

# Clinical Management Of Urachal Cysts

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## Abstract

In 1550, the first reported urachal anomaly was described in a patient who simultaneously voided from her umbilicus and urethra. Urachal patency results from a failure of the obliterative embryologic process occurring in the fourth month of gestation. With infrequent and variable presentations, diagnosing urachal anomalies can be challenging. Two cases of urachal cysts in adult males and their clinical management are presented followed by a brief literature review.

## CASE 1

A 35 year old, white male presented with a three day history of abdominal pain, fever, dysuria, frequency, and dyspareunia. Examination revealed an initial temperature of 38.8°C, periumbilical erythema with guarding, and a firm, tender prostate. Urinalysis revealed leukocytes and bacteria. The patient, with an underlying urinary tract infection, was admitted to “rule-out” appendicitis. Antibiotics and intravenous fluids were initiated. Abdominal tomography revealed an inflammatory midline mass posterior to the rectus sheath. The patient was taken to the operating theater where a purulent, pre-peritoneal cystic mass extending from the umbilicus to the pelvis was excised with an associated cuff of bladder. Pathological examination confirmed the diagnosis of urachal cystitis. The post-operative course was complicated by a superficial wound infection.

## CASE 2

A previously healthy, 31 year old Hispanic male presented with a three day history of periumbilical pain and discharge. At nine years of age in Mexico, he experienced a similar episode and was told that his “umbilical cord had not been properly cut.” Examination revealed a temperature of 38.4°C, umbilical erythema, and right lower quadrant fullness with voluntary guarding. With a leukocytosis of 11,800, acute appendicitis was considered. However, upon closer inspection an infected urachal sinus was diagnosed and intravenous antibiotics were initiated. An abdominal ultrasound demonstrated a cystic structure posterior to the rectus abdominis. A subsequent fistulogram revealed communication between the umbilicus and the cyst.

Cystography did not demonstrate vesicular involvement. At time of operation, the infected sinus tract and cystic cavity were excised from the umbilicus to the bladder and follow-up has been unremarkable.

## DISCUSSION

Usually presenting in early childhood, urachal anomalies occurs in a 2:1 male to female ratio with a reported 2% incidence in adults.<sup>1,2</sup> Embryologically the bladder develops from the ventral cloaca as a three layered structure: inner transitional layer, submucosal tissue layer and an outer smooth muscle layer. The fetal bladder descends during gestation followed by a progressive narrowing. This continues until the urachus obliterates prior to birth as a fibromuscular band. It is related to the umbilical arteries through the umbilicovesical fascia in a pyramidal arrangement. Five common anomalies of urachal development include; a patent urachus, a urachal sinus that communicates with the umbilicus, a urachal diverticulum, an alternating sinus that drains into either the bladder or the umbilicus, and a cyst between 2 closed ends.

Urachal cysts present in a variety of clinical presentations including recurrent urinary tract infections, macroscopic hematuria, hypogastric midline tenderness often associated with a mass, umbilical discharge, and even peritonitis. In children a urachal cyst is the common presentation while in adults infected urachal sinuses are seen more frequently.<sup>3</sup> Morbidity is related to infection and late occurring malignant changes. When grossly infected, the cyst often expands. This pyourachus can then establish communication with the

umbilicus, bladder, bowel or rupture intraperitoneally.<sup>4</sup> Bacteria commonly found in descending order include staphylococcus, e. coli, pseudomonas, streptococcus, and pseudomonas aeruginosa.<sup>5</sup> Adenocarcinoma of the urachal remnant is the most common malignancy associated with a urachal cyst and is often found at the apex of the bladder.<sup>6</sup> A high degree of clinical suspicion followed by an ultrasound has been shown to be the most effective way of diagnosing a urachal cyst or abscess. Diagnostic findings include a midline, cystic, extraperitoneal swelling located between the bladder and the umbilicus.<sup>7</sup> Sinography is useful to delineate the urachal sinuses. Abdominal tomography can detect the pyourachus through imaging a mass located deep to the rectus abdominis between the bladder and the umbilicus with a conical shape, peripheral inflammatory changes in the surrounding tissues, and intraperitoneal fluid.<sup>8</sup> Retrograde cystography is helpful in characterizing bladder patency.<sup>9</sup> Treatment is initiated with intravenous antibiotics followed by complete excision of the umbilicovesical tract including a cuff of bladder.<sup>10</sup> For lesions not communicating with the bladder, conservative excision of the remnant cyst is adequate. Removal of all urachal elements is necessary to avoid recurrence of the cyst or occurrence of adenocarcinoma of the retained elements.<sup>11,12</sup> Traditionally excision of the urachus starts at the umbilicus and extends down to the bladder through an extra-peritoneal approach. More recently laparoscopic excision of the urachal remnant has been proposed to be as effective and as safe as the open operation with the additional advantages of decreased hospital stay, analgesic requirement, and convalescence.<sup>13,14</sup>

In the adult population urachal abnormalities are a rare cause of abdominal pain and present in a variety of ways. Both of the cases were initially misdiagnosed; however, through

continued clinical suspicion and appropriated radiographic studies the correct diagnosis was made. These two cases demonstrate the requirement that both emergency physicians, general surgeons, and urologist be familiar with the presentation and management this rare condition.

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