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Case Report

A case of laparoscopic excision of patent urachus

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ABSTRACT

Patent urachus is an uncommon congenital anomaly caused by persistence of embryologic communication between bladder and umbilicus. The traditional surgical approach has been open for years but laparoscopic approach has become an effective and minimal invasive technique to treat urachal remnants. A 11 years old child presenting as umbilical discharge was diagnosed with patent urachus and treated by laparoscopic excision. There was no intra or postoperative complications. Patient was discharged on post-operative day 1. The urachus connects the fetal allantois at umbilicus to the dome of bladder. Normally it obliterates and gives rise to median umbilical ligament. Urachus is extraperitoneal and easily viewed during laparoscopic visualization of pelvis. Urachal remnants represent a rare congenital anomaly due to failure in obliteration process. Complete excision is indicated both in case of persistent symptomatic remnants and also when asymptomatic for the associated risk of malignant degeneration. The traditional approach has been open surgery. However, it is associated with increased morbidity and longer convalescence. Reporting our experience, we describe the technique step by step of laparoscopic patent urachus excision as minimally invasive diagnostic and surgical approach in comparison to open surgical approach, with better post-operative analgesia, rapid healing and cosmetic results.

Keywords: Urachus, Allantois, Urachal remnants

INTRODUCTION

Urachal remnant is a rare congenital anomaly which is an alllantois remnant that usually obliterates after birth. The incidence of urachal remnant is 1:150000 in infants and 1:5000 in adults.[1] Congenital patent urachus is a rare anomaly with an estimated incidence of 0.25:10,000 deliveries.[2]

Various types of urachal remnants include patent urachus, sinus, diverticulum, cyst and fistula. Although mostly asymptomatic, the most common presenting symptoms are umbilical discharge, abdominal pain and recurrent urinary tract infection. Patent urachus should be surgically treated even when asymptomatic because of possibility of future malignant degeneration. The surgical approach has been open for years, but laparoscopic surgery has become more popular because of its better cosmetic results, less postoperative pain and faster return to daily activities.

The aim of this study is to present a case of patent urachus that was treated by laparoscopic excision.

CASE REPORT

Eleven years male presented with complaints of umbilical discharge and pain since, 8 months. Mild serous discharge was seen in umbilicus. Rest of the umbilicus seemed to be normal. Routine hematological investigations and X-ray abdomen were normal. Urinalysis showed no pus cells. Ultra-sonography

revealed a linear blind ending structure of length 6 cm and diameter 5 mm below umbilicus in subcutaneous plane not communicating with any other structure suggesting. Partially obliterated urachus. CECT Abdomen s/o thin hypodense tract noted communicating from mid portion of urinary bladder upto umbilical region for an approximate length of 8 cm and diameter 2 mm s/o patent urachus. Bladder was normal. A diagnosis of patent urachus was established. Patient was electively posted for laparoscopic excision of patent urachus under general anaesthesia.

Surgical approach

Veress needle inserted through Palmar's point and CO_2 insufflated. 10 mm safety trocar inserted through Palmar's port. 5 mm epigastric and left lumbar ports were inserted under telescopic vision. Evidence of persistent urachus starting from umbilicus upto dome of bladder. Rest abdominal organs were normal. Bladder distended with 200 ml diluted methylene blue. With help of harmonic scalpel, urachus was dissected from umbilicus, caudally upto dome of bladder.[2] Endo-loops of chromic catgut no.1 applied at dome of bladder. Urachus excised and specimen retrieved. Bladder deflated. Laparoscopic excision was successfully completed with no intra or post-operative complications. The procedure lasted for 30 minutes.

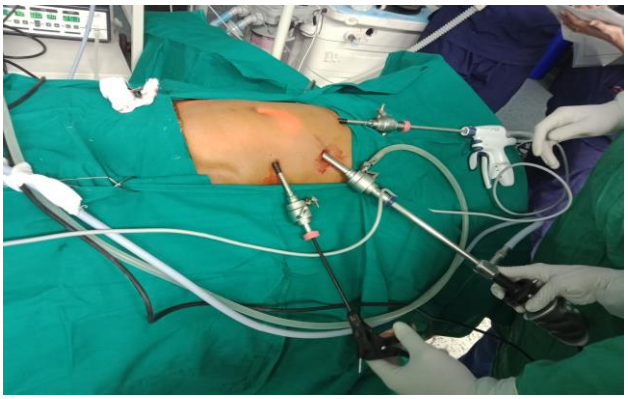

Figure 1: Port position.

