

Comparison of early neonatal valve ablation with vesicostomy in patient with posterior urethral valve

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ABSTRACT

Background: To compare the results of final renal function by two methods of treatment in patients diagnosed as posterior urethral valve (PUV) (valve ablation vs. vesicostomy). **Materials and Methods:** Fifty-four boys diagnosed with PUV participated in this study. They were divided into two groups. Thirty-one of the total were treated with primary valve fulguration (Group 1) and 23 were treated with vesicostomy (Group 2). One-year-creatinine level and glomerular filtration rate (GFR) were measured. Also, they were taken ultrasonography detecting hydronephrosis. Data analysed in IBM SPSS21 with *t*-test and Chi-square test. Presented with 95% of confidence intervals. **Results:** Fifty-four boys diagnosed with PUV participated in this study. The mean age of patients in Group 1 was 3.8 ± 1.48 days and Group 2 was 4.7 ± 1.85 days. One-year Cr level was 1.57 ± 1.45 in Group 1 and 1.57 ± 1.45 in Group 2 which was not statistically significant ($P < 0.8$). Also 1-year GFR level was 31.1 ± 4.4 in Group 1 and $33 \pm 4.7\%$ in Group 2 ($P < 0.10/23$) in Group 2 (43.47%) had severe hydronephrosis and 14/31 (45.16%) in Group 1 had severe hydronephrosis. Graded ultrasound results were not significantly different ($P = 0.24$). **Conclusion:** The results showed no significant difference. Vesicostomy might be a more favourable method due to less complication and follow-up in early neonatal life. Hence, the condition of the patients and decision of the surgeon are effective parameters in choosing an optimal method in patients diagnosed with PUV.

Key words: Ablation, posterior urethral valve, vesicostomy

INTRODUCTION

Posterior urethral valve (PUV) is one of the most common causes of lower urinary tract obstruction in male neonates.^[1] Delay in the treatment might lead to end-stage renal failure, therefore, management of neonates diagnosed as PUV is necessary.^[2]

Gold standard treatment of patients diagnosed as PUV is valve ablation by a urologist.^[2] Bleeding, incomplete valve resection, urethral stricture or damage to the external sphincter are a likely complication of valve ablation.

Other intervention done is vesicostomy. A vesicostomy is a surgical method in which the urine is allowed to drain and also to decompress the urinary system.^[3] Despite tremendous studies done in this field, controversies exist in order to select the best method for a better outcome. So, we decided to compare early neonatal valve ablation with vesicostomy in a patient with PUV.

MATERIALS AND METHODS

Study design

From 2011 to 2013, 54 male infants 2 days to 7 days old with PUV were participated in this study. All had written consent from the patients' parents and the study was approved by Ethic Committee. Pre-term

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infants, infants with low birth weight (LBW) and severe hydronephrosis and infants aged 1-month and lower were excluded from the study.

The patients were divided into two groups. Twenty-three of the total in Group 1 was treated with vesicostomy and 31 in Group 2 were treated with valve ablation.

Valve ablation is done while the baby is stable concerning medical issue. A dose of antibiotic is given intravenously (ampicilin 30 mg/kg) before the procedure. A diagnostic cystoscopy using 0°6/8 Fr (stroz/germany) neonatal cystoscope is needed [Figure 1]. Eleven Fr resectoscope is with either the cold/sickle blade or bugbee electrode and valve resection should be available for performance at the 5, 7, and 12 o'clock^[3] and vesicostomy is done by communicating channel between the bladder and lower abdominal wall when urethral size precludes safe valve ablation can be created to provide bladder drainage in this procedure [Figure 2].^[3]

The patients were undertaken ultrasonography in order to evaluate hydronephrosis and also they were followed by glomerular filtration rate (GFR) and 1-year creatinine (Cr) level.

Analysis

Data were collected and analysed with IBM SPSS 21 Version and also Chi-square test was used $P < 0.05$ was considered significant.

RESULTS

Total 54 boys met the inclusion study criteria. Mean age of patients in Group 1 was 3.8 ± 1.48 days and in Group 2 was 4.7 ± 1.8 days. One-year — Cr level as one of the

prognostic parameter was measured in two groups. It was 1.57 ± 1.45 in Group 1 and 1.57 ± 1.45 in Group 2 which was not statistically significant ($P < 0.8$).

Also, 1-year GFR level was measured it were 31.1 ± 4.4 mg/dl in Group1 and 33 ± 4.7 mg/dl. The patients underwent ultrasonography in which 10/23 in Group 2 (43.47%) had severe hydronephrosis and 14/31 (45.16%) in Group 1 had severe hydronephrosis.

Graded ultrasound results were not significantly different ($P = 0.24$).

The mean follow-up period was 1-year in both groups.

DISCUSSION

Despite many studies were done in the survival of patients diagnosed as PUV most of them showed significant nephrology complication in long-term follow-up.^[4]

The results of this comparative study show that there is not any significant difference between these two methods. Godbole *et al.* in the study comparing primary valve ablation with primary vesicostomy, found no significant difference in serum Cr and GFR at 1-year of age between the two groups.^[5] The findings of this study are in consistant with our results.

