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Congenital omphalo-mesenteric fistula in a newborn

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INTRODUCTION

We present a classical but rare case of omphalo-mesenteric fistula (OMF) in a term newborn. OMF, also called vitelloinstinal duct, is an exceptional congenital anomaly, representing about 2% of malformations of the omphalo-mesenteric duct (OMD). In OMF, the OMD remains open and there is abnormal discharge of intestinal content, facilitating clinical diagnosis. In less obvious cases, fistulography can help making the diagnosis and delineate the exact extent of the malformation. Most of the time, OMF manifests clinically during the neonatal period and requires urgent surgical treatment to avoid complications.

CASE REPORT

This male infant was born at 39 5/7 weeks of gestation by spontaneous vaginal delivery to a 30-year-old G3/P3 after an uneventful pregnancy. Postnatal adaptation was good, with Apgar scores of 9,10, and 10 at 1, 5, and 10 minutes, respectively. His birth weight was 3220 g.

The first clinical examination of the newborn at 10 hours of life disclosed a yellowish „varicose" dilatation on the lateral side of the umbilical cord, close to the border of the cutaneous cord. When examined again four hours later, discharge of intestinal secretions and feces through a 5 mm long fissure was noted. The flow was intermittent and more pronounced during episodes of crying (Fig. 1). There was no umbi-

lical hernia. OMF was diagnosed, the infant was made NPO, and referred to a pediatric surgeon.

Explorative laparotomy was performed on the fourth day of life through a transverse abdominal incision. A persistent and complete OMD was found (Fig. 2) consisting of a multi-layered tubular structure running alongside the peritoneal wall on the umbilical side. The OMD and neighboring small intestine was resected, followed by an end-to-end anastomosis of the small intestine (Fig. 3). The histologic examination of the resected segment showed non-inflammatory intestinal mucosa, with no other abnormalities (Fig. 4, 5). The postoperative course was uneventful.

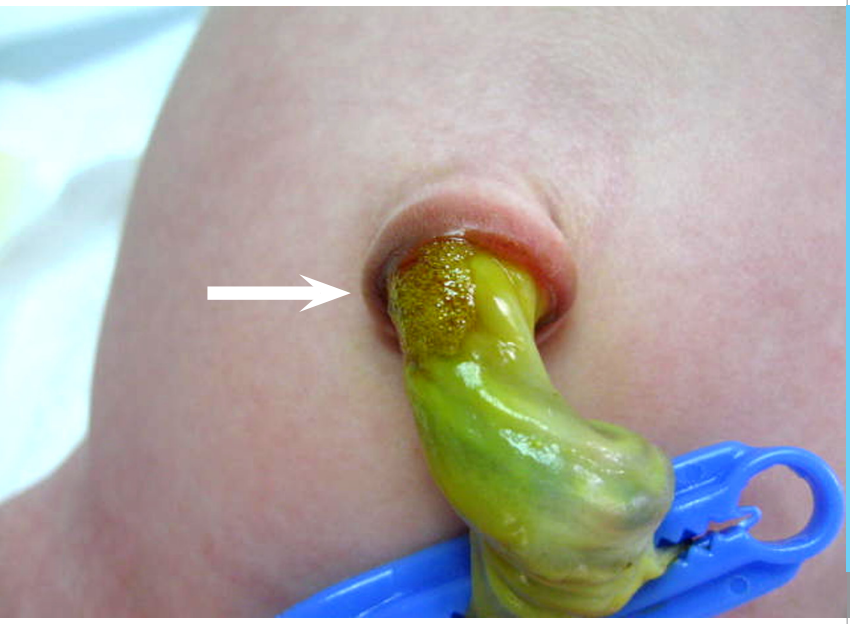


Fig. 1

Discharge through the omphalo-mesenteric fistula (arrow).

