Complex vesical diverticulum, an unusual cause of obstructive uropathy

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ABSTRACT

We report a case of complex bladder diverticulum causing lower urinary tract symptoms and obstructive uropathy with acute kidney injury. The diagnosis is usually based on clinical and imaging findings. Laparoscopic diverticulectomy and transurethral prostate resection were performed with good functional outcomes. We report a case of a large complex bladder diverticulum presenting as obstructive uropathy with voiding symptoms.

1. Introduction

The bladder diverticulum represents a herniation of bladder mucosa through the detrusor muscle. They may be classified as congenital or acquired. Congenital diverticula are due to a detrusor muscle weakness, usually near the ureteral hiatus. Acquired diverticula associated with bladder outlet obstruction, are a frequent cystoscopy finding. Most diverticula are small and asymptomatic and require no treatment. Large bladder diverticula may cause recurrent urinary tract infections, stone formation, ureteral obstruction, and voiding symptoms.

2. Case presentation

A 47-year-old man with a history of bone marrow aplasia was referred by a general practitioner to our department with a weak stream and a sensation of incomplete voiding. He described urine passing as “pisse en Deux” or double voiding. He denied having symptoms of dysuria, haematuria, straining, or urinary incontinence. These obstructive LUTS symptoms were worsening during the last 5–6 months. A physical examination was unremarkable. Blood studies were significant for low platelet count and 1,07 mg/dl creatinine serum level. Urinalysis and urine culture showed no sign of infection. Ultrasonography showed right hydronephrosis (Fig. 1), a large bladder diverticulum with a large post-void residual urine volume and a prostate size of 30 ml. Abdomen radiography also showed right ureterohydronephrosis due to a large bladder diverticulum (Fig. 2). Cystoscopy revealed normal urethra, a small but obstructive prostate, and a large diverticulum at the right posterior bladder wall, connected to another small diverticulum.

A 6 Fr ureteral catheter was placed in the first intervention, and transurethral resection of the prostate was performed.

A CT scan showed a large complex diverticulum with another small adjacent diverticulum causing right hydro nephrosis. The second intervention consisted of laparoscopic diverticulectomy assisted by an endoscopic approach to identify the diverticulum.

After 14 days Foley catheter was removed and a voiding cystourethrogram was performed showing a complete resolution of hydronephrosis (Fig. 3). There were no postoperative complications. The histopathological report showed no evidence of malignancy.

3. Discussion

Bladder diverticula represent a herniation of the urothelium through the detrusor muscle. They may be congenital or acquired. Congenital diverticula are mostly associated with infravesical obstruction and consecutive elevated intravesical pressure during the voiding contraction of the detrusor muscle.

Diagnose evaluation should include intravenous urography or CT scan and cystoscopy to determine the anatomical location of the diverticulum and its relationship to the ureteral meatus.

Most diverticula are small and asymptomatic and require no treatment. However, in some cases, the diverticular size is significant to the point of compromising adjacent anatomical structures. It also can be related to urinary tract infections, stone formation, incomplete voiding, or association with squamous neoplasia due to chronic mucosal irritation. They can also cause vesicoureteral reflux, urinary retention, or ureteral obstruction. Also, transitional cell carcinoma inside the diverticula should be ruled out.

The management of bladder diverticula includes several options,
such as conservative management, endoscopic fulguration, or surgical excision through open, laparoscopic or robotic approaches. The endoscopic treatment is generally reserved for smaller diverticula. A recent series of 39 patients managed with an endoscopic approach showed a significant size reduction of the diverticulum. However, the authors suggest that the surgical management may be necessary in case of procedure fail. A laparoscopic/robotic diverticulectomy has a higher success rate but requires a longer intervention time and larger learning curve. The robotic-assisted bladder diverticulectomy with ureteral reimplantation has also been described as a safe technique with similar outcomes.

As described in our case, the 16 cm diverticulum may cause obstructive uropathy at the level of the right ureter with mild impairment of renal function. In this case, we chose the laparoscopic approach mostly because of the size of the diverticulum.

There seems to be no doubt that infravesical obstruction should be treated in a first-place or simultaneously with the diverticulectomy. Most of the authors described TURP or HOLEP technique as a treatment of the concurrent BPH.

4. Conclusion

A large bladder diverticulum can be a cause of external ureteral obstruction. Imaging and endoscopy play an important role in identifying bladder diverticula. Surgical options include laparoscopic and endoscopic approaches indicated in symptomatic patients.

Declaration of competing interest

There is no conflict of interest associated with this publication.

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