

# Laparoscopic Diagnosis of an Infected Urachal Cyst: a case report with laparoscopic illustrations

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## Abstract

**Introduction:** An urachal cyst is a rare congenital anomaly in an adult female of child bearing age, being more common in males. Acute presentations can easily be mistaken for other abdominal and pelvic pathologies. We report such a case with intra-operative laparoscopic illustrations. **Case presentation:** A 21-year-old Caucasian female presented acutely with lower abdominal pain, fever and vomiting. The differential diagnosis included acute appendicitis. A diagnostic laparoscopy was performed which demonstrated a mass on the anterior abdominal wall. This was excised as a one-stage procedure and the specimen was later confirmed to be an urachal cyst on histological examination. The patient made good post-operative recovery and was discharged home. **Conclusion:** This case demonstrates an acute presentation of an infected urachal cyst. As illustrated, laparoscopic surgery allowed the diagnosis to be made easily. We support that infected urachal cysts should be treated with a one-stage excision.

## INTRODUCTION

The urachus or median umbilical ligament is a structure that is obliterated in the early part of infancy and therefore is a rare finding in adult patients<sup>1</sup>. It is a fibrous cord that arises from the anterior aspect of the bladder wall and extends up to the umbilicus<sup>2</sup>. Urachal abnormalities are more common in men than women<sup>5</sup>. Presentation can be varied and may be asymptomatic. Infection of the urachal cyst can mimic other abdominal pathology including appendicitis, Crohn's disease and pelvic inflammatory disease<sup>3</sup>. Infection can occur through the lymphatics, the bladder, or the blood stream<sup>2</sup>. In rare circumstances, if the cyst ruptures, it can lead to peritonitis<sup>4</sup>. We describe a case of an infected urachal remnant in a young woman of child-bearing age that mimicked acute appendicitis but was diagnosed on laparoscopy.

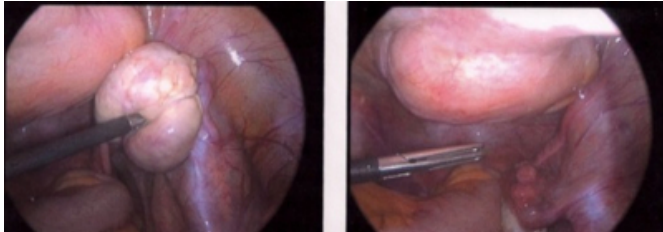
## CASE REPORT

A 21-year-old Caucasian female presented acutely with a 2-day history of lower abdominal pain and tenderness in the right iliac fossa, associated with vomiting, anorexia and fever. Clinically, she was pyrexial, tachycardic and looked flushed. On abdominal examination, she was tender suprapubically and in the right iliac fossa. Blood tests revealed a leukocytosis and an elevated C-reactive protein.

A provisional diagnosis of acute appendicitis was made and the patient was prepared for a diagnostic laparoscopy. At laparoscopy a normal appendix was found. There was no evidence of pelvic inflammatory disease or cystic ovaries. A mass was seen on the anterior abdominal wall and free flow of pus was confirmed on aspiration. The structure was suspected to be a urachal cyst. The decision was made to perform a laparoscopically assisted open excision, via a transverse Pfannenstiel incision, and the cystic structure was mobilised and excised. The bladder dome was repaired in two layers. Figure 1 is a picture taken during laparoscopy of the urachal cyst and its relation to the right ovary and bladder, and figure 2 demonstrates its attachment to the urinary bladder.

### Figure 1

Figure 1: Laparoscopic view of a urachal cyst on the anterior abdominal wall with the right ovary (left picture) held into view with a non-traumatic grasper. The right figure more clearly shows the urachal cyst (top centre of picture)



### Figure 2

Figure 2: Excision of the urachal cyst from the dome of the urinary bladder at open surgery. The surgeon is holding the urachal cyst. Just visible is the communicating channel between the cyst and the urinary bladder.



The patient's post-operative duration of hospital stay was three days and the urinary catheter was removed after a cystogram at ten days. The patient made a good recovery with no complications. Microbiological analysis of the aspirated fluid grew *E. coli* and mixed anaerobes. Histology was consistent with an infected urachal cyst remnant.

### Illustrations

### DISCUSSION

In foetal development, the urachus stops developing and therefore obliterates<sup>5</sup>. The urachus structurally has three layers: from outside in, it has an outermost muscular layer, then an inner layer of connective tissue and then innermost it is lined with transitional and columnar epithelium<sup>6</sup>.

Urachal abnormalities are either acquired or congenital. Congenitally, there are five currently identified urachal

abnormalities. These are formation of a urachal cyst, a patent urachus, a urachal sinus, vesicourachal diverticulum and an alternating sinus<sup>6</sup>.

In terms of acquired disease, urachal remnants can become infected or malignant. A patent urachus is more prone to infection. These infected remnants, as discussed previously, can be mistaken for other abdominal pathology. A wide variety of gram-positive and gram-negative organisms have been cultured from infected cysts which include *E. coli*, *Klebsiella* and *Proteus*.

Laparoscopy is often used as a diagnostic tool in general surgical patients, particularly women, with lower abdominal pain<sup>7</sup>. In this case, the use of diagnostic laparoscopy made the diagnosis of acute urachal cyst inflammation apparent, as this would have been difficult to diagnose at open surgery. The treatment of choice for urachal pathology is the complete excision of the complicated lesion. Laparoscopic surgery assures surgical results comparable to conventional surgery as well as adding the advantages of a minimally invasive approach<sup>8</sup>. Excision is indicated in order to prevent re-infection (30%) and malignant transformation<sup>9</sup>.

### CONCLUSION

An infected urachal cyst is a rare finding in adult patients. The routine use of laparoscopy for diagnosis and management of acute appendicitis will allow surgeons to identify this condition more easily. This case together with the accompanying laparoscopic images illustrates this point well.

### CONSENT

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

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