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Urachal Adenocarcinoma: A Case Report of Rare Tumor in Women

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Introduction. Urachal adenocarcinoma is an uncommon malignancy that typically presents in older men, and its recognition is often delayed because early symptoms are vague. This report is distinctive because it involves a young female patient with a mucinous colon-type immunophenotype, a presentation that is unusually atypical for urachal tumors and can easily be mistaken for a gastrointestinal primary. This rare combination of demographic and pathological features makes the case clinically significant, as it highlights specific diagnostic pitfalls that are not commonly emphasized in the literature.
Case. A 40-year-old woman experienced recurrent dysuria and visible hematuria for one year. CT imaging revealed a mass at the bladder dome extending toward the umbilicus, raising suspicion for a urachal lesion. Following cystoscopic biopsy suggesting mucinous adenocarcinoma, the patient underwent surgical extirpation with partial cystectomy. Histopathology accompanied by immunohistochemistry demonstrated CK7 negativity with CK20, CDX2, and β-catenin positivity, an immunoprofile characteristic of colon-type urachal adenocarcinoma.
Conclusion. Early cross-sectional imaging for persistent hematuria, close attention to masses located at the midline bladder dome, and the routine use of immunohistochemical markers to differentiate urachal from colorectal adenocarcinoma are essential steps to enhance diagnostic accuracy. Incorporating these strategies may prevent missed or delayed diagnoses in similarly atypical presentations of urachal adenocarcinoma.

Keywords: bladder dome tumor, mucinous adenocarcinoma, urachal adenocarcinoma

Introduction

A rare type of non-urothelial malignancy originating from the urachal ligament is called urachal carcinoma. The part that is attacked is usually the dome of the bladder or the midline of the bladder [1]. A canal about 5-10 cm long that connects the allantois to the fetal bladder during early pregnancy is called the urachus. The urachus is divided into three distinct layers: a luminal layer of cuboidal or transitional epithelium, an intermediate layer of submucosal connective tissue, and an outer layer of smooth muscle. If developed normally, the urachus will disappear by the fourth month and the fetus will develop into a fibromuscular cord that extends from the umbilicus to the dome of the bladder in the fifth month [2]. The cause of urachal anomaly is failure of obliteration, although urachal malignancy is very rare [3]. Of all bladder cancers, the incidence is less than 1%, where the ratio between men and women is 1.4-1.6:1, in the fifth and sixth decades, the case is very common [4].

Hematuria, dysuria, and abdominal pain are the most common symptoms of urachal adenocarcinoma. In some cases, a palpable abdominal mass is detected, which may be the only sign felt [5].

The disease can be categorized using the Sheldon or Mayo classification systems, both of which have been shown to be effective in predicting patient prognosis. In non-metastatic disease, the most commonly recommended treatment is surgery, with organ-preserving partial cystectomy being the preferred approach [6].

Given its rarity, only a few reported cases and case series have been reported regarding this pathology. The challenge is regarding the development of standard diagnosis and management, given the low incidence of urachal carcinoma.

Case Report

A 40-year-old woman was referred to the urology outpatient clinic from another hospital with a diagnosis of a preliminary diagnosis of bladder carcinoma based on earlier evaluation, reporting recurrent gross hematuria and dysuria that first began in January 2024, persisting intermittently for approximately one year before presentation. In the previous hospital, on 8 January 2025, the patient had undergone transurethral resection of bladder tumour (TURBT) surgery, with anatomic-pathological results of mucinous adenocarcinoma, and positive angioinvasion. Vital signs were checked and were within normal limits. Physical examination revealed a suprapubic mass with a rubbery consistency, smooth surface and no tenderness.

The patient had no history of diabetes mellitus, hypertension, tuberculosis, kidney disease, or other chronic systemic illnesses. There was no family history of urological malignancy, colorectal cancer, or hereditary cancer syndromes. The patient did not smoke, denied alcohol use, and had no notable psychosocial stressors

An abdominal CT scan with contrast was performed as an adjunct. The CT scan showed a 4.2 x 4 x 7 cm tumour in the fundus vesica urinaria, hepatomegaly with fatty liver and bilateral inguinal lymphadenopathy with a diameter of 0.8-1 cm (Figure 1).

