



VARIATIONS OF PRESENTATION OF MECKEL'S DIVERTICULUM – A CASE REPORT

General Surgery

Dr Madhurya Chakraborty	Department Of General Surgery Silchar Medical College And Hospital, Silchar, Assam., India
Dr Suvajyoti Chakraborty*	Department Of General Surgery Silchar Medical College And Hospital, Silchar, Assam., India *Corresponding Author
Dr Sanjeeb Kumar Singh	Department Of General Surgery Silchar Medical College And Hospital, Silchar, Assam., India
Dr Sushant Singh	Department Of General Surgery Silchar Medical College And Hospital, Silchar, Assam., India

ABSTRACT

Background: Meckel's diverticulum (MD) is the result of the incomplete obliteration of the vitelline ducts. The most common presenting symptom of MD is gastrointestinal bleeding in children; while in adults, the most common presentation is obstruction, either due to intussusception or adhesive bands. We have reported two variations of presentation of meckels diverticulum. **Case Presentation :** In first case, a 12 yr old boy who presented since 3 days worsening abdominal pain predominantly in the right iliac fossa associated with history of fever and 2-3 episodes of vomiting and turned out to be a case of meckel's diverticulum perforation, and second case is of a 8 year-old boy, who presented with 7 days worsening abdominal pain diffusely spread all over abdomen, associated with vomiting, abdominal distension, and not passing any stool with history of fever and after clinical evaluation and radiological diagnosis the case was diagnosed as a case of intussusception. Then the patient was planned for emergency exploratory laparotomy under general anaesthesia and turned out to be a case of intussusception with meckel's diverticulum as lead point. **Conclusion :** Therefore we conclude that after any emergency open exploratory laparotomy that can be due to appendicular pathology or intussusception, one must search for Meckel diverticulum pathology

KEYWORDS

Meckels diverticulum perforation, Perforated acute appendicitis, Right iliac fossa pain, intussusception

INTRODUCTION

Meckel's diverticulum is the commonest congenital abnormality of the gastrointestinal tract. The father of German surgery, Wilhelm Fabry (Fabricius Hildanus), was the first to describe ileal diverticula in 1598. It was not until 1809, however, that a fellow German comparative anatomist, Johann Friedrich Meckel, described the embryonic origin, and that now bears his name.

Meckel's diverticulum (MD) is the result of the incomplete obliteration of the vitelline ducts. It is often referred to by the rule of 2's: 2% of the population, within 2 ft of the ileocecal valve, 2 in. in length, 2 types of heterotopic mucosa, and presentation before the age of 2. MD is the most common congenital abnormality of the gastrointestinal tract; however, it rarely become symptomatic. The most common presenting symptom of MD is gastrointestinal bleeding in children; while in adults, the most common presentation is obstruction, either due to intussusception or adhesive bands. In both populations, perforation is an uncommon presentation, particularly among older aged women. Perforated MD often presents as does perforated acute appendicitis; namely with fever, chills, nausea, vomiting, right lower quadrant abdominal pain, and signs of peritonitis. This resemblance often results in diagnostic inaccuracy. Despite the uncommon incidence of symptomatic MD in adults, the morbidity associated with adult symptomatic MD is significant. The available research, however, remains inconclusive on whether or not an incidental MD should be prophylactically excised. We report 2 cases of variations of presentation of meckel's diverticulum

First case is of a 12 year-old boy, who presented since 3 days worsening abdominal pain predominantly in the right iliac fossa associated with history of fever and 2-3 episodes of vomiting and turned out to be a case of meckel's diverticulum perforation

Case Presentation

On 05/05/23 A 12-year-old male of indian muslim ethnicity from northeastern region patient presented to our casualty department at Silchar Medical College and Hospital with symptoms of fever, nausea, and right lower quadrant abdominal pain for 3 days. As per history given by him and his parents the pain was acute in onset and progressive in nature. The patient complains of vomiting since 1 day associated with nausea. Patient's attendant has not mentioned about any other medical condition of the patient. No other medical condition

related to the present condition was mentioned in patient's family and psychosocial history. Patient belongs to lower middle class family.

