

## THE GREAT PRETENDER: URETHRAL LEIOMYOMA POSING A DIAGNOSTIC CONUNDRUM - A CASE REPORT

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### ABSTRACT

#### Background

Acute urinary retention (AUR) is a common urological emergency, but it is relatively rare in females. The management of female AUR varies due to the diversity of potential underlying causes, often leading to a lack of consensus in treatment protocols. This case highlights a rare cause of AUR in a female patient, presenting a unique diagnostic challenge.

#### Case presentation

A 35-year-old female presented to an outside outpatient department (OPD) with complaints of sudden urinary retention, abdominal pain, painful menses, and a mass protruding from the urethra. Examination revealed a tender, non-reducible mass of 5 x 3 cm at the 12-3 o'clock position of the urethra, with a per urethral catheter in place. Pelvic MRI indicated a well-defined, nodular lesion with altered signal intensity along the anterior aspect of the urethra, consistent with a benign mesenchymal lesion. The patient underwent surgical excision of the mass under regional anesthesia. Histopathological examination confirmed the diagnosis of urethral leiomyoma.

#### Conclusion

Urethral leiomyomas are rare, benign tumors that can present with symptoms similar to other urethral pathologies, including AUR. Surgical resection is the definitive treatment, with a low risk of malignant transformation but potential for local recurrence.

#### Recommendation

This report emphasizes the need for greater awareness and research into female AUR, especially in developing countries, to improve early diagnosis and management.

**Keywords:** Acute Urinary Retention, Urethral Leiomyoma, Female Urology, Benign Tumors, Surgical Resection, Diagnostic Imaging.

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### INTRODUCTION

Acute urinary retention (AUR) is a common urological emergency, characterized by the sudden inability to void despite a full bladder, often accompanied by significant post-void residual urine volume and, in some cases, suprapubic pain. While AUR is well-recognized in men, its occurrence in women is relatively rare and less understood. Female urinary retention (UR) can result from a wide variety of causes, which can be categorized into neurological, obstructive, pharmacological, and psychogenic factors. Neurological causes may include spinal cord injuries, multiple sclerosis, or diabetic neuropathy, while obstructive causes encompass conditions such as pelvic organ prolapse, urethral strictures, or tumors. Pharmacological causes, such as medications that inhibit bladder contraction (e.g., anticholinergics and opioids), and psychogenic causes

involving mental health conditions further complicate the diagnosis and management of UR in women (1).

Despite its clinical relevance, the incidence of UR in women remains poorly documented. A Scandinavian study reported an incidence of 7 cases per 100,000 women annually, with a striking male-to-female ratio of 13:1. This disparity in incidence has led to limited research on female UR, which is often described in small case series or isolated reports of rare etiologies. Unlike male UR, which has been extensively studied, the diverse and uncommon causes of female UR contribute to the lack of standardized management strategies and make treatment outcomes more unpredictable (2).

Among the rare causes of female UR is urethral leiomyoma, a benign smooth muscle tumor of the urethra. Urethral leiomyomas are exceptionally rare and pose a significant diagnostic challenge due to their similarity in clinical presentation to other urethral lesions such as

polyps and squamous carcinoma. Diagnostic approaches typically include clinical history, physical examination, and imaging studies like ultrasound or MRI to assess the tumor's size, location, and characteristics. Biopsy and histopathological examinations are often necessary to confirm the diagnosis and differentiate between benign and malignant lesions. Surgical excision remains the standard treatment for urethral leiomyomas, with a generally favorable prognosis, although recurrence is possible (3).

This case report aims to highlight the clinical complexity of female UR, the diagnostic challenges posed by rare etiologies such as urethral leiomyoma, and the need for further research and improved management strategies for female UR.