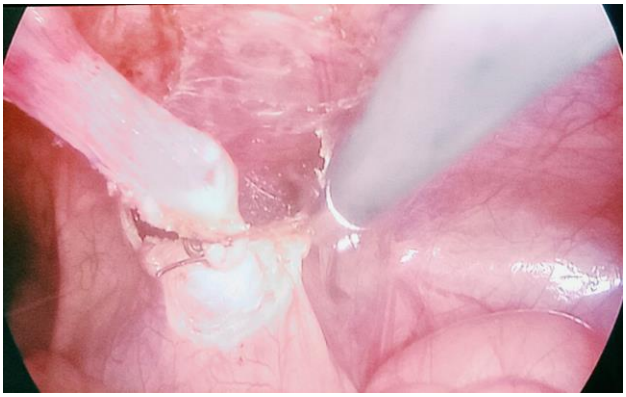

Figure 2: Patent urachus dissected upto dome of bladder and endo-loops being applied.

Patients recovery was uneventful and he was discharged the next day. Diagnosis of patent urachus was confirmed by histopathological examination.

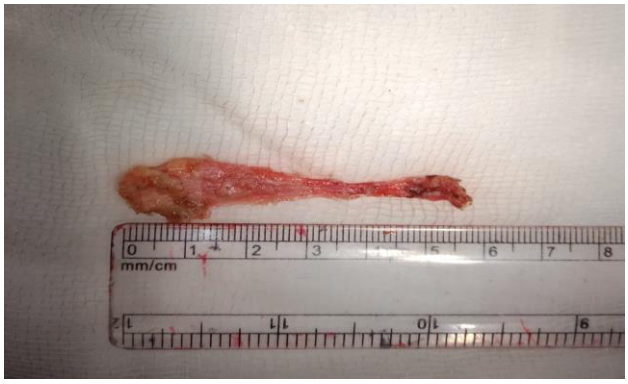

Figure 3: Excised patent urachus.

Figure 4: Post-operative scar.

DISCUSSION

Umbilical cord is a tubular structure containing vitelline duct (omphalomesenteric duct), allantois and fetal blood vessels which pass to and from placenta. During fetal development, midgut communicates with yolk sac through vitelline duct. At birth, this duct is reduced to a fibrous cord that no longer communicates with the intestine. This fibrous cord courses between extraperitoneal bladder and umbilicus as median umbilical ligament.[3]

Urachus is a vestigeal structure usually of 3-10 cm length. Located in a preperitoneal pyramidal shaped area formed by bladder dome (base) and the obliterated umbilical arteries. Tip of pyramid is towards umbilicus. Arises from superior urogenital sinus. Patent urachus is one of the spectrums of congenital urachal anomalies. Failure of entire course of fetal allantois to involute into median umbilical ligament, resulting in an open channel between bladder and umbilicus and it represents 50% of all urachal anomalies and is rare because lumen typically closes at 17 weeks post conception.[4] Incidence of urachal remnant is 1:150000 in infants and 1:5000 in adults.[5] Congenital patent urachus is a rare anomaly with an estimated incidence of 0.25:10,000 deliveries.[6] Males are affected twice as commonly as females.

Patent urachus is often diagnosed in neonates when urine is noted leaking from umbilicus with an abnormal appearing umbilicus. If patent urachus is very narrow, it may present later in life, if high pressure develops in bladder (e.g. bladder outlet obstruction) forcing urine through the patent urachus due to re-canalization. May be associated with infections (*Staph. aureus*, *E. coli*, *Enterobacter spp*, *Citrobacter* and *Proteus*). Reported associated anomalies in 46% of children with urachal anomalies are omphalocele, meningomyelocele, unilateral kidney, hydronephrosis, vaginal atresia.[7]

Patent urachus is diagnosed by radiological investigations. Voiding cystourethrography shows reflux at umbilical orifice through the patent urachus after retrograde injection of contrast in bladder. Ultrasound and CT abdomen shows a tubular connection between anterio superior aspect of bladder and umbilicus.

