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# Omphalomesentric Duct Anomalies - our experience

[1]Dr. Manisha Albal, Associate Professor, Department of Paediatric Surgery, N.K.P Salve Institute of Medical Sciences and Research Centre & Lata Mangeshkar Hospital, Hingna, Nagpur.

[2]Dr. Shriniket Sawarkar, Assistant Professor, Department of General Surgery, N.K.P Salve Institute of Medical Sciences and Research Centre & Lata Mangeshkar Hospital, Hingna, Nagpur.

**Corresponding Author:** Dr. Shriniket Sawarkar, Assistant Professor, Department of General Surgery, N.K.P Salve Institute of Medical Sciences and Research Centre & Lata Mangeshkar Hospital, Hingna, Nagpur.

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**Abstract**

Om phalo mesentric ducts is a major embryonic anomaly encountered in paediatric surgery we intended to share our experience with other, aim of this study was to evaluate the clinical presentation and surgical manage Ment of om phalo mesenteric duct (OMD) remnants in paediatric population.

**Materials and method**: This an Observational study of Om phalo mesentric Duct remnants treated at the Department of Paediatric Surgery in our tertiary care Centre carried out under the period of three years. These anomalies occur in approximately 2% of the population and may remain silent throughout life, or may present incidentally with an intra-abdominal complication.

**Results**: A total of 26 (mean=6.5, median=6) patients were encounter in the time period amongst which 2 patients were below1 month of age, 12 below 1 year, 5 below two years and 6 below 3 years of age. Depending upon the on clinical and radio logical examination patients provisional diagnosis were made and confirmed during surgical intervention.

**Discussion:** OMD remnants present as a wide spectrum of anomalies depending on the stage of arrest of normal process of involution, affecting the male population predominantly. Similar sex distribution was observed in the current series. The incidence of urachal anomalies is about 1:5000 in general population. The malignant epithelial neoplasm can arise from urachal remnants and form the urachus carcinoma, accounting for less than 1% of all bladder cancers.

However, most urachal carcinomas are always diagnosed in advanced stages and associated with a poor prognosis.

**Keywords:** Omphalomesentric, Embryonic, Malignancy, Benign, urachus, neoplasm.

## Introduction

The omphalomesenteric duct (OMD) is an embryonic structure, which connects the yolk sac to the midgut and failure of its resorption results in various anomalies including Meckel's diverticulum, patent vitelline duct, fibrous band, sinus tract, umbilical polyp and cyst, enteric fistula with ileal intussusceptions prolapsing over the umbilicus or hemorrhagic umbilical mass. These anomalies occur in approximately 2% of the population

and may remain silent throughout life, or may present incidentally with an intra-abdominal complication (1). In newborns and infants these anomalies manifest as a mass, prolapsing ileal loop or discharge over the umbilicus and needs urgent surgical intervention (2). The major burden of these malformations is encountered in the paediatric population when they present with complication caused by an under lying remnant. The intra - abdominal components of OMD remnants may remain asymp to matic or are incidentally discovered during a laparotomy for other reasons. However, those who become symptom matic can have a wide range of presentation based on the underlying anomaly. This includes complications such as intestinal obstruction secondary to the band, intus susception, internal herniation, volvulus, or acute abdominal pain due to Meckel's diverticulitis (3).

Various surgical options have been described in the literature, ranging from wedge or segmental resection in case of Meckel's diverticulum to umbilical exploration in case of umbilical discharge. Most reports on symptom matic OMD focus on Meckel's diverticulum, whereas other related anomalies are given little attention. The basic aim of this study was to gather our institutional experience on the various OMD remnants in children with an emphasis on the age and clinical presentation, intra-operative findings, surgical intervention performed, and the his to patho logical outcome (4).

**Material and methods**

This an Observational study of paediatric patients of both sexes with some form of Om phalo mesentric Duct remnants treated at the Department of Paediatric Surgery, N.K.P Salve institute of medical sciences and research Centre, Nagpur carried out under the period of three years from January 2019 to December 2021. Information about patient's sex, age at presentation, type of anomaly identified, and surgical intervention performed was gathered for conducting the study. Apart from baseline Hema to logical workup, patients with acute abdomen had X-rays/ultrasound of the abdomen, and CT scan was also added wherever needed. Radio logical investigations were not required for umbilical anomalies except those in doubt of internal communication with the gut, where a contrast study was conducted. Child with intestinal obstruction or any acute abdominal episode underwent laparotomy after initial resuscitation. Surgical procedures were decided according to condition of the paediatric patient and peri-operative findings were noted. Those with a narrow base Meckel's diverticulum underwent wedge resection, while those with a wide base underwent resection and anastomosis. However, in case of gross peritoneal cavity contamination, friable, and edematous gut, ileostomy was made irrespective of the anatomy of Meckel's diverticulum. In patients with incidentally discovered Meckel's diverticulum, no intervention was performed. However, in case where it was required due to primary surgical condition requiring diversion, site of Meckel's diverticulum was chosen for ileostomy after its segmental resection. In cases of umbilical anomalies, polyps were excised under anesthesia, whereas patients with the patent OMD underwent laparotomy. Histo patho logical examination of specimen was done and recorded.

