ANTERIOR URETHRAL VALVE IN THE FOSSA NAVICULARIS PRESENTING AS A SPLIT URINARY STREAM IN A CHILD

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An anterior urethral valve is uncommon compared to a posterior urethral valve as a cause of lower obstructive uropathy. Furthermore, an anterior urethral valve in the fossa navicularis is extremely rare. We describe the case in a 6-year-old boy who presented with a split urinary stream. Endoscopy revealed an anterior urethral valve in the fossa navicularis, and we successfully incised the valve with a hook knife. We should consider the possibility of an anterior urethral valve in any child with an abnormal urinary stream.

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Key words : Anterior urethral valve, Fossa navicularis

INTRODUCTION

An anterior urethral valve is extremely rare. Herein, we report the case in a child with an anterior urethral valve in the fossa navicularis that presented as a split urinary stream.

CASE REPORT

A 6-year-old boy was referred to our hospital because his mother had noticed a split urinary stream (Fig. 1). His medical and family histories were unremarkable. Clinical examination revealed no abnormality. Results of urinalysis and renal function tests were normal. The penis was circumcised, and the urethral meatus was normal. Intravenous urography showed a normal urinary pelvis, ureter and urinary bladder. After intravenous urography, an urethrogram was obtained during voiding. The urinary stream from the urinary bladder to the urethral meatus was smooth. Antegrade urethrography showed no abnormality.

The patient's mother strongly desired additional investigation to identify the cause of the split urinary stream. Retrograde urethrography was attempted with the patient under general anesthesia. We tried to insert the catheter into the urethra, however, we encountered firm resistance 5 mm proximal to the urethral meatus and were unable to advance the catheter into the urethra. Contrast medium leaked from the catheter, so we were not able to obtain enough retrograde urethrography images to identify the cause of the resistance. An anterior urethral valve or stricture was the suspected cause. Unfortunately, we had not considered the possibility of an anterior urethral valve and had not obtained the parent's consent for additional surgical treatment at the first examination ; therefore, we did not perform any additional procedure.

Four months later, the boy was hospitalized for treatment of a lower urinary tract lesion. At first, we could not insert the cystoscope due to the short distance between the urethral meatus and the point of resistance. We inserted a 0.25-inch guidewire into the urethra under general anesthesia. We encountered resistance, but we

Fig. 1. Urinary stream is split upon voiding.

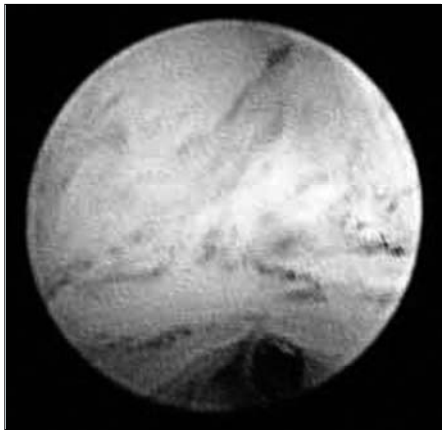

Fig. 2. Endoscopic examination revealed valvular leaflets obstructing the lumen of the urethra.

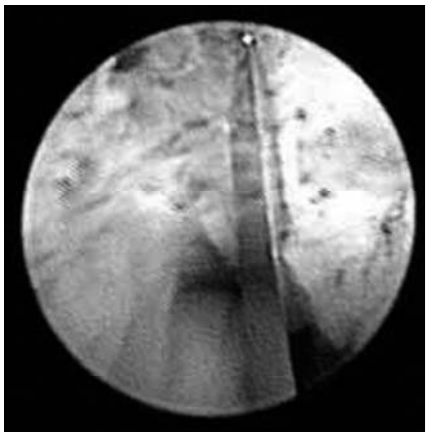

Fig. 3. The flap valve was incised at the 12 o'clock position with a hook knife.

managed to place the tip of the guidewire in the urinary bladder beyond the point of resistance by adjusting the guidewire angle. We dilated the stenosed urethra with an 8–14 F dilation sheath. We slid a 6 F flexible ureteroscope along the guidewire and viewed the inside of the urethra. Valvular leaflets obstructing the lumen of the urethra without a diverticulum were visualized at the 12 o'clock position 5 mm proximal to the urethral meatus (Fig. 2). Through a 12 F pediatric resectoscope, we were able to incise the flap valve at the 12 o'clock position with a hook knife (Fig. 3). No bleeding was seen in the incised section, and a 12 F Foley catheter was left in place.

