

## Infected urachal cyst in a young adult: A case report

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### ABSTRACT

The urachal cyst is one of a spectrum of urachal abnormalities most commonly found in children. They are very rarely seen in adults because the urachus is normally obliterated in early infancy. Clinical presentation is non-specific; therefore, a high index of suspicion is required to make the diagnosis. When it is diagnosed, surgical excision is advised due to the risk of malignant transformation. We describe the case of a 26-year-old male who presented with a small swelling of the umbilicus and purulent umbilical discharge. The diagnosis of an infected urachal cyst was confirmed on ultrasonography abdomen and contrast-enhanced computed tomography abdomen. He was treated initially with broad-spectrum antibiotics and then by surgical excision of the cyst and fibrous tract. Histology of the excised specimen showed chronic inflammation with no evidence of malignancy. Post-operative recovery was uneventful.

**Key words:** Abscess, Urachal cyst, Urachal remnant, Urachal sinus, Urachus

The urachus is the remnant of the cloaca, which in adults attaches the bladder dome to the umbilicus. After birth, it obliterates and presents as the midline umbilical ligament [1]. Patent urachal anomalies are usually detected in childhood. In adults, they occur very rarely and the presentation and diagnosis may be occasionally challenging [2]. It is important to remember the possibility of infected urachal remnants in a patient presenting with an acute abdomen in the emergency department. When it is diagnosed, surgical excision is advised due to the risk of malignant transformation [3].

### CASE REPORT

A 26-year-old man presented to our center with a complaint of 1 week of abdominal pain. The character of his pain was moderate cramping with nausea and vomiting. The vomiting was non-projectile, had multiple episodes of vomiting, and contained undigested food particles. It was associated with low-grade fever but without lower urinary tract symptoms. He never experienced spontaneous extrusion of fluid from his umbilicus.

On physical examination, he looked well with a pulse rate of 82/min and blood pressure of 124/82 mm of Hg, and his body temperature was 38.5°C. The abdomen was soft with small swelling of the umbilicus and tenderness was present over the


swelling (Fig. 1). No distension or peritoneal signs were elicited, and his rectal examination was normal. There was a minimal amount of seropurulent discharge from the umbilicus.

Laboratory data revealed a white blood cell count of 11,000/L. Blood biochemistry and urine analysis were normal. His X-ray abdomen was normal. Abdominal ultrasonography (USG) revealed a tract from the umbilicus to the abdominal wall and a hypoechoic mass with hetero echogenic content between the peritoneum, the muscle layer, and the bladder, without the presence of fluid in the peritoneal cavity. The suggested diagnosis was the infection of the urachal remnants.

The treatment was initiated with broad empirical (Inj amoxiclav 1.2 g I.V. BD and Inj gentamicin 80 mg I.V. BD) antibiotics. However, his condition did not fully recover, so he underwent contrast-enhanced computed tomography (CT) abdomen which confirmed the same diagnosis.

The patient was taken up for laparotomy with a midline incision (Fig. 2a) and the pus was drained (Fig. 2b). The extraperitoneal excision of the urachal remnant with the cuff of the urinary bladder was performed (Fig. 3). There were no post-operative complications.

On pathological examination, the surgical tissue was mainly composed of fatty and dense fibrous tissues without any cell tumor of the bladder wall. The result of a pus culture showed an *Escherichia coli* infection which was treated with the antibiotic ciprofloxacin. At his follow-up examination 6 months later, he was asymptomatic and had no abnormalities of the abdominal wall.

Access this article online	
Received - 25 August 2020 Initial Review - 08 September 2020 Accepted - 03 October 2020	Quick Response code 
DOI: 10.32677/IJCR.2020.v06.i10.007	

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Figure 1: The patient with swelling at umbilicus

