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Persistent Umbilical Discharge in a 10 Years Old Girl: A Case of Patent Ductus Urachus

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ABSTRACT

Patent ductus urachus is a rare congenital anomaly resulting from the failed obliteration of the urachal lumen, which normally closes during the second trimester of pregnancy. This persistent communication between the urinary bladder and the umbilicus can lead to continuous or intermittent leakage of urine from the umbilicus. Diagnosing this condition in older children is often challenging due to its nonspecific clinical presentation, which may mimic common conditions such as omphalitis or umbilical granuloma. Delayed diagnosis increases the risk of recurrent infections, urachal cyst formation, and, in adulthood, malignant transformation into urachal adenocarcinoma. We report the case of a 10-year-old girl with a lifelong history of persistent, clear, and urinous-smelling discharge from the umbilicus since birth. Physical examination revealed a moist umbilical area without significant signs of acute infection. Ultrasonography confirmed the presence of a tubular structure connecting the bladder dome to the umbilicus. The patient successfully underwent surgical excision of the urachal remnant with no postoperative complications. In conclusion, clinical vigilance regarding persistent umbilical complaints is crucial for primary care physicians. Early surgical intervention is definitive, curative, and serves as a vital preventive measure against the risk of future malignancy.

Keywords: Pantent ductus arachus, umbilical discharge, urachal anomalies

INTRODUCTION

The urachus is an embryonic remnant of the allantois that serves as a connecting conduit between the fetal bladder and the umbilicus (Elumalai & Arif, 2017; Hegazy, 2016; Wong et al., 2024). Under normal physiological conditions, this tubular channel undergoes complete involution and obliteration during the second trimester of pregnancy specifically between the 4th and 7th weeks of gestation transforming into a fibrous tissue known as the median umbilical ligament (Wilson et al., 2019; 12). Failure of this obliteration process results in various urachal anomalies, ranging from urachal cysts, urachal sinuses, and urachal diverticula, to the most complete form: patent ductus urachus (Adam et al., 2016).

Patent ductus urachus occurs due to a total failure of the closure process, resulting in a persistent fistula or open channel between the bladder and the umbilicus (Bahadori & Bray, 2024). Epidemiologically, the prevalence of urachal anomalies in the pediatric population is estimated at 1.03%, with true patent urachus being a highly rare entity, accounting for only 1.5%

of all diagnosed anomalies (Adam et al., 2016). This condition is found three times more frequently in males than in females, often associated with congenital lower urinary tract obstructions such as Posterior Urethral Valves (PUV) (Pellegrino et al., 2023; Sheth et al., 2020). In such scenarios, the persistent patent urachus frequently serves as a mechanical pressure-relief valve due to elevated intravesical pressure (Xie et al., 2022).

Although rare, urachal anomalies carry significant clinical weight because their presentation often mimics other common abdominal conditions, thereby posing a diagnostic challenge (Ramos-Pacheco et al., 2016). If left untreated, the condition can persist into adulthood with a higher risk of severe morbidity, including recurrent infections and the potential for malignant transformation into urachal adenocarcinoma (Bahadori & Bray, 2024; Kliegman et al., 2020). Clinically, these anomalies are classified into four primary types based on the site of failed obliteration. The most common type is patent ductus urachus (50% of cases), followed by urachal cysts (30% of cases), which occur when the middle segment remains patent while both ends are closed (Du et al., 2025; Taher et al., 2021). Two rarer types include the umbilical-urachal sinus (15% of cases), which is open only at the umbilical end, and the vesicourachal diverticulum (3–5% of cases), which communicates only with the bladder.