**Results**

A total of 26 (mean=6.5, median=6) patients were encounter in the ---------time period amongst which 2 patients were below1 month of age, 12 below 1 year, 5 below two years and 6 below 3 years of age.

Table 1: age distribution.

| Age | No. of Patients |
|---|---|
| 0 to 1 month | 2 |
| 1 to 12months | 12 |
| 12 to 24months | 7 |

| | |
|---|---|
| 24 to 36 months | 6 |
| Total | 27 |

Amongst the sample size acquired 16 patients were male and remaining 10 were female.

Table 2: gender distribution.

| | |
|---|---|
| Male | 17 |
| Female | 10 |
| Total | 27 |

With a clinical variability in presentations of om phalo mesentric duct remnants around 9 patients presented with umbilical anamolies, 6 with signs of intestinal ob struction, 5 with abdominal pain one with rectal bleeding and 4 were found incidentally.

Table 3: clinical presentation

| Clinical Presentation | No. of Patients |
|---|---|
| Intestinal obstruction | 6 |
| Abdominal pain | 5 |
| Umbilical anomalies | 10 |
| Rectal bleeding | 1 |
| Incidental | 4 |

Depending upon the on clinical and radiological examination patients' provisional diagnosis were made and confirmed during surgical intervention in which 9 patients were diagnosed with Meckel's diverticulum amongst which 4 were found incidentally. Three patients were diagnosed with patent vitello-intestinal duct, two each were diagnosed with Urachal cyst, Urachal sinus, Exomphalos minor, urachal abscess and bladder diver ticulum respectively. One each with Patent urachus, Umbilical polyp, Umbilical Granuloma, Umbilical sinus and exomphalos major respectively.

Table 4: diagnosis.

| Diagnosis | No. of patients |
|---|---|
| Patent Urachus | 1 |
| Urachal Cyst | 2 |
| Urachal Sinus | 2 |
| Urachal Abscess | 2 |
| Bladder diverticulum | 2 |
| Umbilical Polyp | 1 |
| Umbilical granuloma | 1 |
| Umbilical Sinus | 1 |
| Patent Vitello intestinal duct | 3 |
| Meckel's Diverticulum | 9 |
| Exampholos Major | 1 |
| Exampholos Minor | 2 |
| Total | 27 |

**Surgical intervention**

Amongst the sample size of 27, 10 patients underwent segmental resection and anastomosis, 6 patients under went segmental resection and ileostom. 11 patients under went exploration of umbilicus.

Table 5: Surgical intervention

| Surgery | No. of Patients |
|---|---|
| Segmental resection and Anas to mosis | 10 |
| Segmental resection and ileostomy | 6 |
| Exploration | 11 |
| Total | 27 |

**Discussion**

OMD remnants present as a wide spectrum of anomalies depending on the stage of arrest of normal process of involution, affecting the male population predo minantly (5). Similar sex distribution was observed in the current series. Intestinal obstruction is the most common presentation of OMD remnants with under lying mech anism such as bands, in Tus susception, or volvulus (6). In our study, more than half of the patients presented with in testinal obstruction. Meckel's diverticulum forming bands with sur rounding small bowel or the

mesentery was the most predo minant cause seen in 70.45% of cases. Meckel's diverticulum can act as a lead point in secondary intussusceptions (7).

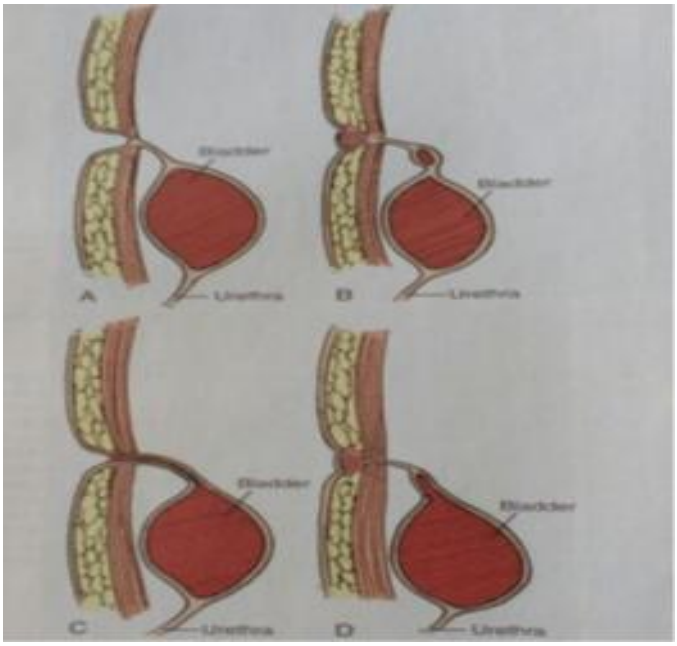


Fig 1: Classification of urachal anamolies.

