

RARE CASE OF FETAL MIDGUT VOLVULUS DETECTED BY WHIRLPOOL SIGN ON ROUTINE ANTENATAL ULTRASOUND.

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ABSTRACT

Fetal midgut volvulus is an extremely rare life threatening condition with poor prognosis. It often remains undiagnosed on antenatal ultrasound and manifest as intestinal obstruction in both antenatal and post natal period. Following is the case report of intrauterine midgut volvulus causing proximal obstruction of stomach and duodenum. The infant survived postnatally after caesarean section delivery with prompt and appropriate surgical intervention. Twisting of bowel loops around the mesenteric vessels suggestive of whirlpool sign was the most significant clue leading to the diagnosis of volvulus.

KEYWORDS :

INTRODUCTION:

Antenatal diagnosis of fetal midgut volvulus has been made frequently with various indirect ultrasound findings such as intestinal dilatation, cystic or solid abdominal mass with ascites and polyhydramnios. But these findings are not pathognomic for fetal volvulus and can also be seen in duodenal atresia or intestinal atresia. On the contrary, the whirlpool sign and coffee bean sign are highly specific for diagnosing fetal volvulus. The whirlpool sign, which is a swirling of mesenteric vessels with twisted bowel loops seen on ultrasound, is a specific indicator of fetal volvulus [1]. The coffee-bean sign also considered as a reliable sign of volvulus, which show closely interposed dilated bowel loop with thick inner sharing walls [2].

Case report:

A case of fetal midgut volvulus with polyhydramnios was diagnosed at 29 weeks of gestation on routine antenatal ultrasound. The pregnancy was terminated at 36 weeks by elective caesarean section. Prompt antenatal diagnosis facilitated close weekly monitoring and early elective caesarean section. Planned laparotomy in early postnatal period yielded favourable prognosis.

G2P1L1 lady with previous LSCS presented at 29 weeks of gestation with increased abdominal girth and excessive fetal movements. Routine growth scan was done which revealed polyhydramnios, amniotic fluid index was 21 cms. Fetal stomach bubble and duodenum were markedly dilated till the duodenojejunal flexure with maximum diameter approx 2.3 cms (Figure 1 and Figure 2). Distal small bowel loops appeared collapsed. There was swirling of the fetal mesenteric vessels at the level of transition which raised the possibility of mid gut volvulus (Figure 3 and Figure 4). Close monitoring with sequential ultrasound scan and post natal evaluation was advised. Repeat scan done at 32 weeks of gestation revealed the same findings. The level of intestinal obstruction had then increased with maximum diameter of duodenum approx 2.4 cms. Amniotic fluid volume was 27 cms. At 32 weeks of gestation, steroid was given for lung maturity to facilitate early delivery.

Elective lower segment caesarean section was done at 36 weeks of gestation. Male child was delivered with 2.4 kg birth weight, APGAR score of 8, 9, 9. Baby cried immediately after birth. Abdomen was soft and non tender. Non-bilious gastric aspirate was present. Elective surgery was done on day 4th of birth by right upper transverse incision. Intraoperative findings revealed one and half turn of mesentery with no vascular compromise. Stomach, duodenum and proximal jejunum were dilated. Long adhesions seen between distal ileum, caecum, ascending colon on one side and dilated jejunum on other side. There were adhesions between

gallbladder and jejunocolic mass with kinking of cystic duct. Ileocolic vessels were seen supplying the jejunum as well. Derotation was done. Adhesions between jejunum and colon were released. Fine vessels running to the jejunum from the ileocolic vessels were cauterised and cut. Adhesions between the gall bladder and ileum were released and emptying of gallbladder was ensured. Strictureplasty was done for the narrowed segment of ileum. On post operative day 1 the baby was stable with no abdominal distention and was passing meconium well. However on post operative day 2 the child had abdominal distention and was not tolerating feeds. X ray abdomen revealed pneumoperitoneum. Air was drained by aspiration through 22G cannula. Sodabicar lavage was also done. Blood transfusion was done. The child continued to remain sick till post operative day 5. On post operative day 6th, baby was comfortable. Abdomen was soft and non distended with normal vitals. The baby was discharged on day 25th of life in stable condition.



Figure 1: Antenatal ultrasound at 29 weeks reveal markedly dilated stomach bubble.



Figure 2: Parasagittal ultrasound image of fetal abdomen show significant dilatation of stomach bubble and duodenum till the duodenojejunal flexure.



Figure 3: Dilated stomach bubble and duodenum around the twisted mesenteric vascular pedicle.

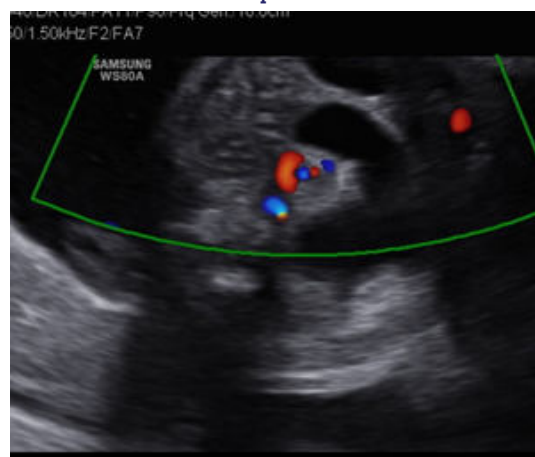


Figure 4: Color Doppler image show concentric small bowel loops surrounding the vascular pedicle with swirling of the mesenteric vessels (whirlpool sign).

DISCUSSION:

The incidence of neonatal intestinal rotation is 1 in 6000, though the percentage of occurrence in foetal life is not certain (3). Fetal midgut volvulus is a rare condition and the diagnosis is challenging in antenatal period. Only a handful cases are diagnosed by skilful radiologist in the antenatal life (4). It is a life threatening surgical emergency in early post natal life with high incidence of mortality and morbidity (4). The etiology of intestinal volvulus without malrotation is not well defined, however most cases could be associated with congenital developmental anomalies like intestinal atresia, gastroschisis or omphalocele (5). Rare conditions like Meckel's diverticulum, duplication cysts or meconium plugs could also predispose to volvulus (6). Various sonographic signs of fetal intestinal volvulus are nonspecific but aid in reaching till the diagnosis. The whirlpool sign described by Yoo et al is the most specific of all the sonographic markers (7). It is due to twisting of bowel loops and mesentery around the superior mesenteric artery. Choa et al in recent prospective study of neonates showed that the sensitivity and specificity of the whirlpool sign is as high as 89% and 92% (1). Volvulus can be complicated by bowel necrosis, perforation, heart failure, ascites, fetal anaemia with pleural and pericardial effusion (8, 9). Tan et al reported cases of fetal volvulus with ascites on antenatal ultrasound and anaemia with elevated middle cerebral artery peak systolic velocity. In all these cases volvulus was confirmed on postnatal laparotomy [10]. In our case the infant survived after early planned caesarean section with prompt surgical intervention. Close antenatal follow up by sonography helped the clinicians to plan early delivery. Identification of the whirlpool sign with dilated

stomach and proximal small bowel loops accurately led to the diagnosis thus aiding in early planned intervention and management.

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