This patient underwent laparotomy extirpation of the tumour and partial cystectomy. The extirpated tumour was then subjected to histopathological examination and concluded to be a mucinous adenocarcinoma, then immunohistochemical examination for CK7, CK20, CDX2 and beta-catenin was performed with the results of negative CK7, positive CK20, positive CDX2, positive beta-catenin and concluded to be a mucinous colon adenocarcinoma.

The patient was subsequently evaluated in the postoperative period through routine outpatient follow-up. Clinical assessment focused on symptom resolution, wound condition, and overall recovery. No immediate postoperative complications were observed during follow-up visits, and the patient remained clinically stable. Further oncologic surveillance was planned according to standard recommendations for urachal adenocarcinoma, although detailed long-term follow-up data were not available at the time of manuscript preparation.

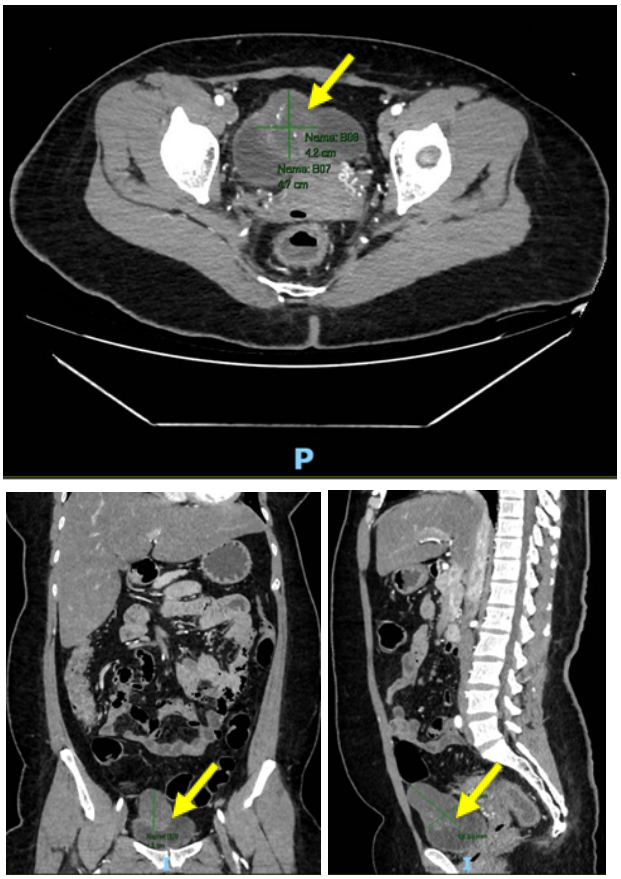

Figure 1. CT scan showing tumor at the vesica urinaria (yellow arrow)

