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Short Report

Successful Laparoscopic Treatment of Infected Urachal Sinus in Adults: A Case Report

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ABSTRACT

Urachal sinus is a rare congenital anomaly. It is one type of the urachal abnormalities that results from incomplete regression of the fetal urachus. We report a case of urachal sinus in a 54-year-old male that presented with purulent discharge from the umbilicus. The treatment aims were the clearance of infection and complete removal of urachal remnants, which can transition to malignancy. A successful, two-stage procedure consisting of drainage with antibiotics, followed by laparoscopic surgery is described in our report.

Keywords: infected urachal sinus; laparoscopic treatment; urachus; urachal remnant

INTRODUCTION

Incomplete regression of the fetal urachus cause urachal abnormalities, and are more common in children than in adults; due to urachal obliteration in early infancy.[1] Normally, this structure is a thin fibrous cord, with various types of urachal abnormalities; such as, a patent urachus (48.0%), urachal cyst (31.0%), umbilical urachal sinus (18.0%), and a vesicourachal diverticulum (3.0%).[2] While the majority of urachal anomalies will present in infancy, some patients do not present till later in life. The symptoms may include: discharge from the umbilicus, lower abdominal pain, fever, a palpable abdominal mass, dysuria, or urinary tract infection.[3] Herein, we describe a case of an infected urachal sinus in an adult presenting with purulent discharge from the umbilicus, which was successfully treated with laparoscopic surgery.

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SHORT REPORT

A 54-year-old, man presented with a clear discharge from his umbilicus for 4 days. The discharge then became purulent over the next 2 days, with aching pain on the umbilicus. He had no fever, urinary symptoms nor abdominal pain (Figure 1). On examination, he was hemodynamically stable. An abdominal examination revealed localized erythematous skin, at the paraumbilical area and a 1 cm fluctuated nodule at the umbilicus. Microbiological culture of the pus grew Corynebacterium amycolatum. Abdominal ultrasonography showed a 1.5x1.6 cm hypoechoic lesion just beneath the umbilicus, with connection to the umbilicus and was suspicious of urachal sinus (Figure 2A). A computed tomography (CT) scan found 1.4x3.4 cm rim enhancing collection at the umbilical and subumbilical regions, without evidence of patent urachus, urachal diverticulum or urachovesical diverticulum. (Figure 2B) The patient was initially treated with local drainage and oral antibiotics. This was then changed to intravenous antibiotics for 2 weeks before surgery, until the infection had subsided. A laparoscopy was performed for removal of urachal sinus; with wedge cystectomy under general anesthesia, by a general surgeon and a urologist. After three ports were placed (Figure 3), intra-abdominal anatomy of the urachal sinus and associated structures were identified; as Figure 4. Urachal remnant was dissected from the abdominal wall to the space of the Retzius to identify the dome of the bladder. The urachal tract was excised, including the dome of the bladder, which was then closed with a barbed suture. Bladder sealing was then confirmed, by normal saline filling the bladder via a Foley catheter (Figure 5). The umbilicus was excised and the specimen was removed (Figure 6). The patient was discharged from the hospital on postoperative day 8, following removal of the Foley catheter and delayed primary suture of the umbilical wound. There were no peri-operative complications. The pathological results showed granulation tissue tract between the skin and bladder; consistent with infected urachal sinus. There was no evidence of recurrence at six months after surgery.

