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FROM CYST TO CANCER: AN UNUSUAL PRESENTATION OF URACHAL ADENOCARCINOMA

Surgical Oncology

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ABSTRACT

Urachal adenocarcinoma is an uncommon malignancy arising from persistent urachal remnants and accounts for less than 1% of all bladder cancers. Owing to its rarity and nonspecific clinical manifestations, diagnosis is often delayed or established only after surgical intervention. We report the case of a 57-year-old man who presented with a gradually enlarging lower abdominal swelling of 1.5 months' duration without associated urinary complaints, hematuria, mucinuria, or constitutional symptoms. Clinical examination revealed a mobile, non-tender cystic mass in the suprapubic region. Contrast-enhanced computed tomography demonstrated a well-defined thick-walled solid-cystic lesion measuring 88 × 86 × 87 mm abutting the superior wall of the urinary bladder, raising suspicion for a neoplastic lesion or mesenteric cyst. Ultrasound-guided fine-needle aspiration cytology revealed malignant cells. Exploratory laparotomy identified a 7 × 7 × 7 cm solid-cystic mass attached superiorly to the anterior abdominal wall and inferiorly to the bladder dome, with posterior adherence to the omentum. Complete excision of the lesion with primary bladder wall repair was performed. Histopathological examination demonstrated adenocarcinoma with glandular, papillary, and cribriform architecture invading the muscular layer. Correlation of the clinical, radiological, operative, and pathological findings established the diagnosis of urachal adenocarcinoma. This case highlights the importance of considering urachal malignancy in the differential diagnosis of supravesical cystic masses, even in the absence of urinary symptoms.

KEYWORDS

1. INTRODUCTION

The urachus is an embryological remnant of the allantois and cloaca that connects the fetal bladder to the umbilicus. Following birth, it normally involutes to form the median umbilical ligament within the space of Retzius. Incomplete obliteration of this structure may result in a spectrum of urachal anomalies, including patent urachus, urachal sinus, diverticulum, cyst, and, rarely, malignant transformation [1]. Urachal carcinoma is an uncommon and aggressive neoplasm, accounting for less than 1% of all bladder malignancies and approximately 0.01% of adult cancers. Adenocarcinoma represents the predominant histological subtype, comprising nearly 80%–90% of cases. [2–4]. Owing to its extraperitoneal location and indolent growth pattern, urachal carcinoma often remains clinically silent until it reaches an advanced stage. Hematuria is the most frequently reported presenting symptom, followed by irritative lower urinary tract symptoms, mucinuria, abdominal pain, or the presence of a palpable suprapubic mass. However, the absence of urinary symptoms may delay diagnosis and contribute to diagnostic uncertainty. [3, 4].

Radiological evaluation typically demonstrates a midline supravesical mass arising from the bladder dome or anterior wall. Nevertheless, differentiation from mesenteric cysts, infected urachal remnants, primary bladder adenocarcinoma, and metastatic adenocarcinoma may be challenging, particularly in patients without characteristic urinary manifestations [1]. Consequently, definitive diagnosis frequently relies on the integration of clinical, radiological, intraoperative, and histopathological findings. [4–6].

We report a case of urachal adenocarcinoma in a 57-year-old man who presented with an isolated lower abdominal swelling without hematuria or other urinary complaints. Preoperative imaging suggested a mesenteric cystic lesion, while intraoperative findings raised suspicion for bladder adenocarcinoma. The final diagnosis of urachal adenocarcinoma was established following clinico-pathological correlation. This case highlights the importance of maintaining a high index of suspicion for urachal malignancy in patients presenting with atypical supravesical masses.

2. Case Presentation

A 57-year-old man presented to the surgical outpatient department with a gradually enlarging lower abdominal swelling of 1.5 months' duration. He denied associated abdominal pain, fever, anorexia, weight loss, altered bowel habits, hematuria, dysuria, urinary frequency, urgency, mucinuria, or any other lower urinary tract symptoms. His medical and surgical histories were unremarkable, with no known comorbidities.

On physical examination, the abdomen was soft, and bowel sounds were normal. A non-tender, mobile, cystic mass measuring approximately 4 × 5 cm was palpable in the suprapubic region. The swelling demonstrated mobility along the axis of the mesentery rather than perpendicular to it. Per rectal examination revealed no palpable growth or pelvic mass, and the prostate was normal in size and consistency.

