Doi: 10.32677/IJCR.2016.v02.i01.003 **Case Report**

Intraperitoneal rectal perforation presenting as fetal ascites – a rare occurrence

Santhanakrishnan Ramakrishnan, Pavai Arunachalam[1], Kalpana Subbarayan, Radhiga Chandran, Karthik Balasubramanian

From, Womens Center Hospitals, Coimbatore and [1]PSG Institute of Medical Sciences and Research, Coimbatore, India

Correspondence to: Dr S Ramakrishnan, Head of the Department and Consultant Neonatologist, Womens Center Hospitals, 146 B, Mettupalayam Road, Coimbatore – 641043, India. Email: ramkris@mac.com

Received: 23 December 2015 Initial Review: 27 January 2016 Accepted: 08 February 2016 Published Online: 20 February 2016

ABSTRACT

Spontaneous perforation of the rectum presenting as fetal ascites is an extremely rare occurrence. We report the case of an infant where antenatally detected fetal ascites was attributable to intraperitoneal rectal perforation. Investigations directed to identify common causes of this condition did not reveal any aetiology. Patient underwent surgical colostomy formation on day two of life, which was reversed at six weeks of age. We suggest that meconium ascites and peritonitis should be considered as differential diagnoses in fetuses with ascites and, if the neonate requires a laparotomy, the rectal area should be thoroughly inspected to exclude this entity.

Key words: *Fetal ascites, Intraperitoneal perforation, Neonates, Rectal perforation*

Intestinal perforation is a recognized complication during neonatal period [1]. Most commonly, it is spontaneous (idiopathic) or following necrotizing enterocolitis [2–4]. Perforation most commonly occurs in small intestine; however, idiopathic rectal perforation is very rare [3]. We report an infant with intraperitoneal rectal perforation presenting as antenatally detected polyhydramnios and fetal ascites. The cause of perforation remains unknown. To our knowledge, this may be only the second case reported in English literature [5].

CASE REPORT

A 30 year old second gravida with one previous live child presented at 35 weeks gestation with antenatal ultrasound showing polyhydramnios (amniotic fluid index 35). There was fetal ascites with internal echoes suggestive of meconium ascites (Figure I). Anomaly scan performed at 21 weeks was normal. There was no maternal history of diabetes mellitus or hypertension. A full term male baby was delivered at 37 weeks by elective caesarian section due to worsening polyhydramnios. The baby did not require resuscitation at birth. He weighed 4.29 kg, had abdominal distension and bilateral large hydroceles. No other abnormalities were found. Examination of the anorectal region was normal.

Initial abdominal X-ray on day 1, showed fluid filled abdomen with centrally placed bowel loops and paucity of bowel gas, suggestive of ascites. There was evidence of abdominal calcification. An ultrasound of the abdomen revealed the presence of ascites with bilateral hydroceles. Bowel loops were visible in the proximal part of the right scrotum. The renal system was normal. An echocardiography ruled out pericardial effusion. A chest X-ray and ultrasound thorax ruled out pleural effusion.

A diagnostic ascitic tap ruled out infective, urinary, biliary and chylous ascites. Usually, a diagnostic ascitic tap identifies the presence of bile in the peritoneal fluid.

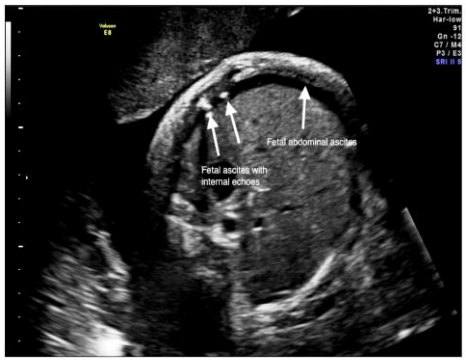

FIGURE I
Antenatal ultrasound scan of the fetus demonstrating ascites with internal echoes (arrow heads).

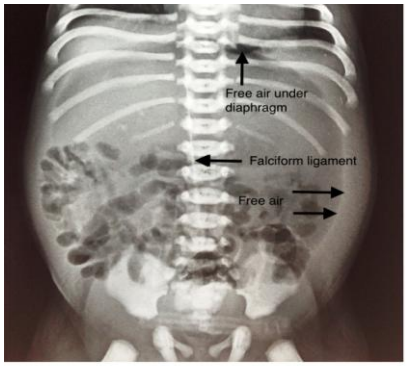

FIGURE II
X-ray of the chest and abdomen demonstrating free abdominal air, gas under the diaphragm and prominent falciform ligament, features consistent with intestinal perforation.

