IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 23, Issue 11 Ser. 4 (November. 2024), PP 41-45
www.iosrjournals.org

A Rare Case Report Of Sigmoid Volvulus – An Important Differential To Consider In Acute Abdomen

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Abstract
Background*: Sigmoid volvulus an uncommon source of bowel obstruction in middle-aged individuals.. This perilous condition pervades globally, with a pronounced predilection for elderly population burdened by concurrent health ailments. While both genders can fall victim, males (1) are more frequently affected.*
Case Report*: A middle aged gentleman presented to emergency center reporting pain abdomen, vomiting , obstipation. On palpation generalized tenderness , guarding present, X – ray abdomen showed classic coffee bean (volvulus) immediately underwent emergency laparotomy - found sigmoid colon was distended and gangrenous. Sigmoidectomy with Hartmann's performed.*
Conclusion*: This case underscores the criticality of swift action in addressing this life-threatening ailment. Its evaluation should be of utmost importance among the potential diagnoses for individuals reporting with abdominal distention and pain, vomiting,obstipation. An abdominal X-ray (3) both erect and supine positions provides excellent diagnostic results.*
Keywords: *sigmoid volvulus ,middle aged , intestinal obstruction , sigmoidopexy, Hartmann*

Date of Submission: 01-11-2024 Date of Acceptance: 11-11-2024

I. Introduction

Sigmoid volvulus, a seldom encountered but crucial instigator in mechanical obstruction of intestine in surgical emergencies, poses a grave risk to life. Prompt diagnosis and immediate surgical intervention are imperative due to the potential for necrosis and perforation if left untreated. This term stemming from Latin roots indicating coiling of a loop around both itself and its mesentery. Interestingly , in geographical areas referred to as the volvulus zone, including Middle East, Indian subcontinent, Africa ,Turkey - condition is more prevalent.

Despite the sigmoid being frequently affected area (50-70%) can also manifest in the caecum.(6) and infrequently at splenic flexure. Sigmoid volvulus manifests in two discernible forms: gangrenous and non-gangrenous. The former carries a notably elevated morbidity risk. Gangrene can manifest at three distinct sites: origin of the twist (neck of volvulus), within twisted segment (twisted sigmoid loop)or in the distal descending colon and proximal segment of rectum. Older patients(4) with comorbidities such as psychiatric illnesses or chronic bed-bound conditions are particularly susceptible to developing sigmoid volvulus. However, this case report highlights that it should also be considered in younger individuals.

Treating volvulus(2,6) involves considering several factors, such as patient's clinical condition, site of blockage, existence of peritonitis, gut health, expertise of the operating surgeon . Additionally, discovering blood during rectal examination raises concerns about possible ischemia or bowel necrosis. In cases of uncertainty, performing a double-contrast barium enema becomes necessary for definitive diagnosis. Sigmoidopexy (2), whether conducted endoscopically or through open surgery, is the preferred treatment for

non-gangrenous sigmoid volvulus. Conversely, the Hartmann procedure, resulting in an end colostomy, is the life-saving option for gangrenous cases

II. Case Report -

A gentleman aged 45 arrived at Emergency room with pain abdomen for 4 days initially colicky, later became dull aching and diffuse. He also reports not passing flatus and feces for 4 days and abdominal distension since 2 days, which was progressive with multiple episodes of bilious and feculent vomiting. There was no history of trauma, previous abdominal surgery or abdominal infections, specifically tuberculosis. No history of drug addictions ,allergy. On general examination he was moderately built, severely dehydrated, altered sensorium, GCS –E3V4M5, PR being 112/min and BP – 90/50 mm Hg. RR – 28cpm spo2 – 86% on Room air.

On Per abdomen examination, we observed a grossly distended abdomen (Figure 1) with guarding and tenderness present all over. No particular mass or lump could be felt, and there was no hepatosplenomegaly. Percussion – tymphanic note. No shifting dullness or fluid thrill. Auscultation – absent bowel sounds. External genitalia – normal. On digital rectal examination – anal sphincter increased tone, gloves stained with blood and feces.

