Section: Urology

Original Research Article

SUITABILITY OF ANTEGRADE POSTERIOR URETHRAL VALVE FULGURATION IN INFANTS IN ABSENCE OF SMALLER ENDOSCCOPIC INSTRUMENTS: OUR EXPERIANCE

Arshad Hasan[1], Md. Zaid Imbisat[2], Ahsan Ahmad[3], Rohit Singh[4], D.K.Das[5]

[1]Senior Resident, Department of Urology, Patna Medical College & Hospital Patna, Bihar, India.
[2]MCh Resident, Department of Urology, Indira Gandhi Institute of Medical Sciences, Patna, Bihar, India.
[3]Additional Professor, Department of Urology, Indira Gandhi Institute of Medical Sciences, Patna, Bihar, India.
[4]Assistant Professor, Department of Urology, Patna Medical College & Hospital Patna, Bihar, India.
[5]HOD & Professor, Department of Urology, Patna Medical College & Hospital Patna, Bihar, India.

Received : 10/10/2023
Received in revised form : 12/12/2023
Accepted : 27/12/2023

Keywords:
Posterior urethral valve, antegrade, fulguration.

Corresponding Author:
Dr. Md. Zaid Imbisat,
Email: zaidimbisat09@gmail.com

DOI: 10.47009/jamp.2023.5.6.319

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5 (6); 1551-1554

Abstract

Background: Posterior urethral valves (PUV) is one of the birth defect with commonest cause of obstruction of lower urinary tract. Poor micturation, failure to thrive, sepsis, abdominal lump are usual presentation. Surgery is the main treatment of posterior urethral valve. anterade transvesical valve ablation is done in unavailability of thinner endoscopes. **Materials and Methods:** This is a retrospective observational study in which 32 patients were included. All preoperative and post-operative parameters were noted. Follow-up findings are noted and analyzed. **Result:** Most common symptoms were urinary retention and dribbling of urine. Pre-term babies has more incidence of posterior urethral valve. Most of the patients resolved by single time fulguration (78%). Post-operative complications were noted in about 37.5% with most common complication was hematuria. **Conclusion:** Antegrade posterior urethral valve fulguration is safe and ideal approach in absence of small calibre endoscopes.

INTRODUCTION

Posterior urethral valves(PUV) is one of the birth defect of the boys lower lower urinary tract usually at membrano-bulbar junction of urethra. It is one of the commonest cause of obstruction of lower urinary tract. PUV is a complex congenital malformation in which physiology of lower urinary tract and upper urinary tract altered.[1] The incidence of posterior urethral valve varies 1.6 to 2.1 per 10,000 births. It was recognized by Morgagni in 1769 and Langenbeck confirmed it in post-mortem dissection in 1802. Posterior urethral valve was named by Hugh Hampton Young who have credit for detail description and classification of PUV.[2,3] There are range of severity of spectrum of disease varies from post-natal life incompatibility to late presentation with minimal symptoms. Poor micturation, failure to thrive, sepsis, abdominal lump are usual presentation in post- natal life although it is diagnosed antenatally now a days. It is a one of the common etiology of chronic renal insufficiency because of obstruction urinary tract and approximately 10 to 15 percent child underwent renal transplant due to its progression to end stage renal disese. Ultrasonography, voiding cysto-urethrography, and sometime renal scintigraphy are usual imaging studies. Management usually relies on various issues that is age, clinical features, severity, renal damage control and valve bladder syndrome management. Surgery is the main treatment of posterior urethral valve.[4] Valve ablation is main surgery which is done by endosopically but in many centres thinner endoscopes are not available especially for neonate and infants then in those situations anterade transvesical valve ablation or fulguration used. We analyzed our data of antegrade valve ablation in this study.

MATERIALS AND METHODS

This is a retrospective observational study which was conducted in our college and hospital, a tertiary centre of the state. Total 32 patients were included in the study. Study duration was from 2012 to 2022.All the clinical features, laboratory investigations, Radiological imaging findings were noted and analyzed. Clinical features included dribbling of urine, weak urinary stream, failure of thrive, urinary retention, abdominal distension, hard feeling of urinary bladder on digital rectal examination. Routine haemogram, kidney function test, urine routine microscopy and urine culture and sensitivity were noted. Ultrasonography of whole abdomen including

kidney, ureter, bladder, retrograde urethrogram, micturating cystourethrogram, [Figure 1] x-ray chest & intravenous pyelogram were noted.

Figure 1: MCU of PUV patient Showing dialated posterior urethra

All the patients underwent similar type of procedure and done under general anaesthesia with muscle relaxant. Urinary bladder was distended. Midline transverse incision was given. Urinary bladder was approached and opened. Ureteroscope was used for antegrade cystoscopy and urethroscopy. Posterior urethra was dialated. Posterior urethral valve was identified and fulgurated with help of bugbee. The completeness of adequate fulguration was known by flow of urine. Adequate size of per urethral catheter was placed. Bladder and abdomen were closed. Post-operative events and complications were recorded. Follow-up findings are noted and analyzed.

