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Patent Omphalomesenteric Duct with Hemorrhagic Cyst with Urachus: Rare Case and Review of Literature

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Abbreviations: Vi Duct-Vitellointestinal Duct; Omd-Omphalomesenteric Duct; Md- Meckel's Diverticulum

1. Introduction:

Congenital abnormalities of patent Omphalomesenteric duct (OMD) or patent urachus both are uncommon, they represent failure of complete obliteration of of OMD or urachus. Combination of patent OMD with urachus has been reported sparingly and rare to find in literature. Preoperative suspicion and establishment of diagnosis is crucial for proper management. We hereby report rarest of rare symptomatic case of patent OMD with hemorrhagic with attached urachus in 7-year-old child. This case was successfully diagnosed preoperatively and managed at our hospital.

2. Case

7-year-old male presented to pediatric OPD of our hospital for recurrent severe lower abdominal pain – for last 2 years associated with penile pruritus. Pain was not associated with any hematurea, vomiting, constipation, urinary obstruction or umbilical discharge. Parents consulted various hospitals for same, where circumcision was performed. When they consulted our department of Gastrointestinal surgery patient already had old CECT abdomen which reported Meckel's diverticulum, but it was not operated. Since the child had severe lower abdominal colic always associated with penile priritus which gave clue to some form of bladder involvement. O/E – no penile skin lesions, lower abdomen- tender & &tense. Workup done, urine examination NAD, blood tests NAD, CECT showed – 10x10cm hemorrhagic cyst in lower abdomen along with MD (Figure 1 &2).

After preoperative fitness and detailed consent explanation patient was operated via midline small incision. Just beneath umbilicus and 2 feet fom ICJ 10x10 cm tense cyst with hemorrhagic content was identified (Figure 3), it was adherent t to bladder and covered in layers, after separation 1 cm wide Meckel's and 5 mm wide urachus was joining the cyst (Figure 4). After excision of MD & cyst, opening towards ileum was 1 cm size repaired & there was no opening towards bladder, cord like structure was transfixed. No drain was placed, allowed oral liquids on day 3, catheter was removed on day 5 & discharged.

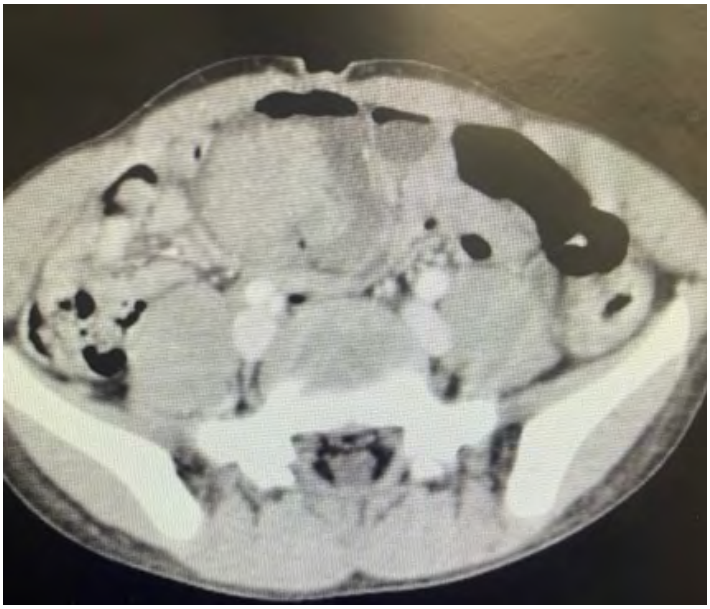

Figure 1: CECT abdomen showing meckels' diverticulum & hemorrhagic OMD cyst.

