

Umbilical Sinus: Case Report Of A Rare Malformation With A Brief Insight Into The Other Vitellointestinal Duct Anomalies

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Citation

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Abstract

Umbilical sinus is a very rare type of malformation among all the vitellointestinal duct anomalies. Its clinical presentation is that of persisting umbilical discharge in younger children. Histopathology reveals intestinal mucosal covering of the sinus. Umbilical sinus although rare, should be considered in the differential diagnosis of any persisting umbilical discharge.

INTRODUCTION

Vitellointestinal duct or omphalomesenteric duct joins the midgut with the extraembryonic part of yolk sac. This duct disappears in the later part of embryonic life. A wide variety of malformations or anomalies may occur as a result of the vitelline duct failing to obliterate completely. They may be in the form of a patent duct, umbilical sinus, a vitelline cyst, a fistula or a diverticulum. Out of all these malformations, Meckel diverticulum has attracted most attention being the most common anomaly while very little is known about other anomalies. Rarest among these rare anomalies is the umbilical sinus, which clinically presents as discharging sinus. Surgical intervention is the recommended treatment for most of these entities.

The aim of presenting this case report is to highlight the fact that this anomaly is one of the rare varieties of vitelline duct anomalies i.e. vitellointestinal sinus or umbilical sinus.

CASE REPORT

An eight-year old child presented to hospital with the history of mucopurulent discharge from umbilicus. It was clinically interpreted as umbilical abscess. Patient was kept on antibiotics but did not respond. Excisional biopsy was done and the tissue was sent for histopathology.

GROSS FINDINGS

A skin ellipse measuring 1.5x1 cm in size, covered with skin on one side, was entirely submitted for histologic examination.

MICROSCOPIC FINDINGS

Sections showed the keratinizing stratified squamous epithelium. At one area of the skin, the epithelium invaginated forming a sinus (fig-1). The sinus tract was lined at most places by stratified squamous epithelium. However there was an area of ulcerated intestinal type of epithelium with mucin-secreting intestinal type of glands showing Paneth and goblet cells (Fig 2 & 3). The lamina propria showed dense (chronic inflammatory) infiltration of lymphocytes and plasma cells. At one place lymphoid follicle formation was also seen (Fig 4). Beneath the mucosal epithelium, abundant smooth muscle bundles and nerve fibers were also seen. Rest of the sub epidermal area beneath the squamous epithelium showed normal dermis, adnexa and subcutaneous tissue. Histopathological examination did not reveal any features of malignancy.

Figure 1

Figure 1: Sinus tract lined by stratified squamous epithelium interrupted at place by intestinal epithelium.

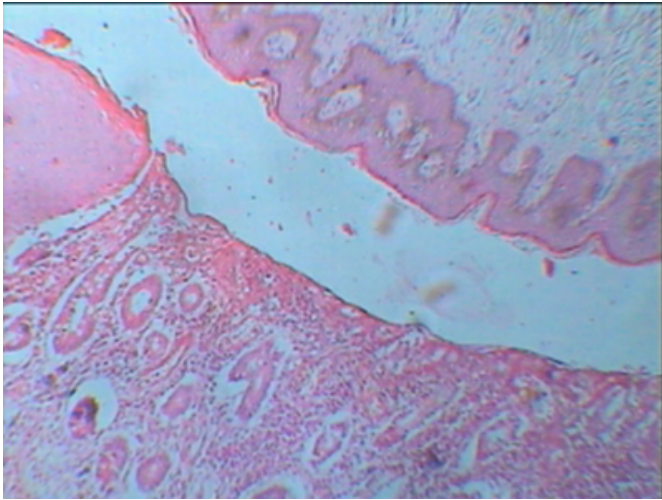


Figure 2

Figure 2: Intestinal epithelium showing paneth cells.

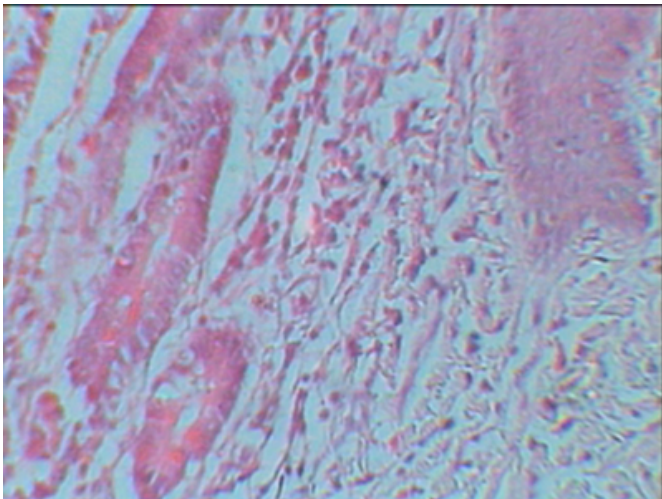


Figure 3

Figure 3: Intestinal epithelium showing goblet cells.