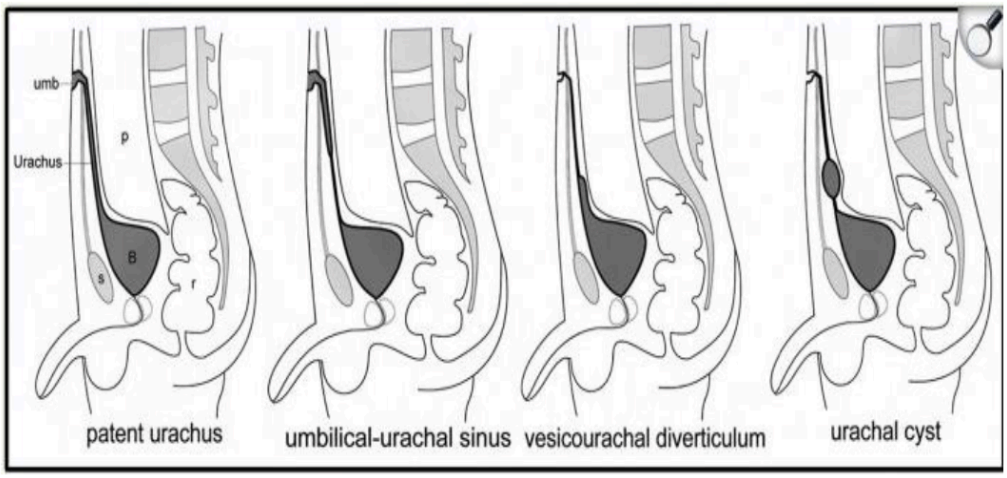


Figure 1. Classification of Urachal Anomalies
Source: Adam et al. (2016)

This case report presents the findings of patent ductus urachus in a 10-year-old girl, a case that is epidemiologically quite rare for this gender and age group. Given the limited national epidemiological data in Indonesia, this publication is vital to enrich medical literature. It emphasizes the importance of early detection through the integration of specific clinical findings and accurate imaging to provide definitive surgical management and prevent serious long-term complications (Ketineni et al., 2025; Nazir et al., 2025; Zaman, 2024).

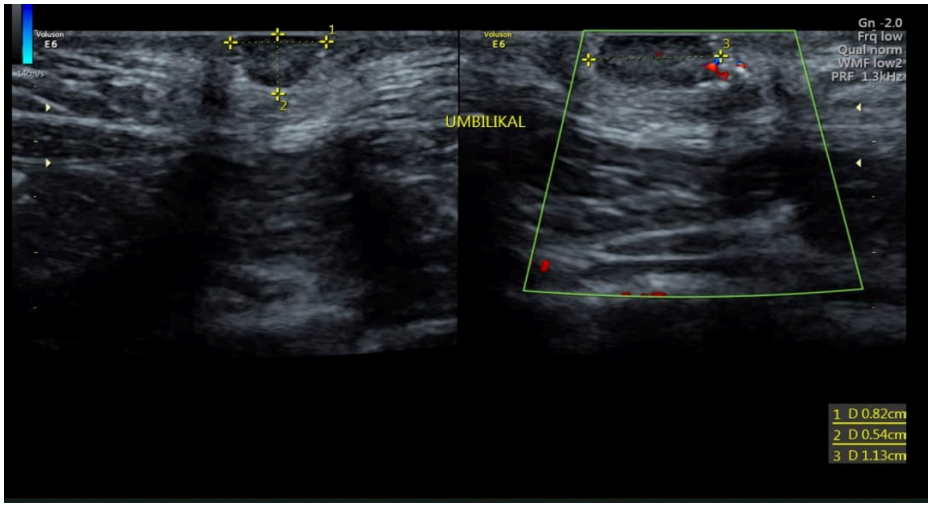
The purpose of this case report is to describe the clinical presentation, diagnostic work-up, and surgical management of patent ductus urachus in a 10-year-old girl an uncommon demographic for this anomaly (Gripp et al., 2016). By presenting this case, we aim to highlight

the importance of maintaining a high index of suspicion for urachal anomalies in children presenting with persistent umbilical discharge, even beyond infancy. The benefits of this report are twofold. For clinicians, particularly primary care physicians and pediatricians, it provides a practical reminder of the key diagnostic clues (e.g., urinous odor, exacerbation with straining) and the role of ultrasonography as a first-line imaging tool. For patients, early recognition and definitive surgical excision offer a curative outcome, prevent recurrent infections, and eliminate the future risk of malignant transformation into urachal adenocarcinoma. Furthermore, this report contributes to the limited literature on urachal anomalies in older female children, thereby enriching national and global epidemiological data.

