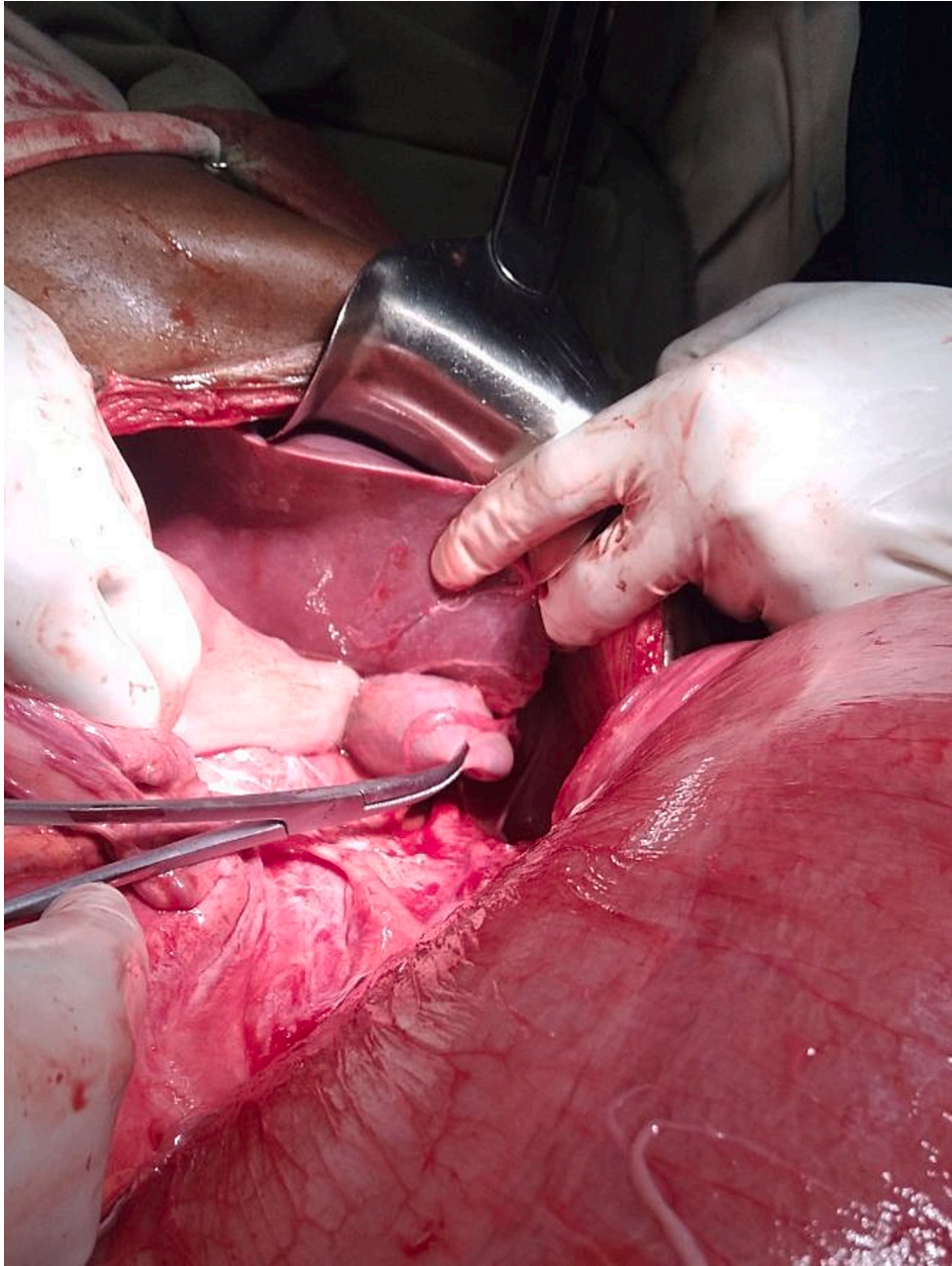


Fig. 9. Gallbladder grasped with Kelly clamp and traction applied to show since it is far in the left lobe of left side liver.



Fig. 10. Post-resectional specimen showing hugely distended colon (megacolon).

conditions and, pain is their cardinal feature. It needs well integrated emergent evaluation, diagnosis and management.

Obstruction is commonest cause of abdominal complaint in surgical practice. In some of Ethiopian hospitals, obstruction accounts up to half of all the surgical conditions. Optimal sigmoid resection in sigmoid volvulus and subtotal colectomy when sigmoid volvulus is associated with megacolon and megacolon are said to reduce postoperative volvulus recurrence.

Left side gallbladder and left side liver without situs inversus are the rarest anomalies which could be associated with ductal, portal and vascular anatomical variation. Special care and workup should be a priority during cholecystectomy in left-sided gallbladder to avoid biliary tract and vascular injury.

Consent for publication

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Ethical approval

Not applicable.

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Not applicable.

Guarantor

Nebiyu Simegnaw will take the primary responsibility of the study.

Research registration number

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CRediT authorship contribution statement

Nebiyu SB independently contributed from the patient evaluation to writing up, and in revision of the paper.

Competing interest

Not applicable.

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