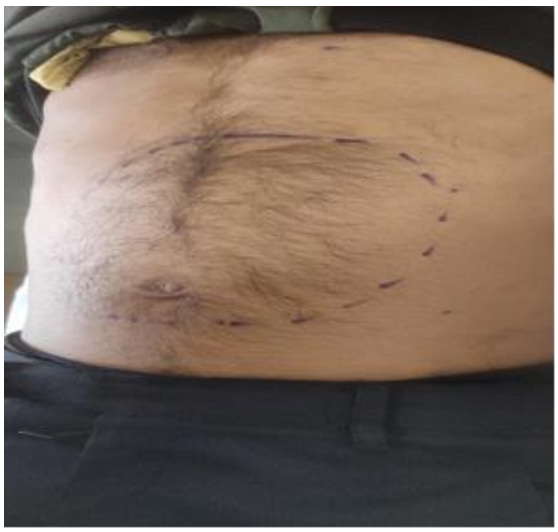

Figure 1: Initial inspection - distented and tense abdomen.

Patient was resuscitated with IV fluids (D5 and NS), Antibiotics, Nasogastric tube and Foley's catheter was inserted. Blood work up revealed a notable increase in the white blood cell count, measuring at 23,000 cells/mm3. Furthermore, the blood gas analysis unveiled a complex metabolic derangement characterized by metabolic acidosis with compensatory alkalosis, elevated lactate levels, suggesting tissue hypoperfusion and septic shock.

Radiological study - abdominal ultrasound revealed dilated bowel loops with absent peristalsis, fluid in abdominal cavity.

X-ray abdomen (figure 3) revealed- coffee bean appearance(3) of bowel loop, suggestive of sigmoid volvulus.

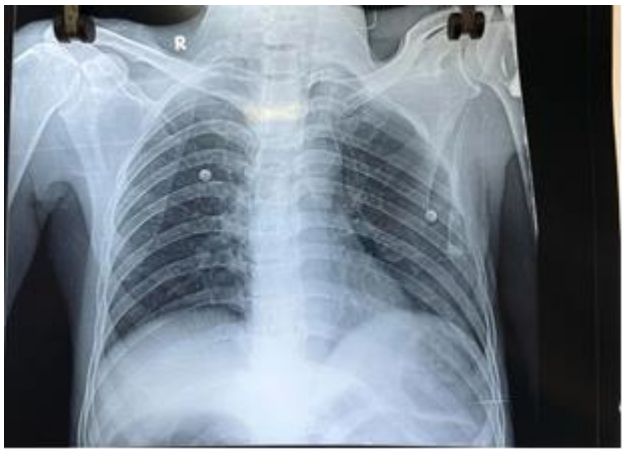

Figure 2: Chest x-ray film (PA view) - No air under diaphragm.

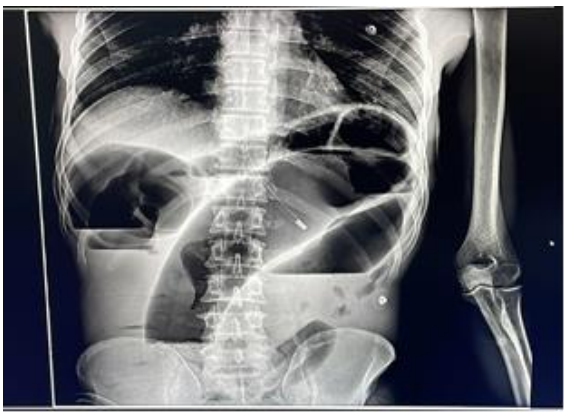

Figure 3: Xray abdomen errect film - showing coffee bean sign , omega sign.

Patient was taken up for Emergency Exploratory Laparotomy – midline incision given.

Intra op findings - 500 ml of seropurulent foul smelling fluid present in peritoneal Cavity. The sigmoid colon was looped on its mesosigmoid and found to be gangrenous, the Ascending and transverse colon appeared dusky .(Figure 4)

Treatment – Gangrenous sigmoid colon excised (sigmoidectomy-Figure 5) and proximal stump brought out as stoma, distal loop sutured and left inside (Hartmann). For completion, the bowel was examined in toto for any further ischaemic areas, or twists and extensive peritoneal lavage given and two abdominal drains placed.

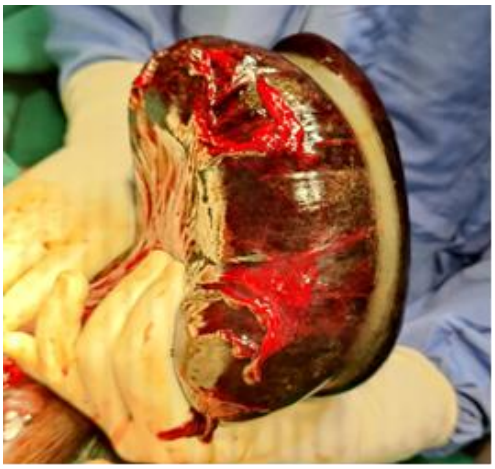

Figure 4: Intra op view of gangrenous sigmoid colon.