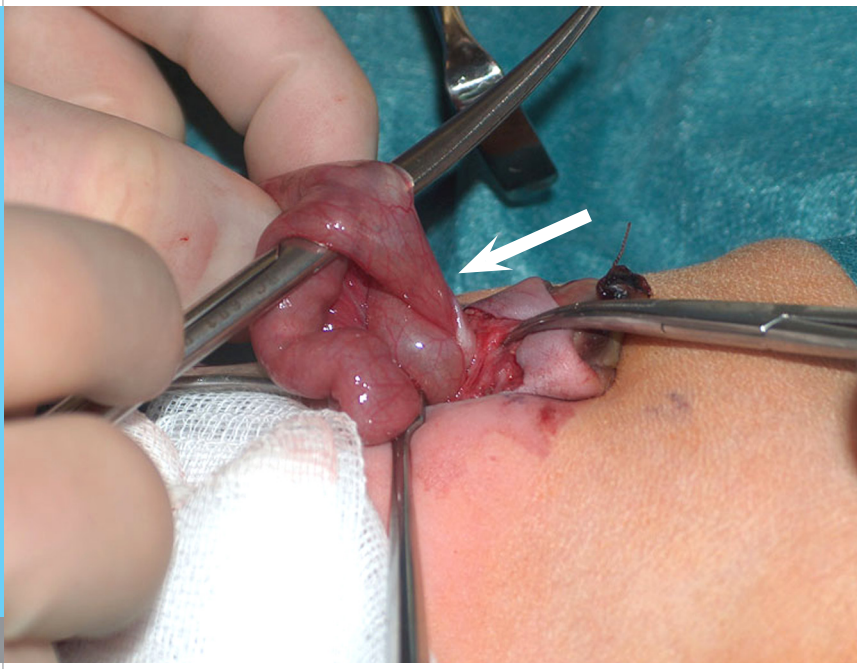


Fig. 2

Intraoperative findings: persistent omphalo-mesenteric fistula (arrow).

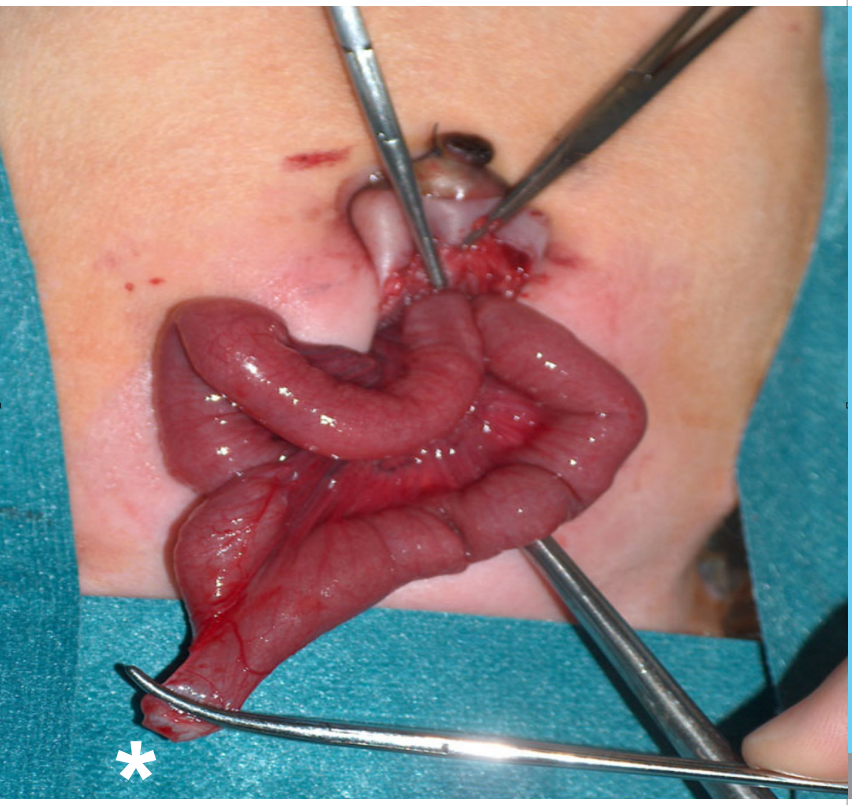


Fig. 3

Intraoperative findings: resection of the fistula (asterisk)