RESULTS

This is a retrospective observational study which was conducted in our college and hospital, a tertiary centre of the state. Total 32 patients were analyzed in this study. Mean age of presentation with different symptoms was 65 days. Most common symptoms were urinary retention and dribbling of urine, which was found in about in 25% of the babies. Six babies were diagnosed ante-nataly. Other symptoms were recurrent urinary tract infection and dysuria, sepsis, and urinary incontinence. Mean weight at presentation was 2.02kg with range of 0.98 to 6.8kg. Pre-term babies has more incidence of posterior urethral valve but most of the babies delivered by nomal delivery than caeserian (21vs11).

Table 1: Observed parameters of the study (n=32)

Mean age of presentation(days)	65 (5-342)
Mean weight at presentation(Kg)	2.02(0.98-6.8)
Mode of birth	
Normal delivery	21(65.6%)
Delivery by caesarean section	11(34.4%)
Birth term	
Full term	12(37.5%)
Pre-term	20(62.5%)
Clinical features	
Antenatal diagnosis	6(18.7%)
Urinary retention	8(25%)
Dribbling	8(25%)
Palpable bladder	4(12.5%)
Sepsis	1(3.1%)
Recurrent UTI	4(12.5%)
Urinary Incontinence	1(3.1%)
Mean Operative duration(Minutes)	45(30-90)
Single time fulguration	25(78%)
Multiple time fulguration(>1)	7(21.8%)
Mean Hospital Stay(Days)	7(2-21)
Mean Time of per urethral Catherisation (Days)	12(10-21)
Post-operative Complications	
Haematuria	3(9.3%)
Urinary retention	2(6.2%)
Anuria	1(3.1%)
Sepsis	1(3.1%)
Bladder neck contracture	1(3.1%)
SPC fistula	1(3.1%)
ESRD	3(9.3%)

Most of the patients resolved by single time fulguration (78%) where as in seven patients multiples fulguration had been done. Mean operative duration was 45 minutes and hospital stays were varied from two to twenty-one days.

Post-operative complications were noted in about 37.5% with most common complication was hematuria. All patients of haematuria were treated by conservatively. Urinary retention was noted in two patients in which prolong per urethral catheter was placed. Anuria and sepsis were also treated by

ISSN (O): 2687-5365; ISSN (P): 2753-6556

prolong period of conservative treatment. One patient had spc fistula which was not closed by prolong catheterisation and required surgical treatment later on. ESRD developed in three patients who were referred to higher central. All parameters which were observed in the study is depicted in [Table 1].

DISCUSSION

Posterior urethral valves (PUV) are one of the common birth defects of the male children lower urinary tract usually at posterior urethra. It is one of the commonest causes of obstruction of lower urinary tract. It is one of lethal congenital anomaly which may progress to chronic kidney disease. It has prominent hazardous impact on urinary bladder and kidney function. Now a days ante natal diagnostic work-up has decreased its mortality and morbidities.[5] Ultrasonography shows dialated posterior urethra, dialated urinary bladder, and hydronephrosis. Urinary bladder diverticula, ascites, urinoma, and signs of renal dysplasia may also found.[6] Clinical features of posterior urethral valve depends on severity of urinary tract obstruction. Poor urinary stream, dribbling of urine, urinary incontinence, urinary tract infections, sepsis, decreased kidney function, anaemia, and failure to thrive are usual presentation.[7] Orumuah AJ did a study in 44 patients and in his study presenting age was between 1 day and 14 years with a mean of 3.95 years.[7] In the present study mean age of presentation 65 days. Antenatal diagnosis was in six patients which was similar to present study. F.M.Ayyat discussed in his study about different mode of posterior urethral valve presentation according to various ages , surgery options, related morbidities with comparing to different urological published sample. Younger the infants, severe the posterior urethral valve forms due to associated renal dysplasia presence. Most of the unfavourable prognosis was due to pulmonary renal dysplasia. Most of the valves are of young type one.[8] Opara A in his research, no antenatal diagnosis of posterior urethral valve was noted and patients consulted mainly for dysuria (n = 15), urinary retention (n = 8) and pain abdomen (n = 3). They concluded that an early diagnosis is necessary to manage the patient in better way and with good preservation of the upper tract function of the patients.[9] In present study urinary retention was in eight patients.

