



# The importance of considering a wide range of differential diagnoses for patients presenting with complaints of urinary incontinence: A case report

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## ABSTRACT

Urinary incontinence (UI) is common in women and is often associated with decreased quality of life. It is important to consider a range of wide differential diagnoses when evaluating a patient presenting with presumed UI. This case describes a patient referred to urogynecology for urinary incontinence caused by a common, benign and usually asymptomatic gynecologic condition: nabothian cysts. However, based on presentation and imaging, there was concern about a more serious condition: adenoma malignum. This case emphasizes the importance of considering a wide range of differential diagnoses and describes several important differential diagnoses associated with urinary incontinence.

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## 1. Introduction

Urinary incontinence (UI) affects approximately 40% of women over the age of 40 [1]. UI can affect women of all ages but the prevalence increases with age. Incontinence is associated with decreased quality of life as well as depression, social isolation, sexual dysfunction and overall morbidity [1].

The evaluation for UI first and most importantly includes history and physical exam. A comprehensive history includes a directed evaluation of current voiding habits and fluid intake, most commonly obtained with a voiding diary. A detailed physical exam includes a neurologic exam, pelvic exam and basic urologic exam, including postvoid residual. During the pelvic exam, UI can be confirmed when urine is visualized to be excreted through the urethra during provocation.

It is important to consider a wide range of differential diagnoses when evaluating a patient with potential UI [2]. Consideration should be given to systemic diseases such as diabetes mellitus, obstructive sleep apnea, and neurologic conditions which can affect urinary function. Cystitis, constipation, functional and cognitive impairment as well as some medications can cause urinary symptoms. Urinary tract fistulas, urethral diverticulum, and ectopic ureter also need to be considered in the differential diagnosis. Urinary tract malignancy and other

gynecologic conditions should also be considered. Here we present the case of a patient referred to urogynecology with a complaint of urinary incontinence caused by a common, benign and usually asymptomatic gynecologic condition.

## 2. Case

A 51-year-old woman, gravida 2, para 2, was referred to urogynecology with a three-year history of urinary incontinence, with leakage occurring with coughing, laughing, sneezing, movement and also insensibly. She stated that she would wear a tampon which would keep her dry in the morning and then would soak through 3–4 pads per day. She reported regular menses, regular bowel function and had no sexual complaints, with one lifetime partner. She had a medical history of anemia, hypertension, hyperlipidemia and kidney stones. Her surgical history included two cesarean sections and an endometrial ablation 8 years prior to presentation. She had regular annual gynecologic care with a history of all normal pap smears with her primary care provider.

Her initial speculum exam revealed profuse watery discharge in the vagina, with a normal-appearing cervix. Both the high volume and appearance of fluid in her vagina was similar to the appearance of a genitourinary tract fistula, and thus her bladder was back-filled with betadine-stained saline with no excretion into the vagina. With a full bladder under provocation she had no excretion of fluid through the urethra. Her urinalysis was negative. A pyridium tampon test for a

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possible ureterovaginal fistula or ectopic ureter was then performed for five days and was negative.

With concerns for possible hydrops tubae profluens, she underwent a transvaginal ultrasound which demonstrated several large nabothian cysts, the largest being 14 mm in size, but no adnexal masses (Fig. 1). She underwent a cervical cone biopsy, diagnostic laparoscopy, and bilateral salpingectomy. Tissue exam revealed no significant cervical pathology and normal fallopian tubes. She had no change in her symptoms. During this time her primary care provider had treated her for possible chronic endometritis with antibiotics with no change in symptoms.

A CT urogram (Fig. 2) showed "multilocular cystic masses within the cervix and there is suggestion of enhancing solid components...adenoma malignum of the cervix is strongly considered within the differential." Total vaginal hysterectomy was attempted, during which several cysts visualized in the cervix making it difficult for clamp placement. A cervical cyst did rupture and there was limited cervical tissue available for retraction. Due to concern for possible risk of malignancy, the uterus was not morcellated and the hysterectomy was completed via an abdominal approach. She had an uncomplicated post-operative course with immediate resolution of her profuse watery discharge. Her final pathology report was confirmed by two pathologists to be benign, with nabothian cysts reported throughout the cervix.