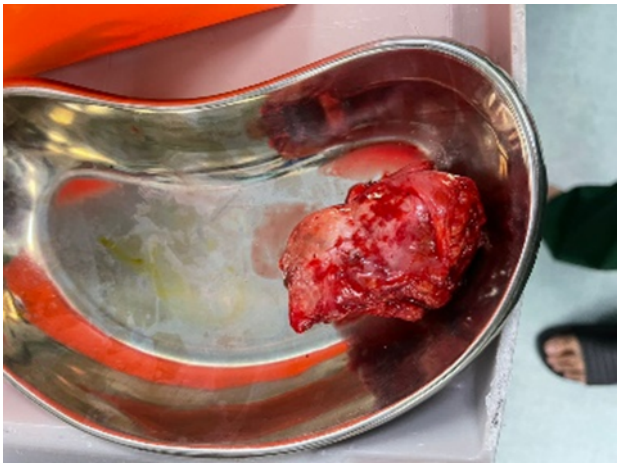

Figure 2. Extirpated tumour

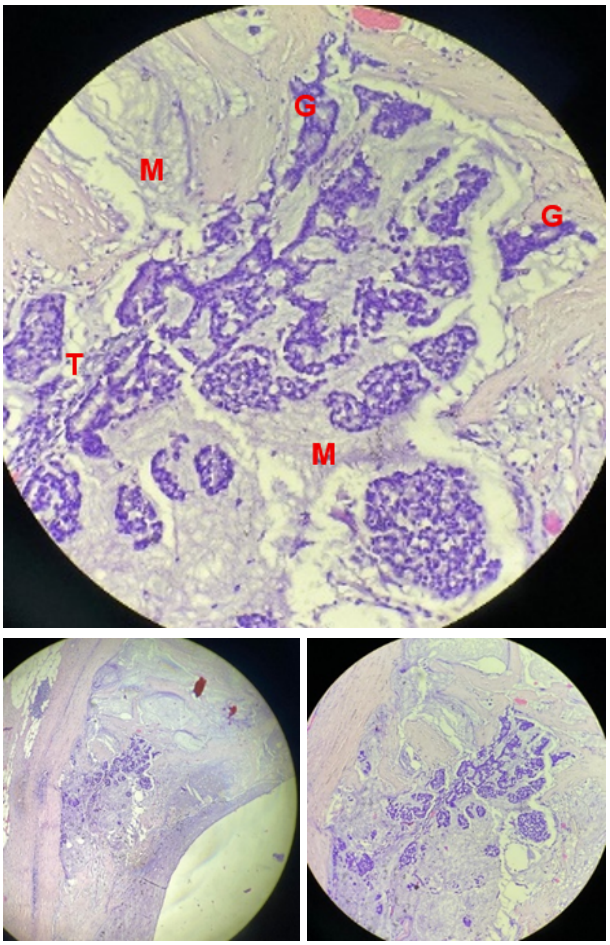

Figure 3. Histopathological appearance of the tumor. It shows abundant extracellular mucin with infiltrating atypical glandular structures composed of enlarged pleomorphic epithelial cells, consistent with mucinous urachal adenocarcinoma. Malignant glands with hyperchromatic nuclei and mucin-producing cells are visible, correlating with the colon-type immunophenotype observed in immunohistochemistry. M: Mucin; G: Granular cells; T: Epithelial Tumor

Discussion

The embryological remnant of the involution of the allantois and cloaca is called the urachus, or median umbilical ligament. It extends from the umbilicus to the dome of the bladder. The urachus is a tubular structure and disappears spontaneously with age, but persists in a small proportion of adults, about 30%. In 1863, Hue and Jacquin were the first to describe a rare and quite destructive urachus tumor [7]. Of all bladder malignancies, this tumor accounts for only 0.5% and 20-40% of primary bladder adenocarcinomas. While the urachus is lined with transitional epithelium, urachus carcinomas arise as adenocarcinomas in approximately 90% of cases [1].

Men with an average age of 60 years (40-70) are particularly susceptible to adenocarcinoma. In all cases, two-thirds are found in men. Thus, only around one third are found in females. In advanced or metastatic disease, the reported average survival is 12-24 months, and the five-year survival is about 43%. In 90% of cases, the tumor invades the adjacent part of the bladder dome [1-2].

However, it is very unfortunate, considering that urachal tumors generally have no early symptoms, patients generally come with a higher stage, severity and poor prognosis when diagnosed. These symptoms will be clearly visible after the tumor attacks the bladder wall, with hematuria being the most common, occurring in 90% of patients. Other symptoms that usually appear are mucopurulent discharge, dysuria, painful urination, frequency and urgency [1,3].

Diagnosis of urachal adenocarcinoma is difficult and requires a combination of clinical presentation, imaging, and histopathology. Ultrasonography, CT, and MRI are some of the imaging techniques that can be used to facilitate the process of identifying the location and extent of the tumor. Cystoscopy is useful for confirming the presence of a mass and assisting in biopsy. Histopathology is the gold standard in the diagnostic process [4].

Histologically, most urachal carcinomas are adenocarcinomas, and the most common subtype is mucinous adenocarcinoma. Enteric, signet-ring cell, and mixed adenocarcinomas are included in other subtypes. The presence of mucin is a characteristic that supports the diagnosis. Regarding our patient's adenocarcinoma, the diagnosis was based on history, physical examination, and CT imaging and was confirmed by histology [5].

According to Sheldon's staging system (Table 1), our patient had stage IIIa Urachal Adenocarcinoma (extending to the bladder). Another staging method is TNM staging (Table 2). Based on TNM staging, our patient's pathological stage was T2 (tumor confined to the muscular wall of the bladder) [3].