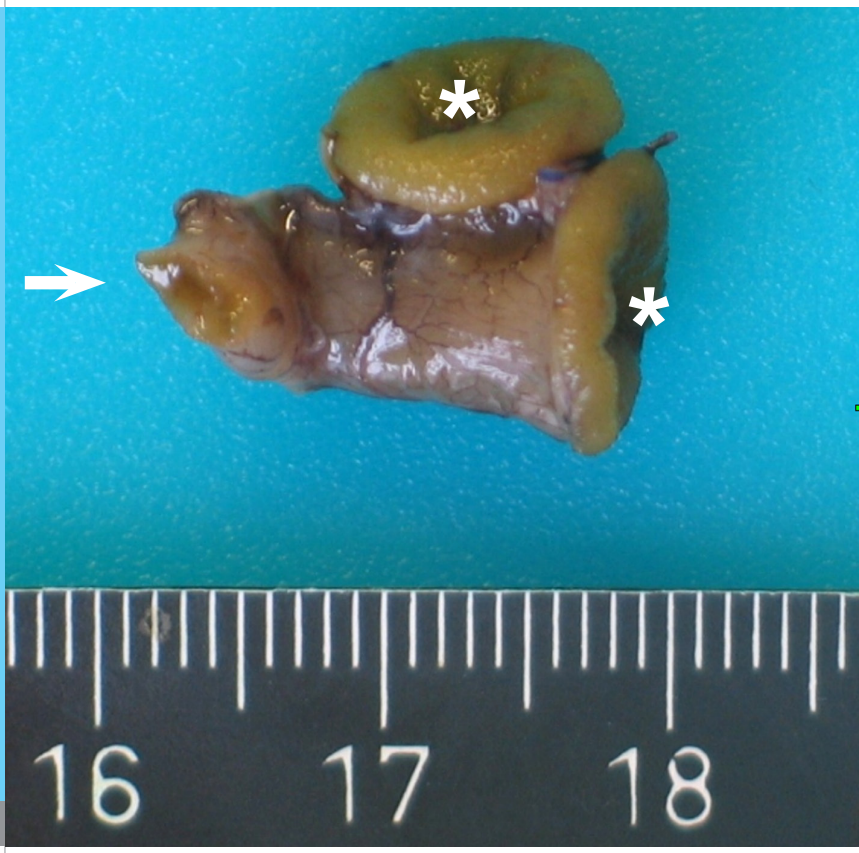


Fig. 4

Resected segment with fistula (arrow) and small bowel (asterisks).

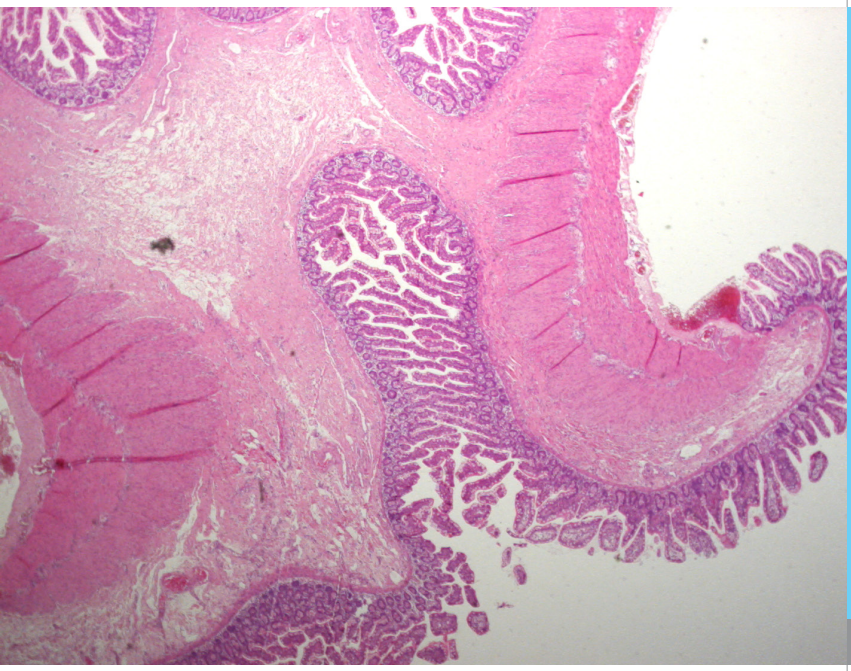


Fig. 5

Histology: normal intestinal mucosa.

DISCUSSION

OMF is a very rare congenital anomaly, which is included in the group of abnormalities resulting from non- or incomplete regression of the OMD. It affects about 2% of infants with umbilical pathology, and is more common in boys than girls (male/female ratio 3:1).

In the first weeks of embryonic life, the OMD passes through the umbilical cord, and connects the intestine with the yolk sac via the umbilical cord and the allantoic diverticulum, to supply nutrients until the final establishment of the placenta (1) (Fig 6). The OMD then separates from the intestine and shows complete involution, between the 5th and 7th weeks of embryonic life.

There are different types of OMD anomalies, depending on the extent of the anomaly. Complete persistance of the OMD will result in an OMF. In contrast, partial persistence can lead to different anomalies depending on its localization, such as a Meckel's diverticulum, with or without a residual tract attaching the diverticulum to the umbilicus (with, in this case, a risk of intestinal volvulus), or a vitellin cyst (2) (Fig 7). Differential diagnosis includes umbilical granuloma, urachal remnants and umbilical masses (hernia, polyps) (3).

