



ORIGINAL RESEARCH PAPER

Paediatric Surgery

FOREIGN BODY IMPACTION IN MECKEL'S DIVERTICULUM WITH A RARE PRESENTATION!

KEY WORDS: Meckels diverticulum, foreign body, impaction, Perforation

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ABSTRACT

Impaction of a foreign body into Meckel's diverticulum(MD) , thereby causing its perforation without any signs and symptoms or any radiological changes is a rare entity .We are presenting a case of a 2 year old child with impaction of a foreign body in MD resulting in its perforation. In a normal scenario foreign bodies would have passed easily without any difficulty or delay. After 7 days of expectant management a decision for surgical exploration was made and to our surprise the foreign body had perforated the body of meckels diverticulum. Meckels diverticulectomy with resection and anastomosis of small intestine was done along with removal of foreign body. The patient recovered uneventfully.

INTRODUCTION:

Meckel's diverticulum (MD), is the most common congenital anomaly of the gastrointestinal tract, seen in 2% of children. Of all the gastrointestinal tract perforations, less than 1% occur due to foreign body ingestion. Out of these 1.6 percent are attributable to MD. MD is known to be an innocent bystander, but it can act as a site of harbor for foreign bodies, leading to impaction and perforation. Large foreign bodies like a chicken bone, a bunch of seeds, and coins get easily impacted, but the impaction of a sharp metallic pin is rare.

We are presenting a case report of the impaction of a sharp metallic foreign body into meckel's diverticulum, leading to its perforation.

CASE REPORT:

A 7-year-old male child, presented to us with an accidental ingestion of a sharp metallic foreign body -straight pin (short, slender piece of metal wire with a point at one end and a blunt head at the other end), 48 hours before presentation in the emergency department, with complaints of dull aching abdominal pain and history of constipation.

On abdominal roentgenogram – Foreign body(FB) was located in the hypogastric region without any obvious alarming signs, with no clinical deterioration 72 hours post-ingestion of FB, hence the patient was kept under observation on laxatives and high fiber diet. Since he had daily bowel movements with no change in clinical or radiological scenario – the expectant line of management was continued and he was being monitored radiologically and clinically. His abdomen was soft and nontender, with not much change in the position of FB on serial X-rays (Figure-1) and no evidence of pneumoperitoneum. His blood hemogram was normal.

On day 7 post ingestion of FB, he developed gradual upper abdominal fullness with 2 episodes of non-bilious vomiting.

Clinically, the abdomen was soft with distended and localized tenderness just beneath the umbilicus; which corresponded radio logically – with 3 air-fluid levels and paucity of gas in the pelvis.

Intraoperatively there was an evidence of a broad-based MD with a pin impacted along its head at the tip of the MD (Figure-2) with minimal intra peritoneal contamination; resection and anastomosis with an adequate margin was done using a stapler. An abdominal drain was kept in the pelvis. Post-operative recovery was uneventful.



Figure 1 – Xray suggestive of foreign body in hypogastric

region-straight pin



Figure 2- Intraoperative image of impacted pin at the tip of meckels diverticulum

DISCUSSION:

According to the well-known statement of Charles Mayo, 'Meckels Diverticulum is frequently suspected, often looked for and seldom found'

MD was first published in his paper by a German anatomist – John Frederick Meckel – in 1809, but was discovered much earlier in 1589 by Fabricus Hildamus, as a remnant of the omphalo mesenteric duct.¹⁻⁵ MD is a most common anomaly of the gastrointestinal tract located at the antimesenteric border and is a true diverticulum.⁶⁻⁸

Foreign body ingestion is likely seen in the pediatric population, the most common age group being 6 months to 6 years. Impaction of FB in an MD can be seen as early as 1 year thereby leading to a complicated MD, which thus can present with hemorrhage (38%), obstruction (34%), or diverticulitis (22%) with much rarer complications particularly in children as perforation (8%) secondary to impaction.⁹

The most common foreign bodies are bone fragments (58), wood splinters (14%), pins, and needles (13%). The mechanism of lodgment of foreign bodies into meckels diverticulum, which leads to lodging of foreign bodies into meckels diverticulum.⁹

Complicated MD presenting as a perforation has an incidence of 0.5-6%, secondary to diverticulitis due to impaction of foreign body. Normally ingested foreign bodies pass harmlessly within 7 days.¹⁰

The impaction of foreign bodies into the meckels diverticulum gives us an insight into the fact that wider-based meckels diverticulum has a higher tendency to give a nest to such foreign bodies. That diverts our attention to an important highlight as to whether incidental nickels should be left intact or should undergo resection. According to the literature, complicated MD has a 1.5-2% risk of mortality, versus removal of uncomplicated MD has 1% risk of mortality on resection, but the number needed to treat for asymptomatic MD is 800, thereby preventing one death.¹¹

Non-passage of foreign bodies (which generally proceeds without any hindrance) for a prolonged duration of time, should raise a suspicion of MD.