In primary urachal carcinoma, the mainstay of treatment is surgical resection, which includes partial cystectomy or radical cystectomy with en bloc resection of the urachus and umbilicus. Lymph node dissection may also be performed. The role of adjuvant chemotherapy and radiotherapy is not well established given the paucity of randomized controlled trials, but in advanced or metastatic cases may be considered. For our patient, we

performed laparotomy excision of the tumor and partial cystectomy [4].

Table 1. Staging system by Sheldon [10,13]

Stage	Sheldon Staging System for Urachal Carcinoma
I	Tumor confined to urachal mucosa
II	Tumor invasion confined to urachal musculature
IIIa	Local extension to bladder
IIIb	Local extension to abdominal wall
IIIc	Local extension to peritoneum
IIId	Local extension to viscera other than bladder
IVa	Metastasis to regional lymph nodes
IVb	Distant metastasis

Table 2. Cancer specific survival in patients with urachal carcinoma as per sheldon clinical staging [10]

Stage	5-year cancer-specific survival	10-year cancer-specific survival
I	65%	57%
II	55%	43%
III	15%	0%
IV	6%	0%

The results of the analysis conducted by Bruins et al [14] and Loizzo et al [15] regarding overall survival in the Dutch group were 48 months. In patients with non-metastatic disease (Sheldon I–III) the 5-year relative survival (RS) was 61%, then in metastatic disease (stage IV) it decreased to around 15% [7].

Due to urachal adenocarcinoma rarity, one of the biggest management issues is the absence of specific guidelines. To comprehend the urachal adenocarcinoma and create targeted therapies. Then, efforts to increase awareness among physicians regarding this rare entity could be directed towards earlier diagnosis and better outcomes [8].

Early diagnosis of urachal adenocarcinoma remains challenging because the initial symptoms are often non-specific and can mimic more common urological conditions. However, several practical approaches can be derived from this case and existing literature. Persistent or recurrent macroscopic hematuria, especially when accompanied by suprapubic discomfort, should prompt early cross-sectional imaging to evaluate the bladder dome and midline structures more carefully. Lesions arising from the anterior or dome region of the bladder, particularly those with a mixed solid–cystic or mucin-containing appearance on CT or MRI, should raise suspicion for a possible urachal origin rather than being attributed solely to primary bladder carcinoma. In addition, timely cystoscopy with targeted biopsy of dome lesions and subsequent histopathological assessment are crucial steps to avoid delayed diagnosis [10,12,16].

Recent studies have also focused on improving the diagnostic accuracy and classification of urachal tumors. Registry-based and multicenter analyses are refining incidence estimates, prognostic factors, and staging systems, while newer work has evaluated preoperative imaging criteria, cystoscopic patterns, and the role of immunohistochemistry to differentiate urachal adenocarcinoma from primary bladder or metastatic colorectal adenocarcinoma [10,12,15-16]. The colon-type immunophenotype in our patient (CK7–, CK20+, CDX2+, β-catenin+) illustrates how an immunohistochemical panel can help correctly identify urachal origin when morphology overlaps with gastrointestinal tumors. From this case, an important lesson is the need to maintain a high index of suspicion for urachal malignancy in younger or atypical patients with persistent hematuria and a mass at the bladder dome, and to routinely integrate imaging, endoscopic findings, and immunohistochemical profiling into a structured diagnostic pathway.

In our case, partial cystectomy was selected because the tumor was localized to the bladder dome without evidence of diffuse bladder involvement or distant metastasis. Current literature suggests that partial cystectomy with en bloc resection of the urachus and umbilicus provides oncologic outcomes comparable to radical cystectomy in localized disease while preserving bladder function. Radical cystectomy is generally reserved for cases with extensive intravesical spread or non-resectable margins. Therefore, partial cystectomy represented an appropriate organ-sparing approach for this patient.

Conclusion

Even though urachal adenocarcinoma is uncommon and can present with a variety of symptoms, any doctor should pay close attention to patients who have dysuria, haematuria, suprapubic pain, or imaging evidence of thickening of the vesical dome. The mainstay of treatment in urachal

adenocarcinoma is surgical excision. Chemotherapy is only given in cases of metastatic disease or local recurrence. In order to improve outcomes and survival rates, the way to do this is to conduct surveillance as early as possible.

Conflict of Interest

The authors define no conflict of interest.

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