

Stones in a female urethral diverticulum

Zackaria Ba * , J.Benjaafar marrakchi, A.Zouhair, R.ouaddane Alami, M. Ahsaini, S.Mellas, J.EL Ammari, MF. Tazi, MJ EL Fassi and MH. Farih

Department of urology, University Hospital Center Hassan II of Fez, Morocco.

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Abstract

Urinary stones in female urethral diverticulum are rarely seen. We report a 52-year-old woman who presented with irritative lower urinary tract symptoms and recurrent infections. The diverticulum was approached via vaginal route and the extraction of the stone was successful. The patient has been well, with no dysuria, dyspareunia, incontinence for 3-months follow-ups.

Keywords: Female; Urethral diverticulum; Calculus; Incontinence; Cyst.

1. Introduction

The incidence of urolithiasis in female urethral diverticulum is rare and has a very low occurrence rate. The topic of the etiology of female urethral diverticulum has sparked debate for numerous years [1] and continues to be a controversial subject.

Urethral diverticulum, a condition rarely seen in females due to their short length, can cause symptoms such as dyspareunia, dysuria, recurrent infections and urinary incontinence. Bladder stone formation is less likely to occur in individuals with this condition.

We report a case of female urethral diverticulum with stones.

2. Case report

A 52-year-old woman presented to our department with a 2 years history of recurrent urinary infections. The patient also complained of irritative lower urinary tract symptoms, lower abdominal pain, dysuria without urinary incontinence. Her past medical history, surgery for the treatment of ureteropelvic junction syndrome 3 years ago. She was on no home medications. We decided to have further evaluation considering the persistence of symptoms despite medical treatment.

Upon conducting a pelvic examination, we detect a grade 2 vaginal cystocele (Fig. 1) and also observe a solid lump on the urethra floor during palpation. Subsequently, an enhanced abdomino-pelvic computed tomography (CT) scan is carried out, which uncovers the presence of several stones forming within the urethra (Fig. 2). In order to further investigate, a cystourethroscopy is performed and it reveals the existence of a single diverticulum opening at the back wall of the urethra (fig 3).

* Corresponding author: Zackaria Ba

Laboratory tests at admission showed a urinary infection caused by E.coli, which had been treated with an oral antibiotic for 2 days prior to surgery. The patient's vital signs were within normal range. Surgery was performed under general anesthesia. Before starting the procedure, a Foley catheter was inserted to isolate the urethra. The median vaginal wall was incised, measuring 3 cm. The diverticulum was punctured and dissected using electrocautery and surrounding tissue (fig 4). Silk sutures were used to mark the punctured area of the diverticulum (at 12, 3, and 9 o'clock positions). The diverticulum, containing stones, was then able to be retracted. Finally, a diverticulectomy was carried out.

After surgery the Foley catheter was kept in place for 2 weeks, intravenous antibiotic therapy with 3rd generation cephalosporin was added (2 g every day) and continued for 5 days. An uroflowmetry was done and showed good voiding pattern (peak flow rate 21 mL/sec, voided urine volume 230 mL and residual urine volume 10 mL) without de novo stress urinary incontinence.

The evolution at 3 months was marked by a significant regression of irritative lower urinary tract symptoms without any episode of urinary infection.