On physical examination his abdomen was distended with rigidity and guarding more in right iliac fossa. USG report was suggestive of hollow viscus perforation with features of peritonitis. Xray plain picture abdomen in erect posture showed gas under diaphragm.

MATERIALS AND METHODS

Our patient was planned for emergency exploratory laparotomy. After all routine blood investigations were done and patient's parents were counselled and explained about the necessity of emergency operation under general anaesthesia. With the consent of parents, patient was taken up for surgery under General Anaesthesia.

Intra operative, On thorough bowel inspection, Meckel's diverticulum seen and identified at 15 cm away from ileocaecal junction and perforation detected over the base of diverticulum, appendix found to be normal in size



Resection of the part of ileum containing meckel's diverticulum was done with 5 cm margin from both proximal and distal edge of base of meckel's diverticulum and end to end ileo-ileal anastomosis was done



In immediate post operative period the patient received 1 unit of Packed Red Blood Cells

The patients vitals were monitored regularly., On day 4 the drain was removed as minimal serous soakage was there. On day 5 the patient was discharged

Second case is of a 8 year-old boy indian muslim ethnicity from northeastern region, who presented with 7 days worsening diffuse pain abdomen with vomiting , abdominal distension, and constipation. With a history of fever for 2 days. After clinical evaluation and radiological diagnosis the case was diagnosed as a case of small bowel obstruction with intussusception. Then the patient had been taken for emergency exploratory laparotomy under general anaesthesia and turned out to be a case of ileo-colic intussusception with Meckel's diverticulum as the lead point.



Meckels diverticulum as lead point

Case Presentation

On 20/01/24 A 8-year-old male patient of indian muslim ethnicity from north eastern zone presented to our surgery emergency of Silchar Medical College and Hospital with symptoms of generalised diffuse worsening abdominal pain for 7 days, associated with vomiting , abdominal distension, and not passing any stool with a history of fever for 2 days . Patient's attendant has not mentioned about any other medical condition of the patient. No other medical condition related to the present condition was mentioned in patient's family and psychosocial history. Patient belongs to lower middle class family.

On physical examination his abdomen was distended with guarding and rigidity. USG whole abdomen shows ileocolic intussusception with telescoping segment 4.4 cm and a "target sign" .

MATERIALS AND METHODS

Our patient was planned for emergency exploratory laparotomy. After all routine blood investigations were done and once the consent has been given by the parents the patient was taken for the operation under General anaesthesia.

Intraoperative Finding : Intussusception was found and the with gangrenous 10 cm segment of ileum as intussusceptum and gangrenous meckel's diverticulum as the lead point



Post reduction Gangrenous segment

Resection of the gangrenous part of ileum containing meckel's diverticulum and end to end ileo-ileal anastomosis was done .

In immediate post operative period the patient received 1 unit of Packed Red Blood Cells

The patients vitals were monitored regularly. His postop days are uneventful. On 26/01/24 the patient was discharged

DISCUSSION/CONCLUSION

MD is the most common malformation of the gastrointestinal tract and is found in 0.14-0.4% of autopsies [3]. It is a remnant of the vitelline duct and, in adults, is usually located up to 100 cm from the ileocecal valve at the antimesenteric border of the ileum [4]. Anatomically, it is a true diverticulum with all layers of the gastrointestinal tract. Occasionally, it contains gastric or pancreatic mucosa [5].

Most MD cases stay asymptomatic with a lifetime complication rate of only 4% [1]. These complications most often occur before the age of 8 years; thus, symptomatic MD in adults is rare.

As the diverticulitis can lead to perforation, the treatment should be surgical. However, preoperative diagnosis can be difficult and is only achieved in 5-15% of cases, and inflamed MD is often misdiagnosed as acute appendicitis [2]. Abdominal CT can help make the diagnosis; yet, most MD cases are diagnosed intraoperatively during laparoscopy, especially if the diverticula do not contain a fecolith or foreign body. In patients with unknown congenital malformation, clinical diagnosis is even more difficult.

