

## Urachal cyst in an elderly female patient : A case report

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### Abstract

Urachal cyst is the most common type of urachal anomalies in adults. However, urachal cyst with superimposed infection in elderly patient is rare. We presented a 68-year-old female patient with a lower abdominal pain and distension. A hypoechoic structure with slightly thickened wall at the anterior aspect of the peritoneal cavity in the mid-lower abdomen was detected by transabdominal ultrasonography (US). Further contrast enhanced CT scan of the whole abdomen revealed an irregular fluid-filled structure with inhomogeneous thick wall enhancement in the midline of the anterior peritoneal cavity extending to the dome of urinary bladder. Pathological examination was consistent with an infected urachal cyst. This article reviews its diagnostic modalities.

**Key words:** Urachal cyst, ultrasound, contrast enhanced CT scan

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## ถุงน้ำบริเวณรอยต่อระหว่างสะดือกับกระเพาะปัสสาวะในผู้หญิงสูงอายุ

วรรณพร บุรีวงศ์ , วิทย์ วราวิทย์, วิชิต ลีละศิธร

ภาควิชารังสีวิทยา คณะแพทยศาสตร์ มหาวิทยาลัยศรีนครินทรวิโรฒ

### บทคัดย่อ

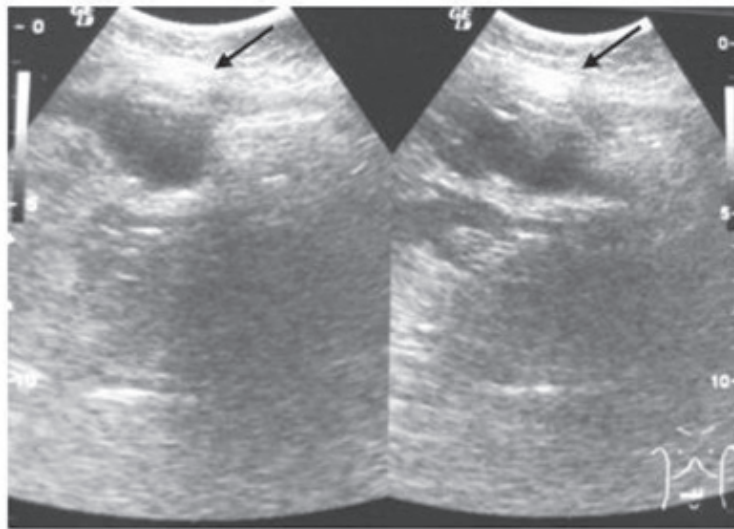
ความผิดปกติของรอยต่อระหว่างสะดือกับกระเพาะปัสสาวะสามารถพบได้น้อยในผู้ใหญ่ โดยชนิดที่พบบ่อยคือถุงน้ำบริเวณรอยต่อระหว่างสะดือกับกระเพาะปัสสาวะ การติดเชื้อแทรกซ้อนของถุงน้ำพบได้น้อยมากโดยเฉพาะในผู้สูงอายุ คณะผู้เขียนได้รายงาน ผู้ป่วยหญิงอายุ 68 ปี มาโรงพยาบาลด้วยอาการอึดแน่นท้องร่วมกับปวดท้องน้อย ผลการตรวจอัลตราซาวด์พบถุงน้ำอยู่บริเวณท้องน้อยด้านหน้าต่อผนังเยื่อหุ้มช่องท้องซึ่งมีลักษณะเช่นเดียวกับผนังถุงน้ำหน้าชั้นเอ็กซเรย์คอมพิวเตอร์เพิ่มเติมพบว่าถุงน้ำดังกล่าวก่อให้เกิดการอักเสบของเนื้อเยื่อด้านหน้าต่อผนังเยื่อหุ้มช่องท้องลงมาถึงส่วนบนของกระเพาะปัสสาวะ ผลตรวจทางพยาธิวิทยาเข้าได้กับการติดเชื้อของถุงน้ำบริเวณรอยต่อระหว่างสะดือกับกระเพาะปัสสาวะ

**คำสำคัญ:** ถุงน้ำบริเวณรอยต่อระหว่างสะดือกับท่อทางเดินปัสสาวะ, อัลตราซาวด์, เอ็กซเรย์คอมพิวเตอร์

### Case report

A 68-year-old female patient was admitted to the hospital with lower abdominal pain and abdominal distension for 5 days. There was no associated nausea, vomiting or diarrhea. An 8-cm abdominal mass was palpated from physical examination with tenderness and distension at the lower abdomen.

Transabdominal US examination revealed a 4x3-cm hypoechoic structure with slightly thickened wall at the anterior aspect of the peritoneal cavity in mid-lower abdomen (Figure 1). There was no demonstrable left kidney in the left peritoneal region.