METHOD

Case Report

A 10-year-old girl was referred with a history of persistent umbilical discharge since birth. The discharge was clear but carried a distinct urinous odor. While the symptoms were intermittent, they had become more frequent in recent months, particularly exacerbated by coughing or physical straining. Upon physical examination, the umbilical area appeared moist, with a bright red mass in the umbilical region, accompanied by a small amount of clear discharge emanating from the lesion, which had a distinct urinous odor. Upon palpation, the mass was non-tender, with a rubbery, smooth, and slick consistency, bowel sounds were present and normal. The patient reported no pain, pruritus (itching), or localized warmth associated with the mass; there was no signs of severe acute inflammation. The patient had no history of voiding dysfunction or significant abdominal pain. And abdominal ultrasound revealed an umbilical lesion (measuring 0.8×0.5×1.1 cm) with a sinus tract communicating with the superior wall of the urinary bladder, confirming the diagnosis of patent ductus urachus. The patient underwent a successful surgical excision of the urachal remnant on 19 October 2025 with no postoperative complications and discharge on postoperative day 2.



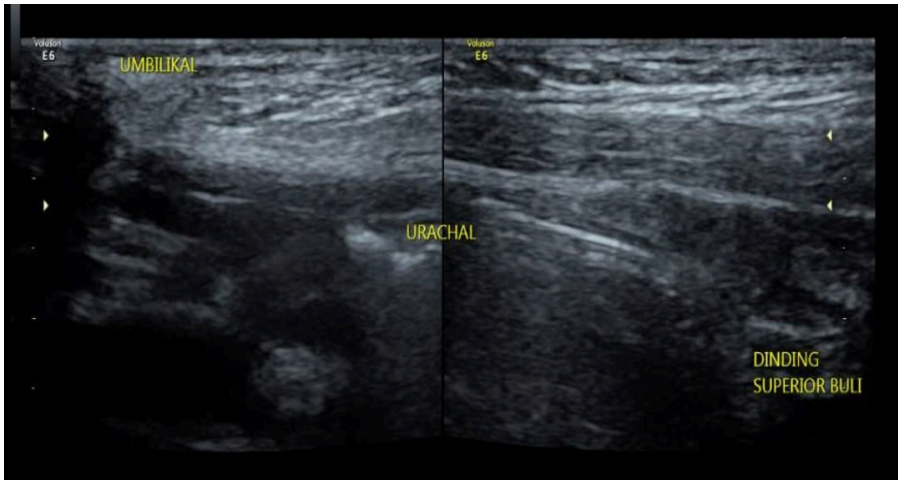


Figure 2. Ultrasound Showing an umbilical lesion (measuring 0.8×0.5×1.1 cm) with a sinus tract communicating with the superior wall of the urinary bladder, suggestive of a Patent Urachus
Source: Author's own documentation (2025)

