International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Posterior Urethral Valve Type II: Case Report

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Abstract:
Introduction: Posterior urethral valve (PUV) is a rare congenital obstruction typically found in male patients. This case adds to the scientific literature by highlighting the spectrum of pathologies associated with PUV.
The patient presented with symptoms consistent with PUV, including urinary retention and potentially signs of kidney dysfunction. Clinical examination and diagnostic tests likely revealed the presence of PUV and associated complications such as renal impairment.
The primary diagnosis was posterior urethral valve confirmed through clinical Voiding cystourethrogram. The endoscopic approach allows identification and resection of the valves under direct vision, associated with bladder neck incision, by the resectoscope with electrode knife, hook, cold blade, or inflated balloon catheter. The outcomes would include relief of urinary symptoms and improvement in renal function post-intervention.
Conclusion: This case underscores the importance of prompt diagnosis and management of PUV to prevent significant morbidity. It emphasizes the need for clinicians to consider PUV in male patients presenting. Early intervention can lead to better outcomes and improved quality of life for affected individuals.

Keywords: posterior urethral valve, cold blade, cystoscopy, case repport.

Introduction:

Posterior urethral valve (PUV) is a rare congenital obstructive membrane fold in the lumen of the posterior part of the urethra and is exclusive to male patients.

Posterior urethral valves can lead to a spectrum of pathologies, this includes acute retention, chronic kidney disease, and in severe cases, pulmonary hypoplasia secondary to low amniotic fluid levels.

Case report:

A 14-year-old with dysmorphic syndrome, referred to our department for suspicion of posterior urethral valve. The main symptoms were dysuria, weak urinary stream, and drip urination with 3 urinary tract infection episodes, with normal kidney function. Renal and bladder ultrasonography showed a bladder wall thickened by 10mm, without an impact on the upper urinary tract. Voiding cystourethrogram (VCUG) ruled out an elongated and dilated posterior urethra, and prominent bladder neck.
Cystoscopy revealed an irregular bladder aspect, posterior urethral valve classified as type II according to Young's classification. The treatment was based on incising the valve and the bladder neck with a cold

blade, to relieve the pressure.

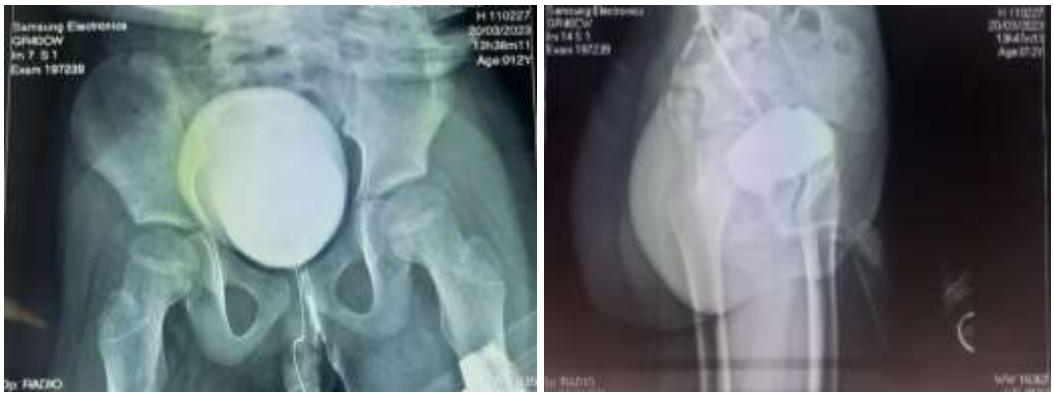
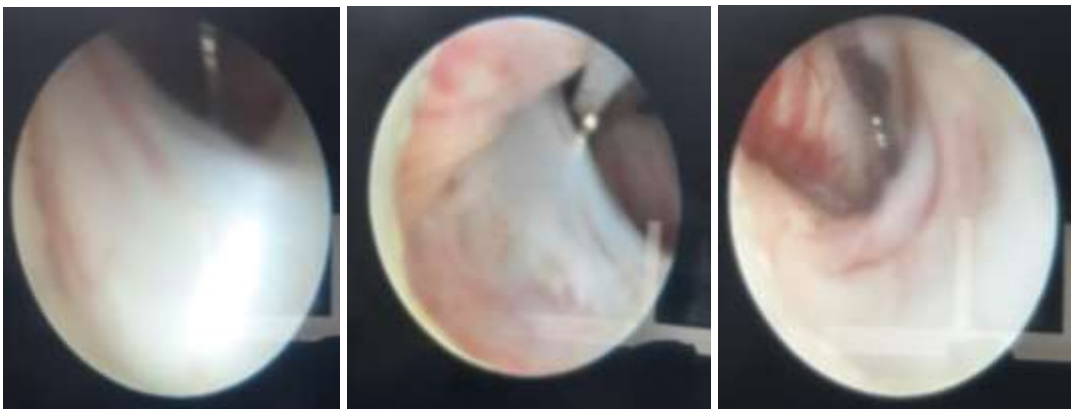