### CASE PRESENTATION

A 35-year-old female, previously healthy, presented with a sudden onset of acute urinary retention one month ago at the Department of Urology, Himalayan Institute of Medical Sciences, Dehradun, Uttarakhand. The patient reported associated abdominal pain and the appearance of a progressively enlarging, painful mass protruding per introitus. The pain was aggravated during straining for micturition, but despite the discomfort, the patient was unable to void. There was no history of trauma, fever, or

burning micturition, and her last successful voiding occurred earlier on the day of symptom onset. The patient initially sought medical attention at an external hospital, where a per urethral catheter (PUC) was inserted to facilitate bladder drainage. However, the symptoms persisted, and she later presented to our outpatient department (OPD) with similar complaints.

Her medical history was non-contributory, with no prior episodes of urinary retention or related symptoms. She denied any history of tuberculosis, asthma, diabetes mellitus, hypertension, unexplained weight loss, allergies, or recent sexual activity. The patient was menstruating at the time of presentation and had a history of two previous children, both delivered via normal vaginal delivery. She was not on any regular medications, and there was no relevant family history of urological or neurological disorders.

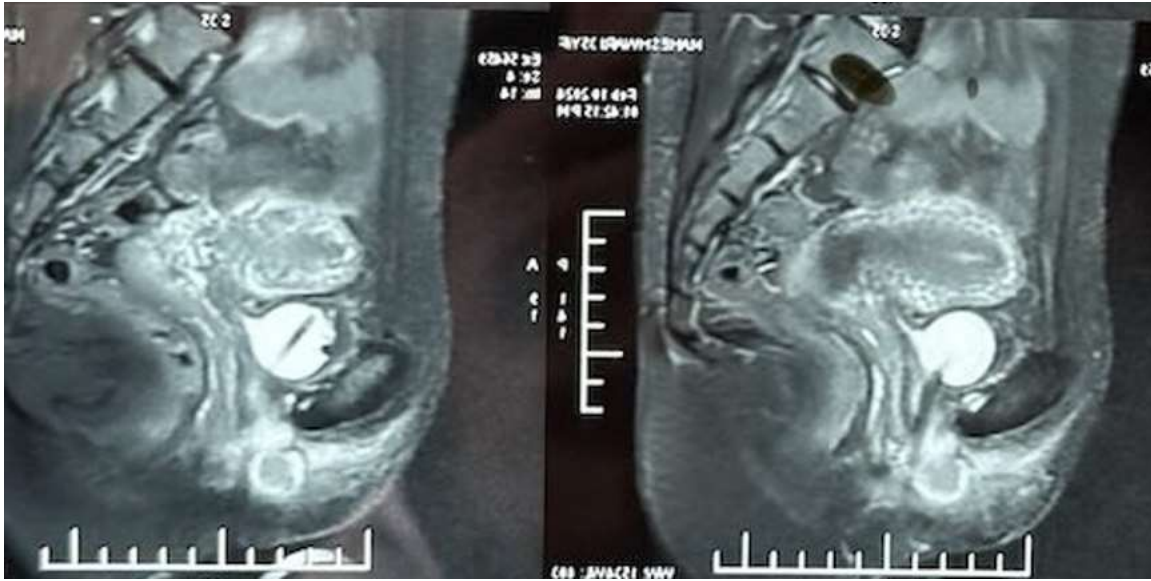
On physical examination, a PUC was in situ. A large, tender swelling measuring 5 × 3 cm was observed protruding from the lateral wall of the urethra between the 12 and 3 o'clock positions (Figure 1). The swelling was non-discharging and had restricted mobility, suggesting a firm, localized lesion. A per vaginal examination revealed no abnormalities, and no signs of prolapse or pelvic masses were noted. Based on the clinical findings, further imaging studies were planned to assess the lesion's characteristics and to guide appropriate management.



**Figure 1: Urethral mass about the urethral meatus**

A transperineal ultrasound revealed a round to oval lesion measuring 3.1 × 1.7 cm on the ventral aspect of the urethra, located close to the Foley bulb within the bladder. The imaging also noted a bulky uterus with 1.8 cc of fluid present in the endometrial cavity, which raised the possibility of a concurrent gynecological condition.

