

# POSTERIOR URETHRAL VALVES: FULGURATION AND RESULTS

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## Abstract

*Obstructive uropathy that takes to the renal failure with more frequency in paediatric age is secondary to posterior urethral valve. Recent advance in endoscopy has altered the management and outcome of the patients.*

**Materials and methods:** *This retrospective study was conducted at National Institute of Kidney Diseases and Urology, Dhaka from July 2005 to December 2009. Total 48 patients were selected for this study among them most were less than 1 year of age and 13 patients (27.08%) had associated vesicoureteric reflux. Most of the patients were presented with dribbling of urine and some were with repeated urinary tract infection and renal failure. Diagnosis was confirmed by Micturating cystourethrogram and Urethrocystoscopy.*

**Results:** *All the patients were managed by endoscopic fulguration. In most of cases fulguration was primary but in some cases after supportive treatment. Outcome was satisfactory in all cases except one patient (2.08%) developed stricture urethra and 4 patients (8.4%) developed end stage renal diseases. After fulguration 13 patients (27.08%) showed to have associated bladder dysfunction and 4 patients (8.4%) required antireflux surgery. Followup period was 36 months varying between 3 to 48 months.*

**Conclusion:** *Early and adequate valve fulguration provides the better outcome of posterior urethral valve.*

**Key word:** *Posterior urethral valve, Endoscopic fulguration, Bladder dysfunction*

## Introduction:

Posterior urethral valve is one of the major common devastating, congenital obstructive urethral lesions in male infants and newborns. These valves are mucosal fold and usually result in lifelong disabilities with urinary incontinence and decreased renal function despite optimal medical management. They may cause varying degree of obstruction when the patients attempts to void. Patients with severe degree of obstruction can present with distended bladder, hydronephrosis and even renal

failure. This can also be diagnosed in utero during antenatal checkup by Sonologist.

Posterior urethral valve occur in 1 in 8,000 to 25,000 live births and make up 10% of urinary obstruction diagnosed in utero<sup>1</sup>. The diagnosis has been made on average 1 in 1250 fetal ultrasound screenings<sup>2</sup>. Posterior urethral valves sometimes associated with other congenital anomalies like pulmonary hypoplasia, vesicoureteric reflux, and cryptorchidism. Hoover and Duckett showed 13% of valve patients associated with vesicoureteric reflux, among them 92% on left side<sup>3</sup>. Most of them resolved spontaneously, 35% of them that failed to cease required antireflux surgery<sup>4</sup>. Children presented with mild, moderate or severe symptoms of obstruction depending on age of presentation and types of valves. They ranged from life threatening renal conditions in newborns to minor voiding dysfunction in older children like poor, intermittent dribbling of urinary stream. Sometimes recurrent urinary tract infection and failure to thrive may be the only feature.

## Materials and Methods:

Total 48 patients were enrolled for this study at NIKDU from July 2005 to December 2009. Patients were evaluated with Urine RME and culture to exclude infection, S. creatinine to see renal functional status, CBC to detect anemia, creatinine clearance to see the extent of renal failure. USG were done to see post void residue, hydronephrosis, hydroureter and also helpful for prenatal diagnosis. IVU showed hydronephrosis and hydroureter in long standing cases. Diagnosis was established by Micturating Cysto Urethrogram (MCU) which showed elongated and dilated posterior urethra with large PVR and vesicoureteric reflux. Urethrocystoscopy confirmed the diagnosis by visual identification and supravescical compressions shows that the valves cause obstruction. Urodynamic study was required to exclude any neuropathic component. Nuclear renal scan sometimes required to evaluate persistent hydroureteronephrosis.

Initially all patients were managed with urethral catheterization for drainage of urinary bladder. Healthy,

uninfected patients managed with endoscopic fulguration that was done by Bugbee's electrode or a pediatric resectoscope with hook in retrograde fashion. If the patients were so small for safe instrumentation or very ill then cutaneous vesicostomy performed as a temporary measure, later on these patients managed with fulguration when patients became older and healthy. Patients with urosepsis, hydronephrosis and renal failure were managed with antibiotics, and correction of fluid and electrolyte imbalance. Fulguration done when patients were stable. Patients with severe hydronephrosis initially managed by cutaneous pyelostomy or loop ureterostomy followed by valve destruction later on when patients condition permit. After fulguration of valve in most of the cases associated vesicoureteric reflux improved spontaneously. Antireflux surgery required later on where it was persisted. Patients followed regularly at three months interval in 1<sup>st</sup> year, half yearly in 2<sup>nd</sup> year, then yearly to predict result of fulguration, complication and monitor renal function.

#### Results:

This retrospective study was conducted at National Institute of Kidney Diseases and Urology, Dhaka from July 2005 to December 2009. Total 48 patients were enrolled for this study where the patients were diagnosed at different age. Among them 13(27.08%) patients were less than 1 month, 21(43.75%) patients less than 1 year and 14(29.16%) patients more than 1 years with mean age 1.5years (Table-I). 13 (27.08%) patients were associated with vesicoureteric reflux, among them bilateral involvement were in 8 cases and unilateral left

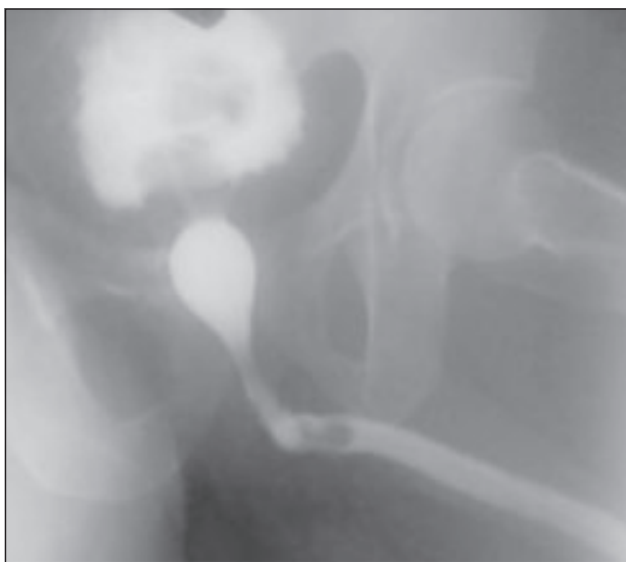


Fig.-1: MCU showed PUV

side involvement in 5 cases. 3 (6.25%) patients were associated with right side undescended testis and inguinal hernia.

