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URACHAL REMNANTS – A CASE SERIES

General Surgery

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ABSTRACT

A urachus is a vestigial tubular structure that connects the urinary bladder to the allantois during early embryonic development. Urachal remnants are classified as patent urachus, urachal sinus, urachal cyst, and urachal diverticulum.

Four patients with urachal remnants underwent surgery at Sree Balaji Medical College and Hospital, Chennai between 2015 and 2020.

All four patients had a urachal sinus and underwent excision of the urachal remnant, from the umbilicus to the urinary bladder, using an umbilical approach.

Pathologic examination of all urachal remnants showed no evidence of neoplasm. All patients had an uneventful postoperative course.

KEYWORDS

Umbilicus, urachus, urinary bladder, urachal sinus

INTRODUCTION:

The urachus is a vestigial tubular structure that, in early embryonic development, connects the urinary bladder to the allantois. These remnants may be divided as either patent urachus (communication between the umbilicus and bladder), urachal sinus (umbilical end is open but there is no communication with the bladder), urachal diverticulum (forms a cap on the dome of the bladder), and urachal cyst (central part of the tract is patent and fills with fluid). In this case series, we evaluate the surgical strategies for addressing urachal remnants.

CASE SERIES:

Four patients underwent surgery for a urachal remnant. Out of these, three patients had a urachal sinus and one of them had Urachal Actinomycosis.

CASE 1:

A 29 year old male, came to the General Surgery Department, Sree Balaji Medical College and Hospital, Chennai, with history of discharge from the umbilicus since 2 weeks. No history of pain. On local examination there was serous discharge from the umbilicus.

CECT reported a cystic lesion with calcification in the umbilical and infra umbilical region in the extra peritoneal tissue. Obliterated vesico-urachal remanant shows a punctate calcification suggestive of umbilical urachal sinus [Figure 1].

The patient was treated with antibiotics and surgical excision of the urachal sinus tract was done. The intra-op findings was a blind ending tract of approximately 4*1cm was found extending midline from umbilicus uptill dome of urinary bladder [Figure 1].

Histopathological report indicates Intradermal Nevus along with the sinus tract and chronic nonspecific inflammatory granulation tissue. Patient developed surgical site infection on post operative day 3 and wound culture was sent. The culture showed no growth and patient responded well to the antibiotics. Surgical site infection was resolved and he was discharged and was advised follow up. The patient had come for follow up after 2 weeks, then 4 weeks. He was examined and found no recurrence of the condition.

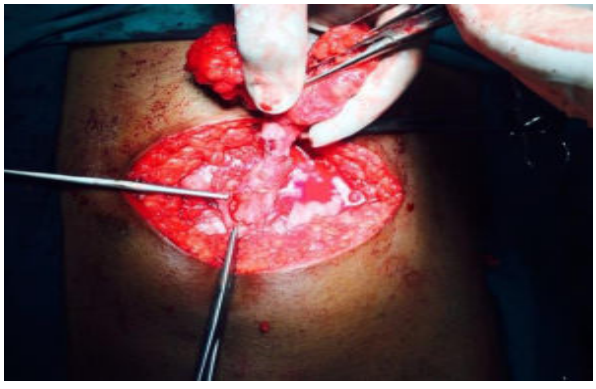
Figure 1

CASE 2:

A 27 yr old male presented with complains of pain in the umbilical region with pus discharge from the umbilical region since 2 days. Pain was intermittent, progressive and there were no aggravating and relieving factors. No faecal or urine odour. Patient had intermittent fever. Normal bowel and bladder habits.

On examination, peri-umbilical erythema and tenderness along with foul smelling pus discharge was present. Granulation tissue seen. No palpable mass. Abdomen was soft. Ultrasound abdomen showed a collection of size 2.5 x 2.2cms in the soft tissue plane in the infra umbilical region with few hyperechoic areas possibly representing air within the collection. Below this, a rent like fluid collection with a maximum thickness of 2.5 – 3mm noted, in the parietal wall extending for a distance of 10 cms towards the urinary bladder. However, a communication with the urinary bladder could not be clearly demonstrated. Bladder appears normal.

Complete excision of urachal remnant



CASE 3:

A 50 yr old male came with complaints of lower abdomen pain and difficulty in voiding for 2 months. He had histroy of dribbling of urine and dysuria. No history of haematuria, vomiting, fever, weight loss or loss of appetite.History of appendicectomy done 10 yrs back.