Also Lukong *et al.* showed vesicostomy as a useful temporizing modality of treatment in neonates and infants with PUV while valve ablation is not possible.^[6]

Also in a study of mini-vesicostomy in the management of PUV after valve ablation, Nanda *et al.* showed that the mini-vesicostomy significantly improved upper urinary

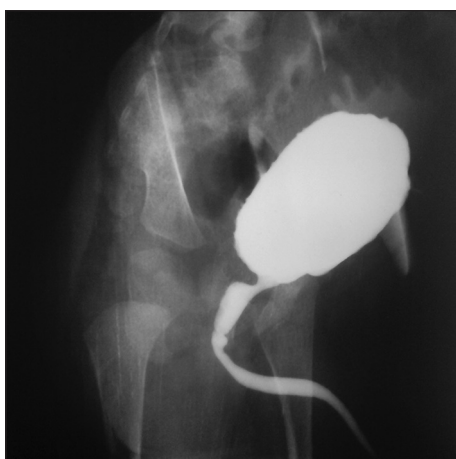


Figure 1: VCUG before vesicostomy

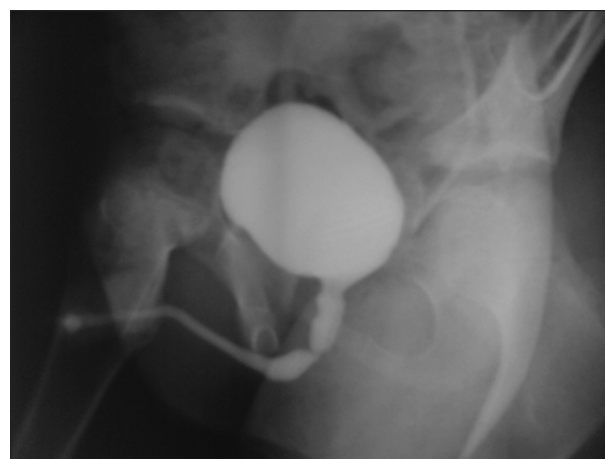


Figure 2: VCUG after vesicostomy

tract drainage, and it is a simple and suitable method to enhance long-term outcomes in PUV.^[7]

In developing countries endoscopic treatment is limited in neonates and infants due to lack of access to suitable sized instruments. Vesicostomy allows the bladder to decompress and to be in contact with urinary growth factors. Management of vesicostomy is easy concerning care needed and protection of the upper urinary tracts from further dysfunctions^[8] also Soliman in his study showed that use of a small Fogarty catheter guided through a neonatal cystoscope is a safe, simple and effective substitute for valve ablation in LBW neonates.^[9]

Prognosis of renal function in PUV has been directly linked to age at presentation, GFR, prenatal diagnosis, renal dysplasia, vesicoureteral reflux, renal scarring, Cr level during 1st year of life, upper tract obstruction, bladder dysfunction and urinary tract infection.^[8] In a study conducted by Divya Bhadoo, serum Cr level was considered an important prognostic factor for final renal outcome. When initial serum Cr was ≤ 1 mg/dl the incidence of chronic renal failure was 23%, while if it was above 1 mg/dl, the incidence increased to 72%.^[9] In our study, 1-year GFR and Cr level were measured. However, the difference was not significant in both groups.

Also, we have measured GFR, prognostic factor. Previous studies show mean GFR in patients who finally developed renal failure, was significantly lower than those without renal failure.^[9] These findings support our management regarding evaluating GFR and Cr level in this study two methods were performed, and complication were assessed. No significant difference was found. However, a complication such as hydronephrosis in groups treated with vesicostomy was lower than the other group.

Since in our community endoscopic treatment is limited in neonates and infants due to lack of access to appropriate sized instruments and advantages of vesicostomy mentioned, vesicostomy might be a better choice in PUV. However, the decision is based on the

surgeon and conditions of the infants. For instance, prematurity, LBW, electrolyte imbalance, and systemic disease are the effective factors that have effect in decision making.

CONCLUSION

Both methods improved urinary tract drainage. However, no significant difference was found in both groups, there was more tendency for performing vesicostomy in the management of PUV in our community. Other studies should be done to support our findings other studies should be done to support our findings.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Hosseini SM, Khoshnavaz R, Zarenezhad M, Paydar S. Transvesical direct visualization of Fogarty balloon catheter ablation of posterior urethral valves in the newborn. *Afr J Paediatr Surg* 2011;8:260-2.
2. Kajbafzadeh A. Congenital urethral anomalies in boys. Part I: posterior urethral valves. *Urol J* 2005;2:59-78.
3. LC Steven1, Divehysh Desai , Posterior Urethral Valves — Pediatric Urology Text Book Online. (http://www.pediatricurologybook.com/urethral_valves.html)
4. Bhadoo D, Bajpai M, Panda SS. Posterior urethral valve: Prognostic factors and renal outcome. *J Indian Assoc Pediatr Surg* 2014;19:133-7.
5. Godbole P, Wade A, Mushtaq I, Wilcox DT. Vesicostomy vs primary ablation for posterior urethral valves: Always a difference in outcome? *J Pediatr Urol* 2007;3:273-5.
6. Lukong CS, Ameh EA, Mshelbwala PM, Jabo BA, Gomna A, Anumah MA, et al. Role of vesicostomy in the management of posterior urethral valve in Sub-Saharan Africa. *J Pediatr Urol* 2014;10:62-6.
7. Nanda M, Bawa M, Narasimhan KL. Mini-vesicostomy in the management of PUV after valve ablation. *J Pediatr Urol* 2012;8:51-4.
8. Lukong CS, Ameh EA, Mshelbwala PM, Jabo BA, Gomna A, Anumah MA, et al. Role of vesicostomy in the management of posterior urethral valve in Sub-Saharan Africa. *J Pediatr Urol* 2014;10:62-6.
9. Soliman SM. Primary ablation of posterior urethral valves in low birth weight neonates by a visually guided Fogarty embolectomy catheter. *J Urol* 2009;181:2284-9.