

**Case Series** 

# VARIED PRESENTATIONS OF MECKEL'S DIVERTICULUM: A SINGLE CENTRE OBSERVATIONAL STUDY

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### ABSTRACT

Meckel's diverticulum is a common congenital anomaly of the gastrointestinal tract, yet it often presents with nonspecific or unusual symptoms, leading to diagnostic delays and dilemma. This case series reviews nine patients treated at our institution, highlighting the varied clinical manifestations and the importance of a high index of suspicion in diagnosis.

**Keywords:** Meckel's diverticulum, gastrointestinal bleeding, intestinal obstruction, chronic abdominal pain, umbilical sinus, appendicitis.

## INTRODUCTION

About 2% of people have Meckel's diverticulum, a remnant of the vitelline duct, which is the most gastrointestinal common congenital system abnormality.<sup>[1]</sup> Even though it is widespread, only 4-6% of instances result in problems, and clinical presentations are uncommon.<sup>[2]</sup> Clinical symptoms might range from gastrointestinal haemorrhage and intestinal obstruction to persistent abdominal discomfort or unrelated surgical findings.<sup>[3]</sup> The significance of retaining clinical suspicion in a variety of situations is shown by this case series, which includes nine patients treated in a tertiary care facility with various presentations of Meckel's diverticulum.

### **MATERIALS AND METHODS**

This observational case series was conducted in the Department of Minimally Invasive and Robotic Gastro Intestinal and Bariatric Surgery, of Yashoda Hospital Somajiguda branch, from January 2022 to March 2025. All patients diagnosed with Meckel's diverticulum intraoperatively or radiologically and subsequently confirmed on histopathology were included. Demographic details, clinical features, imaging findings, intraoperative findings, management, and outcomes were recorded and analyzed.

### **Cases Description**

### **Group 1: Intestinal Obstruction (3 patients)**

Case 1: A 10-year-old boy complained of constipation, abdominal distension, and bilious

vomiting. A Meckel's diverticulum producing volvulus with gangrenous small bowel was discovered during Diagnostic Laparoscopy. Small bowel resection and anastomosis was done laparoscopically.



Figure 1a: CT image showing small bowel volvulus due to Meckel's diverticulum with twisting of mesentery "whirlpool sign"



Figure 1b: CT image showing small bowel volvulus due to Meckel's diverticulum with specific transition point with proximal dilated bowel loops and distal collapsed small bowel loops



Figure 1c: Histopathological image of resected Meckel's diverticulum.

**Case 2:** An acute intestinal obstruction was diagnosed in a male patient aged 51 yrs. CT scan of the abdomen revealed dilated proximal bowel loops with collapsed distal bowel loops with a specific

transition point. Omentum adhering to Meckel's diverticulum, was found creating a potential space through which bowel loop had entered and twisted, was found after Diagnostic Laparoscopy. Diverticulectomy and adhesiolysis were performed in a minimal invasive approach.



Figure 2a: CT image showing Meckel's diverticulum adhered to omentum leading to small bowel obstruction with proximal dilated bowel loops and distal collapsed bowel loops



Figure 2b: CT image showing Meckel's diverticulum as transition point with proximal dilated bowel loops and distal collapsed bowel loops with features of intestinal obstruction



Figure 2c: Intra operative image of wedge resection of Meckel's diverticulum, done laparoscopically using 60mm blue laparoscopic stapler.

**Case 3:** A 40 yrs old lady presented with persistent colicky with features of intestinal obstruction. Contrast enhanced CT was done which showed specific transition point in the bowel loops with proximally dilated bowel loops and distally collapsed bowel loops. Diagnostic Laparoscopy was done which showed distended Meckel's diverticulum with torsion around its vertical axis. Diverticulectomy was done laparoscopically.



Figure 3 a: CT image showing small bowel obstruction with proximal dilated bowel loops and distal collapsed small bowel loops with twisted Meckel's diverticulum at the transition point



Figure 3 b: CT image of same patient with axial cut showing small bowel obstruction with Meckel's diverticulum in the transition point



Figure 3 c: Histopathological image of resected Meckel's diverticulum.

# Group 2: Chronic Pain Post-Appendicectomy (1 patient)

**Case 4:** 54 year old woman complained of recurrent pain in right iliac fossa. She gave a history of appendicectomy done in childhood. Contast enhanced CT of whole abdomen was done, which was unremarakable. Inflammed Meckel's diverticulum was discovered during diagnostic laparoscopy. Laparoscopic wedge resection was carried out.



Figure 4a: Intra operative image of Meckel's diverticulm being resected laparoscopically with 60 mm blue stapler



Figure 4b: Histopathological image of resected Meckel's diverticulum.

### Group 3: Gastrointestinal Bleeding (1 patient)

**Case 5:** A 16 yr old male presented with anaemia and melena since 6 months. Upper GI endoscopy and colonoscopy was done. No abnormality got detected. Contrast enhanced CT of whole abdomen was done, Meckel's diverticulum was detected. Diagnostic Laparoscopy and Meckel's Diverticulectomy was done in minimal invasive approach.



Figure 5a: Intra operative image of Diagnostic Laparoscopy and Laparoscopic Meckel's diverticulectomy using 60 mm blue stapler



Figure 5b: Intra operative image, post laparoscopic wedge resection of Meckel's diverticum, showing, freely lying resected Meckel's diverticulum with stapled base and staple line of small bowel along the antimesenteric border



Figure 5c: Histopathological image of resected Meckel's diverticulum from the same patient.