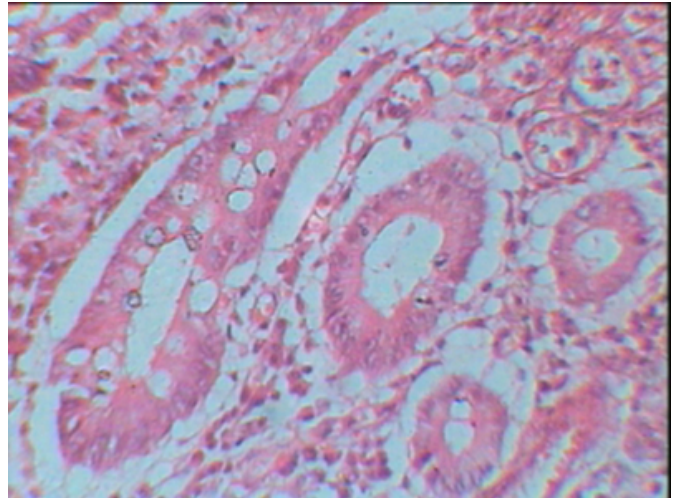
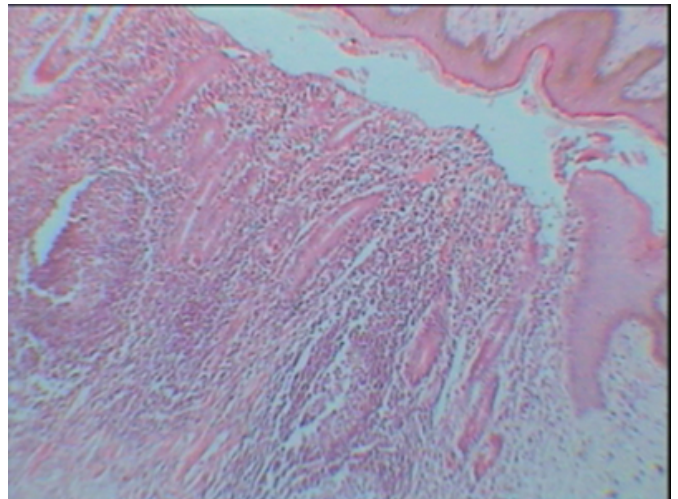


Figure 4

Figure 4: Lamina Propria showing dense chronic inflammatory cells and lymphoid follicle formation.



DISCUSSION

The vitelline or omphalomesenteric duct malformations constitute a rare group and are seen in only 2% of people₂. The omphalomesenteric duct or vitelline duct connects the yolk sac to the gut in the developing embryo and provides nutrition until the placenta is established. The vitelline duct normally closes between the 5th and the 7th weeks of intra embryonic development but can lead to several pathologies in case of closure defects, giving rise to intra-abdominal (Meckel diverticulum, vitelline cyst) or umbilical lesions (umbilical fistula, umbilical sinus and umbilical polyp)₃. To facilitate an understanding of abnormalities of umbilical remnants, some authors₄ present a simplified classification

on the basis of embryonic anatomic relationship: type 1 remnant- the entire duct (vitelline or uracus) is patent; type 2- only one end is patent: type 3- only the mid portion is patent. They may or may not be symptomatic depending on the type of malformation. In Meckel diverticulum, a small portion of the vitelline duct persists forming an out pouching. Sometimes ectopic gastric or pancreatic tissue is seen in this structure and it can form the site of a peptic ulcer and possible bleeding. When both ends of the vitelline duct transform into fibrous cord and the middle part forms a large cyst, a vitelline cyst is formed and if only the umbilical end of duct is patent it is called umbilical sinus. Rarely the whole duct transforms into a fibrous cord traversing through the peritoneal cavity; sometimes intestinal loops may twist around this fibrous cord producing an acute abdominal emergency. Vitellointestinal fistula is formed if a direct communication between umbilicus and intestine persists.

Meckel diverticulum is the most common congenital anomaly of the gastrointestinal tract, occurring in 2%-3% of the population⁵. The umbilical sinus is uncommon and the literature is primarily comprised of few case reports. A retrospective review study¹ of umbilical anomalies spanning over the period of 22 years showed the records of 18 symptomatic children with vitelline duct anomalies (10 boys and 8 girls aged 11 days-14 years) as follows:

Figure 5

Table 1

Anomalies	Patients (18)	Age (11 days- 14 yrs)
Patent Vitelline Duct	12	Before 12 yrs
Meckel Diverticulum	3	13 months, 13 yrs, & 14
Umbilical Sinus	2	yrs
Vitelline Cyst	1	Both 8 yrs 3 years

Available literature shows umbilical sinus as a rare type of malformation. The patient can present clinically at any age with mucopurulent umbilical discharge. The most common cause of a discharging umbilicus is an umbilical granuloma⁶.

CONCLUSION

To conclude, umbilical sinus is rare type of anomaly however it should be considered as a differential diagnosis of discharging umbilicus. A timely accurate diagnosis is important for successful surgical management.

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