Case Report

Persistent Vitello-Intestinal Duct presenting as Prolapsed Loop of Ileum at the Umbilicus: A Case Report

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Abstract

Background: Vitelline duct or omphalomesenteric duct disorders occur because of persistence of the vitelline duct, which normally obliterates between the fifth and ninth weeks of intrauterine life. They occur in about two percent of the population and may remain asymptomatic throughout the entire life span; however, they can present sometimes with intra-abdominal complications or surgical conditions at the umbilical region. The omphalomesenteric duct connects the yolk sac to the midgut and usually obliterates at birth; however, its failure to obliterate may result to any of the following abdominal and umbilical surgical conditions such as Meckel's diverticulum, patent vitelline duct, fibrous band, sinus tract, umbilical mass, enteric fistula with ileal intussusception prolapsing over the umbilicus.
Method: Presentation of a case report of persistent vitello- intestinal duct.

Keywords: Persistent, vitello, intestinal, duct, prolapsed, loop, ileum and umbilicus.

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Introduction

The vitello-intestinal duct, the yolk stalk or omphalomesenteric duct, is a long narrow tube that joins the yolk sac to the midgut lumen of the developing fetus. It shows the end of the fourth week of gestation, usually the vitello-intestinal duct fully obliterates during the fifth to sixth week of fertilization or ninth week of intra-uterine gestation; however, failure of the process of obliteration will result to a patent vitello-intestinal duct.[1,2]

A wide range of anomalies may occur as a result of the incomplete obliteration of the vitello-intestinal duct; Meckel's diverticulum is the commonest of these disorders. Others may include umbilical fistula, umbilical mass and prolapse of a portion of a terminal ileum. An incidence of about 1 in 5000 to 8000 live births have been reported by some authors.[3,4]

It may present as a feculent or serous discharge through the umbilicus and maybe confused with a patent urachus which represents a communication from the bladder to the umbilicus. The patent urachus drains urine from the urinary bladder through the umbilicus and it is a differential diagnosis of patent vitello-intestinal duct. The incidence of patent urachus is about 1-2 in 100,000 births.[5,6]

Some authors have reported that approximately 10% of patients with a Meckel's diverticulum have a fibrous cord attachment to the umbilicus.[7,8] Occasionally, a patent vitello-intestinal duct may partially obliterate and result in a Meckel's diverticulum. However, a persistent vitello-intestinal duct extending from the terminal ileum to the umbilicus may present in various ways such as fecal umbilical drainage, umbilical sinus, umbilical mass or prolapse of a portion of the terminal ileum. This condition is eight times more common in males than females.[9,10]

The index case presented as an umbilical swelling adequately covered by skin; however, a failed attempt to drain this swelling by a general medical practitioner at a private health facility resulted to evisceration of a portion of the terminal ileum and discharge of feco-purulent material from his umbilical region. As a result of this development, the index case was referred to our tertiary health facility where he was properly managed and all his presenting complaints and the underlying pathology successfully managed. This case is being reported in order to draw attention of health workers to the differential diagnosis of umbilical pathological conditions especially in new-born children.

Case Presentation

The index case was a 14-day old male neonate who was referred from peripheral medical centre with complaint of discharge of faecal matter from the umbilicus. He was a product of term gestation, and the mother had antenatal care at the referral centre. Antenatal period was said to be uneventful and the prenatal ultrasound scan carried out then did not reveal any intra-uterine fistal abnormality. He was delivered through a normal vaginal route. He was doing well until 10days after birth when he developed swelling at the umbilicus. Because of this he was taken to a private health centre where the remnant of the umbilical cord was excised. Subsequently he developed a fistula at the umbilicus which was later associated with protrusion of a portion of terminal ilium through the umbilicus. **Figure 1**