# Group 4: Incidental Finding Along with Appendix (3 patients)

**Case 6:** A male patient of age 22 was detected with acute appendicitis. Ultrasound whole abdomen revealed probe tenderness in right iliac fossa. Diagnostic Laparoscopy was done and found inflamed appendix. Small bowel walk was done and a long narrow neck Meckel's diverticulum was discovered incidentally during surgery. A prophylactic diverticulectomy was performed along with laparoscopic appendicectomy.



Figure 6a: Intra operative image of Laparoscopic Meckel's diverticulectomy using 60mm blue stapler



Figure 6b: Intra operative image showing stapled Meckel's base and stapled closure of antimesenteric border of small bowel following laparoscopic wedge resection



Figure 6c: Histopathological slide image of resected specimen of Meckel's diverticulum of the same patient.

Case 7: A 30-year-old man presented with features of subacute intestinal obstruction with anorexia, nausea vomiting, abdominal distension, intermittent passage of flatus with constipation. CECT revealed pus pocket in right iliac fossa with appendix floating in the pocket with breach in wall lining of the tubular appendix. Ultimately Diagnostic laparoscopy was done and appendicular perforation was revealed. Thorough peritoneal lavage given laparoscopically and then laparoscopic appendicectomy was done. Here also routine distal ileal walk revealed a short meckel's diverticulum with wide base. Meckels diverticulectomy was not done as an additional step to the surgery. Findings were noted in the operative notes.



Figure 7a: Intra operative image showing wide base Meckel's diverticulum.

**Case 8:** A 19-year-old woman presented with anorexia, vomiting and pain in right lower quadrant with positive Rovsing's sign with features of Mc Burney's point tenderness. Diagnostic Laparoscopy was done and long inflamed pelvic appendix was found, along with short wide based meckel's diverticulum incidental finding. Appendix was resected laparoscopically preserving back the meckel's diverticulum. All the intra operative findings were mentioned clearly in details in operative notes.



Figure 8a: Intra operative image showing broad based Meckel's diverticulum



Figure 8b: Intra operative image showing wide neck Meckel's diverticulum.

### Group 5: Chronic Umbilical Sinus (1 patient)

**Case 9:** A kid aged 7 who has a persistent umbilical discharge. A fistulogram showed a sinus tract that connected to the small intestine. Meckel's diverticulum with a patent omphalomesenteric duct were discovered on contrast enhanced CT with oral

contrast. Laparoscopically diverticulum was excised along with the excision of the sinus tract and refashioning of umbilicus.

### **DISCUSSION**

Meckel's diverticulum can appear in a variety of ways, frequently resembling other intra-abdominal disorders. The most frequent adult consequence is intestinal obstruction, due to fibrous bands, intussusception, or volvulus.<sup>[4]</sup> Two of the patients in our study had obstructions that needed surgery. GI bleeding, which can result from ectopic stomach mucosa that causes ulceration, is still a serious symptom, particularly in children and young people.<sup>[5]</sup> Even though a positive Meckel's scan is sensitive in younger patients, it might not be as trustworthy in adults.<sup>[6]</sup> It's interesting to note that one patient experienced persistent periumbilical pain, even after having an appendectomy, which is a rare but documented occurrence.<sup>[7]</sup> Diagnostic laparoscopy is essential in these situations.

There is disagreement about whether asymptomatic Meckel's diverticulum should be removed as a preventative measure because of three cases involving accidental discovery during appendectomy. When the diverticulum seems aberrant or inflammatory, literature recommends individuals.<sup>[8]</sup> Meckel's excision in young diverticulum should be taken into consideration if a kid has a persistent umbilical discharge, which might be a sign of a patent omphalomesenteric duct.<sup>[9]</sup> The umbilical sinus, an uncommon but described appearance, was present in both of our instances. This case series highlights the importance of surgical exploration and histological confirmation in instances that are unclear and illustrates the diagnostic difficulty that Meckel's presents.

### **CONCLUSION**

Although most people with Meckel's diverticulum do not experience any symptoms, the condition can cause a wide range of clinical presentations, from acute complications like intestinal obstruction, gastrointestinal bleeding, and perforation to more subtle or long-term symptoms like persistent umbilical discharge or unexplained abdominal pain. These diverse symptoms frequently resemble more prevalent gastrointestinal conditions, which delays proper diagnosis and treatment. This case series highlights the difficulty of diagnosing Meckel's diverticulum and the necessity for physicians to have a high threshold of suspicion, particularly when dealing with young patients who exhibit unexplained stomach complaints. Though their sensitivity varies with age and clinical scenario, imaging modalities include capsule endoscopy, contrast enhanced CT abdomen, and technetium-99m pertechnetate scans, which can help with preoperative diagnosis. Often, a conclusive

diagnosis can only be made during surgery. Both open and laparoscopic surgical exploration are still essential for diagnosis and treatment, with prompt diverticulectomy or segmental resection providing excellent results. Crucially, preventive excision may be warranted to prevent difficulties in the event that Meckel's diverticulum is discovered by accident, especially in young people, or when the diverticulum seems aberrant or inflammatory. In the end, preventing potentially fatal consequences requires early detection and timely surgical intervention. The morbidity linked to symptomatic Meckel's diverticulum can be considerably decreased with increased awareness, prudent imaging, and prompt surgical treatment.

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