

# PATENCY OF THE OMPHALOMESENTERIC DUCT (ENTEROUMBILICAL FISTULA): 2 CASE REPORTS

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## SUMMARY

*Two cases of enteroumbilical fistula presenting in the neonatal period are reported. Both developed complications which required surgical intervention. A brief discussion on clinical features and management follows.*

## INTRODUCTION

Enteroumbilical fistula is a developmental abnormality of the omphalomesenteric duct. It is a result of its incomplete involution during foetal life. A continuous communication between the ileum and the umbilicus exists which may discharge, at intervals, meconium, faeces or gas. I report two cases which were presented to the Paediatric Unit, Alor Star General Hospital, in November/December 1985.

## CASE HISTORY

### Case One

A one-day-old Malay female neonate was admitted to the special care nursery for observation. She was a preterm baby, gestational age of 34 weeks and birth weight of 1,960g.

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She was noticed to be lethargic and not feeding well on day two. The umbilical stump was infected. She was diagnosed as having septicaemia and was treated with parenteral penicillin and gentamycin. Clinical jaundice which appeared on day three gradually increased. A blood exchange transfusion was to be carried out on day seven. However, when the cord was cut to 1 cm from the base for umbilical venous cannulation, a 'red fleshy mass' with a lumen was seen, through which meconium was extruding. The exchange transfusion was abandoned and plasma was given instead.

The following day, she developed apnoeic spells and was mechanically ventilated for the next three days. On day ten, faecal matter was discharging from the umbilicus and the entero-umbilical fistula was confirmed by passing a probe (using an umbilical catheter) through a fine opening at the umbilicus. Subsequently, small amounts of faecal matter began discharging from the umbilicus at intervals. She tolerated nasogastric tube feeding well.

She was referred to the surgical unit on day 18 but operation was deferred because of prematurity and septicaemia.

On day 39, she developed vomiting and abdominal distension. A plain abdominal X-ray indicated small bowel obstruction. She was operated on day 41; the findings were a patent omphalomesenteric duct (confirmed by injection

of methylene blue as dye) with a dilated segment at the umbilical end and a narrowed segment at the ileal end. A few loops of ileum were 'wrapped' around the duct causing 'kinking' and consequently small bowel distension. The duct was excised and a Meckel's diverticulectomy was done.

On the fourth postoperative day, she developed a 'burst abdomen'. A second operation was done and the findings were faecal discharge at the closure site of the ileum with small bowel distension. That part of the ileum was excised and end-to-end anastomosis was done. Following that, she deteriorated and was mechanically ventilated but succumbed to septicaemia on day 49.

## Case Two

A six-day-old Malay male neonate was admitted with a history of foul-smelling umbilical discharge and vomiting since birth. He was a term baby with a birth weight of 2,730g. It was a spontaneous vaginal home delivery.

On clinical examination, he was jaundiced and had a septic cord with foul-smelling discharge. He had frequent spasms of the extremities and trunk on stimulation. A clinical diagnosis of tetanus was made and he was sent to the intensive care unit (ICU) and mechanically ventilated. He was given human tetanus immune globulin, penicillin, gentamycin, phenobarbitone and valium. Nasogastric tube feeding was started soon after ventilation and he was tolerating it well.

In the ICU, a 'red nodule' was noticed on the umbilicus and diagnosed as umbilical granuloma (Fig. 1). However, on day 19, there was faecal discharge from the umbilicus. He was extubated on day 24 and a sinogram confirmed an entero-umbilical fistula. The following day, the small intestine prolapsed out through the duct after an excessive bout of crying (Fig. 2). An emergency laparotomy was done. The findings were a patent omphalomesenteric duct and prolapse of the ileum through the duct. The prolapse was reduced, the duct was excised, Meckel's diverticulectomy and an end-to-end anastomosis were done.

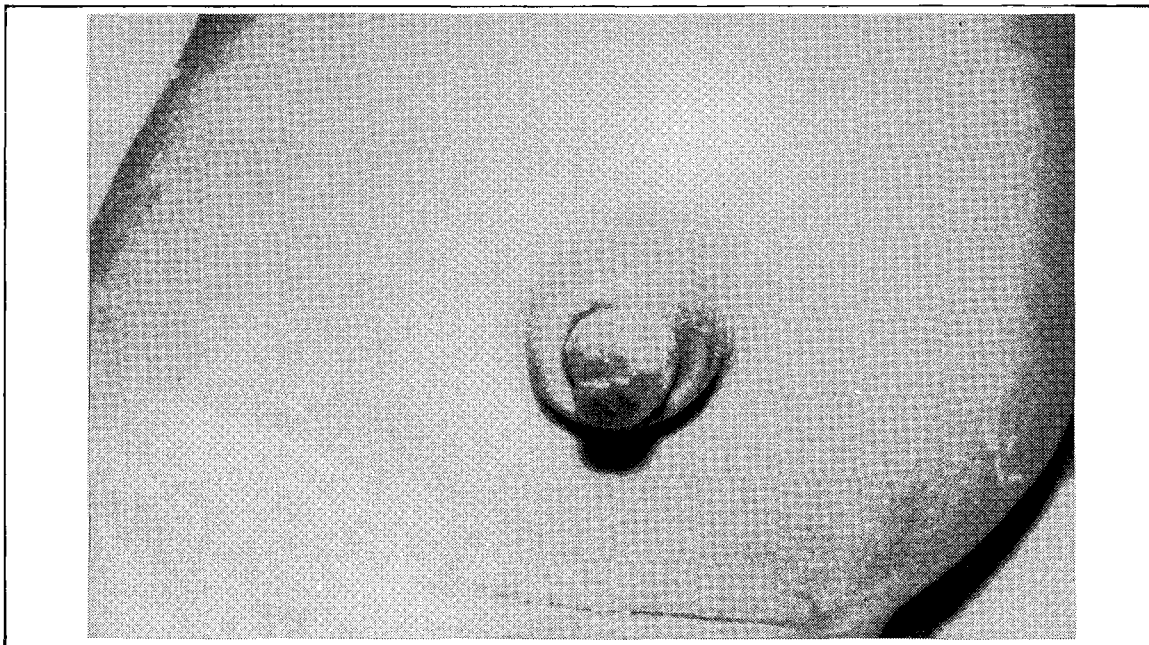


Fig. 1 A red nodule with a small opening at the apex.