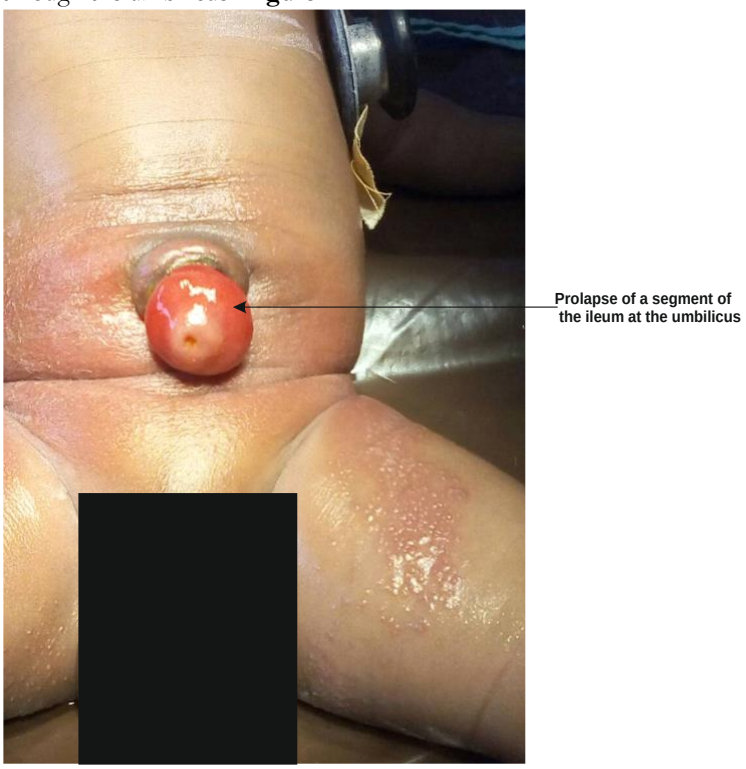

Figure 1: The prolapse of a segment of the ileum at the umbilicus

He had some episodes of non-bilious vomiting, no abdominal swelling, no fever and no refusal of feeds. He was thus referred to our centre for expert management. Examination finding on admission was an active child who was afebrile, not pale anicteric and well hydrated. His respiratory rate was 48/min with bronchovesicular breath sound. Heart rate was 140/min, heart sound 1 and 11 were heard and there was no murmur. The abdomen was full and soft, there was a fleshy tubular swelling protruding through the umbilicus with

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discharge of faecal matter from its lumen. Rectal examination revealed patent ano-rectum, containing soft faeces. A clinical diagnosis of persistent vitello-intestinal duct and prolapsed of terminal ilium at the umbilicus was made.

He was admitted into the ward and commenced on intravenous fluids and intravenous antibiotics (ceftazidime and metronidazole). Fistulogram was done which revealed abnormal connection between the umbilicus and distal ileum suggestive of vitello-intestinal fistula.

He had laparotomy done under general anaesthesia. Abdomen was accessed via transverse supra-umbilical incision. Intra-operative finding was vitello-intestinal fistula tract connecting the umbilicus to the distal ileum about 10cm from the ileocaecal valve. **Figure 2 and 3**

