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Case Report

Surgery Section

Management of Urachal Sinus in an Adult: A Case Report

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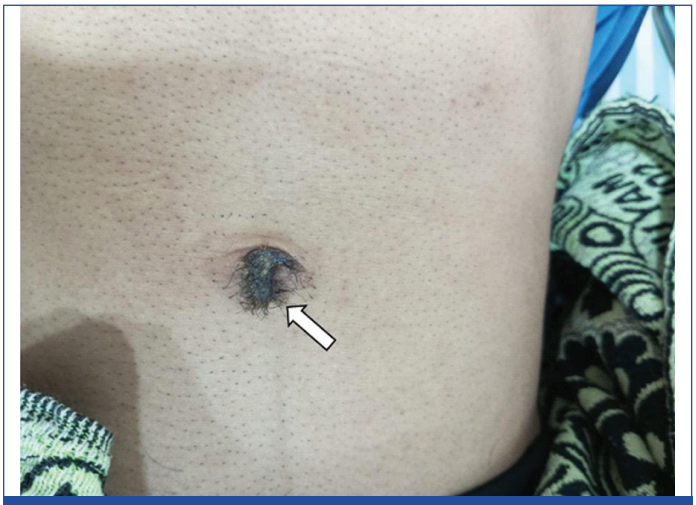
ABSTRACT

Urachal anomalies, though rare, represent a spectrum of congenital conditions resulting from the incomplete obliteration of the urachus. These anomalies are typically identified in paediatric populations, with their occurrence in adults being uncommon and often posing diagnostic challenges. The authors present a case of a 31-year-old male who presented with intermittent abdominal pain, fever, and umbilical discharge. Imaging studies revealed an infected urachal sinus. The patient was treated with broad-spectrum antibiotics followed by surgical excision of the sinus tract. He recovered uneventfully and remained asymptomatic at follow-up. It is important to consider urachal anomalies in the differential diagnosis of umbilical discharge and abdominal pain in adults. Early diagnosis and appropriate surgical intervention are essential to prevent complications and ensure optimal patient outcomes.

Keywords: Abdominal pain, Diagnosis, Discharge, Infections

CASE REPORT

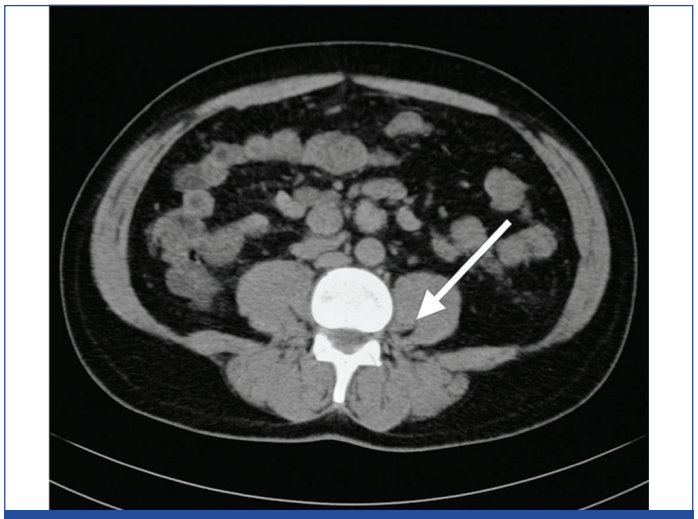
A 31-year-old male engineer presented with a 7-day history of intermittent abdominal pain localised around the umbilical region, accompanied by an episode of vomiting followed by fever. Bladder habits were normal, and the pain gradually increased in intensity over time. On clinical examination, tenderness was noted in the peri-umbilical area, with a tuft of hair follicles lodged in the umbilicus and minimal purulent discharge [Table/Fig-1].



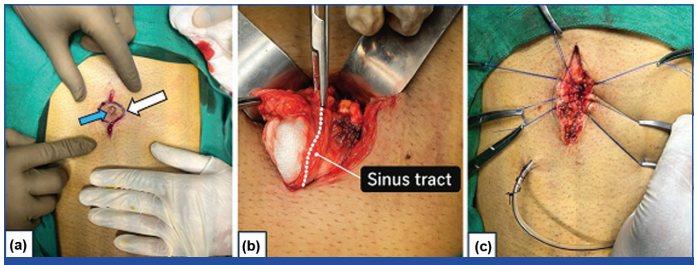
[Table/Fig-1]: Hair follicles lodged in the umbilicus.

Blood investigations revealed leukocytosis with a white blood cell count of 7,400/µL and an elevated Erythrocyte Sedimentation Rate (ESR) of 52 mm/hr. Contrast-Enhanced Computed Tomography (CECT) of the abdomen demonstrated a well-defined tract measuring 37×20 mm in the midline, extending from the umbilicus to an ovoid lesion, consistent with an umbilical abscess likely due to an infected urachal sinus [Table/Fig-2].

The patient was started on broad-spectrum intravenous antibiotics, including ceftriaxone and metronidazole. Surgical management included an omphalectomy followed by careful exploration of the midline abdominal tract [Table/Fig-3]. The urachal sinus was identified and meticulously dissected from the surrounding tissues. Complete excision of the sinus tract was performed to ensure removal of the infected structure [Table/Fig-3]. No communication or connection with the bladder was observed. Haemostasis was achieved, and the surgical site was irrigated with sterile saline before closure. Histopathological examination of the excised tissue confirmed the diagnosis of a urachal sinus.



[Table/Fig-2]: Axial section of a CECT of the abdomen. Linear hypodense tract (white arrow) extending from the umbilicus toward the deep fascia and preperitoneal space, consistent with an umbilical sinus tract. The tract is seen anterior to the peritoneum and posterior to the anterior abdominal wall, aligning with the course of persistent urachal or umbilical remnants.



