

Endourology

Female urethral diverticulum containing large calculi

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ABSTRACT

Urinary stones in female urethral diverticulum are rarely seen. We report a 79-year-old woman who presented with irritative lower urinary tract symptoms and vaginal cystocele with incontinence. The urethral stones in the diverticulum were successfully extracted through the trans-urethral route and anterior tension-free vaginal mesh was applied one month later. The patient has been well, with no lower urinary symptoms or incontinence for 4 months.

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Introduction

Although the estimated prevalence of urethral diverticulum in adult females ranges from 0.6 to 6%,¹ many cases are asymptomatic and not diagnosed. Typical symptoms are urination difficulty, urinary incontinence, dyspareunia, and dripping after urination. Some cases may involve infection, calculus, and/or malignant tumors.² Due to the short urethra and low probability of bladder stone formation, urinary stones in female urethral diverticulum are rare. We report a case of female urethral diverticulum with stones.

Case presentation

A 79-year-old multiparous woman presented with irritative lower urinary tract symptoms lasting for 1 week. She had hypothyroidism, hypertension, dyslipidemia, and no relevant surgical procedures. On local examination, a non-tender firm mass of approximately 3 cm × 3 cm over the anterior vaginal wall was palpable with gritty sensation on touch, and a smaller hen's egg-sized vaginal cystocele with incontinence appeared with abdominal pressure. Her routine urine was cloudy, and *Enterococcus faecalis* and *Escherichia coli* were cultured in her urine. On whole abdominal ultrasonography, no stones were found in the kidney,

ureter, or bladder. On cystourethroscopy, bladder and bilateral ureteric orifices were normal, and 2 orifices in the posterior urethra had visible stones. Drip infusion pyelography demonstrated no abnormal urinary tract or obstruction of urine flow. Plain film of the pelvis revealed large stones under the lower edge of the symphysis pubis (Fig. 1). No anatomical abnormality in the urinary tract or reproductive organs except the 3-cm × 3-cm calcification around the urethra was observed on contrast enhanced CT (Fig. 2). Thus, the final diagnosis of urethral diverticulum with retained large stones associated with vaginal cystocele was made. First, trans-urethral lithotripsy was planned. We crushed and extracted large or small stones in the urethral diverticulum using LithoClast™ (Boston Scientific, Swiss). Then, anterior tension-free vaginal mesh (TVM) was applied one month later. The postoperative period was uneventful and at the 4-month follow-up, the patient was symptom-free and voiding well.

Discussion

The cause of female urethral diverticulum remains largely unknown. Possible etiologies include chronic infection of the peri-urethral glands, childbirth trauma, and iatrogenic lesions after urethral manipulation.³ The main symptoms are recurrent urinary tract infections, post-void dripping, and leakage of urine or purulent discharge by movement, which is caused by the emptying of the diverticular lumen.

The frequency of calculus in urethral diverticulum is approximately 1.5%–10%,⁴ and the causes of its association with calculus

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Fig. 1. Plain film of the pelvis shows stones under the lower edge of the symphysis pubis.

include stagnation and infection of urine, invagination of upper urinary tract stones, and formation of secondary diverticulum of urethral stone. In this case, the patient was female with a short and relatively large inner urethra who had no history of upper urinary stones. Therefore, urinary tract infections may cause urinary stones in the urethral diverticulum.

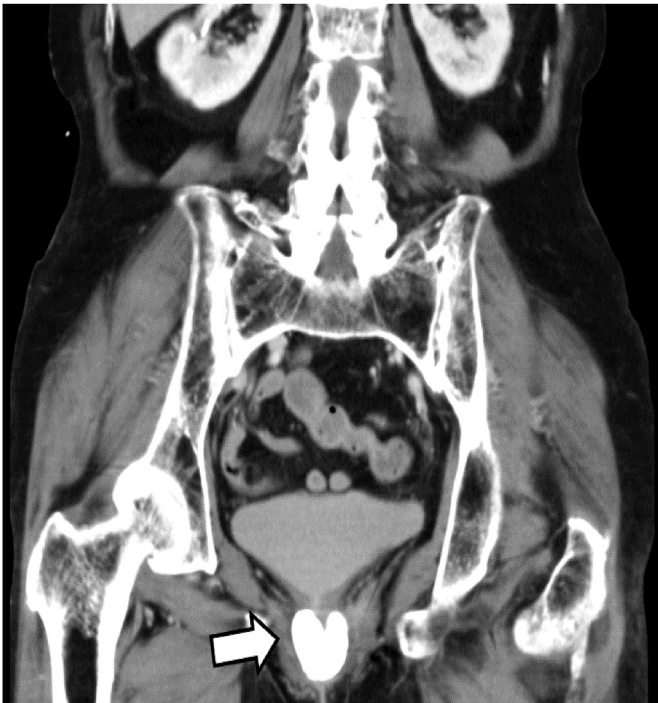


Fig. 2. Computed tomography shows diverticulum with large calculi in the urethral diverticulum.

Diagnosis of urethral diverticulum was first performed by visual inspection and intraluminal examination to confirm an opening to the urethra (the part of the urethra at one-third of the rear wall is the most favorable part of the opening) by cystourethroscopy or diverticula contrast inspection.

Open surgical and endoscopic approaches have been described for the treatment of urethral diverticulum. They include excision of the diverticulum or marsupialization of the diverticular sac into the vagina.⁵ As treatment for diverticulum with calculus, preoperative evaluation for surgical correction, including knowledge of the location, size, number, and anatomy adjacent to the urethral diverticulum is important to prevent complications such as urethral stricture, urethro-vaginal fistula, and incontinence due to injury of the sphincter. In this case, diverticulectomy was not performed because stones were completely extracted by trans-urethral lithotripsy and no symptoms appeared after the tension-free vaginal mesh procedure.

Conclusion

Trans-urethral lithotripsy following the TVM can be a treatment option for female urethral diverticulum with stones.

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Consent

Written informed consent was obtained from the patient for publication of this case report.

Conflicts of interest

No potential conflict of interest to this article was reported.

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