Contrast-enhanced computed tomography of the abdomen and pelvis demonstrated a well-defined thick-walled solid-cystic lesion measuring 88 × 86 × 87 mm in the lower abdomen and pelvis. The lesion exhibited heterogeneous enhancement of the solid component and closely abutted the superior wall of the urinary bladder (Figure 1). Multiple subcentimetric para-aortic, aortocaval, and mesenteric lymph nodes were identified. No ascites were noted. Based on the radiological findings, the differential diagnoses included a mesenteric cyst and a neoplastic lesion.

The sequence of diagnostic evaluation, surgical management, and postoperative outcome is summarized in Table 1.

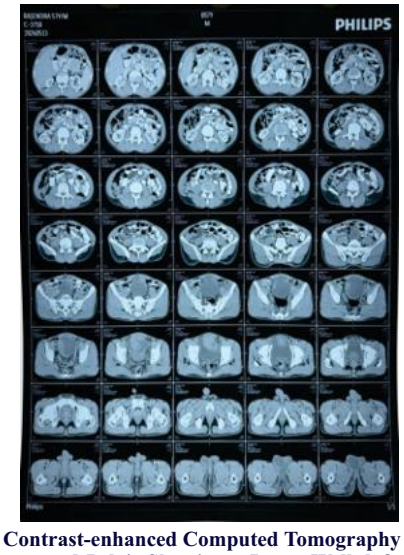

Figure 1: Contrast-enhanced Computed Tomography (CECT) of the Abdomen and Pelvis Showing a Large Well-defined Heterogeneous Solid-cystic Lesion in the Supravesical Region Abutting the Dome of the Urinary Bladder.

Table 1: Timeline of Diagnostic Workup and Management

Events	Findings
Presentation	Gradually enlarging suprapubic swelling without urinary symptoms
CECT Abdomen	88 × 86 × 87 mm solid-cystic supravesical mass abutting bladder dome
FNAC	Positive for malignant cells
Surgery	En bloc excision of mass with involved bladder dome
Histopathology	Adenocarcinoma
Postoperative course	Uneventful; discharged on POD 4 with Foley catheter in situ

Ultrasound-guided fine-needle aspiration cytology yielded blood-mixed material. Cytological examination demonstrated atypical cells arranged in clusters and dispersed singly against a background of necrosis and inflammatory debris. The cells exhibited moderate pleomorphism, a high nuclear-to-cytoplasmic ratio, vesicular nuclei with clumped chromatin, and irregular nuclear membranes. The cytological impression was positive for malignant cells.

The patient subsequently underwent exploratory laparotomy under general anesthesia. Intraoperatively, a well-defined solid-cystic lesion measuring approximately 7 × 7 × 7 cm was identified in the supravesical region. The lesion was attached superiorly to the anterior abdominal wall and inferiorly to the dome of the urinary bladder (Figure 2). Posteriorly, the omentum was adherent to the lesion. Complete excision of the mass was performed with primary repair of the bladder wall, and a 32-Fr abdominal drain was placed in the pelvic cavity.

Figure 2: Intraoperative Photograph Showing a Large Cystic Mass Arising from the Urachal Remnant and Attached to the Dome of the Urinary Bladder During Surgical Excision.

Gross pathological examination revealed a cystic specimen measuring 10.5 × 8 × 7 cm with fibro-fatty attachments (Figure 3). On sectioning, the lesion contained hemorrhagic material and focal papillary excrescences along the inner surface.

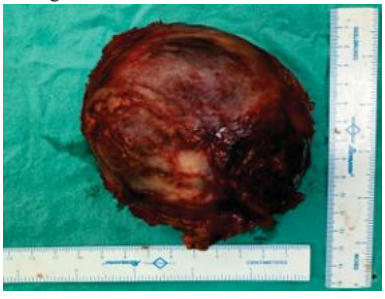

Figure 3: Gross Specimen of the Resected Urachal Mass Measuring Approximately 10.5 × 8 × 7 Cm, Showing a Predominantly Cystic Lesion With Focal Solid Areas.

Histopathological examination demonstrated malignant epithelial cells arranged in glands, papillae, nests, and sheets with focal cribriform architecture and central necrosis. The tumor cells exhibited marked nuclear pleomorphism, vesicular to hyperchromatic nuclei, and frequent mitotic figures with invasion into the muscular layer. The omental tissue was free of tumor involvement.

Correlation of the clinical presentation, radiological findings, operative observations, and histopathological features established the diagnosis of urachal adenocarcinoma.