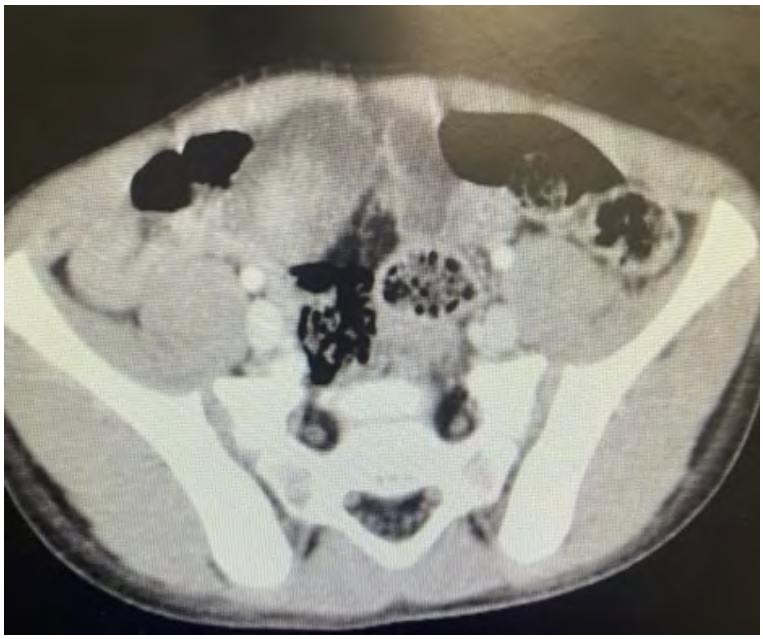

Figure 2: CECT abdomen showing meckels diverticulum.

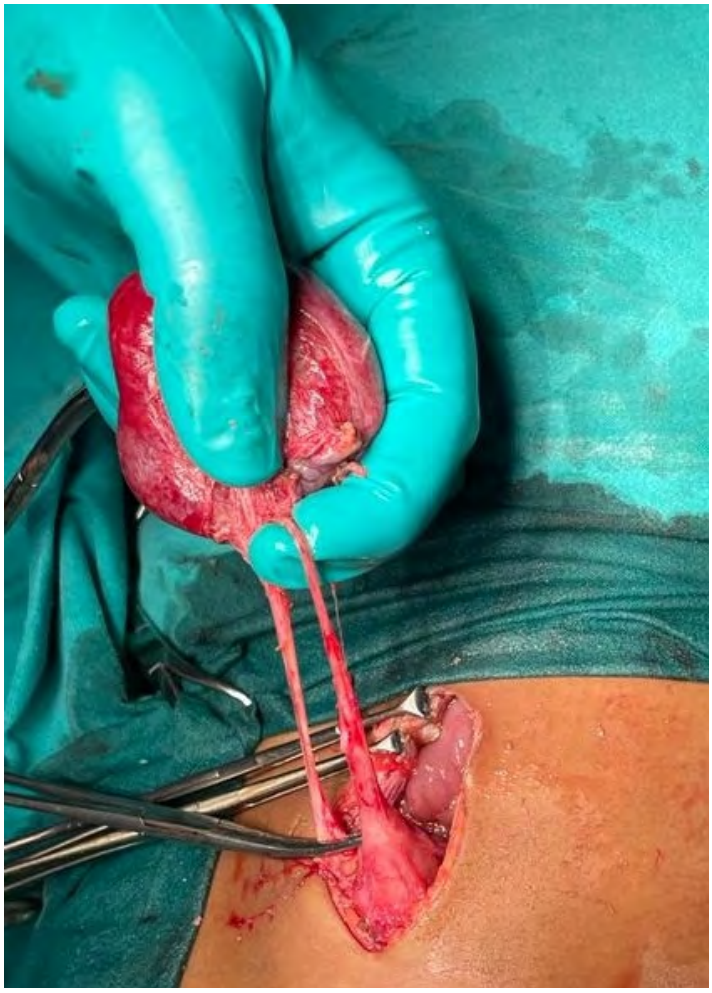

Figure 4: OMD cyst with urachus & meckels.

