



A RARE CAUSE OF SMALL BOWEL OBSTRUCTION IN AN ADOLESCENT: PERSISTENT OMPHALOMESENTERIC DUCT

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ABSTRACT The omphalomesenteric duct is an embryological structure that normally obliterates during early foetal development. Persistence of the duct into adulthood is rare and can present with nonspecific or unusual clinical features. We report the case of a 17-year-old boy who presented with right lower quadrant abdominal pain, initially raising suspicion of acute appendicitis. At laparotomy, a patent omphalomesenteric duct was identified as the cause of small bowel obstruction. The patent duct, along with the involved segment of ileum, was resected, followed by ileoileal anastomosis and prophylactic appendectomy was done. The postoperative course was uneventful, and the patient was discharged on the 10th postoperative day. This case highlights the diagnostic difficulty of identifying the cause of intestinal obstruction in young patients without a history of previous abdominal surgery. Although rare, congenital anomalies such as a patent omphalomesenteric duct should be considered in the differential diagnosis of small bowel obstruction in young adults. Early recognition and timely surgical intervention are important to prevent complications and achieve favourable outcomes.

KEYWORDS : Persistent Omphalomesenteric Duct, Small Bowel Obstruction, Meckel's Diverticulum

INTRODUCTION

Small bowel obstruction (SBO) is a common surgical emergency and a frequently encountered condition in abdominal surgery [1,2]. It represents a significant cause of morbidity, healthcare utilization, and hospital expenditure worldwide and accounts for a substantial proportion of emergency surgical admissions [1-3]. Prompt and accurate diagnosis, followed by timely and appropriate management, is essential to prevent complications such as bowel ischemia, strangulation, perforation, and sepsis.

Omphalomesenteric duct (OMD) remnants are rare congenital anomalies arising from persistence of the embryonic connection between the yolk sac and the primitive midgut [4,5]. The most common OMD remnant is Meckel's diverticulum, whereas complete persistence of the omphalomesenteric duct is exceedingly uncommon. Clinical manifestations of OMD remnants include intestinal obstruction, abdominal pain, gastrointestinal bleeding, umbilical discharge, and umbilical hernia, with most symptomatic cases occurring during childhood [4-6].

Although persistent OMD is recognized as a potential cause of intestinal obstruction in children, its occurrence as a cause of small bowel obstruction in adults is exceptionally rare. We report an unusual case of a young adult patient presenting with small bowel obstruction secondary to a persistent omphalomesenteric duct remnant, highlighting the diagnostic and surgical challenges associated with this rare congenital anomaly.

Case Presentation

A 17-year-old boy presented to the emergency department with colicky abdominal pain and two episodes of bilious vomiting. The pain was intermittent and progressively increased in severity. There was no history of previous abdominal surgery. On examination, the patient was vitally stable with tenderness predominantly in the right lower quadrant of the abdomen.

Routine laboratory investigations were performed. Plain X-ray of the abdomen revealed multiple air-fluid levels, suggestive of small bowel obstruction. Ultrasonography revealed dilated terminal small bowel and inflamed appendix. In view of the clinical and radiological findings, the patient was taken for exploratory laparotomy.

Intraoperatively, dilated small bowel loops with features of a closed-loop obstruction were identified. Dense adhesions were noted between

the terminal ileum, caecum, and appendix. Further exploration revealed a patent omphalomesenteric duct arising from the ileum and extending towards the umbilical region. The persistent omphalomesenteric duct acted as a pathological band, resulting in entrapment of the terminal ileal loop and causing a closed-loop small bowel obstruction.

The involved segment of ileum along with the patent omphalomesenteric duct was resected, followed by a primary ileoileal anastomosis. A prophylactic appendectomy was also performed because of the dense adhesions involving the appendix and adjacent structures. The resected specimen was sent for histopathological examination. The resected omphalomesenteric duct showed intestinal-type mucosal lining with underlying smooth muscle and fibrovascular tissue, consistent with a persistent omphalomesenteric duct. No ectopic tissue or malignant changes were identified.

The postoperative period was uneventful. The patient gradually regained bowel function, tolerated oral feeds, and remained clinically stable. No postoperative complications were noted, and he was discharged on the 10th postoperative day with advice for follow-up.

DISCUSSION

The omphalomesenteric duct (OMD), also known as the vitellointestinal duct, is an embryological connection between the yolk sac and the primitive midgut. Normally, this duct disappears during early fetal development. Failure of its complete obliteration can result in several types of remnants, the most common being Meckel's diverticulum. Complete persistence of the duct, with a patent communication between the ileum and the umbilicus, is much less common.[1,2,6]

Most OMD remnants remain asymptomatic, but they can occasionally present with abdominal pain, gastrointestinal bleeding, umbilical discharge, or intestinal obstruction. These complications are more frequently reported in children, while presentation in adolescents and adults is unusual.[6,7] When obstruction occurs, the persistent duct may act as a congenital band around which a bowel loop becomes trapped, leading to volvulus, internal herniation, or closed-loop obstruction as in our case.

The diagnosis of a persistent OMD before surgery can be difficult. Clinical and plain radiographic findings generally demonstrate the presence of intestinal obstruction but may not reveal its underlying

cause. In some cases, cross-sectional imaging may suggest an abnormal band or tubular structure extending between the small bowel and umbilicus; however, the diagnosis is often made only during surgical exploration. This was also the situation in our patient, in whom the congenital anomaly was identified only after exploration of the obstructed bowel.

Once a symptomatic patent OMD is identified, surgical resection is the treatment of choice. The involved bowel should be carefully assessed for viability, particularly in the setting of a closed-loop obstruction. Resection of the persistent duct with the involved ileal segment and primary anastomosis may be required when the bowel is compromised or when the duct is closely attached to the ileum.

This case emphasizes that congenital anomalies should remain in the differential diagnosis when a young patient presents with small bowel obstruction without a history of previous abdominal surgery. Although a patent omphalomesenteric duct is rare, it can produce significant complications, including closed-loop obstruction and possible bowel ischemia. Careful exploration and timely surgical management are therefore important when the cause of obstruction is not explained by the more common aetiologies [7].

CONCLUSION

A patent omphalomesenteric duct is a rare congenital anomaly that can lead to small bowel obstruction. In our patient, the persistent duct acted as a pathological band and resulted in closed-loop small bowel obstruction. Although the diagnosis may be difficult to establish preoperatively, careful surgical exploration is essential when the cause of obstruction is not apparent. Early recognition and appropriate resection of the patent duct and involved bowel can prevent serious complications and result in good outcomes. This case highlights the importance of considering congenital anomalies such as a patent omphalomesenteric duct in young patients presenting with acute intestinal obstruction.



Figure 1. X-ray Chest with Abdomen Suggestive of Multiple Air Fluid Level



Figure 2 Intraoperative Image Post Adhesiolysis Showing Long Omphalomesenteric Duct Arising from Terminal Ileum of Which Portion Attached to Umbilicus was Disconnected Along with Inflamed Appendix

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