On inspection his umblicus was normal there was no discharge. No sinuses nor dilated veins present over abdomen. An ill defined mass of 6*5 cm was palpated at the suprapubic area extending to the right side. No warmth or tenderness present. Surface was smooth and firm in consistency. The inferior border is not made out clearly. The skin over the swelling is normal. No palpable regional lymph nodes. External genitalia was normal. On per rectal examination Grade 2 prostatomegaly was felt.

CBC showed leucocytosis. CECT Abdomen revealed enlarged prostate, thickened urinary bladder wall in dome, an irregular mass

seen superior to dome of bladder which was adherent to mesentry,ileum and sigmoid colon ?urachal mass with infilteration. On cystoscopy there was no tumour detected and bladder dome was intact. Histopathology showed growth of Actinomycosis israelli in the mass.

Figure 1: Urachal Tract Which Ended In a Diffuse Mass Along With Ileal Loops and Mesentry

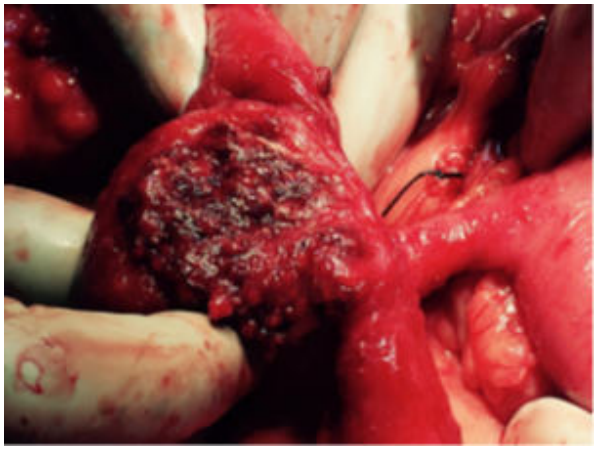


Figure 2: Picture Shows the Mass

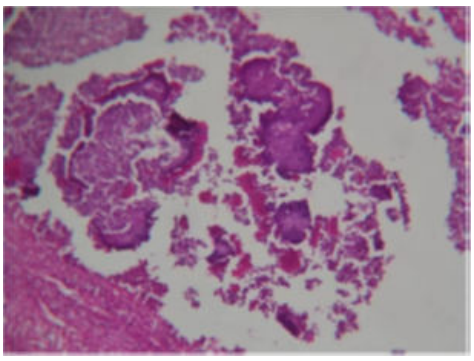


Figure 3: Chronic Inflammatory Fibrotic Lesion Enclosing Colonies of Actinomycosis Israelli

CASE 4:

A 32 year old male came with a 10 day history of persistent purulent umbilical discharge associated with constant lower abdominal pain, chills and rigors. He gave no history of nausea, vomiting or change in bowel habit.

On abdominal examination, purulent umbilical discharge with surrounding erythema and a tender infra-umbilical mass was seen.

C-reactive protein was raised. White blood cell count was normal. Microbiology culture of the pus grew Bacteroides sp.

Abdominal ultrasound scan showed a 3.8 cm echogenic collection in a cavity within the anterior abdominal wall in the midline. An MRI scan, confirmed the diagnosis of Urachal Cyst communicating proximally with the umbilicus (Figure 1). No communication to the urinary bladder was seen.

The patient was treated with intravenous antibiotics and surgery was planned. Cystoscopy and excision of the infected urachal cyst were performed simultaneously. Cystoscopy confirmed no evidence of a sinus into the bladder. A midline incision was used to excise the cyst, together with the omentum adherent to it posteriorly. The sac of the cyst contained white material (Figure 2). Histopathological analysis of the resected specimen showed chronic inflammatory tissue with no evidence of malignancy or tuberculosis. Post op period was uneventful. Patient was followed up periodically.

Figure 1: MRI scan showing high signal fluid within the umbilicus tracking into urachal remnant

Figure 2: The urachal cyst and fibrous tract containing white material within its cavity

DISCUSSION:

The urachus is a tubular, midline structure, located preperitoneal in the centre of a pyramidal shaped space, lined by obliterated umbilical arteries with its base on the dome on the anterior bladder and the tip directed towards the umbilicus. The urachal length varies from 3 to 10 cm. Urachus or median umbilical ligament is a remant of cloaca, which is the cephalic extension of urogenital sinus and the allantois, which is a derivative of the yolk sac. In late embryonic and fetal life and early postnatal life, the urachal portion, fails to grow; thus, its lumen is narrow and is usually obliterated by fibrous proliferation. The urachus involutes normally before birth and persists as a fibrous band. Congenital urachal anomalies are twice as common in men as in women. In, umbilical-urachal sinus, the urachus obliterates at the bladder level but remains open at the umbilicus.