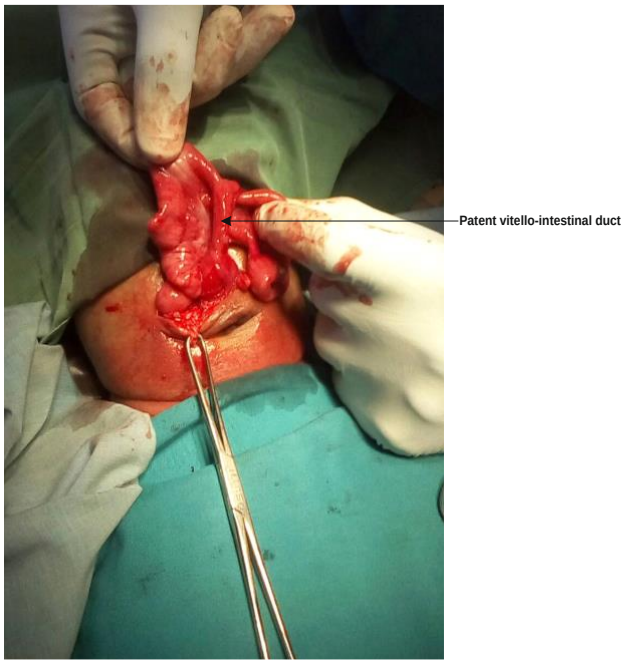

Figure 2: Patent vitello-intestinal duct dissected out at the umbilicus

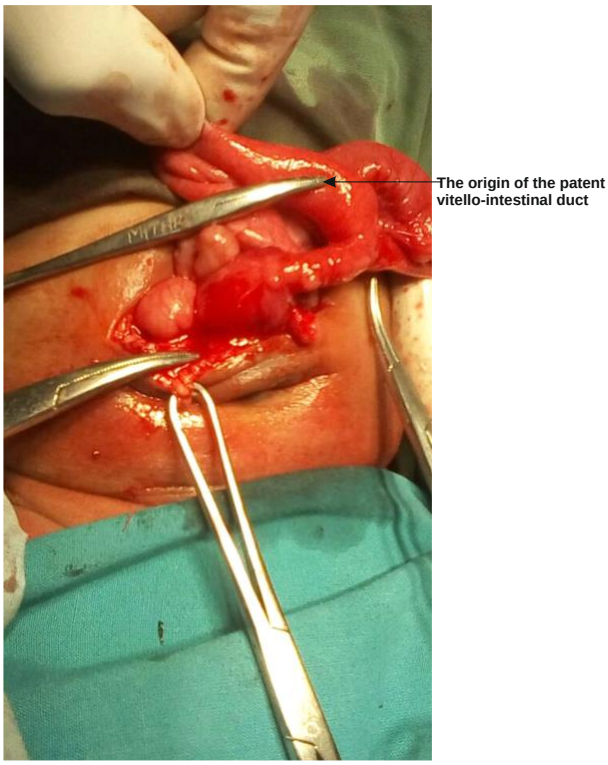

Figure 3: The origin of the patent vitello-intestinal duct at a portion of the ileum

A wedge excision of the fistulous tract with part of anti-mesenteric border of ileum was done. Primary repair of ileum was done transversely in 2 layers using vicryl 3-0 sutures. The umbilical ring (umbilicoplasty) was closed with nylon 3-0 through interrupted suturing.

Surgical wound was then closed in layers with vicryl 3-0 for the subcutaneous tissue and nylon 3-0 for skin apposition.

Post-operatively, he was on intravenous fluid, analgesic and continued intravenous antibiotics for 72hrs. The post-operative period was uneventful. He commenced breastfeeding on 2nd day post-operative period and was discharged home on 7th day post-operative. He was followed up at paediatric out-patient clinic for further monitoring and evaluation. He was last seen at the out-patient clinic a year ago.

Discussion

Persistent of vitello-intestinal ducts account for a wide variety of umbilical abnormalities that may require surgical correction. These remnants include fistulas, sinus tracts, cysts, mucosal remnants and congenital bands. The presence of a patent vitello-intestinal duct may present in various ways which may include intestinal

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obstruction due to volvulus, intussusceptions, fecal fistula and prolapse of the terminal ileum at the umbilicus.[11,12]

The index case presented at a private medical centre with an umbilical mass on the tenth day of life; and attempt at surgical excision of the mass at the private hospital resulted to a fecal fistula and prolapse of the terminal ileum at the umbilical region. This mode of presentation is similar to the experiences of some authors.[13,14]

The diagnosis of patent vitello-intestinal duct is mostly clinical because of its unique way of presentation. They may be asymptomatic; however, common presentations include abdominal pain, rectal bleeding, intestinal obstruction, umbilical drainage, umbilical hernia, cyst and polyp.

The only diagnostic investigation carried out by the index patient was a fistulogram which confirmed the connection of the umbilicus to the terminal ileum. The surgical approach towards correcting this anomaly in the index patient involved a supra umbilical transverse incision which was carefully dipping to expose the prolapse terminal ileum, the fistulous tract and the patent vitello-intestinal duct.

The fistula and the duct were excised and traced down to the terminal ileum where its origin from the terminal ileum was also excised through a wedge incision on the anti-mesenteric border prolapse of the terminal ileum. The resultant defect after excision of the persistent vitello-intestinal duct was close in two layers with vicryl 3-0. Our mode of management is similar to the reports of other researchers.[15,16] The re-construction of the umbilicus also known as umbilicoplasty was part of the surgical care of the index patient. Other surgeons have described different approaches such infra-umbilical excision as their preferred choice of access to the lesion.[17,18]

The index case did well post-operatively and was monitored at the paediatric out-patient clinic for a period of one year without any unresolved problems.

Conclusion

The index case was a case of persistent vitello-intestinal duct which initially presented as an umbilical mass which developed into fecal fistula associated with prolapse of the terminal ileum; this complication resulted after a failed attempt at surgical excision of the mass at a peripheral medical centre. Important lesson to be learned from this case report is that umbilical lesions especially in children should be handled by specialist surgeons.

Declarations

Ethical Consideration: Ethical regulations were followed during the preparation of this case report.

Authors' Contribution: NCC (Conception of case report idea), ALO (Clinical management and literature review), IAB (Clinical management and Case report writing), ABO (Clinical management and Literature review), AA (Clinical management and Case report writing), KEA (Clinical management and Case report writing)

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