Furthermore, MRI imaging demonstrated a well-defined, nodular lesion with altered signal intensity along the anterior aspect of the urethra, which was indicative of a benign mesenchymal lesion. These imaging findings provided crucial information for guiding the management and surgical planning (Figure 2).



**Figure 2: MRI suggestive of the mesenchymal origin of the tumor.**

The patient underwent surgical excision of the urethral mass under combined regional and local anesthesia. The procedure began with careful delineation of the mass from the urethral mucosa at its base after retracting the Foley catheter. Stay sutures were placed at the base to secure the lesion, allowing for precise dissection of the mass in a submucosal plane. The mass was carefully separated from

the surrounding tissues to minimize damage to the urethral structures. After successful dissection, hemostasis was achieved, and the tissue defect was closed with absorbable 3-0 Vicryl sutures. Postoperative recovery was uneventful, and the patient showed good healing (Figure 3).



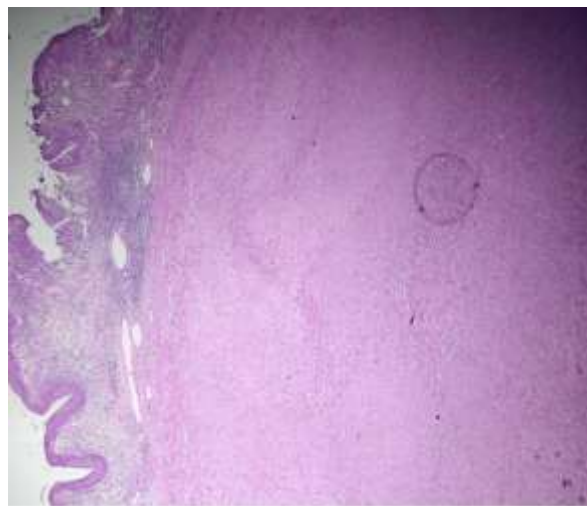
**Figure 3: Post excision of the lesion.**

A gross examination of the excised specimen revealed a polypoidal, pinkish mass measuring 25 × 25 × 8 mm in size (Figure 4). Upon microscopic examination, the mass was found to contain hyperplastic urothelial tissue, with areas of ulceration and granulation tissue indicative of an inflammatory response. The lesion was identified as a well-circumscribed neoplasm composed of intersecting

fascicles of smooth muscle bundles. The tumor cells were spindle to oval-shaped, with vesicular nuclear chromatin and scant fibrillary cytoplasm, consistent with the characteristics of smooth muscle cells. These histopathological features confirmed the diagnosis of a benign mesenchymal tumor, specifically a urethral leiomyoma (Figure 5).



**Figure 4: Excised mass of mass 25X25X8mm.**



**Figure 5: Microscopic Section shows a circumscribed neoplasm and intersection fascicles of smooth muscle bundles with urothelial lining.**

The postoperative recovery was uneventful, with the patient showing no signs of complications. The Foley catheter was removed on postoperative day 6, and the patient was monitored closely during recovery. She experienced mild dysuria for two weeks following the surgery, which gradually resolved without the need for further intervention. This case underscores the importance of recognizing rare causes of acute urinary retention in females, such as urethral leiomyoma, and highlights the need for a thorough diagnostic workup and a multidisciplinary approach to treatment. A tailored surgical management plan was crucial for ensuring a positive outcome and preventing recurrence.

## DISCUSSION

Urethral leiomyoma is an exceptionally rare benign tumor, with fewer than 45 cases documented in the literature. These neoplasms are usually small, with most measuring approximately 1–2 cm in diameter. They are predominantly located in the distal urethra and often originate from the posterior surface of the urethra. Although about 25% of urethral leiomyomas are

asymptomatic, the remaining cases present a range of symptoms, such as the presence of a urethral mass, hematuria, acute urinary retention, recurrent lower urinary tract infections, and vaginal bleeding. Clinical symptoms are closely related to the location of the tumor. Migliari et al. noted that tumors located at the 12 o'clock or 6 o'clock positions often lead to obstructive urinary symptoms, such as difficulty voiding or urinary retention, while leiomyomas that are laterally positioned are more likely to cause irritative urinary symptoms, including frequency and urgency (3).