Hold up of a foreign body, should alarm for MD, and early

signs should be picked up. Although MD is predominantly diagnosed with surgical intervention.¹² Radio opaque foreign bodies can hint toward MD, as in our case secondary to nonpassage of foreign body, monitored on daily x-rays.

MD is known to have a heterotopic mucosa, most commonly seen at its tip but also rarely involves the base hence resection of the ileal segment with anastomosis is favored over wedge resection.¹²

CONCLUSION:

Non passage of foreign body for more than 3 days with a stagnant position should raise an alarm for impaction of foreign body and a low threshold should be considered for an early surgical intervention.

STATEMENTS

1. "Informed consent was obtained from the parents"
2. "All authors attest that they meet the current ICMJE criteria for Authorship.

REFERENCES :

1. Sagar, J., Kumar, V., & Shah, D. K. (2006). Meckel's Diverticulum: a Systematic Review. *Journal of the Royal Society of Medicine*, 99(10), 501–505.
2. Meckel, J.F., 1809. Ueber die Divertikel am Darmkanal. *Archive fur die Physiologie*, 9, pp.421-453.
3. Roessel, Carl W. M.D.. Perforation of Meckel's Diverticulum by Foreign Body: Case Report and Review of the Literature. *Annals of Surgery* 156(6):p 972-975, December 1962.
4. JOHN E. L. Perforation of meckel's diverticulum by a pin. *Br J Surg.* 1955 Sep;43(178):216–218. doi: 10.1002/bjs.18004317817. [DOI] [PubMed] [Google Scholar]
5. Milla Salguero SE, Medina EA, Hause Murillo A, Perdomo Dominguez ES. Perforation of Meckel's diverticulum by an unusual foreign body: A case report and a review of literature. *Clin Case Rep.* 2024 Jul 29;12(8):e9183. doi: 10.1002/ccr.3.9183. PMID: 39081826; PMCID: PMC11286536.
6. Grasso E, Politi A, Prognò V, Guastella T. Spontaneous perforation of Meckel's diverticulum: case report and review of literature. *Ann Ital Chir.* 2013 May 20;84(ePub):S2239253X13020902. PMID: 23685413.
7. Lee JH, Lee JS, Kim MJ, Choe YH. Initial location determines spontaneous passage of foreign bodies from the gastrointestinal tract in children. *Pediatr Emerg Care.* 2011 Apr;27(4):284–9. doi: 10.1097/PEC.0b013e318213131a. PMID: 21490542
8. Sagar J, Kumar V, Shah DK. Meckel's Diverticulum: a Systematic Review. *Journal of the Royal Society of Medicine.* 2006;99(10):501-505. doi:10.1177/014107680609901011
9. Akshay Kalavant. Impacted Foreign Body in Meckel's Diverticulum-A Rare Complication in Children. *Acad J Ped Neonatol.* 2019; 8(1): 555785. DOI: 10.19080/AJPN.2019.08.555785
10. Zhu, J., Scarrold, L., & De Kock, S. (2020). Perforated Meckel's diverticulum from foreign body presenting with pain in the right iliac fossa. *ANZ Journal of Surgery*. doi:10.1111/ans.16486
11. Dumper J, Mackenzie S, Mitchell P, Sutherland F, Quan M, Mew D. Complications of Meckel's diverticula in adults. *Can. J. Surg.* 2006; 49: 353–7.
12. Daniele L, Elliot D, Wong M, Free J. Perforation of Meckel's diverticulum by an intact fish bone: a case report and literature review. *ANZ J. Surg.* 2015; 87: E206–E207. https://doi.org/10.1111/ans.13125.
13. Varcoe R, Wong S, Taylor C, Newstead G. Diverticulectomy is inadequate treatment for short Meckel's diverticulum with heterotopic mucosa. *ANZ J. Surg.* 2004; 74: 869–72