OMF often presents with an umbilical discharge, manifests in the first hours of life with its severity depending on the size of the fistula. The discharge may consist of intestinal fluid, feces, or mucopurulent secretions. Of

note, the presence of an umbilical raspberry bud is often observed with a fistula orifice always easily visible and catheterizable (4).

Fistulography will confirm the clinical diagnosis. It usually shows a communication between the orifice of the fistula and the intestinal loops (5). Histopathological examination may reveal the presence of ectopic tissue of pancreatic or gastric origin, foci of inflammation or necrosis. Complications, although rare, can be serious. The most common complications are intestinal prolapse through the fistula, which can quickly become irreducible; intestinal obstruction due to fibrous adhesions, foci of necrosis of the mesentery due to strangulation by the fistula, bleeding or bowel perforation (6).

The treatment is surgical and consists of complete resection of the fistula, and end-to-end intestinal anastomosis (7).

CONCLUSION

OMF is a rare condition which is most often diagnose in the neonatal period. It belongs to a wider spectrum of congenital anomalies of the OMD. It manifests early in life with often purulent and fecaloid discharge. Its treatment is surgical, with good outcome in most cases.

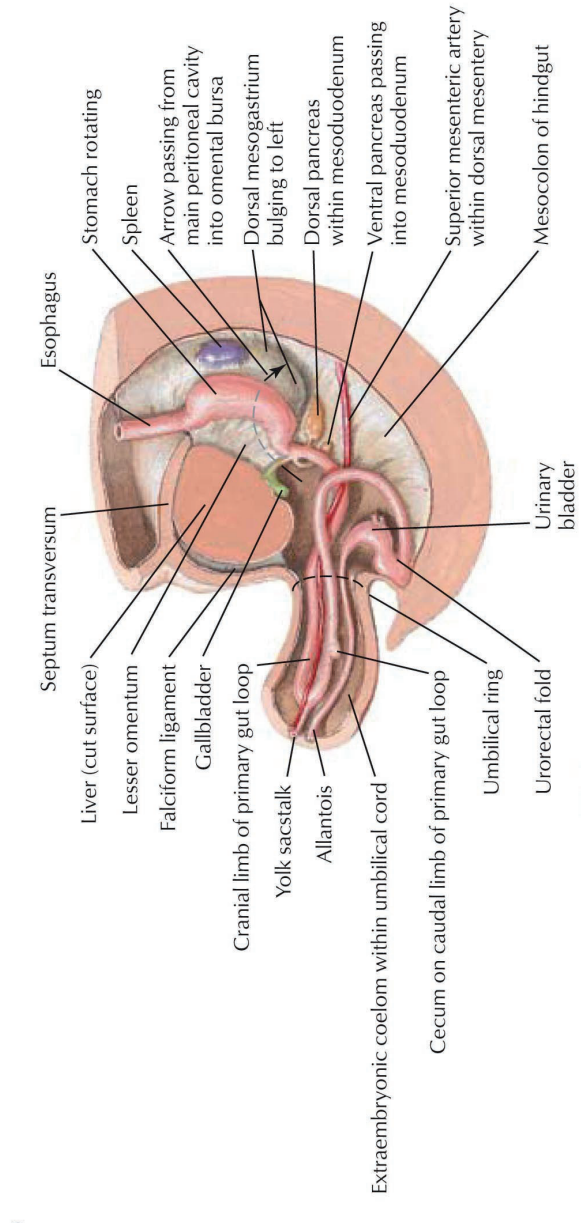
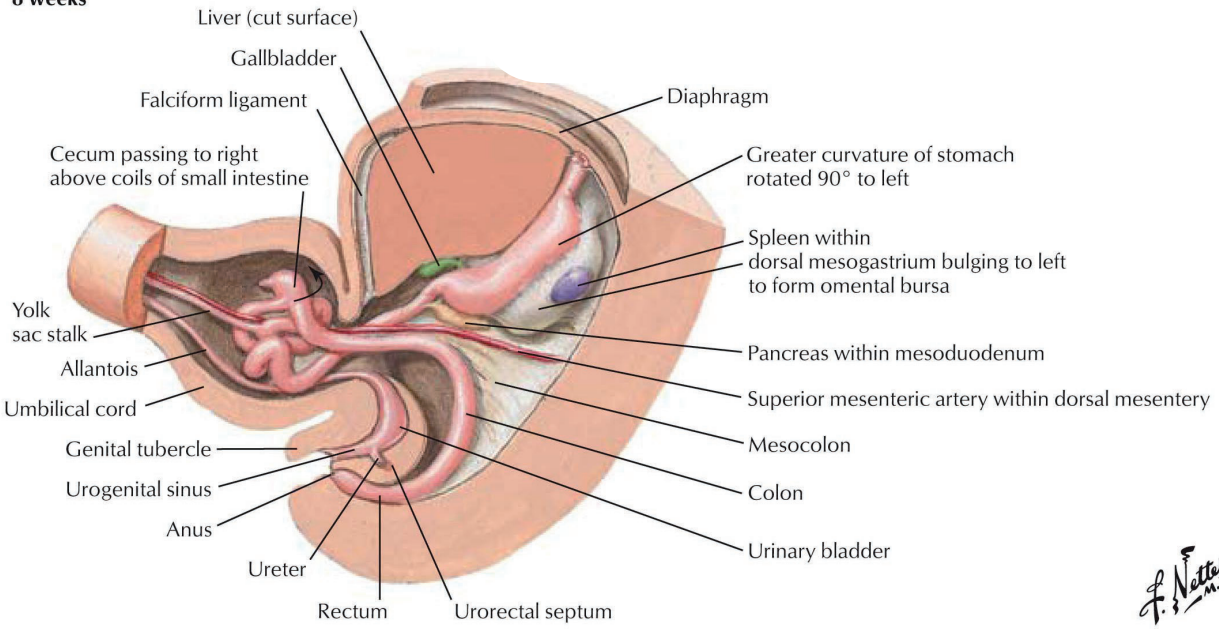