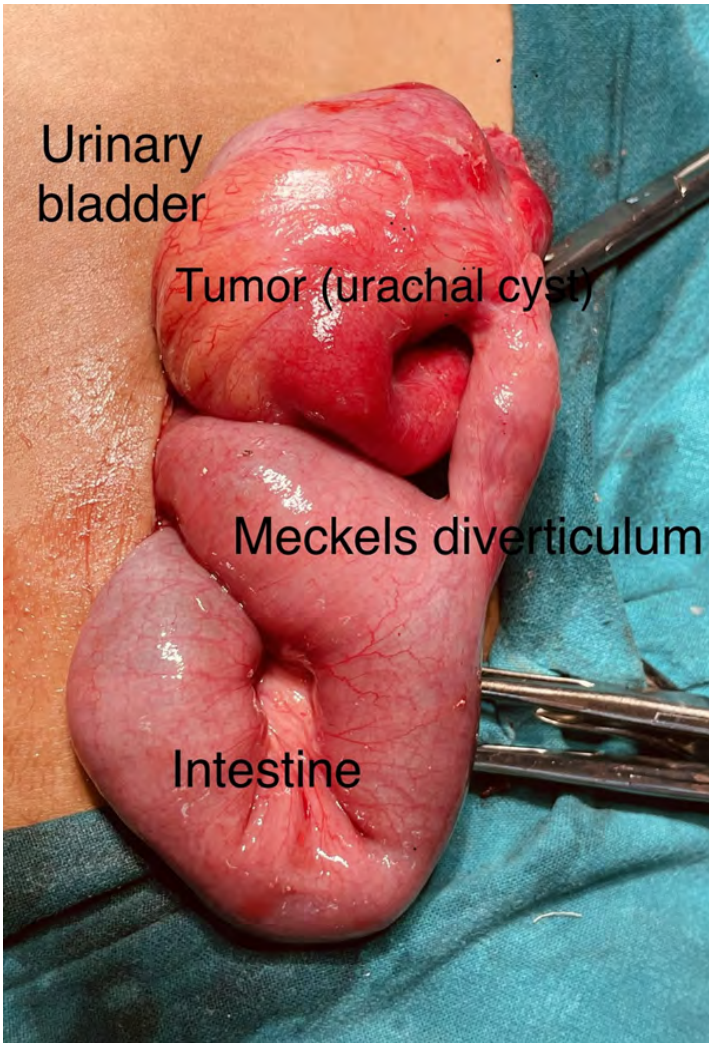

Figure 3: Hemorrhagic OMD cyst with a dhesion to Urinary bladder, attached urachus & Mekel's diverticulum.

3. Discussion

From year 2015 till year 2023 we have identified 6 cases of congenital abnormalities 3 cases of urachus & 2 cases of MD with ectopic pancreatic & gastric mucosa respectively presented with intersection and perforation. This one case had rarest of rare patent OMD cyst, MD with urachus. In one patient urachus case presented with recurrent intra-umbilical abscess with occasional mucus like material discharge on external surface via a sinus, which was laparoscopically excised and revealed borderline mucinous cystic neoplasm in urachal cyst. Another urachus was asymptomatic and was diagnosed as post laparoscopic cholecystectomy sinus in umbilical port. On workup of persistent sinus CECT revealed urachus and patient was treated with catheterization & antibiotics.

Various omphalomesenteric duct abnormalities have been described in literature. They range from exomphalos to various extent of patent VI duct [1]. The VI duct, also known as OMD, is a slim stalk connecting the yolk sac to the midgut lumen. The duct usually regresses between the 5 and 8th week of fetal life, when there is failure of regression, this can present as exomphalos major,

minor or exomphalos with intestinal fistulization. Meckel's diverticulm is found connected in exomphalos. Incidence of patent VI duct (OMD) varies from 1 in 5000-8000 while that of patent urachus are still rare, ranging from 1-2 per 100000 [1]. The combined presence of both the anomalies is very rare. Only very few case reports on coexistence ot pated VI duct abnormality with urachus, like in our case . In our case there was meckel's with OMD cyst with thread like obliterated urachus connected to dome of bladder. When these VI duct abnormalities are not associated with abdominal wall defect, they are called patent VI/OM duct abnormalities [2]. Presentation of patent VI duct can be pain, obstruction or hemorrhage. Dignostic tests can be USG, CECT or tc99 pertechnate scan in cases of obscure GI bleed .VI duct cysts are less common than urachal cysts [3].

Urachus is a residue of two embryonic structures: the cloaca, which is the cephalic extension of the urogenital sinus and the allantoide, which originates from the yolk sac, patent OMD is patent connection of intestines with umbilicus.Between 4th and 5th month of gestation, fetal bladder and yolk sac gets their final shape and residual parts of these form patent urachus and patent OMD respectively in form of fistula, cyst or a cord [4]. In case of internal end of OMD fails to fuse MD results and of internal part of urinary bladder fails to fuse it results in patent urachus. Although both structures finally join umbilicus at median umbilical ligament but its rarest of rare to see both structures combined. Patent OMD or patent urachus are main differential diagnosis of umbilical sinus / cyst or abdominal pain in neonates and children. Most common anomaly is a MD; less common entity is OMD cyst or fistula 0.3% [5]. The persistence of the OMD might be associated with different level of patency. It may create cyst or fistula of digestive or urological system [6]. The incidence of a completely patent OMD is reported to be 0.0063–0.067% [7]. Combination of urachus along with patent OMD duct is rarest mentioned in a few articles. In articl by Jo sé Al bu qu er qu e et al [5], Darshanjit Singh Walia et al [3] & sameer ashok rege et al [8] they have identified patent VI duct with urachus. They identified the combined congenital abnormality of both [9].

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