

## Surgical management of a large iatrogenic urethral diverticulum in a male patient: A case report

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### ABSTRACT

Acquired urethral diverticula in male patients are a rare finding. We report a case of a 70-year male with a past medical history of type 2 diabetes who presented with post micturition dribbling and a scrotal mass which was identified as a urethral diverticulum. We also outline the surgical management in this patient and review similar cases reported in the literature.

### Introduction

Urethral diverticula are dilatation communicating with the urethra via a separate orifice, they are more common in females due to weaker anatomical support. Iatrogenic urethral diverticula in males are a rare finding especially with patients without any significant comorbidities. We report a case of a 70-year-old male, with a past medical history of type 2 diabetes, who presented with post micturition dribbling and a scrotal mass which was diagnosed as a urethral diverticulum. We outlined the surgical management in this patient as well as a review of the literature for the management of similar cases.

### Case presentation

A diabetic 70-year-old male initially presented to our clinic with urosepsis secondary to a periurethral abscess following previous traumatic catheterization for acute urine retention. Patient was managed successfully with urethral catheterization, antibiotics administration and abscess drainage using a perineal vertical incision that went uneventful with smooth postoperative period. One year following the procedure, the patient presented with a painless scrotal swelling and complained of post micturition dribbling. An ultrasound scan and urethrogram confirmed that he had developed a penile urethral diverticulum (Fig. 1). This was further evaluated by a flexible cysto-

urethroscopy which showed that he had developed a diverticulum 4 cm from the urethral meatus with a 4cm wide neck and approximately a 500ml capacity. Conservative management was first attempted by advising the patient to manually evacuate the diverticulum. This was not tolerated by the patient who requested to undergo a surgical repair after discussing alternate options. The patient was admitted electively and underwent surgical excision of the diverticulum. The procedure was performed under general anaesthetic and the diverticulum was initially identified using flexible cystoscopy (Fig. 2). A urethral catheter was inserted into the urinary bladder over a guide wire. The diverticulum was dissected via a vertical penile incision then opened. The redundant portion was excised, and the neck was sutured over the catheter in 2 layers then covered by another dartos layer. Postoperatively the patient remained in hospital for 3 days and had IV antibiotics for the duration. The catheter was removed after 4 weeks and the patient voided satisfactorily with no post micturition dribbling and a urethrogram was performed showing a satisfactory outcome (Fig. 3).

### Discussion

Urethral diverticula are saccular dilatations communicating with the urethra. They are more common in females due to the anatomical vulnerability and lack of tissue support compared to males.<sup>1,2</sup> Urethral diverticula are either congenital or acquired. Full urethral wall thickness

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Fig. 1. A urethrogram showing the urethral diverticulum.

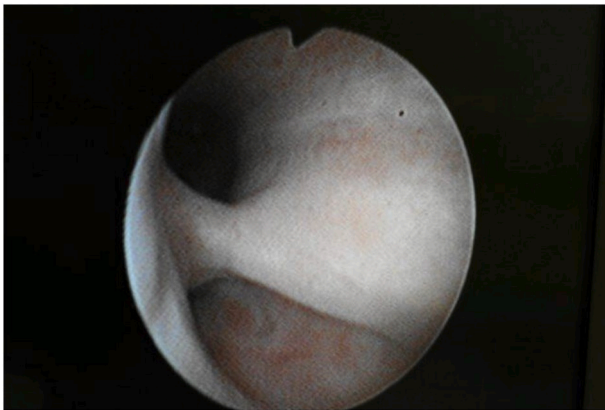


Fig. 2. Intraoperative flexible cystoscopy.



Fig. 3. Post operative urethrogram.

is described in congenital diverticula while the acquired diverticulum is only lined by granulation tissue and lacks a muscle layer.<sup>3</sup>

Congenital diverticula are usually due to anterior urethral valve, intraluminal rupture of periurethral cysts or obstruction due to malunion of urethral segments. Iatrogenic urethral diverticula are slightly more common than their congenital counterparts. They usually develop after urethral trauma whether accidental or iatrogenic such as urethral catheterization or following urological investigations. Other causes include previous urethral surgeries like hypospadias repair, urethroplasty, visualized internal urethrotomy, radiational therapy,

implants such as an artificial urethral sphincter or testicular prosthesis.<sup>1,4</sup>