Intestinal obstruction due to Meckel's diverticulum is the most common presentation in adult and is the second most common in children [6]. There are various mechanisms by which it can cause intestinal obstruction like (a) Volvulus of small intestine around a fibrous band extending from Meckel's diverticulum to umbilicus. (b) Intussusception – in which Meckel's diverticulum sags into the bowel lumen and then serves as a lead point to allow telescoping of the small intestine into first the distal ileum and then in to the large intestine causing ileo-ileal and ileocolic type of intussusception. (c) Littre's hernia – Incarceration of the diverticulum in hernia, (inguinal and femoral) causing intestinal obstruction. (d) Entrapment of small bowel beneath the blood supply of the diverticulum, also known as a mesodiverticular band (e) Stricture secondary to chronic diverticulitis [7] (f) Meckel's diverticulum lithiasis (g) Band extending between the diverticulum and the base of the mesentery, forming a loop in which a part of ileum may get stuck causing obstruction [8]. Inversion of Meckel's diverticulum is not yet clearly understood. One theory is that abnormal peristaltic movement due to ulceration or ectopic tissue at the base of Meckel's diverticulum may cause it to invert [9]. The presenting symptoms in adult patients with intussusceptions are nonspecific and often long-standing. The most important characteristic of pain is its periodic, intermittent nature, which makes the diagnosis elusive and accounts for the delay in establishing the diagnosis [10]. CT is the most sensitive imaging modality for diagnosis of bowel obstruction with reported accuracy of 58%-100% [11]. In the early stage, the characteristic point is the target lesion, described as enveloped, eccentrically located areas of low density, which represents the intussuscepted bowel viewed in cross section [12]. Other findings, such as vascular compromise, layering or stratification effect to bowel

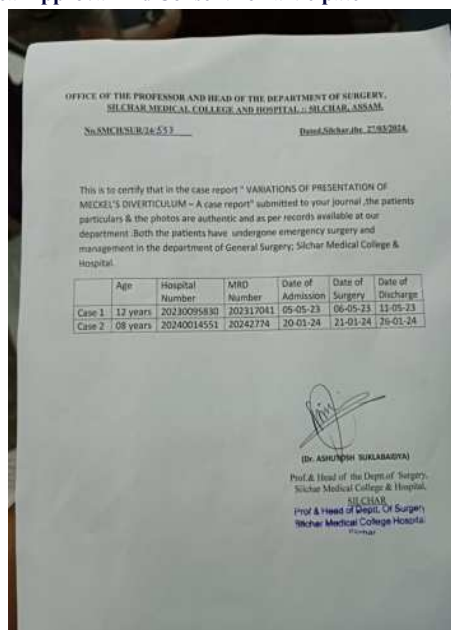
wall thickening and amorphous mass are recognized later in the natural history of unrelieved intussusceptions [13].

CONCLUSION

As we can see in our cases mainly in paediatric population Meckel's diverticulum perforation can sometimes mimic acute appendicitis or meckel's diverticulum acting as lead point for small bowel intussusception, we must consider to search for any Meckel's diverticulum pathology in any emergency exploratory laparotomy surgery

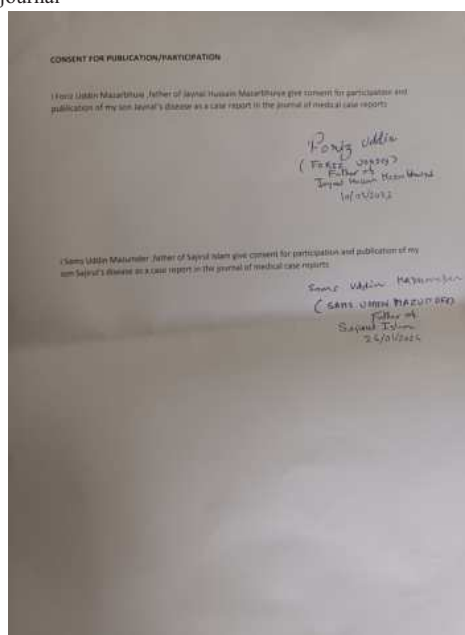
Declarations

1) Ethical Approval And Consent To Participate



2) Consent For Publication

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor -In - Chief of this journal



3) Availability Of Supporting Data

I have provided the pdfs of the two cases I have mentioned containing all investigations done, hospital number every necessary information for my cases

4) Competing Interests

Declaration Of Conflict Of Interest/acknowledgement

This is to declare that I, Dr Madhurya Chakraborty, have received no funding from any external source and have no conflict of interest to declare herewith.

