

Infected Urachal Sinus Revealed by Umbilical Discharge in a Diabetic Adult: MRI Findings and Review of the Literature

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Abstract:

Background: Urachal remnants are embryonic leftovers that typically fade away before birth. However, in rare instances, they persist into adulthood, often staying hidden for decades until a secondary infection brings them to light. **Case Report:** We describe the clinical course of a 65-year-old diabetic male who presented with chronic, foul-smelling umbilical drainage. Given his history of recurrent abdominal pain, our team's initial suspicion leaned toward a gastrointestinal origin, specifically fistulizing Crohn's disease. However, Magnetic Resonance Enterography (MRE) shifted the diagnosis by revealing a 12 cm midline tract extending from the umbilicus to the bladder dome. These imaging features were pathognomonic for an infected urachal sinus. **Conclusion:** MRI stands out as a decisive tool in adult patients where urachal anomalies can mimic more common inflammatory conditions. Its high contrast resolution allows clinicians to rule out bowel involvement and map the tract accurately for definitive surgical planning.

Keywords: Urachal Sinus, Adult Congenital Anomaly, MRI.

Case Report

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1. INTRODUCTION

From an anatomical standpoint, the urachus is the vestigial bridge between the fetal bladder and the allantois. While it usually involutes into the median umbilical ligament before birth, any failure in this regressive process leaves behind various remnants. These are generally categorized into four clinical types: patent urachus, urachal cysts, urachal sinuses, and vesicourachal diverticula [1].

The urachal sinus, accounting for roughly 15% of such cases, consists of a blind-ending tract that opens only at the umbilicus [2]. Although primarily a pediatric diagnosis, these anomalies can emerge in adults, particularly when triggered by infection. In a diabetic context, the clinical picture is often more severe and misleading. This report highlights the diagnostic hurdles we faced and demonstrates how MRI eventually corrected a misdiagnosis that

initially pointed toward inflammatory bowel disease.

2. Case Presentation

We evaluated a 65-year-old diabetic male who had been struggling with a foul-smelling umbilical discharge for six months. Periumbilical pain was a recurrent complaint. Because of the patient's age and the chronic nature of the drainage, the clinical team initially suspected a fistulizing form of Crohn's disease.

To explore this, we performed an MRE using our 1.5 Tesla unit. The study identified a midline tubular structure within the space of Retzius, stretching 12 cm in length with a 20 mm diameter. On T2-weighted images, the tract was markedly hyperintense—a clear sign of purulent or fluid content (**Figure 1**). After gadolinium injection, we observed vivid peripheral wall enhancement on the T1 fat-

saturated sequences, indicating an active infectious process (**Figure 2**). Interestingly, while the tract ended just above the bladder dome, causing reactive mural thickening, there was no direct communication with the urinary or digestive systems. These specific findings confirmed the diagnosis of an infected urachal sinus, effectively ruling out the suspected bowel fistula.

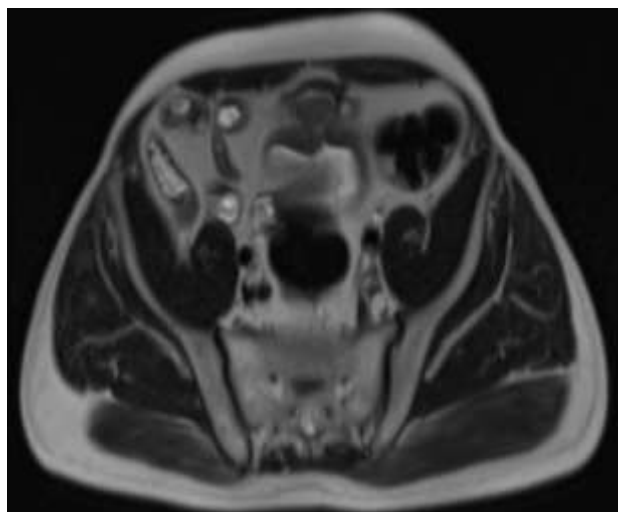


Figure 1: Axial T2-weighted MRI image showing a hyperintense tubular midline structure in the preperitoneal space, consistent with fluid/purulent content within the urachal sinus

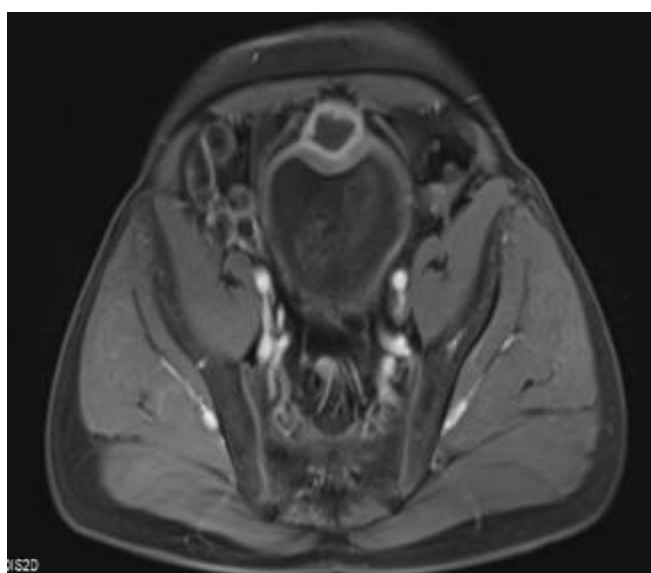


Figure 2: Axial post-contrast T1-weighted image: Intense peripheral enhancement of the tract wall, confirming an active inflammatory process

3. DISCUSSION

Urachal remnants are sequestered in the preperitoneal space, between the transversalis fascia and the peritoneum. In adult patients, an infected urachal sinus typically presents with umbilical drainage or a painful palpable mass [3].

Clinical experience shows that diagnosis is frequently delayed. The symptoms—erythema, discharge, and localized pain—are notoriously non-specific, leading many clinicians to confuse the condition with omphalitis, an umbilical pilonidal sinus, or, as in our case, a digestive fistula [4]. For our patient, his diabetic status likely complicated the clinical picture, potentially masking some inflammatory markers while providing a fertile ground for abscess formation.

When it comes to imaging, ultrasound often serves as the first step, but it is frequently hindered by bowel gas or the patient's habitus. In our practice, MRI remains the gold standard for surgical mapping. It provides the multiplanar clarity needed to visualize the delicate relationship between the sinus, the bladder, and the peritoneal cavity [5].

Definitive management requires complete surgical excision. This is vital not only to stop the cycle of recurrent infections but also to address the small but serious risk of malignant transformation into urachal adenocarcinoma—a tumor known for its late discovery and poor prognosis [6].

4. CONCLUSION

Urachal sinus should remain on the diagnostic radar for any adult presenting with refractory umbilical discharge, even when gastrointestinal symptoms dominate. In our case, the use of MRI was the key to correcting an initial diagnosis of Crohn's disease. Early radiological identification ensures that these patients receive targeted surgical treatment, preventing both severe infectious complications and long-term malignant risks.

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