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CASE REPORT

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Omphalomesenteric Duct Remnant: A Case Report

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Abstract

The *ductus omphaloentericus*, also known as the *ductus vitellinus* or omphalomesenteric duct (OMD), is an embryonic structure that connects the yolk sac to the midgut lumen of the developing fetus. OMD plays a crucial role in early fetal development by transferring nutrients from the yolk sac to the growing embryo. The OMD usually involutes between the seventh and ninetieth week of fetal development. However, if the duct fails to regress completely, remnants can persist, leading to congenital anomalies that can lead to complications like bleeding, inflammation, or obstruction. Treatment typically involves surgical intervention to remove or correct the anomaly.

We present a 15-day-old male newborn who was referred to the emergency department with an umbilical lump protruding from the umbilicus, which raised suspicion of an omphalocele. Surgical exploration was undertaken, and the OMD was found and excised. After improving the clinical condition, on the 10-day hospital stay, the newborn was discharged home without complications.(**International Journal of Biomedicine. 2024;14(3):529-531.)**

Keywords: omphalomesenteric duct • congenital anomaly • newborn • surgery

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Introduction

The omphalomesenteric duct (OMD), also known as the vitelline duct, is a critical structure during early fetal development. It connects the yolk sac with the developing midgut in fetal life. The OMD usually involutes between the seventh and ninetieth week of fetal development. However, in some cases, remnants of this duct persist, leading to a variety of congenital anomalies collectively referred to as OMD remnants.

Abnormalities of the umbilical cord are not frequent. The most frequent pathology after umbilical cord severing is umbilical granuloma, which is easily treated.[(1)] Distinguishing this pathology from others is very important, as incorrect treatment can have serious consequences. If treatment fails, the OMD should be considered.[(1)]

The OMD remnants can present in several forms, including Meckel's diverticulum, omphalomesenteric cysts, fistulas, sinuses, and fibrous bands. Each type can lead to distinct clinical presentations ranging from asymptomatic findings to severe complications such as intestinal obstruction, bleeding, inflammation, or infection[(2,3)]

Diagnosis of OMD remnants typically involves imaging techniques like ultrasound, CT scans, and sometimes radionuclide scans, which are particularly useful in identifying ectopic gastric or pancreatic tissue within a Meckel's diverticulum. Treatment depends on the type and symptoms of the remnant, with surgical resection being the primary approach for symptomatic cases.

Understanding the pathophysiology, clinical manifestations, and management options for OMD remnants is crucial for pediatricians, surgeons, and radiologists. This ensures prompt diagnosis and effective treatment to prevent complications and improve patient outcomes. Newborns with fecal drainage from the umbilicus must alarm neonatologists and children's surgeons. The golden time of treatment usually depends on the age and the determination of the indication for surgery.

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Case Presentation

A male neonate was born vaginally to a 28-year-old primipara woman with a regular pregnancy and without complications. Birth weight: 3750 g, Apgar score: 7/8. At birth, the baby cries loudly, there are no signs of respiratory distress, abnormalities of the umbilical cord or abdominal wall, or other visible abnormalities. The neonatal physical examination at birth and the first meconium passage were normal.

The baby is discharged home in good general condition. On the 5th day of life, the baby's umbilical cord falls off. On the 12th day of life, the mother finds that the umbilical cord is edematous and red; she visits the doctor, who suggests using 70% alcohol. On the 15th day of life, the child's condition worsens, with an umbilical lump protruding from the umbilicus (Figure 1), and the parents urgently take the child to the emergency department for evaluation and further treatment.

Routine blood investigations were within normal limits. Native abdominal X-ray showed full small intestines without gas-liquid levels or any intraabdominal calcification. ECG, echocardiogram, echoencephalography, and abdominal ultrasound were without pathological changes. The patient underwent surgery with a median supraumbilical and infra umbilical laparotomy. On exploration, an omphalomesenteric remnant was visualized. The intraoperative diagnosis: *ductus omphaloentericus* (Figure 2). The OMD was excised. The abdominal wall was closed (Figure 3) and bandaged. The newborn coped well with the intra- and postoperative procedure, returned to neonatal intensive care, started feeding on the second day of life, and was discharged home without complications.