### 3. Discussion

This case demonstrates the importance of having a broad range of differential diagnoses for women presenting with symptoms of UI. It highlights the importance of a full pelvic exam prior to initiation of treatment. With the appearance of profuse watery discharge within the vaginal vault, the differential diagnosis for this patient included other urologic and gynecologic conditions.

There are multiple urologic etiologies that present with symptoms similar to UI. One example of this is a genitourinary tract fistula. Vesicovaginal and ureterovaginal fistulas can present as painless urinary leakage from the vagina. These fistulas most commonly occur as a complication of obstetric or gynecologic surgery [3]. They can also occur from malignancy, radiation, and rarely are spontaneously from urinary calculi or inflammatory bowel disease [4–6].

An ectopic ureter can present similarly with painless urinary leakage, depending on its location. An ectopic ureter is a ureteral orifice that drains in a location other than the trigone of the bladder [7]. Symptoms of an ectopic ureter depend on location of the ureteral opening and gender of the patient. If the ectopic ureter opens into the vesical neck, urethra or vagina, incontinence can be present in females.

There are also multiple gynecologic etiologies that present with symptoms similar to UI. Chronic endometritis can present with vaginal discharge that can be mistaken for urinary incontinence. Chronic endometritis will often present with pain and abnormal bleeding or spotting. In order to diagnose this, an endometrial biopsy and culture can be performed. The presence of plasma cells in the endometrial stroma is diagnostic for chronic endometritis [8]. If the culture is positive for any organism, should then the patient should be treated accordingly [8].

The classical pathognomonic presentation for fallopian tube cancer is intermittent, colicky pain relieved by a sudden watery discharge from the vagina. This is otherwise known as hydrops tubae profluens. The most common clinical presentation is abnormal vaginal bleeding or discharge, followed by abdominal pain and a palpable pelvic and/or abdominal mass [9].

The differential diagnosis that was most concerning in this case was adenoma malignum, as suggested by her imaging evaluation. Adenoma malignum, also known as minimal-deviation adenocarcinoma, is a rare variant of mucinous adenocarcinoma of the cervix. The prevalence is about 3% of all cervical adenocarcinomas. An unfavorable prognosis has been reported for patients with adenoma malignum because it disseminates into the peritoneal cavity even during the early stage of the disease and responds poorly to radiation or chemotherapy. Due to typical location of these lesions, deep in the endocervix, it is difficult to diagnose based on cytology [10]. On imaging, adenoma malignum appears as a "multicystic lesion with some solid components" [11]. Benign cystic lesions can often mimic adenoma malignum, including nabothian cysts [11]. The most common initial symptom is a watery discharge. This is due to secretions of the tumor itself [12]. Due to adenoma malignum's poor prognosis, it is important to diagnose as early as possible. It is difficult to diagnose with imaging, as this case demonstrates, because adenoma malignum can resemble benign pathology like