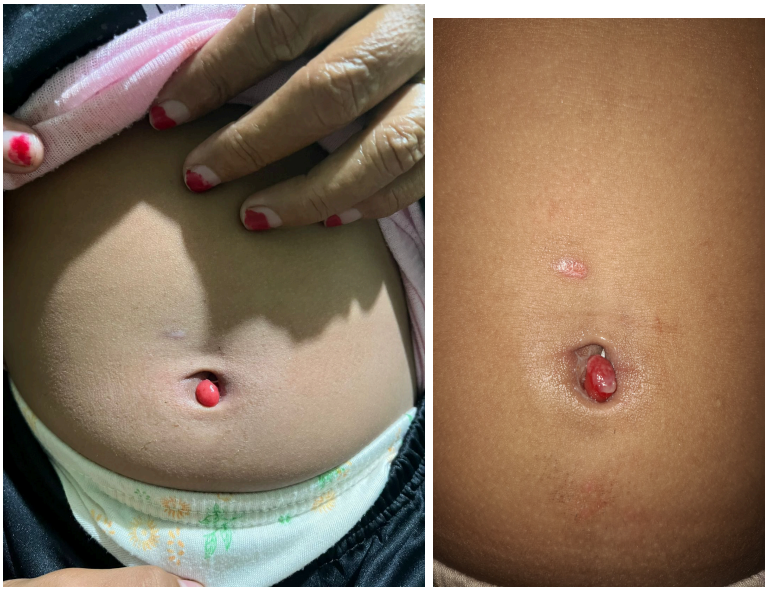


Figure 3. red mass in the umbilical region
Source: Author's own documentation (2025)

RESULTS AND DISCUSSION

The diagnosis of patent ductus urachus in this case was established based on the correlation between clinical history, physical examination, and confirmatory imaging. The characteristic symptom of persistent, urine-like discharge from the umbilicus serves as a pathognomonic sign. Epidemiologically, urachal anomalies occur in approximately 1 in 5,000 to 8,000 live births with a male predominance (2:1 ratio). Identifying this condition in a 10-year-old female is clinically rare, presenting a significant challenge due to the prolonged duration of symptoms prior to surgical intervention (Briggs & Rentea, 2023). According to the literature, such diagnostic delays

can increase the risk of ascending urinary tract infections or the formation of infected urachal cysts (Kliegman et al., 2020).

In clinical practice, a "wet umbilicus" is frequently misdiagnosed as simple omphalitis. Consequently, the presence of a distinct urinous odor should serve as a diagnostic "red flag" for primary care physicians (Haque et al., 2020). To confirm the diagnosis, ultrasonography (USG) is utilized as the first-line diagnostic tool due to its non-invasive and radiation-free nature. In this patient, USG revealed an umbilical lesion (0.8×0.5×1.1 cm) with a sinus tract communicating with the superior wall of the urinary bladder, consistent with the characteristics of patent urachus (Adam et al., 2016).

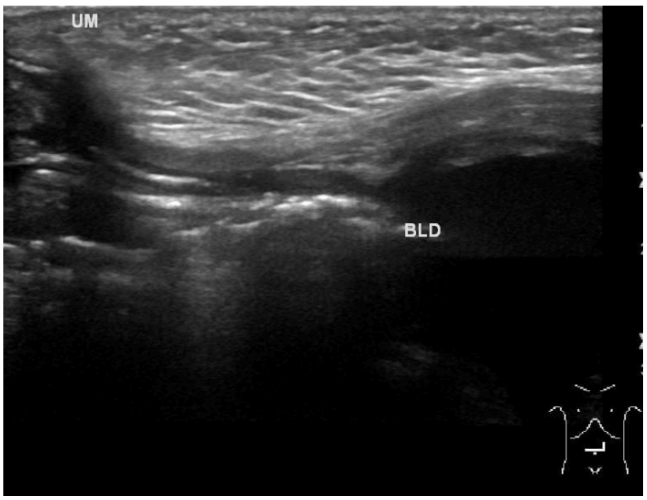


Figure 4. A longitudinal view demonstrates a 3 mm wide anechoic tubular structure connecting the anterosuperior aspect of the bladder to the anterior abdominal wall. In the transverse view, the defect is seen extending through the umbilicus.
Source: Adam et al. (2016)

Although a Voiding Cystourethrogram (VCUG) is considered the gold standard and a Fistulogram/Sinogram can provide more detailed visualization of the tract's connection to the bladder, the definitive USG findings in this case were sufficient to guide surgical management (Brunicardi et al., 2019; Kliegman et al., 2020).