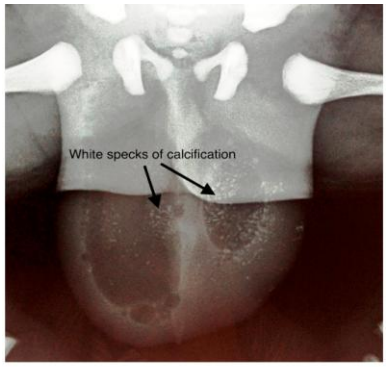

FIGURE III
X-ray of the scrotal region demonstrating enlarged fluid filled scrotal sac with specs of calcification.

Figures: Fig 1 – Antenatal ultrasound scan of fetus demonstrating ascites with internal echoes (white arrows). Fig 2 – X-ray abdomen demonstrating free abdominal air, gas under the diaphragm and prominent falciform ligament, features consistent with intestinal perforation. Fig 3 – X-ray of the scrotal region demonstrating enlarged fluid filled scrotal sac with specs of calcification.

However, loculated and self-sealed antenatal perforations may not reveal evidence of bile in the peritoneal fluid. The baby had worsening abdominal distension and a rising CRP. A repeat abdominal X-ray on day 2 showed classical evidence of intestinal perforation (Figure II). Scrotal region revealed calcification (Figure III). The baby underwent exploratory laparotomy due to radiological evidence of perforation.

Laparotomy demonstrated the presence of a considerable amount of meconium and pneumoperitoneum from an intraperitoneal rectal perforation. As the upper third of the rectum is an intraperitoneal organ, an antenatal perforation would have accounted for fetal ascites. No other gastrointestinal surgical pathology was identified at laparotomy. A thorough intraperitoneal wash was given. Baby underwent a divided colostomy. The child was stable post-operatively; the ascites regressed and the stoma started functioning on the first post-operative day. A rectal biopsy showed the presence of normal ganglion cells ruling out Hirschsprung's disease.

Serological investigations excluded causes of infective ascites such as Syphilis, Toxoplasma, Cytomegalovirus, Rubella, Herpes Simplex and Parvovirus B19. A direct Coomb's test was negative. He was neither anaemic nor jaundiced. A newborn blood spot test ruled out congenital hypothyroidism and cystic fibrosis. A contrast enema performed prior to colostomy reversal was normal. The child underwent colostomy reversal at 6 weeks of life. On last follow up, child was two years and eleven months old, and he was thriving well with normal developmental milestones and no further abdominal concerns.

DISCUSSION

Accumulation of fluid in the fetal abdominal cavity may be due to chylous ascites [6], urinary, biliary, and pancreatic ascites, ruptured ovarian cyst, chemical or bacterial peritonitis, anorectal malformations [7], cardiac ascites, pulmonary, infectious and metabolic ascites [8]. Sometimes the cause of ascites may not be ascertained (idiopathic ascites) [8]. Extrusion of sterile meconium from fetal gut into the peritoneal cavity may result in sterile meconium ascites and peritonitis. In the majority of cases, it is caused by intestinal perforation secondary to bowel obstruction or meconium ileus [9]. Small bowel, particularly distal ileum, is the most commonly affected part and prenatal perforation of the rectum is extremely rare [10]. Less common causes of meconium peritonitis include volvulus, imperforate anus and meconium plugs.

Pitcher et al [11] reported nine babies with fetal extraperitoneal rectal perforation presenting at or soon after birth. These babies presented with cystic mass in the perineum. They reported a good outcome when identified and managed appropriately. Casaccia et al [10] reported the first case of intraperitoneal fetal rectal perforation that presented as isolated ascites without any associated mass in the perineum. The authors described the fetal ascitic fluid as hyperechoic suggestive of possible fetal intestinal perforation. Postnatal ultrasound had confirmed the presence of neonatal ascites with floating echogenic material. The authors identified localized rectal perforation and a considerable amount of intra-abdominal fluid with meconium at laparotomy. To our knowledge, no further cases of fetal ascites and meconium peritonitis secondary to intraperitoneal rectal perforation have been reported.

Fines et al [12] reported prenatal sigmoid perforation secondary to amniocentesis. In our case, the mother did not undergo amniocentesis. Rectal examination, rectal thermometers and rectally administered medications may cause neonatal rectal perforation [13]. However, this baby did not undergo any of the above procedures and underwent only a right iliac fossa ascitic tap, which could not have caused the rectal perforation. In our case, the exact etiology of the rectal perforation is unknown, and we postulate that this is a case of an idiopathic intraperitoneal rectal perforation that manifested as fetal ascites.