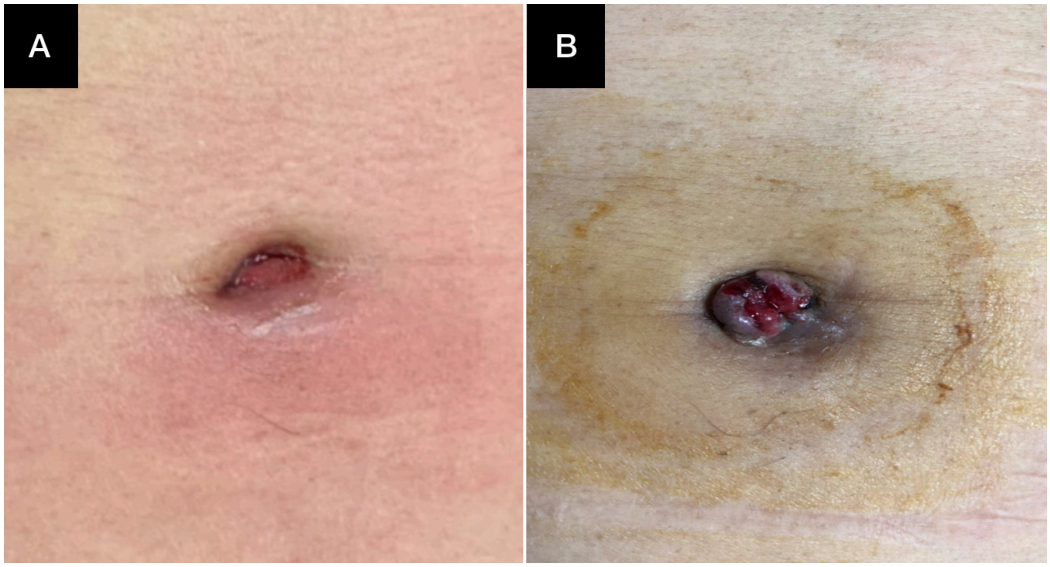

Figure 1 (A) periumbilical skin inflammation with discharge; (B) Resolved inflammation after drainage and parenteral antibiotics

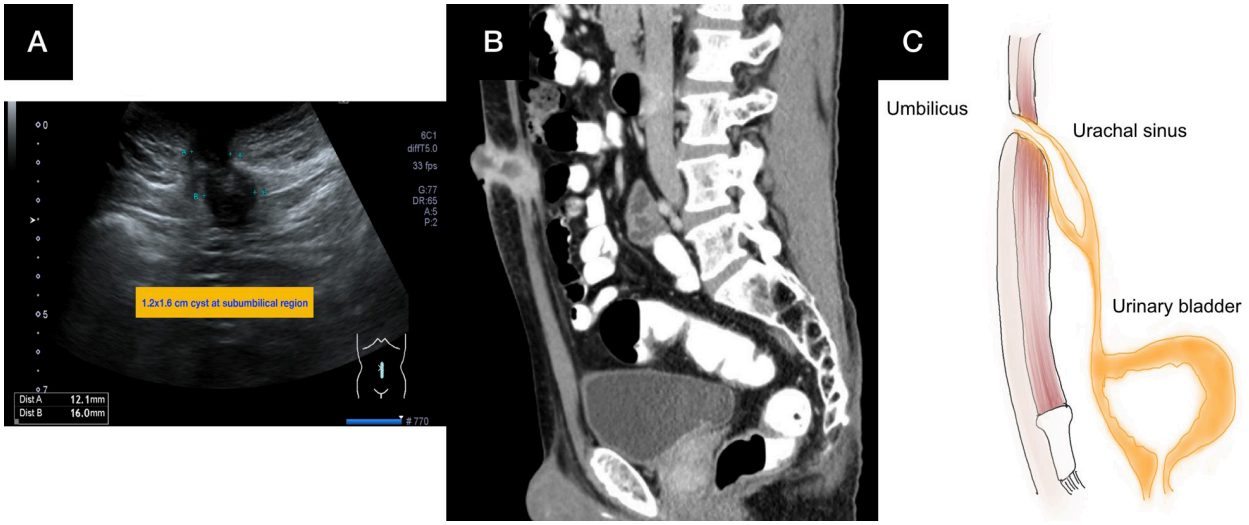

Figure 2 Ultrasonography (A) and computed tomography scans (B) showed a rim enhanced lesion at the umbilicus; compared with diagram of urachal sinus (C)

