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Case Report

Rare case of Female Urethral Diverticulum with a Fistulous Communication to the Vagina: An Uncommon Cause of Post-Void Dribbling

PVS Abhishek[1], Anjali Yerrabelly[2], Ausaaf Khaleel ur Rahman[3]

[1]Associate Professor, Department of Radiodiagnosis, Chalmeda Anand Rao Institute of Medical Sciences, Karimnagar, Telangana, India

[2]Resident, Department of Radiodiagnosis, Chalmeda Anand Rao Institute of Medical Sciences, Karimnagar, Telangana, India

[3]Resident, Department of Radiodiagnosis, Chalmeda Anand Rao Institute of Medical Sciences, Karimnagar, Telangana, India

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Corresponding Author: Dr. PVS Abhishek

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Abstract:

Urethral diverticulum is an infrequent paraurethral pathology in females, occasionally complicated by fistulous communication with the anterior fornix of vagina. Such cases may present with atypical lower urinary tract symptoms, leading to delayed diagnosis. We describe a 19-year-old unmarried, nulliparous female who presented with post-void dribbling and intermittent leakage when the bladder was markedly distended. Pelvic ultrasonography, magnetic resonance imaging (MRI) and cystoscopy identified a periurethral cystic lesion with a tract communicating with the anterior fornix. Recognition of this rare entity is essential for appropriate surgical planning and restoration of continence.

Keywords: Urethral Diverticulum, Urethrovaginal Fistula, Post-Void Dribbling, Paraurethral Pathology, Recurrent Urinary Tract Infections.

Introduction

A female urethral diverticulum is a localized outpouching of the urethral lumen, most commonly arising from repeated infection or obstruction of the periurethral glands.[1] Although the condition is relatively uncommon, it can produce a variety of non-specific urological and gynaecological symptoms, including recurrent urinary tract infections, dyspareunia, dysuria, and post-void dribbling [1]

A fistula is an abnormal epithelialized tract connecting two epithelial surfaces. When a urethral diverticulum establishes a fistulous communication with the anterior fornix of vagina, the presentation may mimic that of a primary urethrovaginal fistula [2,3]. This is an exceptionally rare association, particularly in the absence of any trauma, obstetric injury, or surgery.

We report a very rare case of urethral diverticulum with fistulous communication to the anterior fornix of vagina in a young unmarried, nulliparous woman, diagnosed on ultrasound, MRI and cystoscopy.

Case Report

History: A 19-year-old unmarried, nulliparous woman presented with a history of urinary dribbling immediately after micturition and occasional leakage when the bladder was over-distended. The patient denied continuous leakage, dysuria, hematuria. There was no history of pelvic surgery, instrumentation, childbirth, pelvic trauma, or prior pelvic irradiation.

She had irregular menstrual cycles since menarche at 13 years and no episodes of hematuria during menstruation. The symptoms have been present since childhood but were previously attributed to stress urinary incontinence [4].

Past history

- No operative or catheterization history
- No documented congenital anomalies
- Normal growth and developmental milestones

Family history

- Negative for urinary or genital tract anomalies

Personal history

- Mixed diet, normal bowel habits

- No tobacco, alcohol, or recreational drug use

Examination

- The patient was well nourished, with stable vital parameters.
- Abdominal examination was unremarkable.
- External genitalia were normal in appearance.
- Speculum examination revealed normal vaginal mucosa.
- Minimal clear fluid was observed emerging from the anterior vaginal wall following Valsalva manoeuvre.
- No pelvic organ prolapses or sphincter laxity was evident.

Investigations

- Ultrasound: Demonstrated a well-circumscribed, cystic lesion adjacent to the mid-urethra, with normal upper urinary tract anatomy.
- MRI pelvis: Revealed a T2 hyperintense, well-defined, large, cystic lesion arising from the posterior wall of the mid-urethra, consistent with a diverticulum [1] (fig 3). A thin narrow tract is noted extending from the anterosuperior part of diverticular cavity communicating with the anterior fornix of vagina, confirming a fistulous connection [2,3] (fig4).

No Mullerian duct anomalies were detected [5,6].

- Cystoscopic evaluation confirmed the presence of a mid-urethral diverticular ostium on the posterior wall, consistent with ultrasound and MRI findings.

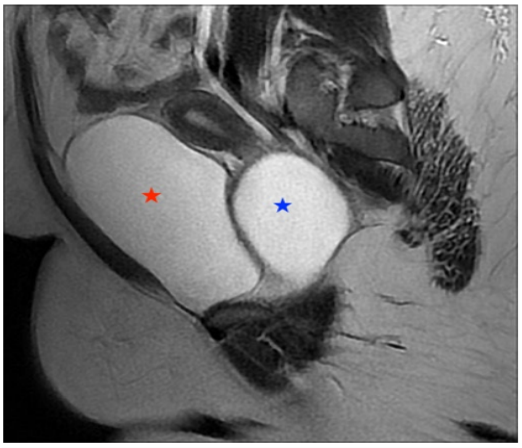

Fig 1: Sagittal T2W MRI Image
shows two homogenous high signal intensity structures (red star represents bladder, blue star represents a diverticulum)