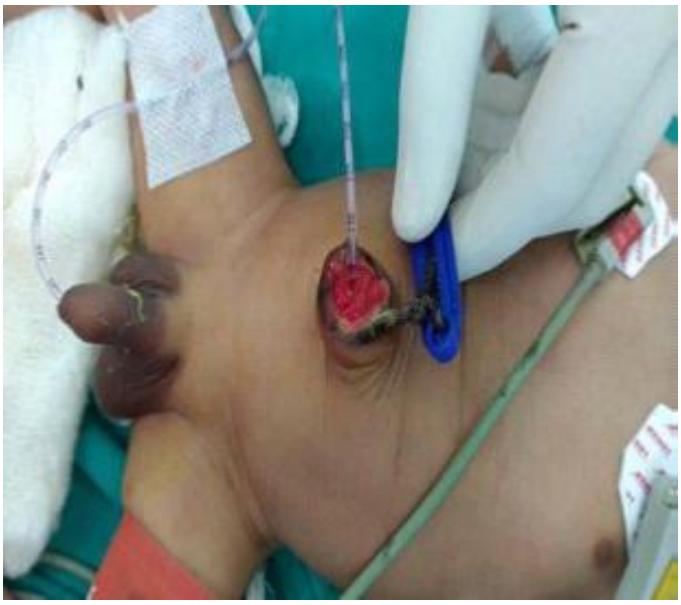

Fig 2: Clinical photo.

Classification: Four distinct types of urachal anomalies are defined. In order if frequency, they are a patent urachus (50%), an urachal cyst (30%), an umbilical urachal sinus (15%), and vesicourachal diverticulum (3% -5%).

The incidence of urachal anomalies is about 1:5000 in general population (8). Based on the location of ab normal residual patency along the urachal tract, four types of congenital urachal anomalies are present, in cluding patent urachus, urachal sinus, urachal cyst and vesicourachal diverticulum (9). Most of the urachal anomalies are detected incidentally and usually remain asymp to matic, while some may be misdiagnosed as other abdominal and pelvic diseases in the emergency room (10). The malignant epithelial neoplasm can arise from urachal remnants and form the urachus carcinoma, accounting for less than 1% of all bladder cancers (11). However, most urachal carcinomas are always diagnosed in advanced stages and associated with a poor prognosis (12)(13).

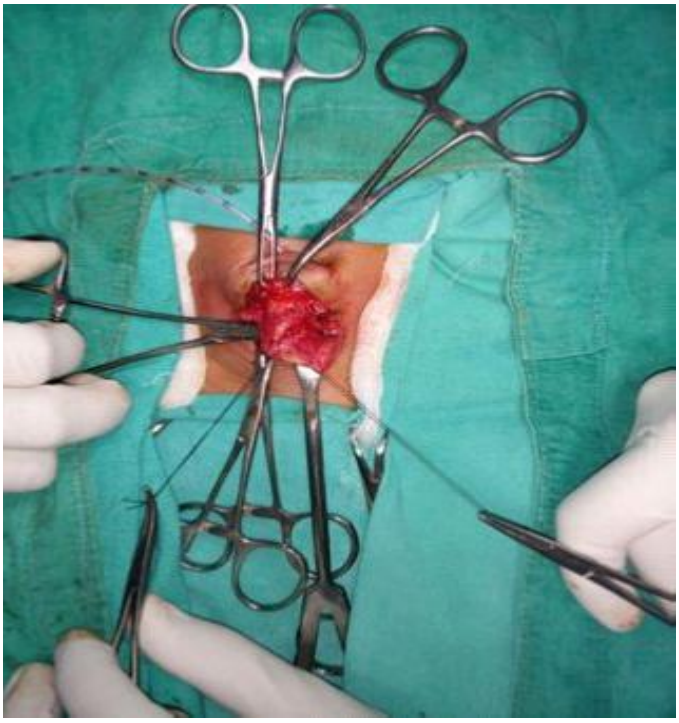

Fig 3: Patent urachus.

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