

# Posterior urethral valve in neonates - overview in a tertiary care center



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## ABSTRACT

**Background:** Posterior urethral valves are a unique obstructive pathology occurring in male children. Although known to present during various age groups when diagnosed in the neonatal period itself the outcome is better. **Aims and Objectives:** To study the incidence, clinical presentation, investigations, and management of neonates with posterior urethral valves and compare with literature. **Materials and Methods:** Retrospective study of neonates admitted to Government Mohan Kumaramangalam Medical College Hospital in South India for 1 year from August 2022 to July 2023. **Results:** Of a total of 16 cases studied the age of incidence of posterior urethral valve is 1–28 days with antenatally detected in nine cases. Fulguration was done in all 14 cases with vesicostomy in one case, bilateral ureterostomy in one case, and death in one case. **Conclusion:** Posterior urethral valve is a rare neonatal disease which is most often diagnosed antenatally. The investigations and modalities of management in our institution are inline with other studies in literature.

**Key words:** Posterior urethral valve; Presentation; Management

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## INTRODUCTION

The posterior urethral valve is the most common etiology of urinary tract obstruction in neonates.<sup>1</sup> The incidence reported is 1:50,000–1:8000. It is the most common cause of chronic renal disease in children. A population-based study found the incidence to be 2.48 (2.14–2.81) per 10,000 live births.<sup>2</sup>

### Aim and objectives

To study demographic features, clinical presentation investigation modalities for diagnosis and management offered in Government Mohan Kumaramangalam Medical College, Salem, situated in South India, Objectives is to compare the results with international studies.

## MATERIALS AND METHODS

Of all the neonates who had been admitted to the newborn ward as a case of posterior urethral valve for 1 year from

August 2022 to July 2023 collected retrospectively and the data were compared with published data. During the above period of 1 year, there were 16 admissions as a posterior urethral valve in the neonatal ward (Table 1). In our hospital total number of deliveries during the period was 13163.

The date of admission in the neonatal ward is from 1 to 28. Antenatally detected and institutionally delivered babies were admitted within 1 week as delivered outside our hospital were admitted later.

During the study, there were four inside deliveries that were admitted on day 1. All four were diagnosed to be bilateral hydronephrosis in antenatal ultrasonogram. There were five admissions outside the institution within 1<sup>st</sup> week of life. All these neonates were suspected to be posterior urethral valves secondary to bilateral hydronephrosis in antenatal ultrasonogram. There were five neonates referred after 7 days of life from the outside hospital and bilateral hydronephrosis

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**Table 1: Admissions as posterior urethral valve in the neonatal ward**

| Day of admission | Number of cases |
|------------------|-----------------|
| Day 1            | 4               |
| Day 3-7          | 5               |
| Day 14           | 4               |
| Day 14–28        | 3               |

**Table 2: Comparison of current study with Paolo and Caione study**

| Procedure               | Our study (%) | Paolo and Caione study <sup>5</sup> (%) |
|-------------------------|---------------|---|
| Initial catheterization | 94            | 96                                      |
| Primary fulguration     | 94            | 97                                      |
| Ureterostomy            | 20            | 24                                      |
| Vesicostomy             | 6             | 10                                      |

was not diagnosed. All these neonates presented as poor voiding, abdominal distension in one, and urosepsis in another.

All the babies on admission underwent investigations for renal parameters, ultrasonogram abdomen for confirming antenatal findings bladder catheterization with 6 f feeding tube, and micturating cystourethrogram whenever feasible. Elevated renal parameters were noted in eight of the neonates and after catheterization repeat sample showed normal parameters in six of the babies.

All the neonates were started on broad-spectrum antibiotics on admission and urine cultures were sent to all the neonates. In urine culture, positive neonates' antibiotics were changed as per the culture sensitivity pattern.

Micturating cystourethrogram was done in six babies who were either culture-negative on admission or became culture-negative after antibiotic therapy. Micturating cystourethrogram was not done in two babies as one baby could not be catheterized and other neonate was sick from admission and was in urosepsis.

Of the 16 neonates, 11 of them underwent cystoscopy and primary fulguration, and three of them underwent primary fulguration and left ureterostomy due to vesicoureteric reflex. One neonate who could not be catheterized with initial raised renal parameters which became better after suprapubic needle catheterization underwent vesicostomy and in follow-up one neonate with elevated renal parameters and urosepsis which did not improve after bladder catheterization and antibiotic therapy underwent bilateral ureterostomy but succumbed.

## RESULTS

During the study period 16 babies were admitted in neonatal ward for posterior urethral valve from day 1

of life to day 28 of life. Most of them presented with antenatal diagnosis. Micturating Cystourethrography was the main investigation and cystoscopy and fulguration was the preferred treatment modality.

## DISCUSSION

The current study was a population-based study, and in our hospital, four out of 13963 had posterior urethral valve incidence of 2.86/10,000 live births<sup>2</sup>. Antenatal ultrasound was done in nine cases (56.25%) in the population-based study rate was 46.9%.<sup>2</sup> The neonates who were not diagnosed prenatally presented with a poor urinary stream or difficulty in passing urine. Renal function tests in most of the neonates are supposed to be within normal limits as the represents mother parameters in eight out of 16 neonates in our study had elevated renal parameters may be due to delayed presentation.<sup>3</sup>

Micturating cystourethrogram which is the mainstay in diagnosis may not be feasible in all cases. In our study also two out of 16 cases – 12.5% of cases could not be done.<sup>4</sup> The surgery done for neonates with posterior urethral valve after initial catheterization is primary fulguration with or without ureterostomy, vesicostomy, and bilateral ureterostomy. In our study, primary fulguration was done in 94% compared with 97% in Paolo and Caione study<sup>5</sup> (Table 2), ureterostomy (20%), and vesicostomy (6%) are comparable with Paolo and Caione study of 24% and 10%, respectively.

### Limitations of the study

Nil.

## CONCLUSION

Posterior urethral valve is a rare neonatal disease which is most often diagnosed in antenatally, the presentation and management are on par with other studies.

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