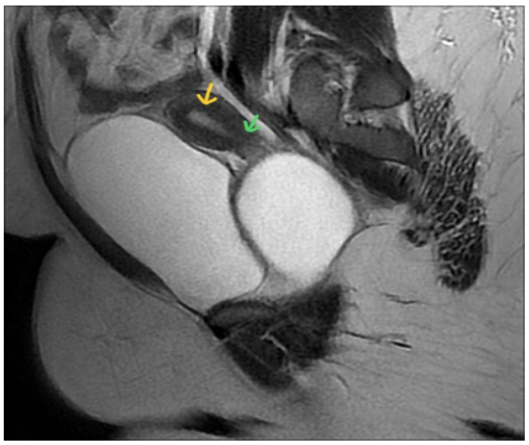

Fig 2: Sagittal T2W MRI Image
shows uterus and cervix are separate from the two fluid filled cavities. (yellow arrow represents uterus and green arrow represents cervix)

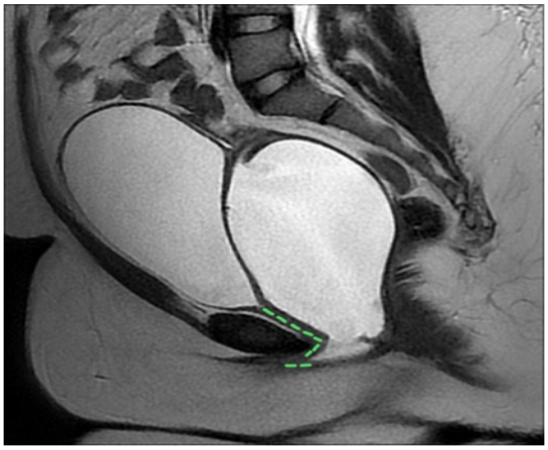

Fig 3: Sagittal T2W MRI Image
shows bladder anteriorly and diverticulum posteriorly with interrupted urethra (GREEN dotted line) which is the origin of urethral diverticulum.

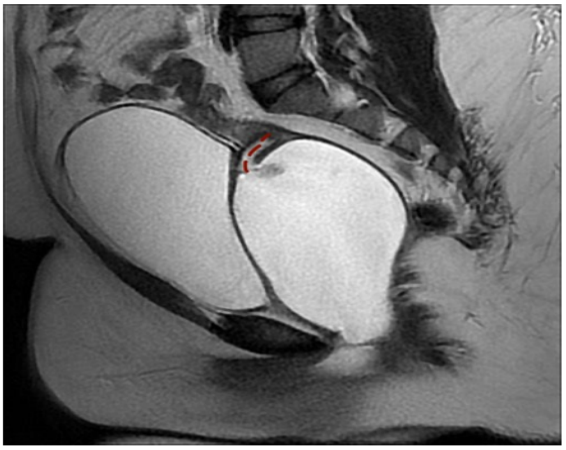

Fig 4: Sagittal T2W MRI Image
shows bladder anteriorly and diverticulum posteriorly with RED dotted line showing fistulous communication of urethral diverticulum with the anterior vaginal fornix.

Discussion

The coexistence of a urethral diverticulum and a urethrovaginal fistula is exceedingly rare [2,3,6]. In this case, the symptoms such as post-void dribbling and leakage with significant bladder filling, can be explained by urine pooling within the diverticulum during micturition and subsequent drainage through the fistulous tract [1,2].

MRI remains the gold standard imaging modality of choice for periurethral pathology, offering excellent soft-tissue contrast and multiplanar capability to delineate diverticular anatomy and associated tracts [1].

Ultrasonography serves as an effective initial, non-invasive evaluation tool, although it is less sensitive for complex fistulous communications [1,7].

Surgical management typically involves complete excision of the diverticulum and closure of the urethral and vaginal defects in multiple tension-free layers [7,8]. Adequate tissue support and preservation of vascularity are critical for preventing recurrence and maintaining continence [7,8].

In addition to surgical challenges, the rarity of this condition often results in misdiagnosis or delayed diagnosis, as symptoms may mimic more common disorders such as stress urinary incontinence, urethrovaginal fistula of obstetric origin, or recurrent urinary tract infections. A high index of suspicion is therefore necessary, especially in young, unmarried, nulliparous women without prior obstetric or surgical history. Failure to identify the diverticular cavity and its fistulous extension may lead to incomplete repair and persistence of symptoms.

Conclusion

Urethral diverticulum with vaginal fistulous communication is a rare but important differential diagnosis in young women with post-void dribbling or leakage at high bladder volumes. High-resolution MRI, supported by ultrasound, is invaluable in defining the lesion and planning definitive surgical repair. Early recognition and intervention can achieve excellent functional outcomes.

Clinicians should be alert to unusual urinary complaints in women who lack common risk factors such as pelvic trauma, obstetric injury, or prior surgery, since an early and accurate diagnosis can greatly influence outcomes. Detailed preoperative imaging with MRI is crucial, as it allows precise delineation of the diverticulum and fistulous tract, helping to avoid intraoperative difficulties and ensuring complete excision with secure, layered closure. When combined with careful surgical technique and coordinated multidisciplinary care, this approach offers the best chance of preserving continence and maintaining long-term quality of life in these uncommon but complex cases.

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