The postoperative course was uneventful. The patient was discharged on postoperative day 4 with a Foley catheter in situ and was advised regular follow-up. The principal diagnostic findings from radiological, cytological, operative, and histopathological assessments are summarized in Table 2.

Table 2: Key Diagnostic Findings

Investigation	Findings
CECT Abdomen and Pelvis	88 × 86 × 87 mm heterogeneous solid-cystic supravesical mass abutting bladder dome
FNAC	Positive for malignant cells
Surgery	En bloc excision of urachal mass with bladder dome involvement
Histopathology	Adenocarcinoma with glandular, papillary, and focal cribriform architecture invading the muscular layer
Omentum	Free of tumor invasion

3. DISCUSSION

Urachal adenocarcinoma is a rare malignancy arising from persistent urachal remnants and accounts for less than 1% of all bladder cancers and approximately 0.01% of adult malignancies.[2, 4] The urachus extends from the dome of the urinary bladder to the umbilicus and normally involutes after birth to form the median umbilical ligament [6]. Incomplete obliteration may result in a spectrum of urachal anomalies, including urachal cysts, sinuses, diverticula, and, rarely, malignant transformation.[4, 6] Because of its deep extraperitoneal location and slow growth, urachal carcinoma frequently remains clinically silent until it attains a considerable size, often leading to delayed diagnosis.[5]

The majority of patients with urachal carcinoma present with hematuria, which has been reported in up to 80% of cases. Other manifestations include mucinuria, dysuria, urinary frequency, suprapubic pain, and recurrent urinary tract infections.[6] In contrast, the present patient had no urinary complaints, hematuria, or constitutional symptoms and presented solely with a gradually enlarging suprapubic swelling. Such atypical presentations may create significant diagnostic uncertainty and delay recognition of the underlying malignancy.

Radiological imaging plays a pivotal role in the initial evaluation of urachal lesions. Contrast-enhanced computed tomography is considered the imaging modality of choice because it can demonstrate the characteristic location of the lesion between the bladder dome and umbilicus and assess local extension and metastatic disease. [7,1]. Typical radiological features include a midline supravesical mass with mixed solid and cystic components, irregular wall thickening, and occasional calcifications. [7,1]. In the present case, computed tomography demonstrated a large thick-walled solid-cystic lesion abutting the superior wall of the bladder, but the differential diagnosis initially included a mesenteric cyst and a neoplastic lesion. This finding illustrates the diagnostic challenge posed by urachal tumors, particularly when urinary symptoms are absent.

Fine-needle aspiration cytology identified malignant cells in the current case and prompted definitive surgical management. However, cytological findings alone are generally insufficient to establish the diagnosis of urachal adenocarcinoma because similar features may be encountered in primary bladder adenocarcinoma or metastatic adenocarcinomas involving the bladder [8]. Therefore, correlation with imaging, operative findings, and histopathological examination remains essential.

Histologically, adenocarcinoma represents the predominant subtype of urachal carcinoma, accounting for approximately 80–90% of reported cases.[6, 10] The tumor commonly demonstrates enteric differentiation with glandular architecture, mucin production, papillary formations, and varying degrees of cellular atypia.[5] In our

patient, histopathological examination revealed malignant epithelial cells arranged in glands, papillae, nests, and sheets with focal cribriform architecture, central necrosis, marked nuclear pleomorphism, and muscular invasion. The absence of tumor involvement within the omental specimen suggested localized disease without gross peritoneal dissemination.

Complete surgical excision remains the cornerstone of treatment for localized urachal adenocarcinoma. Current evidence supports en bloc resection of the urachal ligament, umbilicus, and partial cystectomy involving the bladder dome whenever feasible.[10, 11] Negative surgical margins are among the most important prognostic factors influencing long-term outcomes.[11, 12] In the present case, complete excision of the lesion with bladder wall repair was achieved successfully, and the postoperative course was uneventful.

Despite surgical management, urachal adenocarcinoma is associated with a relatively poor prognosis because many patients present with locally advanced or metastatic disease [4]. Reported five-year survival rates vary widely, ranging from approximately 40% to 60%, depending on stage at diagnosis and completeness of resection.[4, 13] Consequently, long-term surveillance is recommended owing to the risk of local recurrence and distant metastasis.

