Vitello-intestinal duct Fistula – a rare presentation of a patent Vitello-intestinal duct: A case report.

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Abstract:
Patent Vitello-intestinal Duct (VID) results as of failed obliteration of the fetal omphalocele coelom (herniated loops of intestine in the umbilical cord) during the development of the midgut. We report a case of an infant who presented at 11 months of the age with history of persistent umbilical discharge since birth. The VID was confirmed with a fistulogram using gastrograffin contrast studies and a wedge resection with primary anastomosis. The infant was discharged 5days post-op without any post-operative complications. This case report highlight a rare cause of umbilical discharge and the surgical intervention required. (PHD 2011; Vol. 16(2): p67-69).

Key Words: *Vitellointestinal Duct, Omphalomesenteric duct, fistula, fistulogram*

Case Report

This eleven month old male infant presented with umbilical discharge since birth. He was diagnosed initially with neonatal jaundice requiring exchange transfusion through an umbilical vein catheterization in the first week of life. At four week of life when the umbilical cord fell off, the parents noticed the raised pink edges at the umbilicus with discharge. In some occasion, faecal matter was also discharging from the umbilicus.

On examination, a healthy infant with a pea-sized lump with a small opening was noted within the umbilicus. This was consistent with small bowel mucosa, was raised and pink in colour with minimal surrounding erythema. Some discharge was also noted on abdominal palpation around the umbilicus. A diagnosis of a patent vitello-intestinal duct (VID) was made on clinical assessment which in our setting required further investigation. A fistulogram through the umbilical opening using gastrograffin was performed through the umbilical opening and the patent VID was confirmed as shown below.

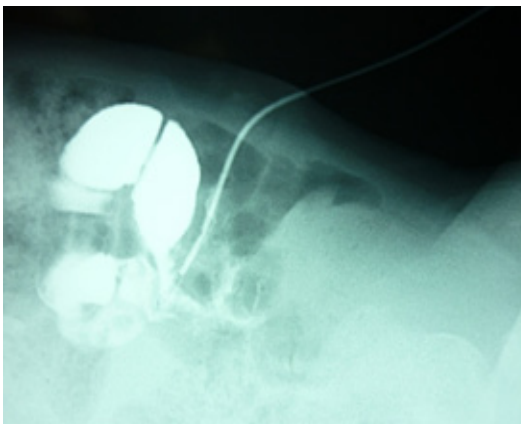

Image 1: A gastrograffin study demonstrating communication of fistula tract to midgut.

Surgical procedure

A longitudinal periumblical incision was made to access the patent VID. (See image 2).At the enteric end of the patent VID a wedge resection of the communication and primary anastomosis was performed. Umbilical end of the fistula was approached from within outwards and the resected segment of patent VID mobilized and pulled through by a separate incision made around the granuloma within the umbilical pit. Primary closures of both abdominal wounds (the initial periumblical and umbilical wounds) were done.

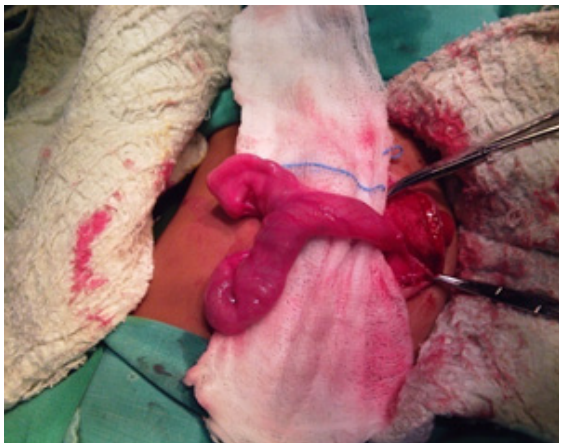

Image2: Intra operative pictures showing the connection between the midgut and the umbilicus

Post-operative recovery and wound healing progressed without any complication and the patient was discharged on fifth post operative day. He was followed up for 3month in clinic and remained asymptomatic.