Figure 1 A urethral diverticulum on clinical examination before surgery



Figure 2 Computed tomography shows large calculi in the urethral diverticulae

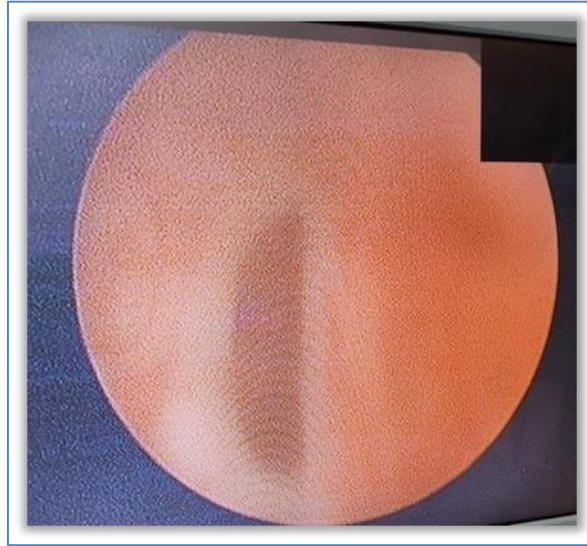


Figure 3 Cystourethroscopy showed orifices of diverticulum

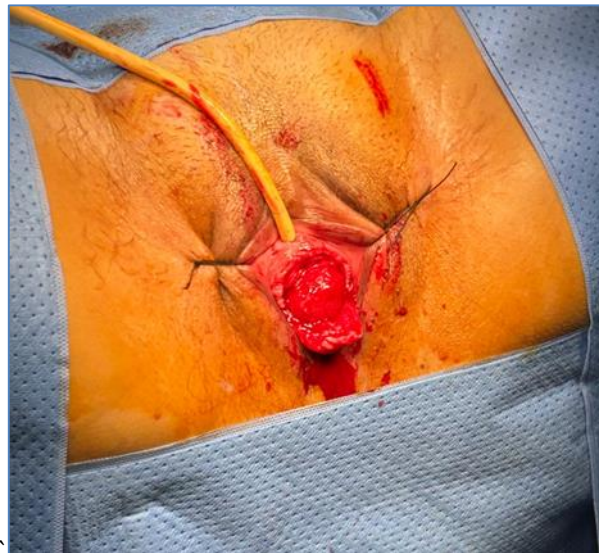


Figure 4 An urethral diverticulum after dissection

3. Discussion

Urethral diverticulum in women is a mystery, with no known cause (1). Theories suggest that chronic blockage and/or bursting of infected glands near the urethra might be to blame(2:3). Additionally, recurring infections, trauma during childbirth, and past surgeries in the vaginal or urethral areas increase the risk of developing a urethral diverticulum.

Patients with urethral diverticulum were traditionally believed to experience the "3Ds": dribble (post-void), dyspareunia, and dysuria (4). Generally, individuals between 30 and 60 years old present with symptoms such as frequent and/or urgent dribbling, localized pain and dyspareunia, dysuria, and urinary incontinence. It appears that the size of the diverticulum does not affect the occurrence of symptoms.

A palpable hard mass on the floor of the urethra is the primary indication of a calculus in the diverticulum [5]. Detecting a firm, palpable mass in the fundus of the urethra is the key clue for diverticular stones [6]. Confirming the presence of a urethral diverticulum and its contained calculus is crucial and cystourethrography can help with this. However, it may not always be enough as the contrast with the sack may not be sufficient [7]. Therefore, a good option would be to get a CT scan or an MRI.

Providing detailed information on the location, number, size, structure, and communicating sites of the diverticulum, MRI is a reliable diagnostic tool for urethral diverticulum. With reported sensitivity, specificity, PPV, and NPV of 100%, 83%, 92%, and 100% respectively, MRI accurately classifies this condition.

There are various options available for addressing urethral diverticulum, including open surgical procedures and endoscopic approaches. Both methods involve either removing the diverticulum or repositioning it within the vagina. (8) It is crucial to conduct a thorough preoperative assessment when dealing with calculus diverticulum. This evaluation should encompass understanding the location, size, number, and anatomy of the urethral diverticulum to minimize the risk of complications like urethral stricture, urethrovaginal fistula, and sphincter injury-related incontinence.

We hypothesized that surgical resection would successfully achieve satisfactory long-term management of diverticulum, preventing symptoms from recurring. Conservative treatment, while relieving symptoms in most cases, does not provide prevention against future symptoms. Additionally, it is important to confirm the number, location, and size of diverticulum before surgery to avoid complications such as urethral stricture, urethro-vaginal fistula, and incontinence resulting from sphincter injury.

4. Conclusion

Vaginal surgical resection is a highly successful approach for treating urethral diverticula in women, leading to high patient satisfaction. Diagnosis of this uncommon condition is established best through clinical examination and T2 pelvic MRI, which can also help identify the formation of stones.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of ethical approval

The present research work does not contain any studies performed on animals/humans subjects by any of the authors.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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