Patients may present with a variety of symptoms ranging from post micturition dribbling, incontinence, haematuria, urinary tract infection, obstructive urinary symptoms or painless penile or scrotal swelling that increase in size during micturition and can be evacuated by manual compression.<sup>2</sup>

Urethrography is the mainstay in diagnosing male urethral diverticulum and localizing its site along with detecting associated strictures or stones. Penile ultrasound with a 10–12 Mhz linear probe might also be used to confirm the diagnosis. Magnetic resonance imaging can localize the pathology and also comment on surrounding tissues for associated anomalies. Additionally, flexible cysto-urethroscopy is recommended to visualize the diverticulum and detect any associated pathology like diverticular stones. With regards to the common sites of diverticula, congenital urethral diverticula commonly occur in the anterior urethra and with equal distribution between the penile and the penoscrotal and bulbar segments, while iatrogenic diverticula most commonly occur at the penoscrotal junction.<sup>2</sup>

Treatment urethral diverticula should be based on individual cases taking into consideration patient co-morbidities and presence of any associated pathologic findings within the urethra that require intervention like stricture or stone. Conservative management involving manual evacuation of the diverticulum may be tried in asymptomatic cases or cases responding to antibiotics. Endoscopic deroofting to widen the diverticular neck offers a relatively atraumatic and simple solution in a narrow neck diverticulum especially in patient with extensive tissue fibrous or in a large diverticulum that may leave a huge defect if adequately incised. Care should be taken in proximal diverticulum close to the sphincter for the risk of incontinence.<sup>2</sup>

Open surgical intervention aims to completely excise the diverticulum and to restore continuity of the urethra with an additional intervening tissue to prevent urinary fistula. Diverticulectomy with primary anastomosis is usually done using dartos muscle as a second layer, ensuring healthy tissues with good blood supply with tension free sutures. Infections should be treated probably prior any surgical intervention and sometimes it may necessitate a suprapubic urinary diversion till definite repair.<sup>1–3</sup>

Urinary diversion can be a suitable option for patients with neurogenic bladder, especially those who may need frequent urethral catheterization for bladder drainage or in patients with multiple surgeries, anatomical abnormalities or extensive fibrosis from prostatic or pelvic radiation.<sup>5</sup>

Surgical outcomes are usually satisfactory and it was found that complications are more common in acquired more than congenital diverticula. These complications include recurrence, fistula formation and urethral stricture formation.<sup>2</sup>

## Conclusion

Acquired urethral diverticula are rare and their treatment should be based on each individual case. Surgical repair is a good viable option and our case report showed a successful method of surgically treating this condition with a satisfactory outcome.

## Informed consent

Written informed consent was obtained from the patient for their anonymized information to be published in this article by City Hospitals Sunderland Medical photography department.

## Ethical approval

City Hospitals Sunderland does not require ethical approval for reporting individual cases or case series.

### Contributorship

Ala'a Sharaf wrote the first draft of the manuscript. All authors reviewed and edited the manuscript and approved the final version of the manuscript.

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### Declaration of competing interest

The Authors declare that there is no conflict of interest.

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### References

1. Mohan V, Gupta SK, Cherian J, Tripathi VN, Sharma BB. Urethral diverticulum in male subjects: report of 5 cases [Internet] *J Urol*. 1980;123(4):592–594. [https://doi.org/10.1016/S0022-5347\(17\)56037-1](https://doi.org/10.1016/S0022-5347(17)56037-1). Available from.
2. Allen D, Mishra V, Pepper W, Shah S, Motiwala H. A single-center experience of symptomatic male urethral diverticula. *Urology*. 2007;70(4):650–653. <https://doi.org/10.1016/j.urology.2007.06.1111>.
3. Wickman MB, Engel RME. Case of anterior urethral diverticulum in male quadriplegic [Internet] *J Urol*. 1976;116(1):118–119. [https://doi.org/10.1016/S0022-5347\(17\)58707-8](https://doi.org/10.1016/S0022-5347(17)58707-8). Available from.
4. Archer R, Blackman J, Stott M, Barrington J. *Urethral diverticulum*. 2015:125–129. Box 1.
5. Cinman NM, McAninch JW, Glass AS, Zaid UB, Breyer BN. Acquired male urethral diverticula: presentation, diagnosis and management [Internet] *J Urol*. 2012;188(4):1204–1208. <https://doi.org/10.1016/j.juro.2012.06.036>. Available from.