

CORRELATION OF CYSTOSTOMY TO LOW URETHROCUTANEOUS FISTULA INCIDENT IN HYPOSPADIA SURGERY

Laura, S. F., Duarsa, G. W. K., and Mahadewa, T. G.

Biomedical Science, Faculty of Medicine Udayana University/
Sanglah General Hospital, Bali-Indonesia

Background: Hypospadias is the most common congenital abnormalities to the penis. The most common post-operative complications and hypospadias is urethrocutan fistula. Urethrocutan fistula is arising from an infected wound, hematoma, urinary extravasations, ischemic necrosis of the flap or graft, technical errors, and postoperative care. Although, reconstruction of the urethra without cystostomy results in patients discharged quickly, some sources still recommend the use of cystostomy in hypospadias surgery. This is because of lower complication rate and more comfortable for the children during the postoperative period. The purpose of this study was to determine the incidence of fistula urethrocutan correlation with cystostomy using hypospadias operation. **Methods:** This study was carried out with cross-sectional design involving 68 patients, comprising 34 people with operating groups and 34 other people of hypospadias surgery without cystostomy. This is a retrospective study by observing medical record of the patients at Sanglah General Hospital from December 2013 until May 2014. All data obtained were assayed with Chi-square and Person Correlation and considered significant at $p < 0.05$. **Results:** This Study reports that the value of $r = -0.364$, $p = 0.034$, and $PR = 0.16$. However, there is a correlation in the use of cystostomy to a lower incidence of fistula in operation urethrocutan hypospadias. In cystostomy surgery, fistula incidence was 2.9% and operating without cystostomy was 17.6%. In operation hypospadias using cystostomy is expected to reduce the incidence of fistula.

Keywords: hypospadias; cystostomy; fistula.

INTRODUCTION

Hypospadias is the most common congenital disorder of penis¹⁻³ and should be managed with surgery procedures consisted of orthoplasty, urethroplasty, meatoplasty, glanuloplasty, and skin coverage, in order to salvage fertility and cosmetic. Many factors might influence the development of fistula such as wound infection, hematoma, urinary extravasation, ischemia or necrosis of flap or graft, and technical error and inadequate management post-surgery. Urinary diversion using catheter by drainage of bladder (cystostomy) might decrease risk of infection, stitch mobility, urinary drainage to neourethra, tissue reaction, and therefore might be comfortable for the patient. Although it is still controversial, some studies indicated that cystostomy might decrease risk of urethral infection in the healing process post-surgery, it also might make patient comfortable, and the rate of post-

surgery complication is lower than not performing cystostomy (particularly in children). Prevalence of urethrocutaneous fistula in Sub-Department of Urology Sanglah General Hospital which used cystostomy post-surgery was 1 in 15 hypospadias case, much lower than in a study by Miliano in 2010.⁴⁻⁸ This inconsistency of data and different opinions from some experts regarding cystostomy associated with urethrocutaneous fistula are interesting to study and leading to internal question for authors whether there is a correlation between cystostomy and the low incidence of urethrocutaneous fistula in hypospadias surgery in Sanglah General Hospital. Therefore, the aim of this study is to determine correlation between cystostomy and incidence of urethrocutaneous fistula in hypospadias surgery in Sanglah General Hospital.

PATIENTS AND METHOD

This was a cross-sectional study to determine correlation between cystostomy and incidence of urethrocutaneous fistula in hypospadias surgery; involving 68 patients (34 post-surgery patients with cystostomy and 34 post-surgery patients without

Address of Correspondence: S. F. Laura
Biomedical Science, Faculty of Medicine
Udayana University/Sanglah General Hospital,
Bali-Indonesia
Email: sflaura@gmail.com

cystostomy) by using data of Medical Record between December 2013 to May 2014 in Urology Outpatient Care of Sanglah General Hospital. Inclusion criteria for this study was male 1-6 year old living in Bali who came to Sanglah General Hospital and had complete medical data documented in Medical Record of Sanglah General Hospital, with written consent from their parents for the author to check for their medical record. The variables were namely independent variable: children underwent urethroplasty followed by cystostomy or not followed by cystostomy, and dependent variable: urethrocutaneous fistula. Subjects were divided according to criteria of each variable, and would be described and analyzed. Bivariate analysis was performed, $p < 0.05$ was considered significant, aimed to determine the incidence of urethrocutaneous fistula and cystostomy in hypospadias surgery. Bivariate analysis was performed with SPSS 21.0 using Chi-Square, or Fisher's Exact Test as alternative. Criteria to test for correlation between independent variable and dependent variable is based on the result of p value and would be compared to confidence interval selected; both variables considered significant if $p < 0.05$. Because $p < 0.05$ we performed Pearson's Correlation test to determine the power of the correlation. Next, we determined Odds Ratio (OR) with significant level $\alpha = 0.05$ and confidence interval (CI) 95% to determine the risk of urethrocutaneous fistula in patients with hypospadias post-surgery.