This baby's initial abdominal X-ray did not reveal any clear evidence of intestinal perforation. Initial X-ray showed centrally placed bowel loops with a paucity of bowel gas suggestive of fluid filled abdomen. A subsequent X-ray revealed the classical "Foot Ball" sign suggestive of intestinal perforation. Abdominal X-ray performed early in the neonatal period may not have allowed air to fill the entire gut and may not identify a perforation, thus delaying prompt diagnosis and surgical intervention [14]. Gillies et al [15] also highlighted this in their case report. Passage of meconium through a persistent processus vaginalis might have contributed to the calcifications seen in the scrotum, in our case. This is a recognised finding in meconium peritonitis [16].

CONCLUSION

Meconium peritonitis should be considered where hyperechoic fetal ascites is present. At laparotomy, if no other site of perforation is evident, a thorough inspection of the rectal area must be performed to identify this rare cause of fetal ascites. Key investigations to identify cause of rectal perforation must be carried out. Of note, abdominal X-ray performed within few hours of birth may not reveal evidence of perforation. By repeating an abdominal X-ray after few hours, or by performing serial X-rays, there would be sufficient time for the bowel loops to fill with air enabling easy detection of perforation

REFERENCES

1. Tan CE, Kiely EM, Agrawal M, Brereton RJ, Spitz L. Neonatal gastrointestinal perforation. J Pediatr Surg. 1989; 24: 888–92.
2. Kawase Y, Ishii T, Arai H, Uga N. Gastrointestinal perforation in very low-birth weight infants. Pediatr Int. 2006; 48: 599–603.
3. Grosfeld JL, Molinari F, Chaet M, Engum SA, West KW, Rescorla FJ, et al. Gastrointestinal perforation and peritonitis in infants and children: Experience with 179 cases over ten years. Surgery. 1996; 120(4): 650–6.
4. Zamir O, Shapira SC, Udassin R, Peleg O, Arad I, Nissan S. Gastrointestinal perforations in the neonatal period. Am J Perinatol. 1988; 5: 131–3.
5. Sundararajan L, Patel D, Jawaheer G. Antenatal rectal perforation presenting in the neonate. Pediatr Surg Int. 2008;24:601-3.
6. Cochran WJ, Klish WJ, Brown MR, Lyons JM, Curtis T. Chylous ascites in infants and children: a case report and literature review. J Pediatr Gastroenterol Nutr. 1985;4:668-73.
7. Hoffman C. Fetal ascites. Arch Pediatr Adolesc Med. 1951; 82(1): 28.
8. Favre R, Dreux S, Dommergues M, Dumez Y, Luton D, Oury J-F, et al. Nonimmune fetal ascites: A series of 79 cases. Am J Obstet Gynecol. 2004; 190(2): 407–12.
9. Bell MJ. Peritonitis in the newborn--current concepts. Pediatr Clin North Am. 1985; 32: 1181–201.
10. Casaccia G, Giorlandino C, Catalano OA, Bagolan P. Prenatal rectal perforation: an unsuspected cause of isolated ascites. J Perinatol. 2006; 26(11): 717–9.
11. Pitcher GJ, Davies MR, Bowley DM, Numanoglu A, Rode H. Fetal extraperitoneal rectal perforation: a rare neonatal emergency. J Pediatr Surg. 2009; 44: 1405–9.
12. Fines B, Ben-Ami TE, Yousefzadeh DK. Traumatic prenatal sigmoid perforation due to amniocentesis. Pediatr Radiol. 2001; 31(6): 440–3.
13. Frank JD, Brown S. Thermometers and rectal perforations in the neonate. Arch Dis Child. 1978; 53(10): 824–5.
14. Veyrac C, Baud C, Prodhomme O, Saguintaah M, Couture A. US assessment of neonatal bowel (necrotizing enterocolitis excluded). Pediatr Radiol. 2012;42:S107–14.
15. Gillies MJ, Chowdhury MM, Lakhoo K. A pitfall in the interpretation of plain abdnominal radiographs in neonatal intestinal perforation. J Med Case Rep. 2008;2: 335.
16. Berrocal T, Lamas M, Gutieérrez J, Torres I, Prieto C, del Hoyo ML. Congenital anomalies of the small intestine, colon, and rectum. Radiographics. 1999; 19: 1219–36.

How to cite this article: Ramakrishnan S, Arunachalam P, Subbarayan K, Chandran R, Balasubramanian K. Intraperitoneal rectal perforation presenting as fetal ascites – a rare occurrence. Indian J Case Reports. 2016; 2(1):8-10.
Conflict of interest: None stated, Funding: Nil