Meckel's Diverticulum: A Rare Entity with Diverse Presentations in Neonatal Age

Fatima Al Zahra[1], Nadeem Akhtar[2], Naeem Liaqat[3]*

[1] Specialist Registrar, Pediatric Surgery Department, PIMS, Islamabad
[2] Professor Pediatric Surgery Department, PIMS, Islamabad
[3] Consultant Pediatric Surgeon, Medicare Hospital, Rawalpindi

***Address for Corresponder:** Dr. Naeem Liaqat, Consultant Pediatric Surgeon, Medicare Hospital, Saidpur Road, Rawalpindi (email: simsonian.chaudary@gmail.com)

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Abstract

Meckel's diverticulum (MD) is a common occurrence in pediatric population but it rarely presents in the neonatal period and when it does,it may have a range of presentations. We present two cases, one of which was a preterm newborn and had bleeding per rectum, while other had volvulus of MD.

Keywords

- Diverticulum
- Newborn
- Neonate

Introduction

Meckel's diverticulum (MD) is a persisting remnant of incompletely obliterated vitellointestinal duct beyond embryonic phase. The majority of cases are incidentally discovered during evaluation of bleeding per rectum in childhood; some present with diverticulitis or obstruction as well. But having these symptoms in newborn period due to MD is not an ordinary presentation. The MD is frequently associated with rules of two as it is found in 2% of population, male to female ratio of 2:1, presents in first 2 years of life, lying within 2 feet from ileo-caecal junction, 2 inch in length, 2 cm in diameter and having two heterotopic mucosa (gastric, pancreatic).[1, 2] Whenever a neonate presents with bleeding per

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rectum, pneumoperitoneum or obstructive symptoms, MD constitutes the bottom of differential list.[3] We came across two cases where MD was found incidentally as a causative agent and was worthy of mention.

Cases Presentation 1:

A preterm male newborn, born via vaginal delivery on 36 weeks of gestation presented with rectal bleeding at 7th day of life. The bleeding was profuse and bright red in color. His bleeding profile was normal. Vitamin K was administered and imaging workup done that turned out to be inconclusive. Since the baby was preterm, exploration was planned on suspicion of Necrotizing Enterocolitis (NEC) even though the abdomen was soft and did not fit in the Bell's advanced diagnostic criteria, yet the Hemoglobin level dropped by 2 gram/dL and no diagnosis could be established despite extensive workup. On exploration, the gut was healthy with no pre-gangrenous patches but MD was found in proximity to ileocecal valve. The base was normal but on palpation, the consistency seemed to be altered compared to adjacent tissue. Resection followed by anastomosis was done and specimen sent for histopathology. The conclusion was compatible with MD along with ectopic gastric mucosa. His postoperative recovery remained good without any untoward event.

Cases Presentation 2:

A male newborn delivered at term by Cesarean section (CS) due to maternal obstetric complications presented on 11th day of life with intestinal obstruction. The baby had been admitted in NICU after birth due to grade 1 hypoxic ischemic encephalopathy owing to prolonged uneventful labour. The baby was resuscitated and later on discharged after establishing feed. Meconium was passed during stay in NICU within first 24 hours. There was no history of reluctance of feed or constipation. Baby was on mother feed on demand and was thriving well. The episode of obstruction of peristaltic movement of gut started two days before when the child developed mild abdominal distension and was not taking feeds. On hospital arrival, abdomen was distended and non-tender, so nasogastric decompression was done and fluid replacement given followed by thorough evaluation. X-ray showed air fluid levels with paucity beyond mid abdomen. Rectal stimulation didn't yield stool or flatus. Hematological workup revealed normal blood profile and electrolytes. Suspicion was of volvulus or band obstruction so exploratory laparotomy was planned. On exploration, there was volvulus of MD and it was adherent through a band to caecum causing obstruction of the gut **Figure 1**. Resection was done with clear margins of ileum and anastomosis done. Patient was put on triple regimen and had uneventful recovery. Tissue histology revealed inflammation of vitellointestinal duct with neutrophil infiltration and no ectopic mucosa was identified. Patient remained good post-operatively and was discharged to home.