RESULTS

Between December 2013 to May 2014, 68 patients fulfilling inclusion criteria were enrolled. They were divided into two groups, hypospadias surgery with cystostomy group (34 patients) and hypospadias surgery without cystostomy group (34 patients). Characteristic data of patients were presented in Table 1.

Table 1
Subject Characteristics Comparison based on Age, Weight and Body Mass Index

Variables	Group		p^*
	1	2	
Age (year)	3.65±0.31	3.00±0.24	0.109
Weight (Kg)	15.71±2.11	14.88±1.65	0.215
BMI	21.68±1.04	21.71±1.13	0.698

Remarks:

Group 1 = hypospadias surgery with cystostomy

Group 2 = hypospadias surgery without cystostomy

BMI = Body Mass Index

*Normally distributed $p > 0.05$

Mean age of patients underwent cystostomy was 3.65±0.31 year old, while in patients without cystostomy was 3.00±0.24 year old, $t = 1.64$ and

$p = 0.019$ ($p > 0.05$). Mean body weight in group with cystostomy was 15.71±2.11 kg versus 14.88±1.65 kg in group without cystostomy, $p = 0.215$; while mean BMI in group with cystostomy was 21.86±1.04 kg/m² versus 21.71±1.13 kg/m², $p = 0.696$ (Table 1). Both were homogen.

There were 6 patients (17.6%) without cystostomy and urethrocutaneous fistula; while only 1 (2.9%) patient with cystostomy who had urethrocutaneous fistula. In bivariate analysis by Chi-Square using 2x2 table (Table 2), prevalence ratio was 0.16, indicating that cystostomy decreased incidence of urethrocutaneous fistula in hypospadias surgery.

Table 2
Prevalence Ratio of Cystostomy against Incidence of Urethrocutaneous Fistula in Hypospadias Surgery.

		Fistel		Total
		positive	negative	
Hypospadias	With cystostomy	1	33	44
	Without cystostomy	6	28	34
Total		7	61	68

Prevalence ratio (PR): 0.16; $p = 0.034$; OR: 0.115

Pearson's Correlation test was also performed to determine correlation between cystostomy and incidence of urethrocutaneous fistula in hypospadias surgery. Based on the analysis, we found correlation of coefficient (r) = -0.364, $p = 0.034$ ($p < 0.05$). The correlation was negative and significant, indicating that there was significant correlation between cystostomy and the low incidence of urethrocutaneous fistula in hypospadias surgery. This is consistent with prevalence ratio mentioned in this study.

Odd Ratio in table 2x2 was 0.115 indicating that cystostomy was the protecting factor of urethrocutaneous fistula in hypospadias surgery.

DISCUSSION

Correlation between cystostomy and hypospadias surgery was analyzed by Chi-Square and Pearson Correlation test. Based on the analysis, we found that there was correlation between cystostomy and the decreased incidence of urethrocutaneous fistula in hypospadias surgery ($r = -0.364$, $PR = 0.16$). This was also supported by a study by Snodgrass et al.²⁻⁷ They mentioned that one of the reasons to perform cystostomy in hypospadias surgery was because the lower complication rate and more comfortable for the children in the post-surgery period. In animal study using rabbit, Scherz et al.⁵ found that wound healing

of rabbit's urethra was influenced by cystostomy; they mentioned that cystostomy was required in the healing period of urethra.^{6,20-28}

In this study, we found that fistula incidence in hypospadias surgery accompanied by cystostomy was 2.9%; while in hypospadias surgery without cystostomy, it was 17.6%. It because of using cystostomy can decrease the infection and hematoma that caused by urine. This is similar to a study by Milano (2010) stating that mean of urethrocutaneous fistula incidence was 15% or 1 in 7 hypospadias surgery.^{4,18-25}

CONCLUSION

In hypospadias surgery with cystostomy, the incidence of urethrocutaneous fistula was 2.9%, while without cystostomy the incidence was 17.6%. There was correlation between cystostomy and the low incidence of urethrocutaneous fistula in hypospadias surgery.

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