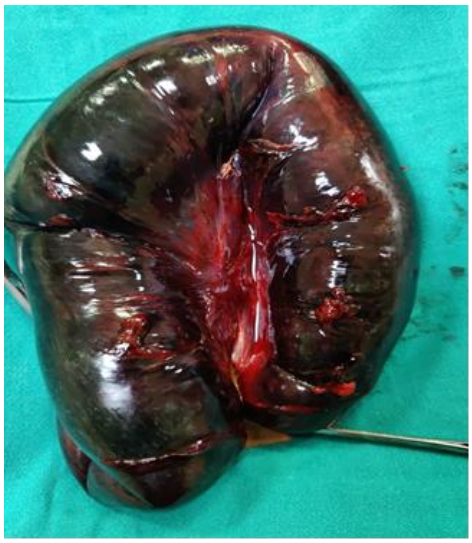

Figure 5: Resected specimen of gangrenous sigmoid colon.

Patient was shifted to the ICU in view of sepsis, and started of broad spectrum antibiotics. He gradually improved & was discharged on post op day 17.
Follow up visits - no complications. Planned for stoma reversal after 1 month.

III. Discussion

Volvulus arises due to segment of intestine that wraps around itself and its supporting mesentery (7,11), resulting in an intestinal blockage and hypoperfused bowel. Earliest document of volvulus dates back to 19th century, where Rokitansky attributed as causative factor in strangulation of intestines. The mesocolon's ability to twist either clockwise or counterclockwise can trigger a condition known as closed loop obstruction in the intestine. This occurs when the intestine wraps around itself, obstructing the flow of its contents. Further, hyperperistalsis worsens the situation by propelling additional contents into this narrowed passage, elevating intra-abdominal pressure and stressing the mesentery. As pressure builds, it exceeds venous pressure, compromising blood supply due to mesentery torsion. This compromised blood flow eventually leads to tissue ischemia and gangrene. The primary contributors to the development of bowel gangrene include shock, cardiovascular conditions, delayed hospital admission, excessive torsion(twisting beyond 360 degrees).

This condition is attributed to reasons, such as eating pattern (high fibre diet), weather conditions that are hot and humid cause greater amount of water to be lost from body & sedentary lifestyle. Elderly patients, especially those with psychiatric comorbidities such as chronic schizophrenia, Alzheimer's disease, pseudobulbar palsy, parkinson are also prone to developing volvulus.(5,7). Further in young age group, the prevalence of sigmoid volvulus often aligns with megacolon due to conditions like Hirschsprung's disease, Chagas disease, Ogilvie syndrome. Although in this case, patient presented at delayed state but above mentioned comorbidities not found

Plain abdominal X-rays are fast and effective (3,4,6) tool to investigate. Sigmoid volvulus detected by X-rays in 88% of cases by Javors et al. (14) and 83% by Welch and Anderson (7) respectively.

Management (2,11,12) begins with the crucial steps of resuscitating followed by untwisting of volvulus, effectively managed by reduction via endoscope using sigmoidoscopy, administering a barium enema. However, it's important to acknowledge that some techniques carry potential to perforate, generally reserved for cases without indications of peritonitis or ischemia of gut.

Operative treatment –

- Necessitates exploratory laparotomy , visualisation of bowel , manual detorsion.
- Resection and primary anastomosis if bowel is viable.
- Other procedures such Sigmoid colopexy is linked to a greater recurrence rate(22%). Mesosigmoidoplasty, which involves widening the narrow sigmoid mesocolon, presents a steep learning curve and performing it becomes exceptionally challenging in cases of mesentery edema.
- If gangrenous then sigmoidectomy with End colostomy and rectal stump closed (Hartmann's procedure)
- Further , reversal of stoma done 10- 12 weeks later (9,10,11).

IV. Conclusion

This constitutes a rare scenario of sigmoid volvulus in middle-aged individual, notable for its distinct clinical presentation compared to previously documented cases. The takeaway message is the importance of maintaining a high index of suspicion, enabling prompt and aggressive management in such cases, as proactive approach not only mitigates risk of further bowel loss and septic shock but is also critical given the life-threatening nature of condition.

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