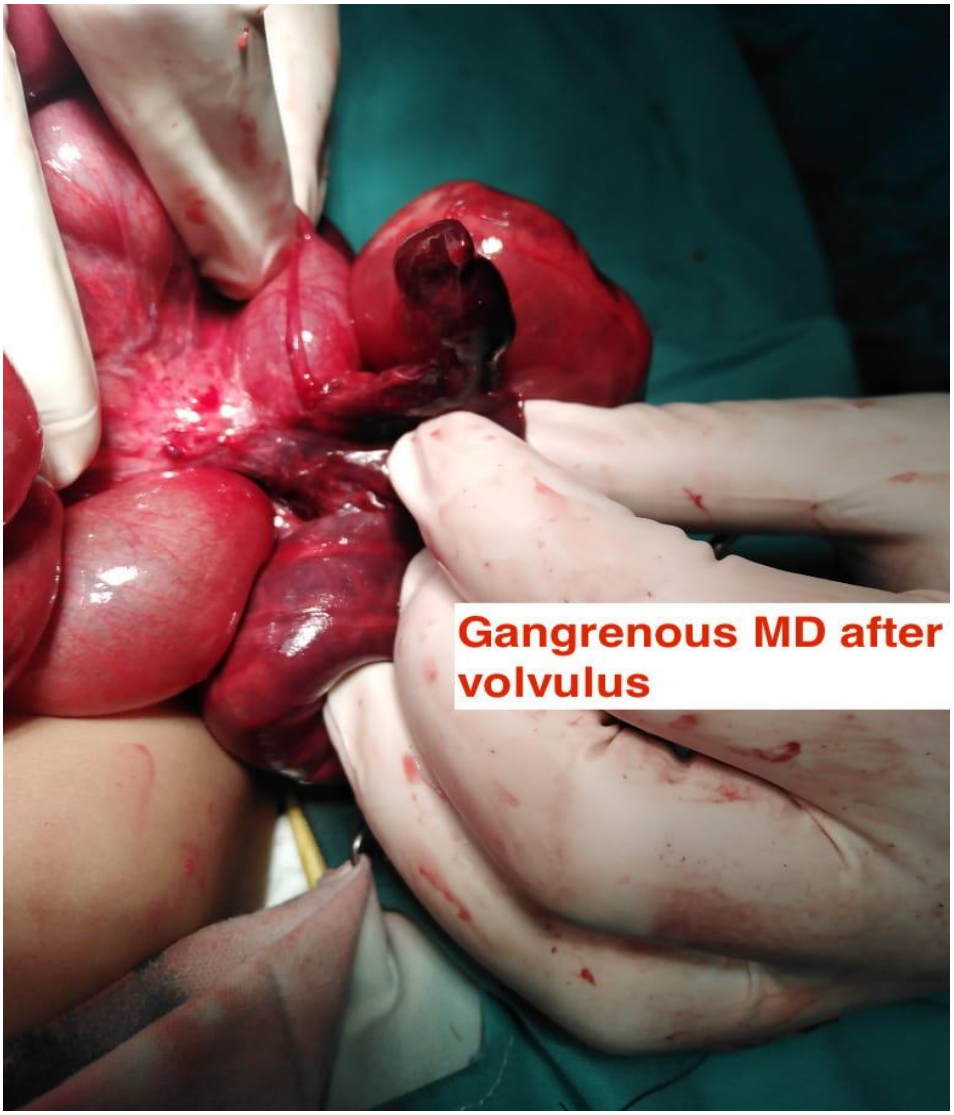

Figure 1: Gangrenous MD after volvulus

Discussion

MD presents in 2-4% of population and comes across as either an incidental finding or having symptoms of bleeding, inflammation, perforation, volvulus or intussusceptions.[2, 4] Only 10% of cases are confirmed to have the diagnosis pre-operatively and the rest are confirmed post operatively. The bleeding remains as most common feature of presentation, constituting 76% of cases. Other presentations are obstruction, pneumoperitoneum, and inflammation; 58%, 33% and 30%, respectively. The obstruction results from either local inflammation or a band traversing from tip to abdominal wall.[5, 6] Pneumoperitoneum mostly occurs due to erosion with the acidic content of gastric mucosa

secretions. Some even rare presentation is enterolith, lactobezoar/phytobezoar and malignant transformation.[1, 7]

The imaging modality of choice is Meckel's scan which is a technetium labelled scan that picks up gastric mucosa. The study is enhanced with supplementation of glucagon, pentagastrin or H2 blockers. Other adjuncts in diagnosis could be laparoscopy, angiography, CT scan or capsule/wireless endoscopy.[7]

The downside of laparoscopy remains the need for conversion if the diverticulum is inflamed and friable making endoscopic resection cumbersome.[6, 8] Wireless endoscopy is also a newer approach with a detailed analysis of anatomical lining of gut but the hinderance remains the propensity to get lodged in the diverticulum.[4]

In our experience, in both cases the modality opted was resection and anastomosis. The other alternative can be stoma formation if local edema, serositis or contamination precludes early anastomosis. Due to prolonged course of treatment and stoma related complications, primary resection and anastomosis remain the mainstay.[2, 7, 8]

Another subject of interest is the choice between resection/anastomosis and wedge resection. Diverticulectomy can be performed either way but in long-length and broad-based diverticula, segmental resection is deemed better, in contrast to a short and blunted Meckel's diverticulum, in which even wedge resection would suffice.[9] The problem with wedge resection is that due to ectopic mucosa secretions, the mesenteric border is continuously exposed to acidic content and has some residual inflammation that may impair healing; this condition may lead to bleeding or end in perforation.[10]

Conclusion

Despite the infrequent incidence in neonatal period, the diagnosis of Meckel's diverticulum should be considered if no other reason could be implied.

Ethical Considerations

This study is approved by Institutional Research Committee, Medicare Hospital, Rawalpindi with reference number IRB/2020/29.

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Conflict of interests

There are no conflicts of interest.

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