Umbilical-urachal sinus consists of blind dilatation of the urachus at the umbilical end. A small opening into the umbilicus is generally present and may result in periodic discharge. A thickened tubular structure along the midline below the umbilicus can be visualized at USG. There are four types of congenital urachal anomalies: 1) Patent urachus 2) Urachal cyst 3) Umbilical-urachal sinus and 4) Vesicourachal diverticulum. A patent urachus is purely congenital and accounts for about 50% of all cases of congenital anomalies. An urachal cyst (30%), umbilical-urachal sinus (15%), vesicourachal diverticulum (3 % to 5%), may close normally after birth but then reopen in association with pathologic conditions. The route of infection may be lymphatic, haematogenous, or vesical, and a wide variety of gram-positive and gram-negative micro-organisms have been cultured from infected urachal remnants.

Urachal abnormalities result from incomplete regression of the fetal urachus. If the allantois remains patent and urine appears through umbilicus, it is patent urachus. If the proximal and distal parts of allantois are obliterated and only the middle part is patent, it is urachal

cyst. When the allantois is patent only at the umbilical end, rest of the part is fibrosed then it is urachal sinus. If the allantois is forming a small diverticulum at the vesical end, it forms vesicourachal diverticulum. In vesicourachal diverticulum, the urachus communicates only with the bladder dome.

Urachus is surrounded by the umbilicovesical fascia, disease process usually remain contained inside the pyramidal space. The urachus can remain completely open or obliterate partially, leading to the formation of cystic structures throughout its course.

The characteristics of the drainage fluid are a clue to its cause. Persistent clear fluid leakage (likely urine) in an infant is highly suggestive of a patent urachus while cloudy, serous, or bloody fluid is more indicative of an urachal sinus or cyst. The differential diagnosis of umbilical drainage also includes omphalitis, omphalomesenteric duct remnant, or an umbilical granuloma. During routine radiographic evaluation for the other diseases of urinary system, urachal anomalies can be incidentally found. Excision of the urachal remnant is curative. The main surgical dilemma occurs in patients who present with an asymptomatic lesion that is incidentally discovered in imaging. Pathological analysis of excised urachal remnants showed persistent epithelium in the remnant.

CONCLUSION:

Urachal sinus is a blind dilatation of urachus at the umbilical end and is subject to infection. The accurate diagnosis can be done by USG, CT and MRI. Urachal tumours are very rare. Histological sections of remnant urachus show non-regressing epithelium. The transformation remnant epithelium into a malignancy is unknown. The anatomy and imaging of these urachal diseases is essential for proper diagnosis and interventions. Such rare urachal remnant anomalies knowledge is essential for surgeons and urologists.

REFERENCES:

1. Naiditch JA, Radhakrishnan J, Chin AC. Current diagnosis and management of urachal remnants. J PediatrSurg 2013;48:2148–52
2. Gopalan A, Sharp DS, Fine SW, Tickoo SK, Herr HW, Reuter VE, et al. Urachal carcinoma: a clinicopathologic analysis of 24 cases with outcome correlation. Am J SurgPathol 2009;33:659–68.
3. Turial S, Hueckstaedt T, Schier F, Fahlenkamp D. Laparoscopic treatment of urachal remnants in children. J Urol 2007;177:1864–6.
4. Prabhakar, D.G. & Sasikumar, P. & Ravishankar, K.S. & Babu, P.. (2015). A case of urachal sinus. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 6. 495-497.
5. Mathan, D. & Kumar, T. &Jeyaraman, R. & Babu, P.. (2015). Urachal actinomycosis: Case report. 6. 423-426.
6. DC Frimberger, BP Kropp. 10th Edition. Philadelphi: Saunders;; 2012. Bladder anomalies in children.In: Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA, editors. Campbell-Walsh Urology; pp. 3381–85.
7. KL Moore, Edwin Jr. 17th Edition. Philadelphia: Saunders,; 1982. The urogenital system. In: Moore KL, eds. The developing human; pp. 255–97.
8. JS Yu, KW Kim, HJ Lee, YJ Lee, CS Yoon, MJ Kim. Urachal remnant diseases: spectrum of CT and US findings. Radio Graphics. 2001;21(2):451–61.