**Figure 1** Infected urachal cyst. Transabdominal sonography shows an irregular hypoechoic structure with slightly thickened wall at the anterior aspect of peritoneal cavity at mid-lower abdomen.

Further contrasted CT scan of the whole abdomen was performed. The study revealed a 3.2-cm fluid collection with irregular wall in the midline of the anterior peritoneal cavity with adjacent fat reticulation. The soft tissue was extended from the umbilical region to dome of urinary bladder (Figure 2). After intravenous contrast administration, inhomogeneous thick wall of the fluid-

filled lesion was seen at anterior peritoneal cavity. The soft tissue extension at dome of urinary bladder also showed inhomogeneous enhancement. These findings were consistent with infected urachal cyst (Figure 3). Markedly small size of the left kidney was also detected which was probably due to congenital hypoplasia (Figure 4).

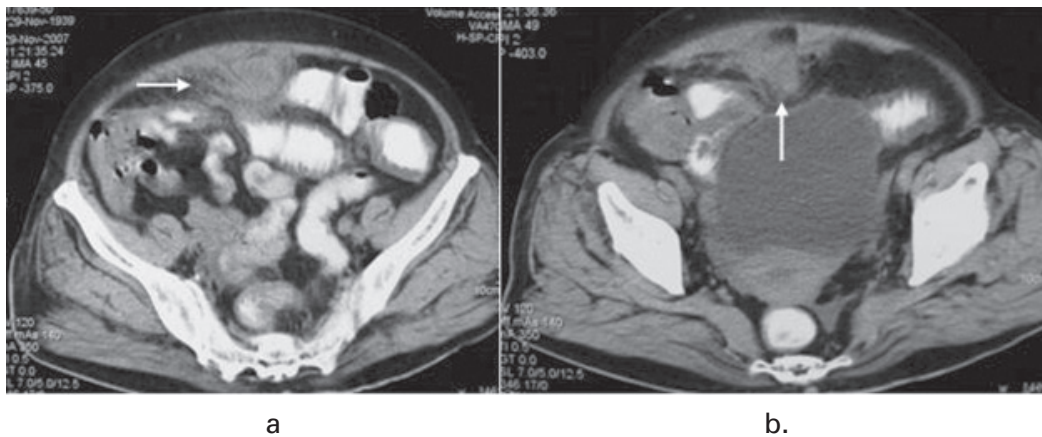


Figure 2 Axial non-contrasted CT scan. (a) An irregular fluid-filled structure in the midline of the anterior peritoneal cavity with adjacent fat reticulation. (b) Soft tissue extension to the dome of urinary bladder.