**Table-I**  
*Age of Diagnosis*

<1 month	13(27.08%)
<1 year	21(43.75%)
> 1 year	14(29.16%)

Most of the patients were presented with symptoms but 11 with repeated urinary tract infection and 6 patients with renal failure.

Twenty one (43.7%) patients initially treated with fulguration. Thirteen (27.08%) patients were so small to negotiate endoscopic instruments that they were treated initially with cutaneous vesicostomy followed by endoscopic fulguration when child become larger one. Six (12.5%) patients with urosepsis initially treated with indwelling urethral catheterization and infection was controlled by sensitive antibiotics followed by fulguration. Eight (16.66%) patients with hydroureteronephrosis and renal failure initially treated with urethral catheterization with correction of fluid and electrolyte imbalance. Among them 1 patient underwent loop ureterostomy, 2 patients underwent cutaneous pyelostomy where renal failure were not improved with urethral indwelling catheterization. Then all 6 patients underwent fulguration. (Table-II).

**Table-II**  
*Treatment*

Initial fulguration	21 (43.7%)
Vesicostomy then fulguration	13 (27.08%)
Urosepsis control then fulguration	6(12.5%)
Renal failure treatment then fulguration	5(10.41%)
Loop ureterostomy then fulguration	1(2.01%)
Cutaneous pyelostomy then fulguration	2(4.16%)

After operation 1 patient (2.08%) developed stricture urethra, and 4 patients (8.4%) developed end stage renal disease (Table-III). Thirteen patients (27.03%) showed bladder dysfunction and 4 patients (8.4%) required antireflux surgery.

**Table-III**  
*Complication of disease and fulguration*

Bladder dysfunction	13(27.08%)
Stricture urethra	1(2.08%)
ESRD	4 (8.33%)

**Discussion:**

Obstructive uropathy that takes to the renal failure with more frequency in pediatric age is secondary to posterior urethral valves. The management has changed in important form in last few years that leads to better outcome of the patients with good quality of life. Prenatal diagnosis has improved the opportune detection of these patients. Appropriate treatment of patients with PUV, resides in a series of requirements that include: 1. opportune diagnosis, of being possible prenatal 2. Use of fine endourologic equipment 3. Patient's categorization for group's presage that allows to values the functional renal evolutions and therapeutic result. 4. Study of dynamics vesical function <sup>5</sup>.

We retrospectively reviewed 48 patients that underwent endoscopic posterior urethral valve fulguration. Thirteen one (64.58%) patients were presented with dribbling of urine and failure of thrive. Seventeen (35.41%) patients presented with repeated urinary infection and renal failure. In our series 34(70.83%) patients were presented less than 1 year. Diagnosis was confirmed with Micturating Cystourethrogram and Urethrocystoscopy. Twenty one (43.7%) patients was treated primarily with valve fulguration except some too small patients and severe hydroureteronephrosis with renal failure were treated initially with high diversion followed by fulguration when the patients become larger and stable. All the patients were followed regularly with history, physical examination and necessary investigations. Average length of followup was 36 months varying between 3 months to 48 months. 3 patients were lost from followup, 2 from 6 months and 1 from 1 year of followup.

In our series most of the patients showed satisfactory micturition and good quality of life after fulguration. Thirteen patients (27.035%) after fulguration showed frequency of micturition and occassional incontinence. They were evaluated with urodynamic study and showed bladder dysfunction ranging from instability to myogenic failure and managed accordingly. Bladder dysfunction commonly founded when diagnosis was late and or

delayed treatment, may be due to long term outflow obstruction. This result was nearer to study conducted by Warren J, Pike JG et al <sup>6</sup>. The patients those who underwent high diversion before ablation showed less bladder compliance then other patients. After operation 1 patients showed stricture urethra at 6<sup>th</sup> months of followup and managed with optical internal urethrotomy. Among 8 patients (16.6%) of renal failure, after fulguration 4 patients (8.4%) improved renal function and rest 4 patients (8.4%) developed end stage renal diseases and required dialysis. This result was similar to study conducted by Warren J, Pike JG et al <sup>6</sup>. One patient died at 1 year of followup from complication of renal failure. Among 21 patients with vesicoureteric reflux, most of them resolved spontaneously but 4 patients (19.04%) required antireflux surgery, in 3 cases on bilateral and in 1 cases unilateral site. This result was similar to study conducted by Hoover and Duckett <sup>3</sup>. Early age of diagnosis with early adequate treatment provide good result and patient with renal failure, VUR and bladder dysfunction provide poor prognosis. Primary valve ablation remains the gold standard treatment of PUV, with vesicostomy reserved for selected cases. Long term bladder and renal dysfunction is common in this group and 30% still develop renal insufficiency even after fulguration <sup>7</sup>. So this disease mandates long term urological and nephrological followup<sup>8</sup>.

**Conclusion:**

PUV patients will be individualized and alleviating obstruction promptly to prevent renal failures that have some of these patients.

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