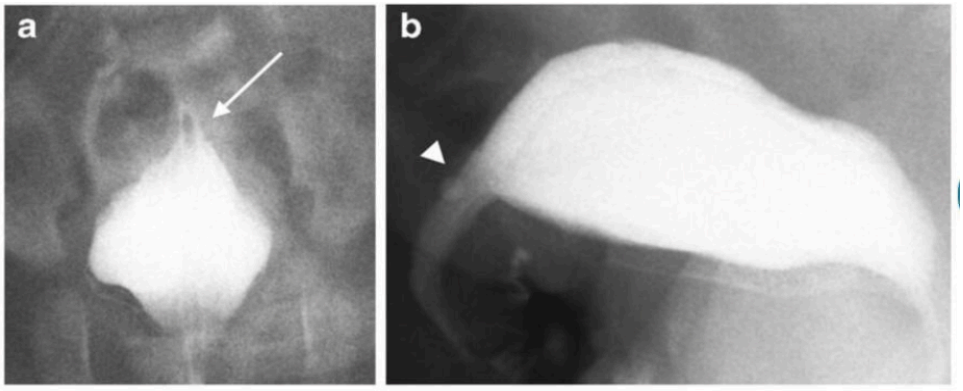


Figure 5. Patent urachus in a 1-week-old girl with suspected urinary drainage from the umbilical cord undergoing a voiding cystourethrogram (VCUG). (a) Anteroposterior view shows a slightly irregular contour with superior bladder tenting (arrow). (b) Lateral projection confirms a patent urachus (arrowhead) extending from the anterosuperior margin of the bladder to the umbilical cord.
Source: Kliegman et al. (2020)

Definitive management for urachal anomalies is complete (en bloc) surgical excision, extending from the umbilicus to the bladder dome, including the removal of a small portion of the bladder wall (bladder cuff). This procedure ensures that no residual urachal epithelium remains, thereby preventing the risk of malignant transformation into urachal adenocarcinoma in adulthood (Bahadori & Bray, 2024). Surgical techniques may involve open laparotomy, as performed in this patient, or minimally invasive techniques that offer faster recovery times.

The prognosis for patients undergoing complete surgical excision is categorized as excellent, as the procedure is curative with a very low risk of recurrence (Brunicardi et al., 2019). With appropriate management and proper removal of the entire tract, patients can achieve a normal quality of life and urinary function without the risk of long-term complications associated with this anomaly (Kliegman et al., 2020).

CONCLUSION

This case reports a 10-year-old girl diagnosed with patent ductus urachus, presenting with the characteristic clinical symptom of a moist, erythematous umbilical mass discharging clear, urinous-smelling fluid since infancy. The diagnosis was established through a comprehensive approach involving medical history, physical examination which revealed a rubbery and smooth umbilical mass and confirmation via ultrasonography (USG). The patient received definitive management through Urachal Excision Laparotomy and Umbilicoplasty, accompanied by parental education regarding the monitoring of postoperative complications. With a *dubious ad-bonam* prognosis, this case underscores that early detection through multidisciplinary approaches and imaging is crucial for providing immediate therapy, enhancing the patient's quality of life, and preventing long-term risks such as recurrent infections or malignant

transformation in adulthood. Persistent umbilical discharge in children should immediately prompt consideration of urachal anomalies. Integrating detailed clinical findings with appropriate radiological confirmation enables definitive surgical management, ensuring an excellent prognosis, prevention of future malignancy, and long-term patient safety.

REFERENCES

Adam, S. Z., Nikolaidis, P., & Miller, F. H. (2016). Imaging of the urachus: Anomalies, complications, and mimics. *RadioGraphics, 34*(7), 2049–2063. https://doi.org/10.1148/rg.347130062

Bahadori, A., & Bray, G. (2024). Should asymptomatic urachal remnants in adults be excised? A scoping review. *Journal Name, 9*(1), 1–8.

Briggs, K. B., & Rentea, R. M. (2023). Patent urachus. In *StatPearls*. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK541015/

Brunicardi, F., Andersen, D. K., Billiar, T. R., Dunn, D. L., Kao, L. S., Hunter, J. G., Matthews, J. B., & Pollock, R. E. (2019). *Schwartz's principles of surgery* (11th ed.). McGraw-Hill Education.