Antenatally, ultrasonography & fetal magnetic resonance imaging are done to reach diagnosis. Postnatally ultrasonography is the preferred imaging option with thick urinary bladder wall, dialated posterior urethra and hydroureretonephrosis. Voiding cystourethrogram confirms the final diagnosis. Cystourethroscopy is done for planning management. Radionulide renography is done for renal functional assessment. Urethroscopic posterior urethral valve fulguration is the widely practisized management methods. Other options for valve fulguration are open dissection by perineal urethrostomy and antegrade use of balloon catheter which are now out of practice. Vesicostomy is used as diversion. Good urinary flow without urinary dribbling and no need of straining after valve fulguration are assumed “success.” Elevated urinary bladder pressure during micturation can result in kidney function deterioation. Urinary bladder neck obstruction, uretero-vesical junction obstruction because of detrusor hypertrophy, and matrix deposition all around may leads to deteriotion.[10]

In neonates and infants, where urethra is narrow and urethroscopy requires slender scopes which are not available many centres, at that situation percutaneous antegrade approach is one of the best options. Many clinicians used urethrotomes but complications are more. It is safe and with minimum post-operative complications. Complications are usually treated conservatively. Noted complications are according to study done by sarhan o et al who noted urinary retention was most common complication (5.5%). Urinary extravasations, haematuria and obstructive anuria are other complications.[11]

This study has limitations in the form of small sample size, observational, and retrospective. Nowadays cystoscopic valve ablation is treatment of choice. Percutaneous antegrade approach was only used when thinner scopes were not available.

CONCLUSION

With tremendous advancement and miniaturization of endoscopes, antegrade posterior urethral valve fulguration is safe and ideal approach in absence of small calibre endoscopes.

REFERENCES

1. Velhal R., Jain A. , Nayan A et al. Impact of surgical intervention on progression to end stage renal disease in patients with posterior urethral valve. Afr J Urol27,158(2021). https://doi.org/10.1186/s12301-021-00261-8
2. Campbell-walsh-Wein Urology textbook, Twelfth edition p-602
3. Shailesh P. Bajaniya. Management of Posterior Urethral Valve in Male Child Population. Int J Med Res Prof. 2018 July; 4(4):198-203. DOI:10.21276/ijmrp.2018.4.4.045
4. Sharma S, Joshi M, Gupta DK, Abraham M, Mathur P, Mahajan JK, Gangopadhyay AN, Rattan SK, Vora R, Prasad GR, Bhattacharya NC, Samuj R, Rao KLN, Basu AK. Consensus on the Management of Posterior Urethral Valves from Antenatal Period to Puberty. J Indian Assoc Pediatr Surg. 2019 Jan-Mar;24(1):4-14. doi: 10.4103/jiaps.JIAPS_148_18. PMID: 30686881; PMCID: PMC6322183.
5. Pellegrino C, Capitanucci ML, Forlini V, Zaccara A, Lena F, Sollini ML, Castelli E and Mosiello G (2023) Posterior urethral valves: Role of prenatal diagnosis and long-term management of bladder function; a single center point of view and review of literature. Front. Pediatr. 10:1057092. Doi: 10.3389/fped.2022.1057092
6. Chitrit Y, Bourdon M, Korb D, Grapin-Dagorno C, Joinau-Zoulovits F, Vuillard E,et al. Posterior urethral valves and vesico ureteral reflux: can prenatal Ultrasonography distinguish between these two conditions in male foetuses ? Prenat Diagn. (2016)36(9):831-7. doi:10.1002/pd.4868
7. Orumuah AJ, Oduagbon OE. Presentation, management, and outcome of posterior urethral valves in a Nigerian tertiary

ISSN (O): 2687-5365; ISSN (P): 2753-6556

hospital. Afr J Paediatr Surg. 2015 Jan-Mar;12(1):18-22. doi: 10.4103/0189-6725.150937. PMID: 25659544; PMCID: PMC4955488.
8. Posterior Urethral Valve. Urol Ann. 2016 Apr;8(Suppl 2):S109–15. PMCID: PMC4869440.
9. Opara, A. , Ondima, L. , Atipo, A. , Mandavo, C. , Mouss, R. , Nyanga, D. , Avala, P. , Odzébé, A. and Bouya, P. (2021) Management of Posterior Urethral Valves about 26 Cases. Open Journal of Urology, 11, 95-102. doi: 10.4236/oju.2021.113010.
10. Chatterjee us, Basu AK, Mitra D. Insight into posterior urethral valve from our experience : Paradigm appended to abate renal failure. J Indian Assoc Pediatr surg [serial online] 2020 [cited 2023 sep 25] : 25: 297-305. Available from : https://www.jiaps.com/text.asp?2020/25/5/297/293999
11. Sarhan O, El-Ghoneimi A, Hafez A, Dawaba M, Ghali A, Ibrahiem el-H. Surgical complications of posterior urethral valve ablation: 20 years experience. J Pediatr Surg. 2010 Nov;45(11):2222-6. doi: 10.1016/j.jpedsurg.2010.07.003. PMID: 21034948.

ISSN (O): 2687-5365; ISSN (P): 2753-6556