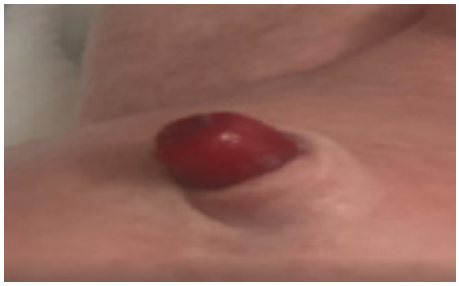

Fig. 1. *An umbilical lump protruding from the umbilicus.*

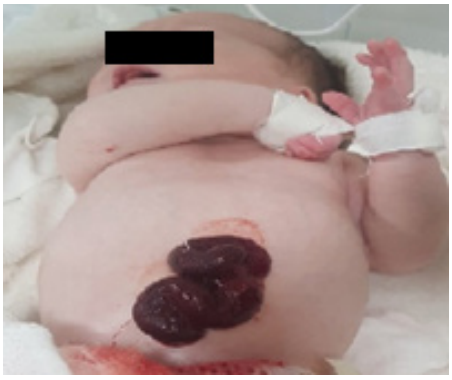

Fig. 2. *Surgical exploration: The ductus omphaloentericus.*

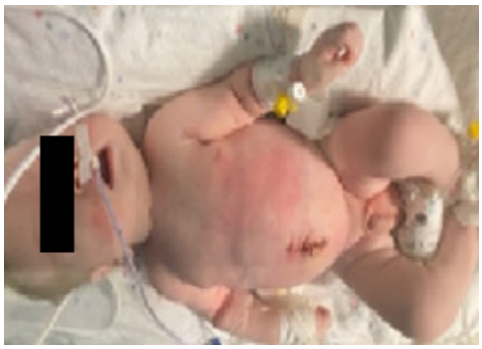

Fig. 3. *The abdominal wall after surgery.*

Discussion

The persistence of the OMD is a rare congenital malformation of the gut that occurs in approximately 2% of the population.[4,5] The condition is most often observed during the first year of life, predominantly in boys.[4-6] The OMD connects the yolk sac with the developing midgut in fetal life. The duct usually closes between the seventh and ninetieth week of fetal development. Its persistence might be manifested with several different signs and symptoms.[5]

Depending on the degree of failure of the OMD's involution, different types of anomalies develop. OMD anomalies include the umbilical sinus, Meckel's diverticulum, omphalomesenteric cyst, fibrous bands connecting the ileum to the umbilicus, and also the umbilical fistula.[3,7] The clinical manifestations of OMD remnants are variable and can range from asymptomatic findings to acute abdominal emergencies. Common presentations include intestinal obstruction, gastrointestinal bleeding, abdominal pain, and umbilical discharge.[7-9]

Diagnosis of OMD remnants involves a combination of clinical evaluation and imaging studies. Ultrasound is useful for identifying cysts, fistulas, and diverticula. CT scan provides detailed anatomical information and is helpful in cases of obstruction or perforation. Radionuclide scintigraphy is particularly effective in detecting ectopic gastric mucosa within Meckel's diverticulum.[10-13] The treatment of OMD remnants is guided by the type and symptoms of the remnant. Asymptomatic remnants are generally managed conservatively with observation unless there is a high risk of complications. Symptomatic remnants require surgical intervention, including diverticulectomy, resection of cyst or fistula to prevent infection or discharge, and lysis of fibrous bands to alleviate the obstruction.

In conclusion, OMD remnants and related complications are essential for neonatologists and pediatric surgeons since they might lead to life-threatening conditions in rare cases. We present a 15-day-old male newborn diagnosed with *ductus omphaloentericus*, which was excised. There was no resection of the intestines, and the possible complications were prevented.

Ethical Considerations

The Ethics Committee at the University of Prishtina approved the report's publication. The patient's legal guardians

gave informed consent for publishing the case report, including images and other clinical information, except individual details identifying the patient.

Competing Interests

The authors declare that they have no competing interests.

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