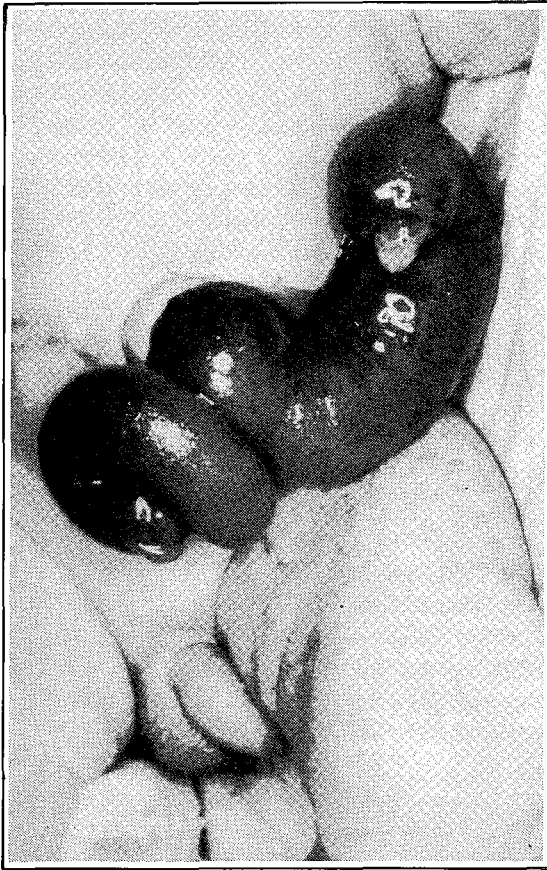


Fig. 2 Prolapse of the small intestine through the umbilicus.

The postoperative course was uneventful and he was discharged well.

## DISCUSSION

Congenital abnormalities of the omphalomesenteric duct are rare. Conservative estimates of its frequency range from 1 – 3%.<sup>1</sup>

A number of abnormalities can occur due to its imperfect obliteration during foetal life.<sup>2</sup> The entire duct may remain patent resulting in entero-umbilical fistula. A remnant of mucous membrane may persist at the umbilical end producing an umbilical polyp. The proximal part of the duct may fail to obliterate producing a Meckel's diverticulum. If the distal part fails to obliterate, a draining sinus results. When both ends are obli-

terated but not the midportion, a cyst forms. The duct may obliterate but not resolve, resulting in a fibrous cord connecting the umbilicus to the ileum.

Most of the reported cases of entero-umbilical fistula are full-term, healthy infants.<sup>1</sup> A few of the cases reviewed by Morgan<sup>1</sup> were found at autopsy in premature infants.

The time of presentation is usually in the neonatal period although cases have been described in older children.<sup>3</sup> At the time of birth, it is often noticed that the umbilical cord near the navel is abnormally large. When the umbilical cord sloughs off, a 'cherry red nodule' about 0.5cm in length is left at the navel. This is often thought to be granulation tissue and mistakenly diagnosed as umbilical granuloma. Morgan<sup>1</sup> drew attention to one clinical sign which helps in the diagnostic differentiation between the 'nodule' of umbilical granuloma and that of a patent omphalomesenteric duct. In the latter, the 'nodule' at the umbilicus changes in shape. At times, it seems to become erect and protrude and at times it draws down into the abdomen. Morgan attributed this changing contour to peristalsis in the duct.

However, a fine probe can easily be passed through the small opening at the apex. Radio-opaque material, when introduced into the opening, will outline the duct and show its communication with the ileum.

The contaminated discharge at the umbilicus may result in omphalitis or periomphalitis. This may be prevented by careful local toilet. The most dangerous complication is prolapse or evagination of the small bowel through the duct. The prolapse appears as a red sausage-like mass lying across the abdomen and is attached by its middle to the umbilicus. Bowel obstruction follows and, if not relieved immediately, death ensues. Of the 150 cases reported up to 1952, 30 were complicated by prolapse.<sup>3</sup> Bowel obstruction due to 'kinks' when loops of small bowel are 'wrapped' around a patent duct has not been described in the medical literature. However this

has been described when a fibrous cord connects the umbilicus and the ileum.

Scaletter and Mazursky<sup>3</sup> found that out of those cases with prolapse, 87% died after operation. For those without prolapse, 17% died after operation.

In the two cases described, both had medical problems which resulted in elective surgery being postponed. However, both developed surgical emergencies in due course and emergency had to be done.

When an enterumbilical fistula is diagnosed in an otherwise healthy infant, an early operation is advocated.

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## REFERENCES

- <sup>1</sup> Morgan J E. Patent omphalomesenteric duct. Review of the literature and case report. *Am J Surg* 1942; 58 : 267.
- <sup>2</sup> Congenital malformations of the omphalomesenteric duct: In Avery M E; Taeusch H W Jr (eds). *Schaffer's diseases of the newborn* (5th Edition). Philadelphia: W B Saunders Company, 1984: 381–385.
- <sup>3</sup> Scaletter H E, Mazursky M M. Congenital enterumbilical fistula due to a patent vitelline duct. *J Paediatr* 1952; 40 : 310.