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INTESTINAL MALROTATION PRESENTING AS MIDGUT VOLVULUS WITH SMALL BOWEL GANGRENE IN A PREGNANT FEMALE: AN UNUSUAL CASE REPORT OF INTESTINAL OBSTRUCTION

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ABSTRACT
Background: Malrotation is a congenital anomaly developing from aberrant bowel rotation during intrauterine life. Clinically it presents as intestinal obstruction which can be either acute (midgut volvulus) or chronic and intermittent. Cases usually present in childhood but 0.2-0.5% of all cases present in adulthood. *Case presentation*: A 24 year female of 28 weeks pregnancy landed in emergency with abdominal distension and obstipation for 10 days with low general condition. While being optimized, she underwent spontaneous preterm delivery after 24 hours. X ray abdomen was suggestive of acute obstruction and CECT suggested malrotation with midgut volvulus. On laparotomy she had midgut volvulus with complete small bowel gangrene. Duodeno-colic resection anastomosis was done. Poor prognosis was explained. Postoperatively she developed leak on 5th day, attendants refused further treatment and left against medical advice. *Conclusion*: Complications of intestinal obstruction due to mal-rotation usually occur in second and third trimester. Clinical suspicion and prompt diagnosis is urgently required. Once the bowel gangrene sets in, prognosis becomes extremely poor.

Keywords*: Intestinal Malrotation, Pregnancy, Midgut Volvulus, Small Bowel Gangrene, Case Report*

INTRODUCTION
During midgut embryogenesis, primitive bowel loops undergo counter-clockwise 270^{o} rotation around the superior mesenteric artery axis to achieve their respective normal anatomical locations. Intestinal malrotation is a condition arising due either to abnormal rotation of bowel during fetal development or to absent rotation. Clinically it presents as intestinal obstruction which can be either acute (midgut volvulus) or chronic and intermittent. Most of the cases present in the childhood but 0.2-0.5% of all cases present in adulthood also (Low *et al.*, 2014). Here we present an unusual case of a pregnant female who developed intestinal obstruction during 28th week, the cause of which turned out to be intestinal mal-rotation complicating as midgut volvulus.

CASE
A 24 year old female with 28 week pregnancy came to emergency with complains of abdominal distension and inability to pass flatus and faeces. There was no history of concurrent comorbidities. She had history of previous recurrent abdominal pain episodes that use to self-resolve since childhood. On presentation she was toxic and febrile. On examination she had distended abdomen with a uterine fundal height of 28 weeks. There was diffuse tenderness and bowel sounds were absent. BP= 90/60 mmHg, pulse rate= 110/min and respiratory rate was 20/min. Patient was admitted and treatment was started. She underwent preterm labour and spontaneous vaginal delivery after 24 hours post admission. Her baby was live but expired after a day.

Investigations

Ultrasound abdomen showed a live fetus with breach presentation and prominent bowel loops. Due to pregnancy, MRI abdomen was planned but since she underwent spontaneous vaginal delivery during the treatment course, an X-ray abdomen was done which depicted multiple air fluid levels suggestive of small bowel obstruction. (Figure 3) CECT abdomen revealed intestinal obstruction with a whirlpool sign indicating mal-rotation. (Figure 1)

Table no.1

Haemoglobin	8.71g%
TLC	11600cumm
Serum Sodium/Potassium/Calcium	140/3.43/1.19mEq/L
PT/INR	1.09
Urea/Creatinine	12/0.25mg%
Serum albumin	2.14g%
Random blood sugar	88mg%
Liver function test	Within normal limits

