



ULTRASOUND FEATURES OF ANTENATAL MIDGUT VOLVULUS PRESENTING AS AN OBSTRUCTION IN 24 WEEKS FETUS: A RARE CASE REPORT

Radio-Diagnosis

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ABSTRACT

Mid-gut volvulus is an embryological abnormal fixation of small bowel mesentery that commonly occurs during fetal development leading to ischemia of the involved intestine if not intervened. It is a rare and life-threatening condition that is difficult to diagnose in the prenatal stage. It is usually diagnosed at 27 weeks of gestation, but our case is reported at 24 weeks of gestation. A fetus of 26 years old primigravida with 24 weeks of gestation was discovered to have mid-gut volvulus with small bowel obstruction and absence of peristalsis on ultrasonographic examination antenatally. Ultrasonographic signs showed the presence of extensively dilated loops of bowel in a coffee bean shape and anatomic position reversed between the superior mesenteric vein (SMV) and superior mesenteric artery (SMA), as a sign of malrotation. Moreover, the presence of a "whirlpool sign" (wrapping of SMV and mesentery around SMA) was evaluated on color doppler. Close prenatal follow-up, appropriate delivery, and timing of therapeutic intervention may significantly lower morbidity and mortality.

KEYWORDS

antenatal diagnosis, congenital anomalies, mid-gut volvulus, whirlpool sign.

INTRODUCTION

Midgut volvulus is a rare and life-threatening condition in which the loops of bowel loops are twisted about the pedicle axis of the superior mesenteric artery. [1,2,3] Prenatal diagnosis of midgut volvulus is rare and difficult in the absence of specific signs. [1] The first case of midgut volvulus observed antenatally was reported by Cloutier et al. in 1983. [3] Fetal midgut volvulus is usually secondary to intestinal malrotation, mesenteric dysplasia, and cystic fibrosis. [4] According to the literature, prenatal volvulus is most frequently diagnosed at two peaks of gestational ages of 27 weeks and 32 weeks. [1] As per our knowledge, this is the first case report in which midgut volvulus is observed at 24 weeks of gestation. Therefore, in this case report, we present a prenatal diagnosis of fetal midgut volvulus at 24 weeks of gestation.

CASE SUMMARY

In the present study, a 26-year-old primigravida Indian female was referred to the Department of Radio-Diagnosis at Shridevi Institute of Medical Sciences and Research Hospital, Tumkur, Karnataka, India for a regular antenatal scan. The fetus was 24 weeks of gestation and ultrasonography was performed with Samsung HS70A using a curvilinear and linear transducer. There were no other anomalies of the fetus found, but polyhydramnios was reported.

The ultrasound of the fetus revealed a maximum diameter of 1.91 cm of extensively dilated loops of the bowel in a coffee bean shape (Figure 1) suggestive of a volvulus as well as continuous distension of the bowel in the following distal loops (Figure 2). There was no peristalsis noted within a malrotated segment of small bowel loops.



Figure 1. Dilated small bowel loop; diameter 1.91 cm



Figure 2. Dilated proximal small bowel loops secondary to volvulus

The presence of an anatomic position reversed between the superior mesenteric vein (SMV) and superior mesenteric artery (SMA), is a sign of malrotation. Moreover, the presence of a "whirlpool sign" in a clockwise direction (wrapping of SMV and mesentery around SMA) was evaluated (Figure 3). Other non-specific features observed include abdominal mass and trace ascites (Figure 4).



Figure 3. Swirling of SMA and SMV: "Whirlpool" sign

An antenatal diagnosis of acute volvulus of the gut with small bowel obstruction was made and immediate counseling was provided to the couple. Unfortunately, the couple opted for the termination of pregnancy.



Figure 4. Ascites

DISCUSSION

Midgut volvulus due to malrotation is usually reported in the first month of life or later in childhood [5]. Several ultrasound findings suggesting the diagnosis of midgut volvulus have been reported. The 'whirlpool' sign, seen when the superior mesenteric vein and the mesentery swirl around the axis of the superior mesenteric artery, and the 'coffee bean' sign are the appearances of dilated bowel loop with thick inner walls and thin outer walls indicates the double and single wall thickness respectively [5]. The whirlpool sign has been found in more than 75% of cases in previous studies. [1, 6-7] The coffee bean sign is an indirect and non-specific ultrasound feature of the midgut volvulus identified in a study by Li et al. in 2022 and was detected in 33% of fetuses. [4] Our present study even detected a continuous distension of distal bowel loops which can predict intestinal necrosis to some extent. A retrospective study of 355 fetuses found changes in bowel movement in all the fetuses. This change may have an effect on the Whirlpool sign. [4] Other signs include the absence of peristalsis on real-time ultrasound, and ascites, which may be suggestive of bowel perforation. An ultrasound feature important for the diagnosis of bowel ischemia is the failure to show vascular flow to the bowel and the absence of peristalsis [2].

CONCLUSION

We conclude that midgut volvulus is a rare entity that can present as a small bowel obstruction antenatally even at 24 weeks of gestation. The immediate and early diagnosis and management of this acute catastrophic complication resulted in the termination of the pregnancy. A close prenatal follow-up, apt delivery, and timing of therapeutic intervention may significantly lower morbidity and mortality.

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