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Meconium per vagina: a rare presentation of meconium peritonitis

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Abstract Meconium peritonitis results from antenatal perforation of the gastrointestinal tract; it presents as gastrointestinal obstruction, intraabdominal masses, or calcification. The presentation with passage of meconium per vagina secondary to meconium peritonitis is rare. We describe the radiologic and surgical findings in a neonate who had passage of meconium per vagina secondary to ileal atresia and meconium peritonitis. Initial clinical and radiologic examination suggested rectal atresia with an associated rectovaginal fistula, although subsequently, this was not the case. Possible explanations for the passage of meconium per vagina include decompression of a meconium cyst via the left fallopian tube or direct perforation of a collection into the vagina from the peritoneal cavity.

Meconium peritonitis occurs as a result of antenatal perforation of the intestinal tract. It is very uncommon, occurring in approximately 1 in 35,000 live births [1]. The passage of meconium per vagina secondary to meconium peritonitis is rare. Only 3 cases have been reported in the literature [2-4]. We report the radiologic and surgical findings in a neonate who had passage of meconium per vagina. Initial clinical examination suggested rectal atresia with rectovaginal fistula; abdominal ultrasonography appeared to confirm this and showed the presence of intraabdominal collections of meconium. At laparotomy, however, there was meconium peritonitis secondary to ileal atresia; the collected meconium may have drained per vagina via the left fallopian tube or directly through a perforation into the vagina from the peritoneal cavity.

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1. Case report

A female neonate, weighing 2500 g, born by elective cesarean delivery at 37 ± 1 week's gestation was transferred to the regional pediatric surgical center at 12 hours of age. Antenatal ultrasound scan performed at 37 weeks had shown polyhydramnios and bowel dilatation suggestive of obstruction. There was no family history of cystic fibrosis. At birth, the abdomen was distended, and there was passage of meconium from the vagina.

On arrival, she appeared jaundiced. There were no cardiorespiratory problems, and good oxygen saturation in air was maintained. The abdomen was soft and mildly distended, and some bowel loops were palpable. Nasogastric aspirates were minimal and nonbilious in nature. The anus was normally sited but only patent to 2 cm on examination. The external genitalia appeared normal, and no obvious fistula was seen.

Abdominal radiographs revealed that there was a lack of distal bowel gas, a few suspected specks of peritoneal calcification, and the suggestion of a lower abdominal soft tissue mass (Fig. 1).

Clinically, she appeared to have rectal atresia (atretic rectum at the anorectal level with a normally sited anus) associated with a potential rectovaginal fistula resulting in the passage of meconium per vagina.

She was managed with nil by mouth, intravenous fluids, antibiotics, and nasogastric decompression. Because of her stability, further radiologic examinations were planned for the following morning (ultrasound/contrast study). Cotton wool was placed at the vestibule to detect passage of meconium per vagina.

Overnight, further meconium was passed per vagina. Conjugated hyperbilirubinemia and clotting abnormalities were noted (bilirubin 245 and international normalized ratio [INR] 3.47). Abdominal ultrasonography demonstrated what was believed to be gas in a distended rectum ending distally approximately 2 cm from the perineum. A channel was seen to pass to the posterior fourchette, through which gas bubbles and meconium could be seen to pass (Fig. 2). Dilated meconium-filled loops of bowel and a right subphrenic collection were also noted. A diagnosis of in utero perforation, anorectal anomaly with fistula to the posterior fourchette, was made on the basis of ultrasound imaging; an additional contrast study was not performed.

Laparotomy was performed that morning after correction of clotting abnormalities with fresh frozen plasma (FFP). Intraabdominally, there were dense adhesions and scattered calcification. Careful dissection permitted progressive visualization of the contents of the peritoneal cavity; there were multiple collections (left upper quadrant, right subphrenic, and umbilical region). Type III ileal atresia was present with gross dilatation of the proximal bowel associated with in utero perforation. There was no evidence of meconium ileus. The ovary and left fallopian tube were noted within this meconium collection. Collapsed distal intestine and colon were identified (including the rectum) and confirmed to be patent. Collections of meconium were drained; the channel seen on ultrasound was not visualized at laparotomy (although it was considered that it may be present but nonidentifiable). The ileal atresia was resected; proximal and distal bowels were exteriorized as terminal stoma and mucous fistula, respectively.

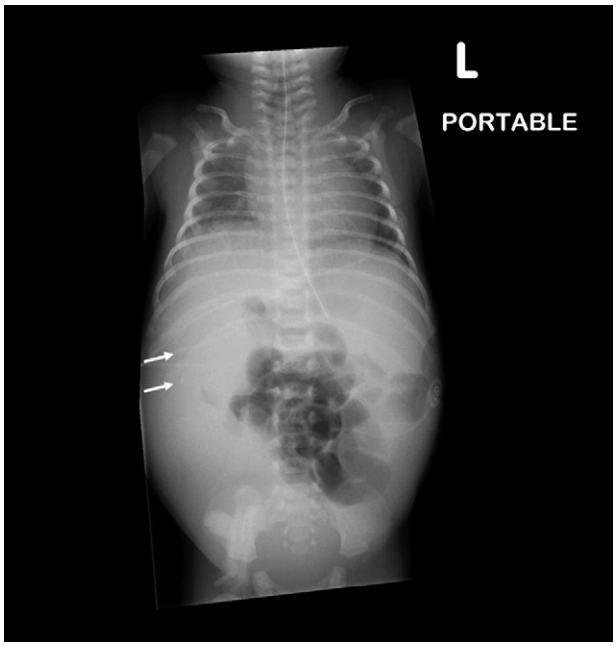

Fig. 1 Chest and abdominal radiograph obtained at 12 hours of age. There is a lack of distal bowel gas, a few potential specks of peritoneal calcification (arrows), and the suggestion of a lower abdominal soft tissue mass.