Discussion

During physiological herniation around 4-5weeks of gestation development, the midgut returns into the peritoneal space in a counter-clockwise rotation. During the return of the midgut, the umbilical cord becomes visible and is reorganized. The vitellointestinal duct (VID) and vessels involute and various layers of mesenchyme become fused and gradually transformed into Wharton's jelly which later becomes the matured umbilical cord. Any form of abnormal rotation or failure of obliteration of the intestinal duct during this stage of development could result in wide range of congenital midgut anomalies, such as patent VID vitello-intestinal duct.[1] The VID is a remnant of fetal vitelline duct that fails to obliterate resulting in a persistence of the communication between the midgut and the umbilicus. Another rare condition results from in complete obliteration of the fetal viteline duct is a Meckel's diverticulum which occur in approximately two 2 percent of live births.[2] Other associated anomalies with abnormal VID development include malrotation, small bowel atresia and stenosis. [1]

A patent vitello-intestinal duct (VID) can present as discharging umbilical sinus, umbilical nodule or polyp. There may be associated cellulitis,which in rare cases can rapidly progress to necrotizing fasciitis and severe sepsis. The differential diagnosis of persistent umbilical discharge includes a patent urachus (a congenital communication with the bladder), an incarcerated hernia, metastatic disease, tuberculosis or some other chronic infection. At 11 months of age the differential usually rests between a patient VID and urachus. The appearance of the discharge can help make the diagnosis as it did in this case. Fistulogram or water-soluble contrast studies may also be diagnostic. Failure to treat a VID could result in having complications such as sepsis including omphalitis, periumblical dermatitis, bleeding from intestinal mucosa and intestinal small bowel prolapsed.[3,4] Neonatal sepsis complicating VID has been reported to have a high mortality of 18%.[3,4]

Various surgical operative interventions have been described for the patent VID. The umbilical approach to VID has been reported through one of the three approaches: a circular incision around the umbilicus with excision of umbilicus and umbilicoplasty,[5] infraumblical incision without umbilical excision so the patient retains the umlicus,[5,6] a circular incision around umbilicus without umbilical reconstruction, hence the patient losses the umbilicus.[7] These approaches allow the patent VID to be mobilized and then a decision can be made as to how the patent VID is to be resected. These options for resection are either a wedge a segmental small bowel resection. In this case, the approach used preserved the umbilicus rendering the need for umbilical reconstruction.

Conclusion

Patent vitellointestinal duct (VID) should be considered in the differential diagnoses of any case presenting with a persistent umbilical discharge. Further investigation

such as fistulogram is appropriate if clinically indicated, and technically feasible. Early diagnosis and early surgical intervention is recommended to prevent serious complications such as sepsis. The case reported is an example of a wedge resection of the VID through an umbilical incision made around the external opening of the fistula is a simple and straightforward option.

References

1. *Peter IW, Patrica C. Embryology and development. Gray's Anatomy Churchill Livingstone, 38th edition: 188-190, 1995.*

2. *Elebute EA, Ransome-Kuti O. Patent Vitellointestinal Duct with Ileal Prolapse. Arch Surg. 1965; 91:456-60.*

3. *Yamada T, Seiki Y, Ueda M et al. Patent Omphalomesenteric Duct; A Case Report and Review of Japanese Literature. Asia Oceania Journal of Obstetrics & Gynaecology. 1989; 15:229-236.*

4. *Giacalone JP, Vanrylcel F Belva. Surgical Treatment of Patent Omphalomesenteric Duct presenting as Fecal Umbilical Discharge. Acta ehir Belg. 2004; 10: 211-213.*

5. *Hasegawa T, Sakucai T, Momta et al. Transumbilical Resection and Umbilical Plasty for Patent Omphalomesenteric Duct. Pediatric Surg Int.1998; 13:180-1.*

6. *Sheth NP. Transumblical Resection and Umbilical Plasty for Patent Omphaloesenteric Duct. Pediatric Surg Int. 2000; 16: 152.*

7. *Fleming F, Ishtiaq A, O'Connor J. Patent Omphalomesenteric Duct Presenting as an Umbilical Discharge. Ir Med Journal. 1994; 94: 182.*

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