[Table/Fig-3]: Intraoperative dissection of an umbilical sinus tract. (a) Circular incision marked (white arrow) and partially deepened around the umbilicus, with superior and inferior extensions (elliptical extension) marked to facilitate complete excision and closure. Urachal sinus opening is visible at the center (blue arrow), with a small sinus tract protruding. (b) Two large Langenbeck retractors are used to retract the skin and subcutaneous tissues laterally for exposure. The sinus tract is clearly identified (white arrow), and appears as a tubular structure, whitish in colour, extending from the umbilicus into the deeper tissues. (c) Intraoperative dissection following excision of an umbilical sinus tract. The elliptical incision around the umbilicus has been deepened and the tract excised, leaving a raw wound bed with clean edges. Multiple interrupted sutures (3-0 or 4-0 Prolene) are placed and tagged for skin closure.

Postoperative recovery was uneventful. The patient was discharged on the third postoperative day with a course of oral antibiotics. At the two-week follow-up visit, the patient remained asymptomatic, and the surgical site had healed well.

DISCUSSION

Urachal anomalies, although rare, represent a spectrum of congenital conditions resulting from the incomplete obliteration of the urachus-a vestigial remnant of the allantois connecting the foetal bladder to the umbilicus [1]. These anomalies include urachal cysts, sinuses, diverticula, and patent urachus, each varying in presentation and clinical significance [2,3]. While these conditions are typically identified in the paediatric population, their occurrence in adults is uncommon and often poses diagnostic challenges [3,4]. Approximately two instances per 100,000 hospital admissions occur in adults, as urachal abnormalities typically arise in early life [5].

The urachus originates from the involution of the cloaca and the allantois. Normally, it is obliterated during pregnancy or early childhood to form the medial umbilical ligament [6]. Various urachal abnormalities arise due to its persistence: patent urachus (50%), a continuous communication between the bladder and the umbilicus; urachal cyst (30%), a residual, double-blind ending hollow within the urachal canal; urachal sinus (15%), a tract that opens at the umbilicus but ends blindly; and vesicourachal diverticulum (3-5%), an outpouching from the bladder due to incomplete obliteration of the urachus [4,6].

The patient in the present study, a 31-year-old male, presented with peri-umbilical pain, fever, and purulent discharge, consistent with the characteristic presentation of an infected urachal sinus. Similar presentations have been reported by other authors [4,7]. In a case report by Dias MP et al., a 70-year-old male presented with periumbilical pain and discharge [7], while Ramdani H et al., reported a 34-year-old male with purulent umbilical discharge and abdominal pain [4]. These reports highlight that urachal sinuses can present across a wide age range. In our patient, the presence of a tuft of hair follicles in the umbilicus may have contributed to the infection-a finding not commonly reported in the literature. This underscores the importance of thorough clinical examination to identify potential risk factors for infection.

Due to non-specific symptoms, the diagnosis of urachal sinus is frequently delayed. Moreover, it often mimics other conditions such as umbilical granuloma, omphalitis, or appendicitis [6,8]. In our patient, elevated ESR levels and leukocytosis suggested an underlying infection, prompting further imaging. The CECT of the abdomen revealed a midline tract extending from the umbilicus to an ovoid lesion, suggesting an infected urachal sinus. This finding aligns with that of Bencherki Y et al., where CT scanning facilitated diagnosis and guided surgical planning [6].

The gold standard for diagnosing urachal anomalies involves a combination of clinical evaluation and imaging studies, including ultrasound, Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) [9]. Although ultrasound is frequently used as the initial modality, CT or MRI offers superior delineation of urachal anatomy and better assessment of infection or other associated complications [10]. When an umbilical-urachal sinus is present, a tubular blind-ending tract extending from the umbilical end can be visualised on ultrasound, CT, or MRI scans [4]. If there is an external opening, contrast administration through the umbilicus can help delineate the tract [11]. In the patient of present report, CECT effectively illustrated the sinus tract and associated abscess, similar to the findings reported by Montes MR et al., where CT identified a urachal sinus communicating proximally with the umbilicus [12].

The treatment of urachal anomalies depends on the presence of complications or associated conditions. An open or laparoscopic surgical approach is typically used to remove a non-infected urachal sinus, involving single-step radical excision of the remnant with or without a bladder cuff [13]. In the presence of infection, antibiotics are administered initially, and the sinuses are surgically opened or drained before definitive excision to prevent recurrence and complications such as sepsis or malignant transformation [14]. This two-phase strategy, involving definitive surgery following infection control, is consistent with the management strategies described by Bencherki Y et al., and Awad AM et al., [6,15]. In our patient, the absence of bladder communication simplified the procedure, as bladder cuff resection was not required, unlike in patients with vesicourachal diverticulum or patent urachus [16].

The diagnosis of urachal sinus was confirmed histopathologically, with no evidence of malignancy. This is significant because, although rare, urachal remnants can undergo malignant transformation [7]. Our patient had an uneventful postoperative recovery, similar to other reported cases where complete surgical excision resulted in symptom resolution without recurrence [6,7,12]. Therefore, omphalectomy remains the preferred treatment approach, as conservative management may lead to recurrence [17].

CONCLUSION(S)

An infected urachal sinus in adults is a rare but clinically significant condition that requires prompt diagnosis and treatment. This case highlights the need to consider urachal anomalies in the differential diagnosis of umbilical discharge and abdominal pain in adults. Early diagnosis, combined with surgical excision and appropriate antibiotic therapy, provides definitive treatment and helps prevent recurrence and complications.

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