

Intestinal prolapse through a persistent omphalomesenteric duct causing small-bowel obstruction

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Persistent omphalomesenteric duct as a cause of small-bowel obstruction is an exceptional finding. A neonate presented with occlusion due to intestinal prolapse through a persistent omphalomesenteric duct. Remnants of the duct were successfully resected, and the postoperative course was uneventful. We discuss the presentation of omphalomesenteric duct and its management.

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Although small-bowel obstruction is common, persistent omphalomesenteric duct as a cause of this condition is an exceptionally rare finding. The omphalomesenteric duct remnant is one of the rare congenital anomalies associated with the primitive yolk stalk. Most omphalomesenteric duct remnants tend to be Meckel's diverticula, while the occurrence of a persistent omphalomesenteric duct is infrequent.

Case report

A 20-day-old male infant who had been born at term was brought to the emergency room with acute small-bowel evisceration through the umbilicus (Fig. 1). His parents had noted peri-umbilical erythema, mucus-containing umbilical drainage, vomiting, and absence of passage of gas and faeces. The infant was taken to the intensive care unit, where he was managed with intravenous hydration and refeeding. The insertion of a probe into the prolapsed intestine stopped the vomiting and enabled breastfeeding to be resumed. The child was thus able to gain weight, so that he could be operated on in an optimal condition. Surgery was undertaken 5 days after his admission.

A peri-umbilical incision was made, and a 3 cm length of distal ileum that had prolapsed through a patent omphalomesenteric duct was reduced (Fig. 2). The duct was released from the umbilicus and small-bowel resection with termino-terminal anastomosis was done (Fig. 3).

The infant regained normal bowel function and resumed breastfeeding 2 days after surgery. He was discharged 5 days after surgery.

Discussion

Anomalies in the omphalomesenteric duct occur because of lack of involution during the 9th week of gestation. Omphalomesenteric



Fig. 1. Small-bowel prolapse through the umbilicus.



Fig. 2. Omphalomesenteric duct. The small intestine is dilated upstream.

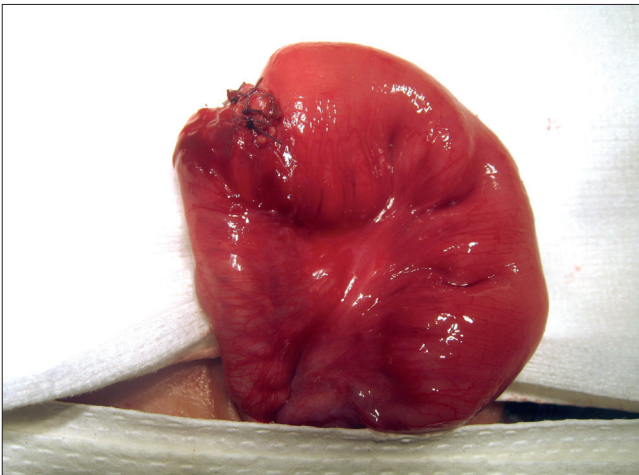


Fig. 3. *Termino-terminal anastomosis.*

duct remnants (vitelline duct anomalies) have been reported to be congenital anomalies associated with the primitive yolk stalk.^{1,2} The omphalomesenteric duct is the embryonic structure connecting the primary yolk sac to the embryonic midgut. In normal circumstances it becomes a thin fibrous band, which eventually disintegrates and is absorbed spontaneously at the 5th - 10th week of gestation.^{1,2} The omphalomesenteric duct will continue to grow if it fails to atrophy and disintegrate completely; failure of such closure may result in the following lesions (omphalomesenteric duct remnants): Meckel's diverticulum, patent omphalomesenteric duct (umbilico-ileal fistula), omphalomesenteric duct (umbilical) sinus, omphalomesenteric duct (umbilical) cyst, umbilical mucosal polyp, or a fibrous cord connecting the ileum to the umbilicus. Meckel's diverticulum is the most common omphalomesenteric duct anomaly.

Omphalomesenteric duct remnants may persist in approximately 2% of infants. Although these malformations are found with equal frequency between the sexes, the incidence of symptoms is significantly greater in males.² While patients may be asymptomatic, common symptoms of omphalomesenteric duct malformations include abdominal pain, rectal bleeding, intestinal obstruction, umbilical drainage and umbilical hernia. All these symptoms appear to be age-dependent, most usually appearing before the age of 4 years. Eighty-five per cent of infants younger than 1 month and 77% of children aged 1 month - 2 years have a symptomatic presentation.²

There are many mechanisms for small-bowel obstruction from a persistent omphalomesenteric duct. These include intussusception in the case of a patent omphalomesenteric duct, volvulus or internal hernia (closed-loop obstruction) from a patent omphalomesenteric duct, or a fibrous connection between the umbilicus and the ileum. A patent omphalomesenteric duct, as in the case reported here, results from an omphalomesenteric duct that is not completely obliterated and absorbed.³ Congenital omphalomesenteric ducts are clinically significant because they may lead to intestinal obstruction, as in our patient. In general, the most appropriate treatments of small-bowel obstruction as well as timing of surgery remain controversial.^{4,6}

Management of this condition requires careful assessment and awareness, while treatment needs to be tailored to the individual case.⁶ Surgical resection of remnants of the duct is required for the treatment of bleeding, intussusception and, as in this case, intestinal prolapse causing obstruction.

Conclusion

Persistent omphalomesenteric duct constitutes an extremely infrequent cause of small-bowel obstruction. Surgical resection of remnants of the duct is required for the treatment of intestinal prolapse.

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