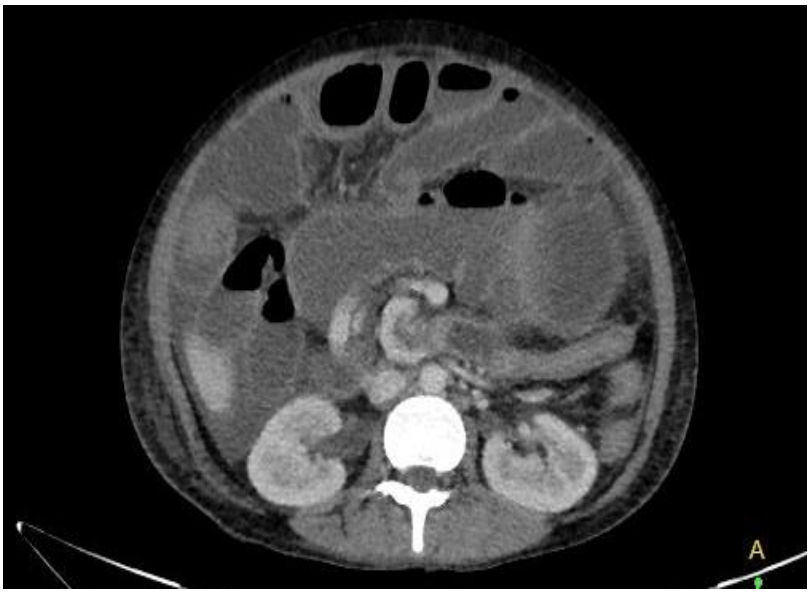

Figure 1: CECT abdomen depicting whirlpool sign suggestive of malrotation

Figure 2: CECT showing post partum uterus after spontaneous vaginal delivery

Treatment and follow up

Based on these findings, laparotomy was done after written and informed consent. Intraoperatively, there was complete small bowel gangrene with midgut volvulus (Figure 4) and ascending colon was lying freely towards the left. Volvulus was resolved by counter-clockwise rotation. Gangrenous bowel segment

was resected and duodenum was anastomosed to the remaining colon in a side to side fashion. Poor prognosis was explained.

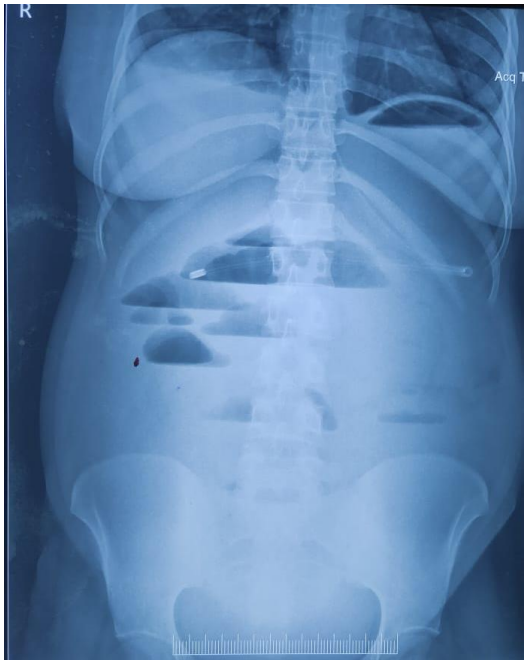

Figure 3: X-ray abdomen (Antero-posterior erect view) showing centrally placed multiple air fluid levels suggestive of small bowel obstruction

Figure 4: Intraoperative finding of gangrenous small bowel on exploration

Postoperatively the patient was kept on parenteral nutrition, intravenous fluids and antibiotics. She developed anastomotic leak on day 5 and started deteriorating. Her attendants refused further treatment and left against medical advice. Thereby she was lost to follow-up.

CONCLUSION

1 Pregnancy is a state of stress and it can mask the classical symptoms and signs of any disease thereby leading to a diagnostic dilemma and delay.

2 It prohibits the basic radiology from being utilised for the fear of teratogenicity to aid in the diagnosis.
3 Complications of intestinal obstruction due to mal-rotation in pregnancy usually occur in second and third trimester due to rapidly enlarging uterus and release of relaxin hormone that increases tissue pliability (Cong *et al.*, 2014; and Biswas *et al.*, 2006).
4 Volvulus accounts for 25% of cases of intestinal obstruction in pregnancy (Webster *et al.*, 2015), timely intervention is required to prevent catastrophic consequences.
5 Midgut volvulus (mostly ileo-colic) accounts for 1-3% of bowel obstruction cases in pregnancy (Mathews and Soper, 1993).
6 Classical whirlpool sign of mal-rotation with volvulus can also be seen on ultrasonography but may be missed in pregnancy due to the gravid uterus.
7 Once the bowel gangrene sets in, prognosis becomes extremely poor.

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Contributions
1. Tabish Ansari: data collection for manuscript and overall patient monitoring
2. Priyanka Rai: operating surgeon and clinical decision making
3. Vaibhav Raj Gopal: operating surgeon and manuscript designing
4. Amarjot Singh: clinical decision making and manuscript designing

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