The present case is noteworthy for several reasons. First, the patient lacked the typical urinary manifestations commonly associated with urachal carcinoma. Second, radiological evaluation initially suggested alternative diagnoses, including a mesenteric cyst. Third, definitive diagnosis was established only after integration of clinical, radiological, intraoperative, and histopathological findings. These features underscore the importance of maintaining a broad differential diagnosis when evaluating supravesical cystic masses and highlight the need for careful clinicopathological correlation.

4. CONCLUSION

Urachal adenocarcinoma is an uncommon and often overlooked malignancy that may present without the characteristic urinary symptoms typically associated with bladder tumors. The present case highlights the diagnostic challenges posed by a large supravesical cystic lesion that clinically and radiologically mimicked a benign cystic pathology. Definitive diagnosis was established only after integration of imaging findings, cytological evaluation, surgical exploration, and histopathological examination. This report underscores the importance of considering urachal malignancy in the differential diagnosis of midline suprapubic masses and emphasizes the role of complete surgical excision and histopathological assessment in achieving accurate diagnosis and optimal management.

5. REFERENCES

1. Parada Villavicencio C, Adam SZ, Nikolaidis P, Yaghmai V, Miller FH. Imaging of the urachus: anomalies, complications, and mimics. Radiographics. 2016;36(7):2049-63. doi:10.1148/rg.2016160062.
2. Sheldon CA, Clayman RV, Gonzalez R, Williams RD, Fraley EE. Malignant urachal lesions. J Urol. 1984;131(1):1-8. doi:10.1016/S0022-5347(17)50167-6.
3. Wright JL, Porter MP, Li CI, Lange PH, Lin DW. Differences in survival among patients with urachal and nonurachal adenocarcinomas of the bladder. Cancer. 2006;107(4):721-8. doi:10.1002/cncr.22059.
4. Szarvas T, Módos O, Niedworok C, Reis H, Szendröi A, Szász MA, et al. Clinical, prognostic, and therapeutic aspects of urachal carcinoma: a comprehensive review with meta-analysis of 1,010 cases. Urol Oncol. 2016;34(9):388-98. doi:10.1016/j.urolonc.2016.04.012.
5. Gopalan A, Sharp DS, Fine SW, Tickoo SK, Herr HW, Reuter VE, et al. Urachal carcinoma: a clinicopathologic analysis of 24 cases with outcome correlation. Am J Surg Pathol. 2009;33(5):659-68. doi:10.1097/PAS.0b013e31819aa4ae.
6. Ashley RA, Inman BA, Sebo TJ, Leibovich BC, Blute ML, Kwon ED, et al. Urachal carcinoma: clinicopathologic features and long-term outcomes of an aggressive malignancy. Cancer. 2006;107(4):712-20. doi:10.1002/cncr.22060.
7. Thali-Schwab CM, Woodward PJ, Wagner BJ. Computed tomographic appearance of urachal adenocarcinomas: review of 25 cases. Eur Radiol. 2005;15(1):79-84. doi:10.1007/s00330-004-2408.
8. Paner GP, Lopez-Beltran A, Sirohi D, Amin MB. Updates in the pathologic diagnosis and classification of epithelial neoplasms of urachal origin. Adv Anat Pathol. 2016;23(2):71-83. doi:10.1097/PAP.0000000000000110.
9. Bruins HM, Visser O, Ploeg M, Hulsbergen-van de Kaa CA, Kiemeney LA, Witjes JA. The clinical epidemiology of urachal carcinoma: results of a large, population-based study. J Urol. 2012;188(4):1102-7. doi:10.1016/j.juro.2012.06.020.
10. Siefker-Radtke A. Urachal adenocarcinoma: a clinician's guide for treatment. Semin Oncol. 2012;39(5):619-24. doi:10.1053/j.seminoncol.2012.08.011.
11. Molina JR, Quevedo JF, Furth AF, Richardson RL, Zincke H, Burch PA. Predictors of survival from urachal cancer: a Mayo Clinic study of 49 cases. Cancer. 2007;110(11):2434-40. doi:10.1002/cncr.23070.
12. Pinthus JH, Haddad R, Trachtenberg J, Holowaty E, Bowler J, Herzenberg AM, et al. Population-based survival data on urachal tumors. J Urol. 2006;175(6):2042-7. doi:10.1016/S0022-5347(06)00263-1
13. Dhillon J, Liang Y, Kamat AM, Siefker-Radtke A, Dinney CP, Czerniak B, et al. Urachal carcinoma: a pathologic and clinical study of 46 cases. Hum Pathol. 2015;46(12):1808-14. doi:10.1016/j.humpath.2015.07.021.