Congenital anterior urethral diverticulum in a young man: A case report and review of the literature

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ABSTRACT

Congenital anterior urethral diverticulum is a rare entity that can occur at any age but exceptionally in adults. Its diagnosis is suspected clinically by obstructive symptoms of the lower urinary tract most often associated with a penoscrotal ball. Its management consists of a diverticulectomy associated or not with a urethroplasty depending on the size of the diverticulum.

We discuss through a case report the clinical and therapeutic aspects of this rare entity.

1. Introduction

Diverticulum of the male urethra is a very rare condition, in contrast to the female diverticulum. It can be congenital or inherited, the latter being by far the more frequent. Its diagnosis is suspected clinically by obstructive symptoms of the lower urinary tract most often associated with a penoscrotal ball and confirmed by retrograde and voiding urethrocytography. The treatment of male urethral diverticulum must be initiated early in order to prevent complications, in particular the impact on the upper urinary tract. It is surgical and consists of a diverticulectomy with or without urethroplasty depending on the size of the diverticulum.

We describe through a clinical observation and an update of the literature the diagnostic and therapeutic aspect of congenital anterior urethral diverticulum.

1.1. Observation

A 23-year-old patient with a history of recurrent urinary tract infections, with no previous history of bladder catheterization or other endourethral procedures. The patient came to the clinic with dysuria associated with delayed drips. Clinical examination after micturition found a fluctuating penoscrotal ball, collapsing completely on manual compression with urine output through the urethral meatus. The biological work-up came back normal and the cytobacteriological examination of the urine revealed an Escherichia coli. Urethrocytography performed after antibiotic therapy revealed a diverticulum of the bulbar urethra in the form of an additional, oval image hanging from the ventral surface of the urethra (Fig. 1). In addition, the renal-vesical ultrasound was normal. Cystoscopy revealed the neck of the urethral diverticulum which communicated with the urethral lumen through a large orifice (Fig. 2) without other detectable lesions (in particular anterior urethral valves). The treatment consisted of a perineal diverticulectomy and suture of the ventral side of the urethra with a 4–0 PDS suture on a CH 16 bladder catheter (Fig. 3). The postoperative course was uncomplicated. The catheter was removed at 15 days postoperatively. The follow-up was marked by resolution of symptoms and recovery of normal micturition.

2. Discussion

The concept of congenital anterior urethral diverticulum was first described in 1906 by Watts. It is defined as a saccular or fusiform dilatation of the urethral canal communicating with the urethral lumen through an orifice with a neck of variable size. It may be congenital or acquired, most often secondary to urethroplasty. The congenital urethral diverticulum may be located throughout the anterior urethra but most commonly between the bulbular urethra and the middle part of the penile urethra. Several theories have explained its formation, the most likely being a defect in the formation of the spongy tissue causing a dilatation of the urethra and its protrusion to the outside resulting in the formation of the diverticulum. Diagnosis is most often made in...
Fig. 1. Urethrocystography.

Fig. 2. Endoscopic appearance (Red arrow: diverticulum, blue arrow: urethral lumen). (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

Fig. 3. (a) Intraoperative appearance (b) Diverticulectomy piece.
childhood or adolescence with an average age of diagnosis of 13 years. A few cases of late discovery in adulthood have been described in the literature including our own.

A classification has been described in the literature based on the width of the neck of the diverticulum allowing the classification of the congenital diverticulum of the urethra into 3 types: wide-necked, narrow-necked and mega urethra. Furthermore, the distinction with the anterior urethral valve is unclear in the literature; some describe them independently, others group them together. It is most commonly manifested by dysuria, haematuria, weak stream, delayed drops or post-void discharge. Other clinical signs may be revealing such as recurrent urinary tract infection found in 32% of cases in the series by Cinman et al., acute retention of urine particularly in the case of a diverticulum complicated by lithiasis, a scrotal mass, a phlegmon, a fistula or even infertility. However, careful investigation will almost always reveal patients who did not have good micturition with a penoscrotal ball as a tell-tale sign.

The radiological diagnosis is made by retrograde and mictional urethrocystography which is sufficient in the majority of cases to localise the diverticulum, to specify its size and to discover associated anomalies like urethral stenosis. In addition, other types of imaging such as MRI may be necessary when there is doubt about a change in the anatomy caused by the urethral diverticulum, and its indications in urethral pathology are becoming increasingly widespread.

Ultrasound completes the information provided by the UCG with the advantage of assessing the impact of the diverticulum on the upper urinary tract. In addition, intraoperative urethrocytostomy allows direct visualization of the diverticulum in the form of a urethral dilatation of variable size, lined by the urethral mucosa and communicating with the urethral lumen through an orifice. We recommended this in this patient to explore the urethra and bladder to exclude differential diagnoses.

Urethral diverticulum can be complicated by ureterohydronephrosis and renal failure, which can sometimes be warning signs, hence the importance of early diagnosis and management. Treatment depends on the size and degree of obstruction. However, options stand out: abstention in small diverticula for which manual pressure evacuation of the urine by the patient is sufficient, endoscopic treatment if associated with an Anterior Ureter Valve and diverticulectomy with restoration of urethral continuity by perineal approach. This restoration of continuity can be achieved by an end-to-end anastomosis or by urethroplasty. In a series of 13 patients Alphs et al. Proposed a limit of 4 cm of urethral substance loss for deciding on either technique with similar final results. In some emergency situations a urinary diversion by suprapubic cystostomy or marsupialization of the diverticulum may be necessary. In our case, restoration of urethral continuity was achieved by closure of the ventral aspect of the urethra with a single-stage overjet.

3. Conclusion

Congenital anterior urethral diverticulum is a rare entity especially in adults.

It should be suspected in the presence of clinical symptoms of the lower tract or recurrent urinary tract infection associated with a penoscrotal mass. Its management depends on its size and is surgical in the most cases. If left untreated, it can affect the upper tract, leading to renal failure.

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