

## Intestinal polyp of the umbilical cord – A case report

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### ABSTRACT

The omphalomesenteric duct (OMD) is the communication between the developing embryonic disc and the yolk sac. It is the last point to close after separation of intestine from the yolk sac. If the development is halted at any time during the final closure, then the communication between the intestine and yolk sac may not be obliterated. Hence in approximately 1-4% of infants, a remnant is retained. The persistence of remnants of the OMD within the umbilical cord can be an incidental finding. Intestinal polyp of umbilical cord, a variant of OMD is an extremely rare abnormality. It may indicate the presence of Meckel's diverticulum, may be associated with the atresia of small intestine or other anomalies. Therefore its early recognition can decrease the risk of developing life threatening complications.

**Key-words:** omphalomesenteric duct, meckel's diverticulum, atresia of small intestine

### INTRODUCTION

The omphalomesenteric duct (OMD) is the communication between the developing embryonic disc and the yolk sac.<sup>1</sup> The persistence of remnants of the OMD within the umbilical cord can be an incidental finding.<sup>2</sup> Intestinal polyp of umbilical cord, a variant of OMD is an extremely rare abnormality.<sup>3</sup>

### Case History

A twenty eight years old woman presented to obstetric OPD with nine months of amenorrhea. Her first child had delayed milestones, microcephaly and microphthalmia. Toxoplasma serology in second trimester of present pregnancy revealed slight elevation of IgG levels (positive >10IU/mg) and IgM was negative. Patient delivered a healthy female baby weighing 2.8kg. Segment of umbilical cord was sent for histopathology.

### Macroscopic appearance

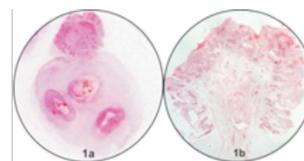
Umbilical cord measured 18.5cms in length. Surface showed a small nodule of 0.4 cms in diameter situated 8.5cms from one resected end. Since placenta was not sent, we could not

determine the end nearer to the placenta.

### Microscopy

Histologically the nodule was composed of well formed small intestinal villi lined by columnar cells with abundant goblet cells (Fig.1). Crypt epithelium showed few paneth cells. Lamina propria contained few smooth muscle fibers, lymphocytic infiltrate and focal lymphoid aggregates (Fig. 2).

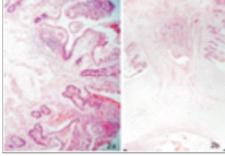
**Figure-1:** **1a.** Photograph of the slide of section of the umbilical cord with polyp on surface. **1b.** Showing intestinal polyp of the umbilical cord (4x, H&E Stain).



The muscularis mucosa was composed of frayed muscle fibres. Stalk contained few smooth muscle fibres and blood vessels.

Small intestinal mucosa was continuous with amniotic epithelium at the edge. No remnants were found in the cord or at the base of the polyp.

**Figure-2: 2a.** Showing intestinal mucosa with goblet cells, lymphoid aggregates in lamina propria and deeper mucosa showing splayed muscle fibers (10x, H&E Stain). **2b.** Showing the stalk of the polyp in continuity with the Wharton's jelly (4x, H&E Stain)



## DISCUSSION

In umbilical cord, apart from the umbilical vessels the structures present within the Wharton's jelly that represent embryonic remnants are Vitelline vessels, Urachal remnants, OMD structures and Meckel's diverticulum. The vitelline vessels are the vascular remnants of vitelline circulation which can be single diminutive vessels or multiple minute clustered channels. Urachal remnants are positioned centrally in the umbilical cord i.e. between the paired umbilical arteries. The epithelial cells of urachal remnants resemble urothelium. A patent urachal remnant may present as an urachal cyst.

The other vitelline embryologic remnant i.e. OMD may be found incidentally in the umbilical cord in the form of epithelial nest in the periphery of Wharton's jelly between the umbilical vessels and external cord surface. Usually the epithelial cells resembling immature columnar cells are clustered in a microscopic nest. Unusually the OM remnants may be well developed to recapitulate small intestinal morphology (i.e. mucosa, submucosa and muscularis propria). In such circumstances, the presence of well developed umbilical remnants raises the suspicion for equivalently developed *in vivo* embryologic remnants i.e. Meckel's diverticulum.<sup>2</sup>

During embryonic development the

omphalomesenteric duct (OMD) or vitelline duct is the last point to close after the separation of intestine from the yolk sac. By 10<sup>th</sup> week of embryonic life the closure is completed. In term neonate the point of final closure is situated 8 to 10cms above the ileocaecal valve. If the development is halted at any time during the final closure, then the communication between the intestine and yolk sac may not be obliterated.<sup>1</sup> Therefore in approximately 1-4% of infants, a remnant is retained. Such a remnant may occur at any point along the path of the duct i.e. either within the abdomen, at the umbilicus or at the umbilical cord.

When an intermediate portion of the duct remains patent, an OMD cyst is formed and when there is outward telescoping of mucosa of OMD with or without gastrointestinal mucosa, a polyp occurs. Histologically both OMD cysts and polyps show a lining of cuboidal or columnar epithelium with gastrointestinal differentiation.

A solitary umbilical OMD cyst or polyp is not of serious consequence. However, these lesions can occasionally be associated with other OMD anomalies like umbilical sinus, umbilical-enteric fistula, Meckel's diverticulum or congenital fibrous band.<sup>4</sup> Remnants of distended OMDs can be associated with atresia of small intestine and can be a rare cause of abdominal distension.<sup>5</sup> A portion of vitelline duct immediately adjacent to the bowel may remain open, forming Meckel's diverticulum.<sup>1</sup> Lee & Aterman (1968) first reported an intestinal polyp arising 5cms from the placental end of the cord.<sup>5</sup> In 1986 Iwaski et al observed isolated mass of well formed intestinal tissue, 1cm from the entry point into the abdominal wall.<sup>3</sup> In 2002, Guschman et al also reported a case of intestinal polyp of umbilical cord in a healthy male newborn.<sup>6</sup>

In our study an intestinal polyp of 0.4cms in diameter was situated on umbilical cord, 8.5cms from cut end of the cord. The malformation was attributed to the persistence of OMD or its remnants. After extensive literature search only three cases have been reported world wide. This is the fourth case, making it an extremely rare condition.

Since it is the fourth case of this curious anomaly being presented, it is pertinent to draw the attention of pathologists and obstetricians to the intriguing variant of heterotopias, for it will be of great interest to see if wide range of differentiation of which this rather plastic epithelium apparently is capable can now also be found in this unusual site.<sup>7</sup> Thus a thorough examination of placenta and umbilical cord is of great importance and can throw light on various pathologic conditions.

## CONCLUSION

Intestinal polyp of umbilical cord is extremely rare. It may indicate the presence of Meckel's diverticulum in the child, may be associated with the atresia of small intestine or other anomalies. Therefore early recognition of OMD remnants can decrease the risk of developing life threatening complications. When confronted with a lesion suspicious for OMD remnants, practitioners should refer the patient to pediatric surgeon for further imaging and surgical evaluation.

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