Figure 1: Voiding cystourethrogram



(a) (b) (c)

Figure 2: Cystourethroscopy and transurethral incision: (a) PUV type II before incision, (b) during incision, (c) after incision.

Discussion:

Posterior urethral valves are one of the most common congenital obstructive uropathies (1/5000 to 1/8000). They were first described by Morgagni in 1717 and then by Langenbeck in 1802.[1,2] The boys are exclusively affected.[3]

The impact on the posterior urethral valves varies depending on the degree of obstruction. The supramontanal Posterior urethral valve remains the rarest entity of this pathology. Although Young described type II PUV, as not obstructing valves, but simply hypertrophy of the verumentanum.[4]

The morbidity of PUV is not only limited to transient urethral obstruction but, the congenital obstruction of the urinary tract at a critical time in organogenesis may have a profound and lifelong effect on the function of the kidney, ureter, and bladder.[5]

Obstructive valves can cause dilatation of the posterior urethra and bladder, thickening the bladder wall. The ureters may also become dilated which can cause the appearance of a reflux, then can aggravate kidney function if the urine is infected.

Young's classification described three different types of valves based on the orientation of the valves and their relationship to the verumontanum: [6]

- Type I: submontanal valve,(95% of cases), two membranous structures in the posterior urethra originating from the caudal end of the verumontanum rising along the lateral margin of the urethra on

each side meeting at 12 o'clock.

- Type II: supramontanal valve, rare form, membranes arising from verumontanum and attached cranially to the bladder neck.
- Type III: submontanal diaphragm, (5% of cases), circular diaphram in the region of the caudal end of the verumontanum with a central defect.

Figure 3: Young's classification of posterior urethral valves.

A. Type: I; B. Type II: C; Type III.

In recent years, they are typically detected during infancy through antenatal ultrasound. However, Posterior urethral valves may rarely be diagnosed during later childhood.

VCUG will demonstrate undilated or mild dilated posterior urethra in the case of PUV type II. Cystoscopy is a useful tool as it defines the anatomy and function of the bladder, bladder neck, and urethra.

The endoscopic approach allows identification and resection of the valves under direct vision, associated with bladder neck incision, by the resectoscope with electrode knife, hook, cold blade, or inflated balloon catheter.[7,8,9,10,11] The bladder neck incision in conjunction with valve resection has again been suggested to improve bladder dynamics.[12,13,14]

In our case we use the cold blade handset with bladder neck incision to relieve the pressure.

Management of posterior urethral valves still represent a clinical challenge in pediatric urology. It consists of relieving the obstruction and pressure on the urinary tract, with care to maintain normal bladder and renal function, minimize morbidity and prevent iatrogenic problems as long as possible.[15]

Close follow-up is needed after valve ablation to ensure proper bladder function in the children, and report complications including: postoperative urinary retention, urethral bleeding,urethral stricture , urethral tract infection,urinary extravasation, urethral diverticulum and bladder neck contracture.[9,12]

The severity of abnormal preoperative creatinine levels, and recurrent urinary tract infections are associated with an increased risk of chronic kidney disease during follow-up for patients with posterior urethral valves.[16,17]

Conclusion:

PUV are the main cause of dysuria and infravesical obstruction in children.

Their seriousness lies in the impact on the upper urinary tract, which can be life-threatening due to infection and renal failure.

The basic treatment is currently endoscopic and can be performed in the neonatal period.

Competing interests:

The authors declare no competing interest

Author Contributions:
All authors contributed to the creation of this article. The authors also declare that they have read and confirmed the final version of this article

Figures:
Figure 1: Voiding cystourethrogram
Figure 2: Cystourethroscopy and transurethral incision: (a) PUV type II before incision, (b) during incision, (c) after incision.
Figure 3: Young's classification of posterior urethral valves.
A. Type: I; B. Type II: C; Type III.

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