The boy was discharged 3 days later. Voiding cystourethrography was performed 2 weeks later. No vesicoureteral reflux was identified. The voiding cystourethrogram revealed a normal-caliber urethra, and the patient produced a single urinary stream.

DISCUSSION

A posterior urethral valve is much more common than an anterior urethral valve as a cause of lower obstructive uropathy. Obstruction of the anterior urethra can be caused by a urethral valve, urethral diverticulum or urethral stricture, of these, an anterior urethral valve is extremely rare. Obstruction by an anterior urethral valve can damage the upper urinary tract and result in end-stage renal failure. Therefore, we should not overlook the possibility of such an abnormality[1].

Formation of an anterior valve is not well understood. Urethral duplication and congenital cystic dilation of the periurethral gland are thought to be the causes of such formation[2]. An anterior urethral valve can produce various symptoms, depending on the extent of obstruction. Symptoms include ballooning of the urethra, urinary incontinence, diminished urinary stream, poor urinary stream, urinary infection and enuresis. An anterior urethral valve can be located anywhere in the anterior urethra. Approximately 40% occur in the bulbar urethra, 30% at the penoscrotal junction and 30% in the penile urethra[4]. To our knowledge, ours is the third reported case of an anterior urethral valve in the fossa navicularis in the worldwide literature[5].

Voiding cystourethrography is the most helpful modality for diagnosis of an anterior urethral valve. It shows the small urethral caliber and proximal urethral dilatation[3]. Depending on the extent of the obstruction, the spectrum ranges from mild urethral dilatation to bilateral hydronephrosis with renal insufficiency. However, diagnosis of an anterior urethral valve in the fossa navicularis can be difficult because of the location of the valve. Voiding cystourethrography or retrograde urethrography is sometimes not informative for diagnosis of an anterior urethral valve in the fossa navicularis. Most such valves are likely to appear open with retrograde flow on the retrograde urethrogram because of the structural relation to the urethra. In our case, voiding cystourethrography showed good antegrade urinay flow, but we were not able to inject contrast medium during retrograde urethrography. Therefore, we presumed that the valve in our patient opened in the reverse direction, blocking retrograde flow and yielding to antegrade flow.

We did not consider the possibility of an anterior urethral valve at first examination under general anesthesia. We should have suspected the existence of an urethral valve and performed an additional procedure the same time to complete both diagnosis and treatment of the cause of the abnormal urinary stream at the same time.

In our case, a guidewire was passed beyond the anterior urethral valve, therefore, we were able to deal with the anterior urethral valve by retrograde procedures. In the case of a valve for which retrograde passage of the catheter is difficult, antegrade urethrography via cystostomy is needed to identify the cause of the stricture[6].

Thanks to advances in pediatric endoscopy, endoscopic management of urethral valves is common[7]. Endoscopic fulguration should be considered as the initial treatment. We did not apply a Holmium : YAG laser in our case, but Holmium : YAG laser ablation of the anterior urethral valve is considered a safe and effective treatment modality, especially if it is performed with a flexible ureteroscope[8].

An anterior urethral valve is a rare congenital anomaly, and the resulting obstruction can lead to end-stage renal failure. Thus, we should consider the possibility of an anterior urethral valve in any child with an abnormal urinary stream. When we see a child with an abnormal urinary stream, voiding cystourethrography should be performed if the urethral meatus is normal. If voiding cystourethrography does not show any abnormality, retrograde urethrography might be needed to identify the existence of an urethral valve.

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和文抄録

尿線の分裂を主訴にした舟状窩前部尿道弁の1例

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前部尿道弁は下部尿路閉塞症の原因として，後部尿道弁に比べて稀な疾患である．さらに，舟状窩における前部尿道弁はきわめて稀である．われわれは尿線の分裂を主訴に受診した，6歳，男児の前部尿道弁に関して報告する．膀胱鏡にて前部尿道弁と診断し，内視鏡的切開にて治療しえた．尿線の異常を訴える小児においては，前部尿道弁の可能性も考慮すべきである．

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