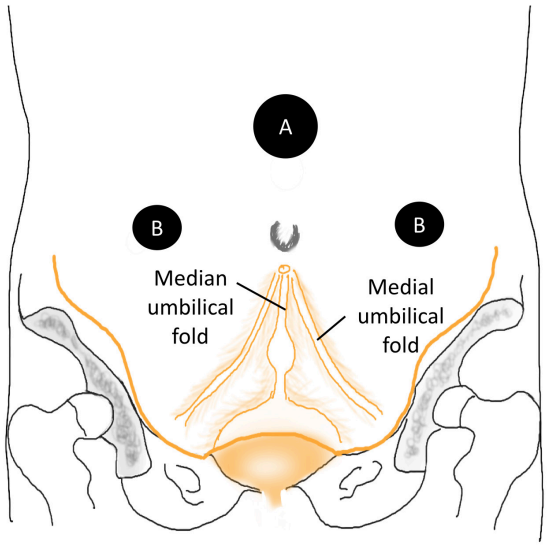

Figure 3 Trocar position, (A) 10 mm camera port; (B) 5 mm woking ports

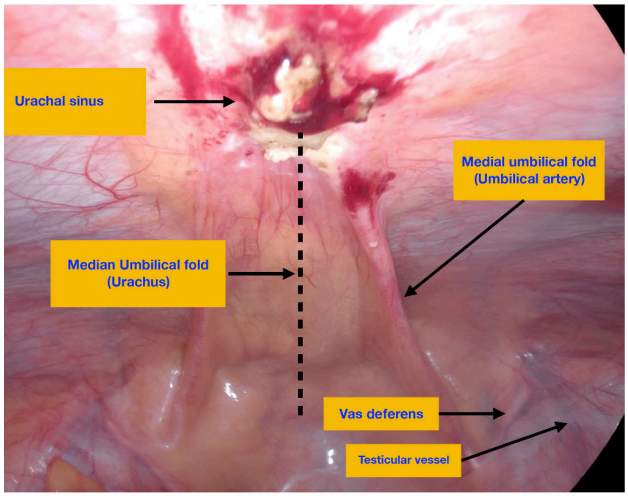

Figure 4 Intra-abdominal anatomy of urachal sinus and associated structures

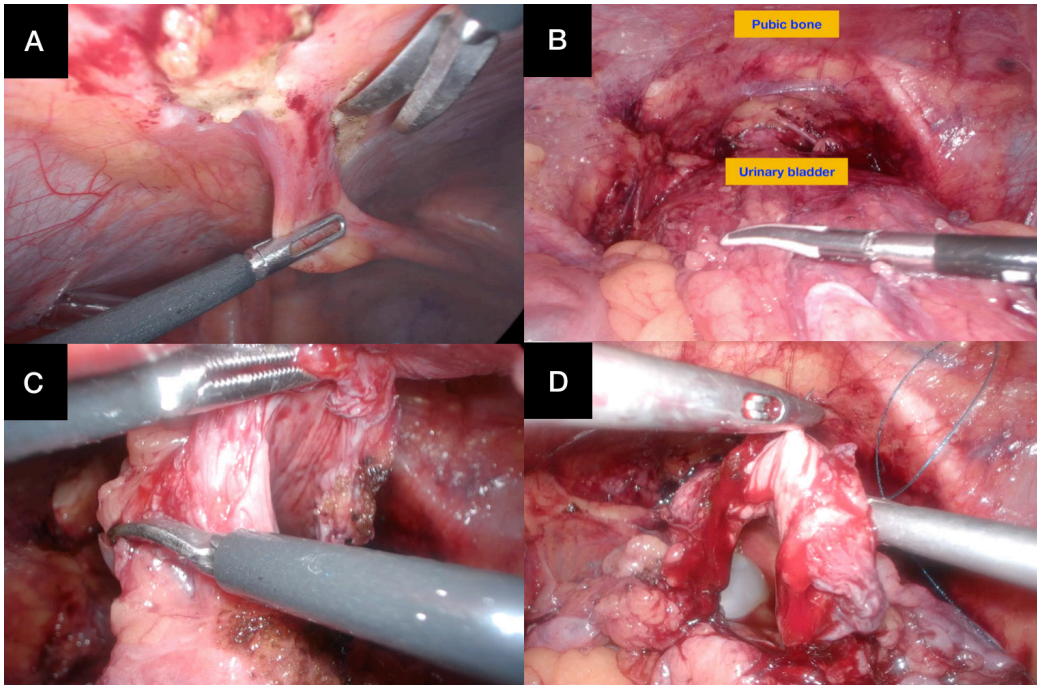

Figure 5 (A) The urachal remnants were dissected at its superior end, near the umbilicus; (B) The dissection was carried down to the space of the Retzius; (C) The dome of the bladder underwent a wedge excision; (D) The bladder was closed with a barbed suture