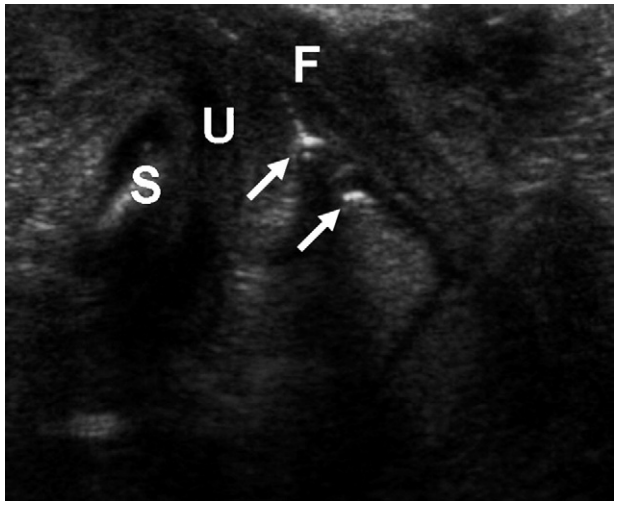

Fig. 2 Midline sagittal ultrasonographic image of the perineum. The symphysis pubis (S) and urethra (U) are marked. Bubbles of air and meconium (arrows) passed down a channel to the posterior fourchette (F).

Postoperatively, recovery was uneventful. Distal loopogram confirmed normal colon and rectum with no evidence of fistula; cystography demonstrated normal bladder and urethra with no vesicouterine reflux. Due to feed intolerance and high stoma output, early closure of the stoma was undertaken.

2. Discussion

Meconium peritonitis results from antenatal perforation of the intestinal tract and is commonly owing to obstructive lesions or congenital malformations. Although Morgagni [5] suggested in utero perforation of the gastrointestinal tract as its etiology in 1761, it was not until 1943 that the first successful surgical procedure for meconium peritonitis was reported by Agerty et al [6].

Four clinical subtypes are recognized (adhesive meconium peritonitis, giant cystic meconium peritonitis, meconium ascites, and infected meconium peritonitis) and relate to the timing of in utero perforation and whether the

perforation spontaneously seals [7]. It may present with gastrointestinal obstruction, intraabdominal masses, or calcification. Presentation with the passage of meconium per vagina is rare.

To date, there are only 3 case reports describing the passage of meconium per vagina secondary to meconium peritonitis [2-4]. Both Pollock et al [2] and Gauderer and Cass [4] found collections of meconium to be draining via the fallopian tubes and uterus at laparotomy. In the other case, the basis for the passage of meconium per vagina remains unclear; Moore [3] encountered a huge meconium cyst in which no usual peritoneal organs could be identified, although he describes a tubular structure in its lower portion. (At autopsy, the intestines were found compressed against the posterior abdominal wall).

Our case was perplexing; a provisional diagnosis of rectal atresia with rectovaginal fistula was considered. However, rectal atresia (atretic rectum at the anorectal level with a normally placed anus) is usually an isolated anomaly. Likewise, a normally sited anus is not expected in anorectal malformation with rectovaginal fistula.

In retrospect, the initial clinical findings and abdominal ultrasound results were misleading. The rectum may have been compressed against the peritoneal cavity secondary to the pressure exerted by the dilated proximal bowel and collections of meconium (in a similar manner to that described by Moore [3] in 1963), giving the appearance of rectal atresia. Abdominal ultrasonography demonstrated what was believed to be the distended rectum, from which a channel was seen to pass to the posterior fourchette, through which gas bubbles and meconium could be seen to pass. In fact, this probably represented the collection of meconium located proximal to the ileal atresia at the site of in utero perforation. Meconium and bubbles of gas present within the collection may have passed per vagina via either the left fallopian tube (noted within the collection at laparotomy), as previously described by Pollock et al [2] and Gauderer and Cass [4], or a perforation directly between the collection and the vagina.

At laparotomy, the colon distal to the ileal atresia was collapsed, including the rectum; a fistula was not demonstrable. (It may have been present but nonidentifiable). Postoperative contrast study showed no abnormality of the colon or rectum, or vaginal fistula after resection of the atretic segment/dilated proximal small bowel and drainage of the collections, and there was no further passage of meconium per vagina.

In conclusion, passage of meconium per vagina secondary to meconium peritonitis is rare; its occurrence in conjunction with a normal anal opening on the perineum should alert the clinician to a possible diagnosis other than anorectal malformation.

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