

FREQUENCY OF URETHROCUTANEOUS FISTULA FOLLOWING SNODGRASS HYPOSPADIAS REPAIR IN CHILDREN

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ABSTRACT

Objective: To determine the frequency of urethrocutaneous fistula over a period of three months following snodgrass hypospadias repair for the treatment of distal penile hypospadias in children.

Methodology: This descriptive study was conducted in the paediatric surgery unit, Lady Reading Hospital, Peshawar over a period of eight months from June 2009 to February 2010. Patients with distal penile hypospadias without chordee between 2 and 14 years were included and patients were excluded who had previous repair for hypospadias. All those patients fulfilling the inclusion and exclusion criteria whose parents gave informed consent after explanation of the whole protocol were admitted through outpatient department for the said procedure and data was analyzed.

Results: A total of 52 patients were included in the study. All patients were in the range of 2 to 10 years and underwent Snodgrass Tubularized Incised Plate (TIP) urethroplasty for hypospadias repair. The overall rate of urethrocutaneous fistula was 9.6% (5 out of 52 patients). Mean operative time noted in minutes was 57.52 minutes. No major morbidity or mortality was noted in this study.

Conclusion: TIP urethroplasty is simple, single stage operation in the management of hypospadias and has good functional and low complication rate.

Key Words: Hypospadias, Urethrocutaneous fistula, Snodgrass Tubularized Incised Plate (TIP) urethroplasty

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INTRODUCTION

Hypospadias is a congenital defect due to incomplete tubularization of the urethral plate leading to abnormal location of the meatus anywhere along the ventral aspect of penis and down on to the perineum¹.

This condition occurs in approximately 1 in 150 to 300 males, making hypospadias the

second most common birth defect in boys after cryptorchidism. In majority (80%) of cases the meatus is located distal to the midshaft². More than 200 methods of repair have been introduced throughout the 125 years history of hypospadias repair³. Snodgrass repair also called Tubularized incised plate urethroplasty, was introduced in 1994. The simplicity of the operative technique, low complication rate and reliable creation of a normal appearing glanular meatus, (a vertical slit like normal appearing meatus) making Snodgrass a preferred method for repairing distal penile hypospadias^{4,6}. This procedure allows construction of neo-urethra from existing urethral plate without additional skin flaps⁷.

The goal of modern hypospadias repair is to achieve functionally as well as cosmetically normal looking glans, meatus and phallus⁸. Urethrocutaneous fistula being the most frequent complication ranging from 0.58% – 16%^{8,9} following Snodgrass repair can be avoided by interposition of a vascularised dartos flap between neourethra and overlying skin^{10,11}. Often distal obstruction is related to persistent fistulas. Once a

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fistula has matured, closure procedures may be ineffective because of a discouraging rate of fistula recurrence. Therefore, some have suggested repairing urethrocuteaneous fistulas using the principles of wide mobilization of adjacent skin flaps, multilayered closures and use urinary diversion.

Baskin recommends using magnification and delicate instrument for fistula repairs. It is extremely important to recognize a concomitant urethral stricture or diverticulum at the time of fistula closure. These should be repaired prior to ensure the success of the fistula closure. Occasionally a meatoplasty may be necessary at the time of fistula repair¹².

Snodgrass repair has become a preferred method for repairing distal hypospadias because of its versatility to correct different meatal variants¹³.

The rationale of this study was to evaluate the frequency of urethrocuteaneous fistula following snodgrass hypospadias repair in our setup as impressed with excellent published results and this technique has popularity worldwide. As hypospadias repair has long learning curve and on acceptable results we started this technique in our unit.

METHODOLOGY

This descriptive study was conducted in the paediatric surgery unit, Lady Reading Hospital, Peshawar over a period of eight months from June 2009 to February 2010. Non probability sampling techniques was used. Children between 2 and 14 years, with distal penile hypospadias without chordee were included and those who had previous repair for hypospadias were excluded from the study.

This study was conducted after approval from the ethical committee of the hospital. Patients with distal penile hypospadias were confirmed and diagnosed as presenting with abnormal meatal opening on the ventral surface of the penis below the level of glans by detailed history and clinical examination. All those patients fulfilling inclusion criteria of this study whose parents gave informed consent after explanation of the whole protocol, benefits versus risks of surgery were admitted through the outpatient department of the hospital.

Each patient was thoroughly re-examined by taking history, complete clinical examination and routine investigation i.e., Haemoglobin, urine R/E, HBs Ag, anti HCV antibodies and other relevant investigation if necessary were also done in each patient preoperatively.