Histopathological examination shows fragmented tubules separated by fibrous cords, without a desmoplastic tissue response. Composed of 3 layers epithelium (stratified, columnar or urothelium), connective tissue and outer smooth muscle layer (in continuity with detrusor muscle). No goblet cells, no atypia in the epithelium.

Treatment modalities include early prenatal detection allows for appropriate counseling and planning for corrective surgery after birth. Initial conservative approach when active infection is present, treatment with antibiotics and regular monitoring; spontaneous resolution without surgical intervention rarely occurs. Prophylactic surgical removal is done in all cases, regardless asymptomatic or symptomatic. In presence of infection broad spectrum antibiotics are given to cover organisms mainly *E. coli* and *Staph. aureus* (most common organisms in urachal infections).

Surgical resection of patent urachus includes excision of entire urachus and tract with portion in communication with bladder dome. Traditional surgical approach with a lower midline laparotomy or semicircular infraumbilical incision was practiced. Laparoscopic excision 1st lap excision of urachal remnants described by Trondsen in 1993.[8] Surgery is the optimal treatment modality since urachal remnants do not regress spontaneously and post-operative complications are reportedly low. By a review of Urachal remnants literature, a surgical approach with local resection of patent urachus until dome of bladder is preferred for potential risk of recurrent inflammation.

Laparoscopy is an excellent diagnostic and therapeutic modality especially in patients with acute abdominal pain, doubtful clinical history and no clear signs on physical and radiological examination and can be performed in both adult and paediatric age group. It provides an excellent panoramic view of the operative field (magnified dissection of preperitoneal plane) and easier access to the bladder dome. Lap excision of persistent urachus requires less time, requires less analgesia and the patient can be discharged on the first post-operative day, with favorable cosmetic outcome with minimal or no morbidity.[9]

CONCLUSION

By our experience and by review of literature of laparoscopic excision of patent urachus, we conclude that Laparoscopy is a useful alternative for the diagnosis and surgical treatment of persistent urachus, especially when its presence is clinically suspected despite the lack of sonographic evidence. The procedure is associated with low morbidity, although a small risk of bladder injury exists, particularly in cases of severe inflammation.

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REFERENCES

1. Yohannes P, Bruno T, Pathan M, Baltaro R. Laparoscopic radical excision of urachal sinus. J Endourol. 2003;17:475-9.
2. Persutte WH, Lenke RR, Kropp K, Ghareeb C. Antenatal diagnosis of fetal patent urachus. J Ultrasound Med. 1988;7:399-403.
3. Sabiston textbook of surgery: the biological basis of modern surgical practice. Philadelphia: Elsevier Saunders; 2004.
4. Pazos HM, Costa WS, Sampaio FJ, Favorito LA. Structural and ontogenetic study of the urachus in human fetuses. Cells Tissues Organs. 2010;191(5):422-30.
5. Yohannes P, Bruno T, Pathan M, Baltaro R. Laparoscopic radical excision of urachal sinus. J Endourol. 2003;17:475-9.
6. Persutte WH, Lenke RR, Kropp K, Ghareeb C. Antenatal diagnosis of fetal patent urachus. J Ultrasound Med. 1988;7:399-403.
7. Rich RH, Hardy BE, Filler RM. Surgery for anomalies of the urachus. J Pediatr Surg. 1983;18:370-2.
8. Trondsen E, Reiertsen O, Rosseland AR. Laparoscopic excision of urachal sinus. Eur J Surg. 1993;159(2):127-8.
9. Klinika S, Egyetem S, Orvostudomanyi A, Budapest K, Ulloi U. Prospective study to determine the diagnostic sensitivity of sigmoidoscopy in bowel endometriosis. Orvosi Hetilap. 2017;158(7):264-9.
10. Sukhotnik I, Aranovich I, Mansur B, Matter I, Kandelis Y, Halachmi S. Laparoscopic Surgery of Urachal Anomalies: A Single-Center Experience. ISR Med Assoc J. 2016;18(11):673-6.

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