

# Mucinous cystadenomas of urachus: A case report and literature review

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## Abstract

Urachal epithelial neoplasms are rare tumors that arise from the vestiges of the urachus. Mucinous cystadenomas are considered as a benign glandular tumors of the urachus. Cystadenomas are commonly found in the ovary, appendix, and pancreas. Mucinous cystadenomas of the urachus are extremely rare in the urachus, and only nine cases reported so far. We reported the 10th case of Mucinous cystadenomas of the urachus detected incidentally at the time of diagnostic laparoscopy for investigation of genitourinary tuberculosis.

**Keywords:** Cystic neoplasm, mucinous cystadenomas, urachus

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## INTRODUCTION


Mucinous cystadenomas are benign cystic neoplasms filled with mucin and lined by well-differentiated columnar mucinous epithelium.<sup>[1]</sup> These tumors are mainly found in the ovaries and rarely occur in children and adolescents.<sup>[2]</sup> Other common sites of mucinous cystadenomas are the appendix and pancreas.<sup>[3-5]</sup> An English literature review shows only nine reported cases of urachal mucinous cystadenoma so far.<sup>[6-11]</sup> Mucinous cystadenomas are covered under an updated 2016 World Health Organization classification of genitourinary tumors.<sup>[12]</sup> Hull and Warfel reported the first time a case of a mucinous cystadenoma as an incidental finding in the year 1994.<sup>[6]</sup> Later on, Paul *et al.* described the first case of urachal mucinous adenocarcinoma at the stage of carcinoma *in situ* and suggested a premalignant change in the urachal remnant.<sup>[13]</sup>

Urachus usually obliterates to a fibrous band, known as the median umbilical ligament before birth. However, incomplete closure may lead to various pathologies such as cysts, diverticulum, fistula, infections, and neoplasms.<sup>[14]</sup> Among them, neoplasms are less reported and need more attention because of the ability of benign neoplasms to turn into malignant ones. These neoplasms can be broadly categorized into noncystic frankly invasive and mucinous cystic tumors on the bases of overall architecture.<sup>[12]</sup> The mucinous cystic tumors are further subdivided according to the scheme used for mucinous ovarian tumors such as mucinous cystadenoma – a single layer of mucinous columnar epithelium with no atypia, mucinous cystic tumor of low malignant potential (MCTLMP) – epithelial proliferation including formation of papillae with low-grade cytologic atypia, and mucinous cystadenocarcinoma

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– malignant cytologic features with microinvasion or frank invasion.<sup>[15]</sup> We attempt to share a case of mucinous cystadenoma from the aspects of clinical presentation, operative findings, and histopathology because of its rare entity, aggressive behavior to develop into pseudomyxoma peritonei, and the possibility of malignant transformation.

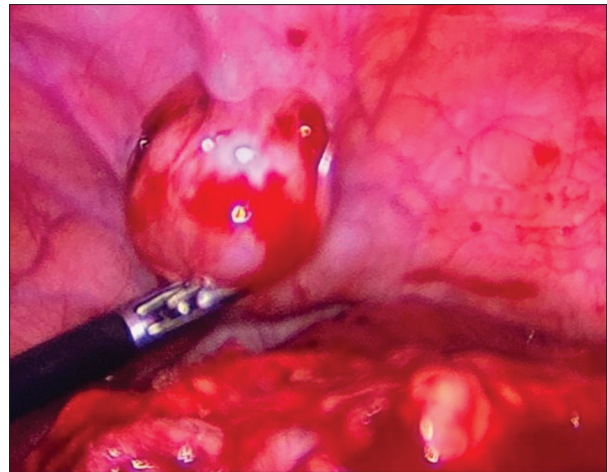
### CASE DETAILS

A 27-year-old female presented to the surgical outpatient department with chief complaints of lower abdominal pain and vomiting for 7–8 days. She also reported a history of diarrhea a few days back. She had malaise, weakness, evening rise of temperature, and weight loss. On physical examination, the abdomen was distended but soft and not tender. Her vitals were stable. Her respiratory and cardiovascular system examinations were unremarkable. Her menstrual cycles were regular. Ultrasonography of the abdomen and contrast-enhanced computed tomography scan were suggestive of abdominal tuberculosis predominantly genitourinary tuberculosis. Laboratory examination showed hemoglobin of 8 g/dl, a white blood cell count of 12,370/ $\mu$ L, platelet count of 455,000/ $\mu$ L of blood, and normal renal and liver profile. She was not diabetic and hypertensive. Her viral serology for the human immunodeficiency virus was nonreactive.

A diagnostic laparoscopy revealed a frozen pelvis and incidentally found a well-defined rounded swelling in the suprapubic region in the line of median umbilical ligament at the suprapubic region [Figure 1]. An excisional biopsy demonstrated a well-circumscribed grayish multilocular cystic lesion filled with gelatinous material measuring 2.5 cm  $\times$  2.5 cm  $\times$  2 cm [Figure 2a]. Histologically, sections revealed a cystic nodule lined by mucin-secreting columnar epithelium with basal nuclei, abundant apical mucin, and focal pseudostratification, but no nuclear atypia was seen [Figure 2b]. The cystic wall was composed of fibrocollagenous, muscular wall, and adipose tissue, and the lumen contained proteinaceous and myxoid materials with calcification. A diagnosis of urachus mucinous cystadenoma was confirmed. The postoperative course was unpretentious, and the patient was discharged on the 4<sup>th</sup> postoperative day. The patient is in follow-up without any complaints.