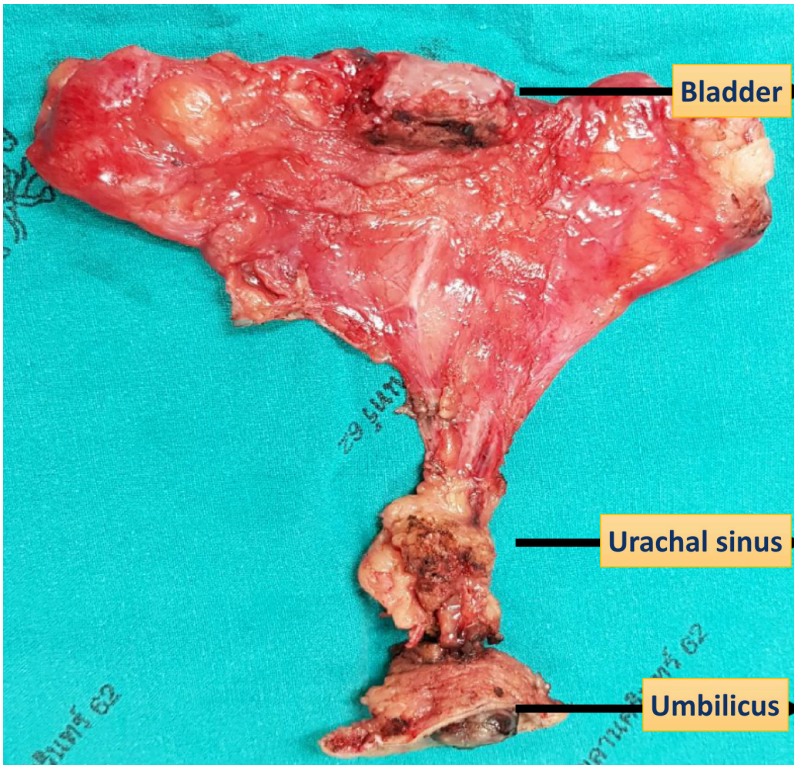

Figure 6 Entire specimen; including the dome of the bladder; umbilical sinus; and umbilicus

DISCUSSION

Urachal sinus is a non-communicating dilatation of the urachus at the umbilical end. This occurs when the urachus does not seal close to the umbilicus, and leads to a blind ending tract from the umbilicus into the urachus. These can be asymptomatic or present with infection, abdominal pain and umbilical discharge.

The presentation and progression in pediatric and adult populations is different. However, adults have a higher risk of urachal cancer and more morbidity. The risk of urachal malignancy in adults is high, and the prognosis is poor. One retrospective study of 130, adults with urachal abnormalities found that 51.0% were malignant and 20.0% presented with metastatic disease.[4] Patients aged 55 years or older and who have hematuria have the strongest predictors of urachal malignancy (each $p<0.001$).[4]

Ultrasonography and CT scan confirms the diagnosis and analyses of the surrounding anatomical connections. CT scanning is further required for confirmation, and to look for malignancy. Findings of urachal sinus include a tract or collection, extending from the umbilicus, with the prominent, median umbilical vein. Blind ended tract arising from umbilicus.[5] In cases of infection, an ultrasound may show collection with complex echogenicity or septations. CT scan may reveal inhomogeneous attenuation or abnormal enhancement (rim or patchy enhancement), as in our case (Figure 4). We used ultrasonography for the diagnosis, followed by CT scan to confirm the extent of the lesion toward the fibrotic tract.

Treatment includes complete excision of the urachal remnant. In cases with infection, a single stage procedure, prior to appropriate antibiotic therapy, or 2-stage procedure involving initial incision and drainage, followed by later excision of the urachal remnant can be performed.[6] There has been a higher complication rate in patients who underwent a single-stage repair (40.0%) versus a two-stage repair (0.0%) in infected cases.[7] A complete excision of the remnants is important, as there is a high probability of reinfection and a chance for the development of malignancy in residual remnants.[5]

Traditionally, an open procedure, using a lower midline incision, has been used with safe and effective results.[8] The laparoscopic approach has been reported to be effective, and safe procedure for a patient with urachal anomalies. It also has additional advantages of less post-operative pain, decreased hospital stay, and a more rapid recovery.[9,10]

In our case, we used a two-stage procedure. Firstly, with administration of broad-spectrum antibiotics along with drainage of the pus. After resolution of infection, we performed the laparoscopic excision of the cyst, followed by wedge partial bladder excision, for total removal of all urachal remnants; this leads to a shorter hospitalization with a good outcome.

CONCLUSION

Infected urachal sinus in adults is rare, and complete surgical excision is the treatment of choice; due to the risk of malignant transformation in adults. Laparoscopic surgery treatment is an effective and safe procedure for a patients with urachal remnants.

CONSENT

Written informed consent was obtained from the patient for publication of this case report, and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

CONFLICT OF INTEREST

The authors declare no conflict of interests for this article.

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