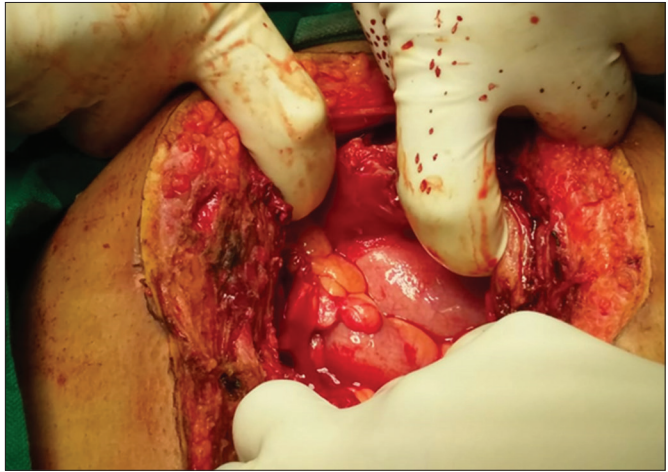


Figure 3: Excision of whole tract till the urinary bladder

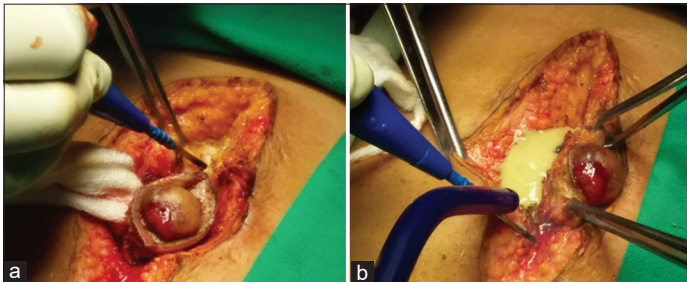


Figure 2: (a) Midline laparotomy incision with excision of the umbilicus; (b) drainage of abscess

## DISCUSSION

The urachus is a normal embryonic remnant of the primitive bladder dome. It generally exists as a fibrous cord extending from the dome of the bladder to the umbilicus. It also occupies the potential midline space between the peritoneum and fascia transversalis. Urachal diseases can be congenital or acquired [4].

Congenital anomalies occur when the urachus fails to obliterate. The pathology associated with congenital disorder urachus is generally divided into four categories. The first is a patent urachus, in which there is a communication between the bladder and the umbilicus. Second is the umbilical sinus, in which the urachus opens into the umbilicus. Here, drainage from the umbilicus will often be present. The third category is the vesicourachal diverticulum, in which the urachus has a wide patent opening into the bladder. Urinary complaints are often present with this type. The last type is the urachal cyst, in which the urachus has a cyst-like structure within its length. The urachal cyst becomes prominent when infection occurs or ruptures of the cyst [5].

Acquired diseases include inflammation and neoplasm. Inflammation occurs more frequently in children and young adults. Infected urachal cysts with an onset beyond the fifth decade are quite rare. The urachus is located in a clinically silent area, extraperitoneally in the space of Retzius. As a consequence, possible symptoms and clinical signs of inflammation as well as of tumors are in many cases non-specific or delayed, or even absent. Inflammation, as well as the development of an abscess,

can remain clinically unrecognized for a long time or it can be considered as an acute surgical abdomen.

USG is usually sufficient to diagnose an infected urachal remnant. Abscesses may have a solid appearance on USG [3] as well as attenuation values higher than water on CT, thus mimicking a neoplasm. On the other hand, tumors may show on CT hypodense central areas due to necrosis, hemorrhage, or mucoid content such that the resulting features may simulate an inflammatory mass [6].

The most common infecting pathogens are *E. coli* and *Proteus*, but a variety of other pathogens can also be found [7]. The differential diagnosis of urachal abscess should include cellulitis, necrotizing fasciitis, peritonitis, acute appendicitis, hematoma, ventral or umbilical hernia, and tumor lesions, especially when it develops into the abdominal wall [8].

The treatment of infectious urachal remnants in adulthood should include antibiotic therapy for the acute infection followed by primary or secondary excision after draining the abscess cavity. It is generally recommended that all urachal remnants should be excised to avoid recurrent disease due to possible malignant transformation later in life. However, when the infection is present, management by pre-operative percutaneous drainage and subsequent elective excision may represent the most effective surgical option. Although the condition is not well defined, the possibility of adenocarcinoma in an incompletely resected specimen led to the practice of radical excision of the urachal remnant. Radical excision requires removing all the structures within the umbilicovesical fascia [9], including the urachus and each medial umbilical ligament, as well as the associated peritoneum from the umbilicus to the bladder dome. For benign lesions that do not communicate with the umbilicus or bladder, there is no consensus on whether the umbilicus and a bladder cuff should be resected routinely [10]. Most reports of urachal cyst excision do not mention umbilical resection. Traditional surgical excision of urachal remnant involves a transverse or midline incision.

## CONCLUSION

Urachal abnormalities are rare in adults. Clinical presentation is non-specific; therefore, a high index of suspicion is required to

make the diagnosis. When it is diagnosed, surgical excision is advised due to the risk of malignant transformation.

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*Funding: None; Conflicts of Interest: None Stated.*

**How to cite this article:** Varshney A, Khanna R, Jain A. Infected urachal cyst in a young adult: A case report. *Indian J Case Reports*. 2020;6(10):566-568.