Yours sincerely,
Dated - 06/04/24

Madhurya Chakraborty

Dr Madhurya Chakraborty
Post Graduate Trainee,
Dept of General Surgery,
Silchar Medical College and Hospital

5) Funding

Not Applicable

6) Author's contribution

These 2 patients were clinically examined and admitted under consultant and Visiting Surgeon Dr Suvajyoti Chakraborty

These patients were prepared for emergency ot (including all lab investigations and radiological investigations, taking consent for emergency ot,) by Dr Madhurya Chakraborty , Dr Sushant Singh, Post graduate trainees

The patients operation was done as Dr Suvajyoti Chakraborty , assistant professor as 1st surgeon, Dr Sanjeeb Kumar singh , Registrar as 2nd surgeon and Dr Madhurya as 3rd surgeon

7) Acknowledgements

We acknowledge the efforts of every hospital staff, nursing personnel, doctors involved in the treatment and management of the two patients

We also acknowledge and pay our gratitude to our head of the department as sir allowed us to publish the case reports

MD:

Meckel's diverticula

REFERENCES

1. A. Parvanescu, M. Bruzzi, T. Voron et al., "Complicated Meckel's diverticulum," Medicine, vol. 97, no. 38, article e12457, 2018.
2. Y. Groebli, D. Bertin, and P. Mo, "Meckel's diverticulum in adults: retrospective analysis of 119 cases and historical review," The European Journal of Surgery, vol. 167, no. 7, pp. 518–524, 2001.
3. J. Dumper, S. Mackenzie, P. Mitchell, F. Sutherland, M. L. Quan, and D. Mew, "Complications of Meckel's diverticula in adults," Canadian Journal of Surgery, vol. 49, no. 5, p. 353, 2006.
4. K. Blouhos, K. A. Boulas, K. Tsalis et al., "Meckel's diverticulum in adults: surgical concerns," Frontiers in Surgery, vol. 5, p. 55, 2018.
5. J. R. Robinson, H. Correa, A. S. Brinkman, and H. N. Lovvorn III, "Optimizing surgical resection of the bleeding Meckel diverticulum in children," Journal of Pediatric Surgery, vol. 52, no. 10, pp. 1610–1615, 2017.
6. Sharma RK, Jain VK. Emergency surgery for Meckel's diverticulum. World Journal of Emergency Surgery. 2008;3:27.
7. Whang EE, Ashley SW, Zinner MJ. Small intestine. In: Brunicaudi FC, McGraw-Hill, editors. In Schwartz's Principles of Surgery eighth edition. 2005. pp. 1043–1044.
8. Tomikawa M, Taomoto J, Saku M, Takeshita M, Yoshida K, Sugimachi K. A loop formation of meckels diverticulum: a case with obstruction of the ileum. Ulus Travma Acil Cerrahi Derg. 2003 Apr;9(2):134–6.
9. Blakeborough A, McWilliams RG, Raja U, Robinson PJ, Reynolds JV, Chapman AH. Pseudolipoma of inverted Meckel's diverticulum: clinical, radiological and pathological correlation. Eur Radiol. 1997;7(6):900–4.
10. Yalamarthi S, Smith RC. Adult intussusception: case reports and review of literature. Postgrad Med J. 2005 Mar;81(953):174–7.
11. Marinis A, Yiallourou A, Samanides L, Dafinos N. Intussusception of the bowel in adults: a review. World J Gastroenterol. 2009;15:407–411.
12. Steinwald PM, Trachiotis GD, Tannebaum IR. Intussusception in an adult secondary to an inverted Meckel's diverticulum. Am Surg. 1996;62:889–894.
13. Sioka E, Christodoulidis G, Garoufalidis G, Zacharoulis D. Adult intussusception due to inverted Meckel's diverticulum. World J Gastrointest Surg. 2011;3:123–127.