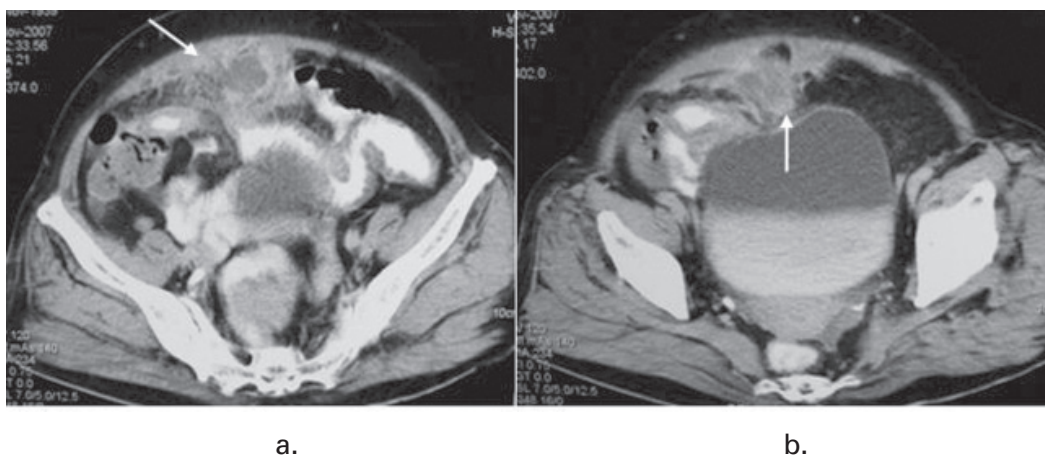


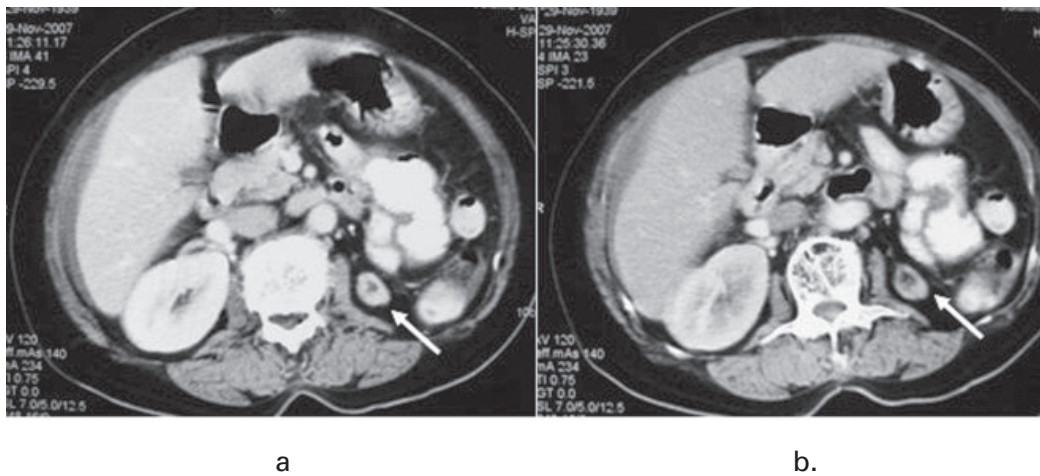
Figure 3 Axial contrasted CT scan. (a) Inhomogeneous wall enhancement of the fluid-filled structure. (b) Soft tissue extension to dome of urinary bladder also shows inhomogeneous enhancement.

The patient underwent surgery. Pathological examination was consistent with infected urachal cyst and chronic abscess extending to dome of urinary bladder.

#### Discussion

The urachus or median umbilical ligament is a remnant of the cloaca and the allantois which

is obliterated before birth by fibrous proliferation and becomes a fibrous band with no function. It lies between the transverse fascia and parietal peritoneum within the perivesical space, extending from dome of the urinary bladder to the umbilicus. Its size is about 3-10 cm in length and about 8-10 mm in diameter.



**Figure 4** Axial contrasted CT scan on (a) arterial phase and (b) portovenous phase. Markedly small size of the left kidney, probably due to congenital hypoplasia was demonstrated (by arrow).

There are 4 types of urachal anomalies.

1. Patent urachus. A persistent communication between bladder lumen and umbilicus, leading to urine leakage from the umbilicus. Diagnosis can be made by fistulography or cystography.
2. Urachal sinus. The urachus is patent at its umbilical side resulting in umbilical mass or inflammation with or without periodic discharge. A thickened midline tubular structure below the umbilicus can be seen by US.
3. Urachal diverticulum. The urachus is patent at the bladder dome. US can show an extraluminal fluid-filled structure with no communication to the umbilicus. On CT, a midline cystic structure at anterosuperior aspect of the urinary bladder can be detected.

It can also be demonstrated when the bladder is opacified on cystography or urography.

4. Urachal cyst. The urachus remains patent between two end points with no connection to the bladder or umbilicus, as shown in this case<sup>1-3</sup>

Urachal cyst is the most common type of urachal anomalies in adults. It remains clinically silent until infection superimposes. The peak incidence of infected urachal cyst is in infancy and early adulthood. Infection occurring within a cyst in a patient beyond the fifth decade is rare<sup>4,5</sup>

Radiographic evaluation of urachal cyst by US, CT and MRI are used for confirming the diagnosis. On US, non-infected urachal cyst appears as a smooth edge, anechoic, cystic

lesion in midline of the lower abdominal wall. Thick and irregular wall with mixed internal echogenicity suggests infected cyst<sup>3,6-7</sup>. CT shows a thin wall, homogeneous and non-enhancing cystic mass between transverse fascia and parietal peritoneum with no connection between the cyst and other structures. With infection, irregular and thickening wall and inhomogeneous attenuation higher than water is observed. Because variable contrast enhancement in and around the cyst is detected in infected cyst, it is difficult to differentiate infected cyst from urachal carcinoma . On MRI, the urachal cyst can be seen as a well defined, thin wall cystic structure in transaxial or sagittal MR scans. Sagittal images are also helpful in demonstrating the anomalies between the dome of urinary bladder and the umbilicus. For morphologic display, non-infected urachal cyst shows homogeneous isointense signal on T1W images and homogeneous hyperintense signal on T2W images. Contrast enhanced studies are also needed . Other radiographic modalities such as voiding cystourethrography and urography are not used for diagnosis. Fistulography should be performed to evaluate fistula, in the presence of umbilical discharge.<sup>10</sup>

Urogenital anomalies such as urethral duplication, meatal stenosis, inguinal hernia, cryptorchidism, vesicoureteral reflux, single

kidney and hydronephrosis may associated with urachal cyst.<sup>11</sup> In this case, congenital hypoplasia of the left kidney is detected which may be urogenital anomaly associated with urachal cyst.

### Conclusion

Urachal anomalies, which are commonly found in infancy and young childhood can present in several patterns. Infected urachal cyst in an elderly patient is rare. Radiographic evaluation by US, CT and MRI are used for confirmation of the urachal cyst, evaluation of complications such as superimposed infection and malignancy, and detection of the associated urogenital anomalies.

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