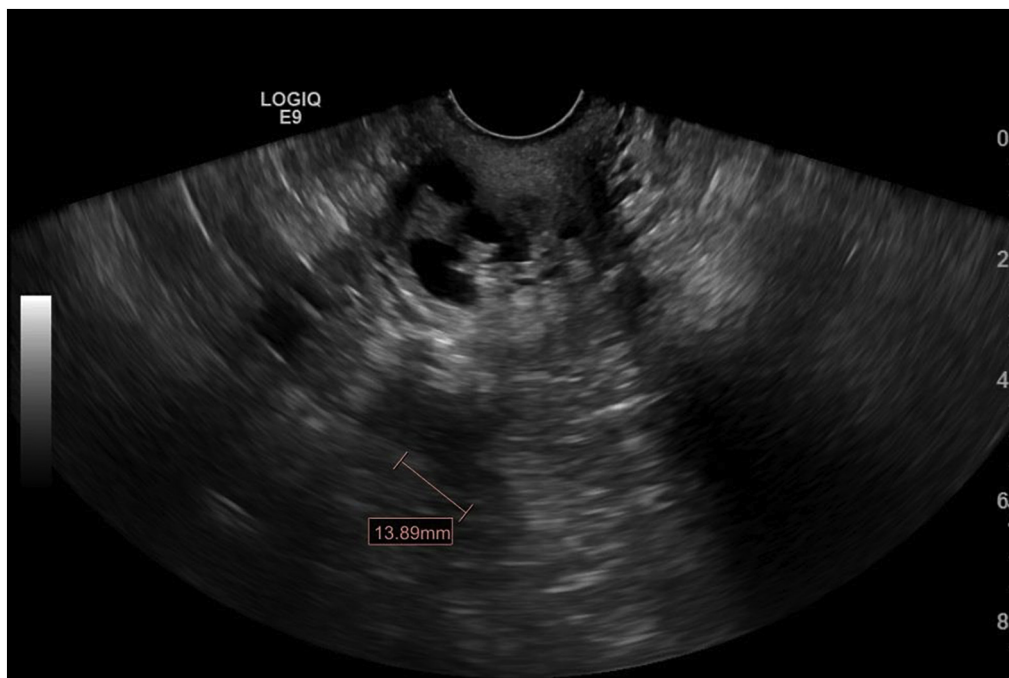
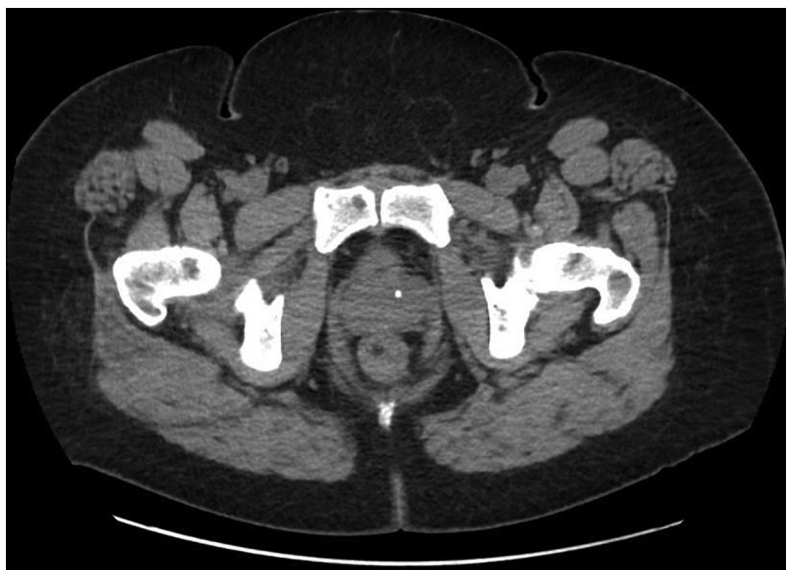


Fig. 1. Transvaginal ultrasound demonstrating multiple cystic structures.



**Fig. 2.** CT Urogram with multilocular cystic masses within the cervix. There is suggestion of enhancing solid components in the figure above.

nabothian cysts. Pathologic evaluation is required for definitive diagnosis.

Nabothian cysts are retention cysts of the uterine cervix and are a result of chronic cervicitis [13]. Nabothian cysts are usually asymptomatic and do not require treatment. Their prevalence was noted to be approximately 12% based on MRI findings [14]. The columnar epithelium secretes mucus which can present as watery discharge [13]. Okamoto et al. explained that “a solid component surrounding or separating multiple cysts is considered a clue in distinguishing adenoma malignum from benign lesions” [13]. The MR imaging findings of both diseases overlap [13]. Few case reports note thin watery discharge as a symptom of nabothian cysts, although this is not common [15].

As demonstrated above, there are several possible considerations when evaluating a patient with the chief complaint of UI. Through a detailed history and physical exam, health care providers are able to narrow the differential diagnoses presented above in order to better identify the correct diagnosis. This case was challenging as it was presumed to be UI based on the patient’s presentation. Then subsequent imaging suggested the possibility of adenoma malignum, which was extremely concerning for both the provider and the patient. However, the final diagnosis was a benign condition, nabothian cysts, causing copious discharge. The high prevalence of UI can cause many providers to mistakenly diagnose this condition without looking into other possible diagnoses. As this case demonstrates, it is important to consider a wide range of differential diagnoses in order to provide patients with the most efficient as well as the safest care.

#### Contributors

Katelyn E. Tondo-Steele drafted the original manuscript.  
Nicole M. Book contributed to the revision of the manuscript.

#### Conflict of Interest

The authors declare that they have no conflict of interest regarding the publication of this case report.

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#### Patient Consent

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#### Provenance and Peer Review

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