Du, L., Jing, X., Tang, Y., Pang, H., Yan, X., Ye, L., & Luo, H. (2025). From prenatal detection to postnatal evaluation: A retrospective observational ultrasound study of patent urachus with allantoic cyst. *BMC Pregnancy and Childbirth, 25*(1), 614.

Elumalai, G., & Arif, B. (2017). Congenital anomalies of urachus: Embryological basis and its clinical significance. *Embryology, 103*, 45676–46679.

Gripp, K. W., Adam, M. P., Hudgins, L., & Carey, J. C. (2016). 36th annual David W. Smith workshop on malformations and morphogenesis: Abstracts of the 2015 annual meeting. *Wiley Online Library*.

Haque, S., Mansoor, N., & Huang, D. (2020). Congenital urachal anomalies: Embryology, key imaging considerations and management. *Annals of Clinical Anatomy, 3*(1), 1010.

Hegazy, A. A. (2016). Anatomy and embryology of umbilicus in newborns: A review and clinical correlations. *Frontiers of Medicine, 10*(3), 271–277.

Ketineni, R. R., Singh, B., Chandralekha, A. R., Soni, K., Lodha, N., & Singh, B. (2025). Advances in radiological imaging modalities and their expanding role in the early diagnosis, monitoring, and prognosis of internal medicine disorders: A comprehensive review. *Cureus, 17*(12).

Kliegman, R. M., St. Geme, J. W., Blum, N. J., Shah, S. S., Tasker, R. C., & Wilson, K. M. (2020). *Nelson textbook of pediatrics* (21st ed.). Elsevier.

Nazir, A., Hussain, A., Singh, M., & Assad, A. (2025). Deep learning in medicine: Advancing healthcare with intelligent solutions and the future of holography imaging in early diagnosis. *Multimedia Tools and Applications, 84*(17), 17677–17740.

Pellegrino, C., Capitanucci, M. L., Forlini, V., Zaccara, A., Lena, F., Sollini, M. L., Castelli, E., & Mosiello, G. (2023). Posterior urethral valves: Role of prenatal diagnosis and long-term management of bladder function; A single center point of view and review of literature. *Frontiers in Pediatrics, 10*, 1057092.

Ramos-Pacheco, V. H., Saldaña-Dominguez, Y., & Cervantes-Sánchez, M. C. (2016). Infected urachal remnants: An unusual presentation. *Journal of Pediatric Surgery Case Reports, 9*, 6–8. https://doi.org/10.1016/j.epsc.2016.03.012

Sheth, K. R., White, J. T., Bilgutay, A. N., Seth, A., & Mittal, A. G. (2020). Anterior urethral valves—A rare but challenging congenital pathology. *Journal of Pediatric Urology,*

16(5), 585.e1–585.e5.

Taher, H., Ramnarine, S., Smeulders, N., Desai, D., Mushtaq, I., Cuckow, P., & Cherian, A. (2021). Patent urachus and bladder outflow obstruction—Chance or consequence? A study of a cohort of patients with complete patent urachus presenting to a tertiary urological center and a review of literature. *Annals of Pediatric Surgery, 17*(1), 2.

Wilson, A. L., Gandhi, J., Seyam, O., Rahmani, B., Patel, S., Joshi, G., Smith, N. L., & Khan, S. A. (2019). Urachal anomalies: A review of pathological conditions, diagnosis, and management. *Translational Research in Anatomy, 16*, 100041. https://doi.org/10.1016/j.tria.2019.100041

Wong, D., Rowe, E., & Ruby, R. (2024). Embryology and anatomy of the urogenital system. In *Equine neonatal medicine* (pp. 629–637).

Xie, B., Wang, Y., Li, C., Zhang, H., Zhang, Y., & Su, H. (2022). Recent patents for control devices of fluid pressure. *Recent Patents on Engineering, 16*(3), 43–53.

Zaman, Q. (2024). The role of artificial intelligence in early disease detection: Transforming diagnostics and treatment. *Multidisciplinary Journal of Healthcare (MJH), 1*(2), 43–54.