### DISCUSSION

Urachal masses are relatively uncommon in clinical practice and remain undiagnosed for an extended period because of their obscured location. These lesions are often identified as an incidental finding or at an advanced stage of malignancy. The differential diagnosis



**Figure 1:** Well-defined rounded swelling in the suprapubic region in the line with median umbilical ligament

includes both neoplastic and nonneoplastic conditions. Mucinous cystadenomas represent a small percentage of urachal mucinous cystic neoplasms with a possibility of malignant transformation.<sup>[5,9]</sup> Table 1 summarizes the demographic characteristics, clinical presentations, and histopathologic features of mucinous cystadenomas in order to differentiate them from a MCTLMP and mucinous cystadenocarcinoma.

Urachal remnants may persist in approximately 32% of adults.<sup>[16]</sup> Although the origin and pathophysiology of urachal tumors are not fully understood; it is believed that the malignant transformation of the columnar or glandular metaplastic epithelium of the urachus results in urachal carcinoma.<sup>[17]</sup> Prophylactic excision of benign urachal lesions has been recommended because the presence of urachal remnant predisposes to malignancy.<sup>[7]</sup>

Urachal mucinous cystadenoma is a rarely reported neoplasm and can be presented as lower abdominal mass,<sup>[7,9]</sup> lower abdominal pain,<sup>[9,10]</sup> urinary frequency,<sup>[8]</sup> and sometimes hematuria.<sup>[9]</sup> They have the potential to rupture and develop into pseudomyxoma peritonei.<sup>[9]</sup> Histology described in this case report confirms the diagnosis of mucinous cystadenoma that lacked the evidence of nuclear atypia and invasion. To our knowledge, this is the 10<sup>th</sup> reported case of urachal mucinous cystadenoma in the English literature.

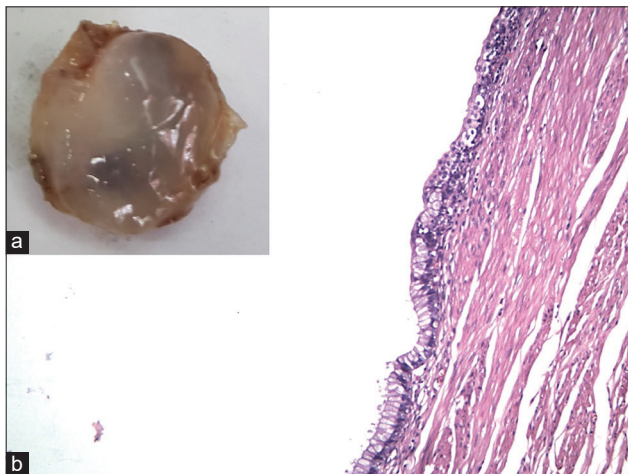
### CONCLUSION

Although rare, urachal mucinous cystadenomas should be included in the differential diagnosis of suprapubic lower abdominal mass. The patient should be followed clinically after excision for the evidence of local recurrence.

**Table 1: Clinicopathologic characteristics of urachal mucinous cystadenoma**

References	Age	Sex	Presentation	Pathology		Diagnosis
				Gross	Microscopic	
Hull and Warfel <sup>[6]</sup>	32	Male	Incidental finding	14 cm, multilocular	Columnar cells with focal cellular and nuclear stratification; nuclei had pleomorphic contours	Urachal cystadenoma
Schell et al. <sup>[7]</sup>	70	Female	Lower abdominal mass	15.5 cm, multilocular	Glandular epithelium that lacked pseudostratified and villous areas; no foci of dysplasia	Mucinous cystadenoma of undifferentiated malignant potential
Saha et al. <sup>[8]</sup>	60	Female	Increased frequency of urine	3 cm, unilocular	Glandular epithelium that lacked pseudostratified and villous area; no foci of dysplasia	Mucinous cystadenoma
Amin et al. <sup>[9]</sup>	59	Male	Adnominal mass and hematuria	7 cm, NA	Single layer of mucinous columnar epithelium with no atypia	Mucinous cystadenoma
Amin et al. <sup>[9]</sup>	33	Male	Cyst rupture and abdominal pain	13 cm, NA	Single layer of mucinous columnar epithelium with no atypia	Mucinous cystadenoma
Amin et al. <sup>[9]</sup>	24	Female	Microhematuria	1.5 cm, NA	Single layer of mucinous columnar epithelium with no atypia	Mucinous cystadenoma
Amin et al. <sup>[9]</sup>	42	Female	NA	5 cm, NA	Single layer of mucinous columnar epithelium with no atypia	Mucinous cystadenoma
Gupta et al. <sup>[10]</sup>	15	Female	Lower abdominal pain	4.5 cm, unilocular	Mucinous epithelium lining a cyst; no invasion	Low-grade mucinous neoplasm with uncertain malignant potential
Wang et al. <sup>[11]</sup>	56	Male	Incidental finding	7.5 cm, multilocular	Single layer of flat epithelium or tall columnar cells with abundant apical mucin and focal pseudostratification; no nuclear atypia	Mucinous cystadenoma
Present case	27	Female	Incidental finding	2.5 cm, multilocular	Pseudostratified mucin-secreting columnar epithelium with no significant nuclear atypia	Mucinous cystadenoma

NA: Not available



**Figure 2:** (a) Well-circumscribed grayish multilocular cystic lesion filled with gelatinous material, (b) mucin-secreting columnar epithelium with basal nuclei, abundant apical mucin, and pseudostratification

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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### Conflicts of interest

There are no conflicts of interest.

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