These tumors primarily affect women of reproductive age, particularly in their third and fourth decades of life, with a marked predominance in females. Urethral leiomyomas are rarely observed in men. Interestingly, tumor size tends to decrease after menopause, prompting speculation that their growth may be influenced by hormonal factors. The average tumor size ranges from 1 to 7 cm, with the proximal urethra and posterior wall being the most commonly affected sites. The clinical presentation of urethral leiomyomas varies depending on the tumor's size and location. Some patients may present with a palpable

urethral mass, hematuria, urinary retention, recurrent urinary tract infections, or vaginal bleeding. However, up to 23% of cases remain asymptomatic and are incidentally discovered during surgeries for other conditions. In the case described in this report, the patient presented with a painful mass located at the distal urethra, which is relatively uncommon (4).

Radiological imaging plays a crucial role in the diagnosis and preoperative planning of urethral leiomyomas. Modalities such as ultrasound, pelvic magnetic resonance imaging (MRI), and computed tomography (CT) scans provide critical information regarding the tumor's location, tissue characteristics, and depth of tissue infiltration. Ultrasound imaging typically shows a well-defined, iso- to hypoechoic, homogeneous mass, which helps in evaluating the lesion's characteristics and guiding the surgical approach (5). MRI is particularly useful for identifying the lesion's exact location, size, and signal characteristics, assisting in distinguishing benign lesions from more aggressive tumors. In this case, the MRI findings were consistent with a benign mesenchymal lesion, providing strong evidence to support the diagnosis of urethral leiomyoma.

Surgical resection remains the definitive treatment for urethral leiomyomas. The choice of surgical approach is tailored to the location of the tumor within the urethra. Tumors located at the external urethral meatus can often be excised through local excision. For tumors located on the posterior urethral wall, a transvaginal approach is commonly employed. Tumors confined to the urethral lumen can typically be excised using a transurethral resection. Larger tumors, particularly those near the bladder neck, may necessitate a more invasive transabdominal surgical approach. Regardless of the technique used, it is essential to preserve the urethral sphincter to avoid complications such as urinary incontinence. The primary goal of surgery is complete excision of the tumor, ensuring minimal tissue damage and preserving normal urethral function. Although malignant transformation of urethral smooth muscle has not been reported, the possibility of local recurrence remains a concern. As such, long-term follow-up is recommended to monitor for any signs of recurrence or complications (6).

This case has been reported following the SCARE (Surgical Case Report) criteria, which ensures a structured and comprehensive presentation of clinical findings, management strategies, and patient outcomes, providing valuable insights into the rare and often overlooked diagnosis of urethral leiomyoma in female patients (7).

## CONCLUSION

Urethral leiomyoma is a rare benign tumor with diverse clinical presentations, often leading to diagnostic challenges due to its rarity and overlapping symptoms with other urethral pathologies. This case highlights the importance of a thorough clinical evaluation, supported by imaging and histopathological analysis, in achieving an accurate diagnosis. Surgical excision remains the

cornerstone of treatment, with careful attention to preserving urethral function to prevent complications. Although the prognosis is generally excellent, close follow-up is warranted to monitor for potential recurrence. This case underscores the need for awareness of such uncommon etiologies of urinary retention, especially in reproductive-age women presenting with atypical symptoms.

## Acknowledgment

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## List of Abbreviations

AUR- Acute urinary retention  
OPD- outpatient department  
MRI- Magnetic resonance imaging  
UR- urinary retention  
PUC- per urethral catheter  
CT- computed tomography  
SCARE- Surgical Case Report

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