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## Case Report

# Urethral calculi: A rare cause of acute urinary retention in women

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## ABSTRACT

Urinary retention is defined as the inability to void; frequently the patient is able to void partially, thus can not completely empty the bladder and diagnosed by increased post-void residual urine (PVR) volumes. It is usually seen in men, but a rare condition in women. The etiological factors may be neurological, anatomical, infectious or pharmacological. It can be encountered after gynecological or incontinence surgery. Urethral calculi associated with acute urinary retention in women is a very rare condition, because of the anatomic structure of female urethra. In this study, a case of acute urinary retention due to the urethral calculus in a middle-aged woman was presented.

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## 1. Introduction

Urinary system calculus is a common problem in patients admitting to the emergency room (ER) and urology polyclinic; ER physicians and urologists are familiar with the acute renal colic of urolithiasis. Contrary to this, symptoms of the stones in the lower urinary tract are nonspecific; such as a sensation of pelvic pressure, penile pain, irritation during micturition, obstructive symptoms like acute urinary retention and sensation of the calculi at the urethra. Urethral calculus is a rare condition, with an incidence of less than 2% of all urinary stone disease presentations in industrialized countries.<sup>1</sup> Acute urinary retention is the situation of unable to void, thus distention of bladder causing pain. It is commonly seen in older men because of the bladder outlet obstruction as a result of benign prostatic hyperplasia, prostate cancer, and urethral stricture. The anatomy, length and the structure of the female urethra allow complete bladder emptying and passage of most of the small size calculi; very few women are diagnosed with urethral stones. This may be a challenge in diagnosis for the physician, the failure to diagnose of an impacted urethral calculus may cause urethral stricture, incontinence and renal insufficiency.<sup>2,3</sup>

We report a woman with acute urinary retention caused by a 17 × 9 mm urethral calculi, without any urinary anatomic abnormality. The case was diagnosed by computed tomography and treated endoscopically.

## 2. Case Presentation

A 64 years old woman admitted to emergency department with a 2-day history of suprapubic pain, frequency, and urethral bleeding. She admitted to polyclinic a week ago with right flank pain, diagnosed by right renal colic and treated by parenteral analgesics. At her physical examination, there was a palpable mass, glob vesicale, in the suprapubic area suggesting acute urinary retention. She had an appendectomy about 30 years ago, no any other surgeries in her anamnesis. Her laboratory tests revealed leukocytosis (12,000/μl) with normal renal function and a normal hemoglobin level, but she could not give urine for microscopic examination. Ultrasonography showed right renal dilatation without any significant finding. Plain x-ray of the abdomen didn't demonstrate an opacity. Non-contrast computed tomography (CT) reported a 17 × 9 mm calculus at the symphysis pubis level, suggesting urethral stone (Fig. 1). Physical examination in lithotomy position revealed a calculus, obstructing the external urethral meatus (Fig. 2).

Neither the calculus could not be extracted manually, nor pushed into the bladder because of the size. Thus endoscopic treatment was planned and performed; under spinal anesthesia.

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Fig. 1. Image of the urethral stone in computed tomography.



Fig. 2. Stone image at vaginal examination.

Pneumatic lithotripsy is performed through a rigid cystoscope, and the stone fragmented into smaller pieces. Some pieces fell out spontaneously while some were extracted with the forceps. The patient discharged the day after the operation. She had no complaints during the 4 months of follow up.

### 3. Discussion

The incidence of urethral stones was reported 7 per 100,000, with the male predominance. The male to female ratio is 13:1.<sup>4</sup> As the reasons for urinary retention, urethral stones cover a small volume of cases in urological practice. It is a very rare entity and consists less than 2% of all urinary stones in industrialized countries.<sup>1</sup> The acute urinary retention may be associated with some neurological (upper motor neuron lesions), anatomical (pelvic

organ prolapsus, urethral caruncle, ureterocele), infectious (genital herpes), inflammatory (vaginal lichen planus/sclerosis) disorders. Some pharmacological (antimuscarinics) may be the cause, as well as some gynecological operations may be the cause of acute urinary retention in women. There are few manuscripts about the urinary retention in women in the literature.

As a rare condition, urethral calculi can be classified into two groups: native or migrant. Native urethral calculi are secondary to abnormalities that predispose to urinary stasis and infection. Because of their slow-growing nature; native urethral calculi do not cause any acute symptoms. Non-specific symptoms such as urethral discharge, dyspareunia, irritative voiding symptoms, urethral bleeding, the feeling of a mass or hardness on the undersurface of the penis or anterior wall of the vagina can be seen.<sup>3,5</sup> Migrant urethral calculi, is more common condition, a calculus formed in the kidney or bladder moves to and blocks the urethra. Migrant calculi can cause pain, feeling of pelvic pressure, acute urinary retention and irritative symptoms.

Abdominal ultrasonography, which is frequently used in ER, have limited role, penile ultrasonography may have a role, however, it is not a standard method in ER without a certain suspicion.<sup>3</sup> Diagnosis depends on physical examination, including vaginal examination and inspection of the external urethral meatus; if the calculus is not visible, the plain x-ray and computed tomography might be the selected imaging modalities. Proper positioning is important at plain x-rays and intravenous urograms, they should cover all the lower abdomen and pelvis. Computed tomography sections should also contain the lower portions of the pelvis.

There is not a standard treatment option because of the rarity. Small stones, which are smaller than 8–9 mm can pass spontaneously. Stones bigger than 10 mm can cause obstruction and surgical approaches may be necessary. Alternatives are endoscopic in situ lithotripsy or pushing the stone back into the bladder and cystolithotripsy. Open surgical procedures carry the risks of impotence, incontinence, urethral stricture, thus it is not the first choice of treatment.<sup>2,6</sup> For potential risks of the urethral mucosal damage, causing urethral strictures, the urologists or ER physicians must be very careful in the manual extraction of the stone.

As a conclusion, acute urinary retention is uncommon in women. Careful evaluation including detailed anamnesis, physical examination, and appropriate imaging should be completed for the differential diagnosis in women. The ER clinicians should keep in mind that urethral calculi can cause acute urinary retention. And therefore, it is recommended that; clinicians extend the usual practice of radiologic imaging not only for kidney, ureters, bladder, and include the lower urinary tract as well.<sup>3</sup> Manual extraction is applicable in limited cases with expert consultation.

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