Fig. 6

Embryology of the omphalo-mesenteric duct (OMD).

8 weeks


Liver (cut surface)
Gallbladder
Falciform ligament
Cecum passing to right above coils of small intestine
Yolk sac stalk
Allantois
Umbilical cord
Genital tubercle
Urogenital sinus
Anus
Ureter
Rectum
Urorectal septum
Diaphragm
Greater curvature of stomach rotated 90° to left
Spleen within dorsal mesogastrium bulging to left to form omental bursa
Pancreas within mesoduodenum
Superior mesenteric artery within dorsal mesentery
Mesocolon
Colon
Urinary bladder
F. Netter M.D.

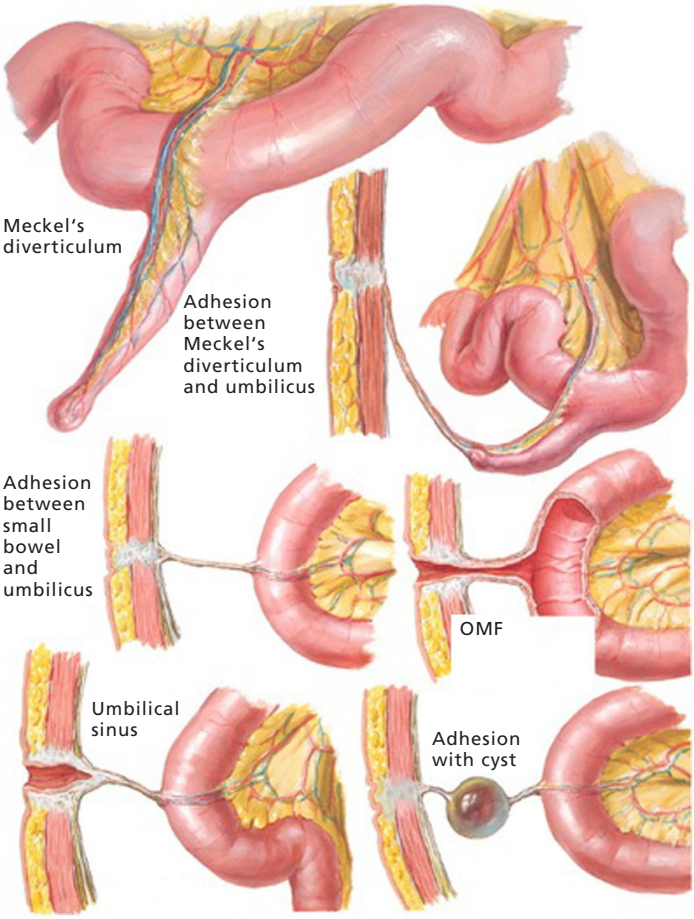


Fig. 7

Different types of omphalo-mesenteric duct (OMD) anomalies.

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