All patients were operated under general anesthesia. A tourniquet was applied to maintain a

bloodless field and a 3/0 silk stay suture taken into glans for traction and later to secure the urethral stent. A 'U' shape incision was made extending along the edges of the urethral plate to healthy skin 2mm proximal to the meatus. Flaps were mobilized for a tension free repair. The urethral plate was then incised in midline from the hypospadiac meatus distally. Incised plate was then tubularized over a 6Fr or 7Fr stent using interrupted polyglycolic acid no 6/0 suture. This neourethra was then covered with a vascularised dartos flap harvested from subcutaneous tissue of dorsal prepuccial skin. All patients were maintained on antibiotics prophylaxis. Urethral stent was removed on 10th postoperative day. Operative time was calculated for each repair.

Patients were followed for three months with their first visit commencing at the tenth day postoperatively for the removal of stent in the outpatient department. The next visits were scheduled on 1st and 3rd months in the outpatient department. All patients were followed for complication especially for fistula formation and documented in a predesigned proforma for each patient. All data was analyzed by using SSPS version 16. Age of patient and the time taken for operative procedure was analyzed for mean and standard deviation. Urethrocuteaneous fistula was expressed in frequencies and percentages. Data were expressed pictorially on tables.

RESULTS

A total of 52 patients with distal penile hypospadias were analyzed for age, operative time and postoperative complication, urethrocuteaneous fistula. All these patients were in the age range from 2 to 10 years. Mean age was calculated as 3.9 years \pm SD 1.86. Mean operative time was 57.52 minutes \pm SD 7.79, minimum time taken for the repair was 45 minutes and maximum time was 70 minutes.

The overall rate of urethrocuteaneous fistula was 9.6% (5 in 52 patients). Out of these five, urethrocuteaneous fistula was noted in 3(5.8%) patients on their first visit after removal of the stent on tenth post operative day and in 2(3.8%) patients, urethrocuteaneous fistula was noted in their second visit in the first month post-operatively. No urethrocuteaneous fistula was noted in the third follow up visit in third month postoperatively.

Out of these five patients, three (5.8%) patients were in the age range of 2-4 years and two (3.8%) patients were in the range of 5-7 years. No urethrocuteaneous fistula was noted in patients above 8 years (Table 1).

Table 1: Age wise distribution of Urethrocutaneous fistula

Age	Urethrocutaneous fistula		Total
	Yes	No	
2-4 Years	3	34	37
	5.8%	65.4%	71.2%
5-7 Years	2	11	13
	3.8%	21.2%	25.0%
8-10 Years	-	2	2
	-	3.8%	3.8%
Total	5	47	52
	9.6%	90.4%	100.0%

DISCUSSION

TIP urethroplasty (snodgrass) is a relatively straightforward one stage procedure having excellent cosmetic and functional results with a minimum complications¹⁴.

According to Cheng EY et al and Akmal M et al, post Snodgrass repair urethrocutaneous fistula frequency was ranging 0.58%-16%^{8,15} Zhou et al noted 12.5% urethro-cutaneous fistula rate. Ahmad K reported post Snodgrass repair fistula rate of 11.8%¹⁶. Ikramuddin et al¹⁷ noted a fistula rate of 2%, while Javanthi VR⁶ reported a fistula of 1%.

In 2003, Sozibir and Snodgrass mentioned that dartos flap obtained from the dorsal prepuce and shaft skin is used to cover the neourethra¹¹. In 2006, Willcox D used a second layer of vascularised pedicle subcutaneous tissue harvested from dorsal hooded prepuce provided to cover for the urethroplasty to minimize the incidence of urethrocutaneous fistula¹³.

According to our study, urethrocutaneous fistula occurred in 5 (9.6%) patients and according to various other studies, the frequency of fistula is 0.58% to 16%^{8,10,13}.

This higher incidence of urethrocutaneous fistula post Snodgrass repair observed in present study compare to several western studies may be due to development of sub-specialties like pediatric urology, pediatric plastic surgery and dedication of surgical specialists to special field of interest in Western countries. Moreover strict sterile theatre environment, proper suture materials and proper instruments have an edge over our study which we lack in our setup because of poor funding and dealing with heavy elective surgical lists along with heavy casualties in this warzone.

Table 2 describes the frequency of urethrocutaneous fistula in various studies.

CONCLUSION

TIP urethroplasty is simple, single stage operation in the management of hypospadias and has good functional and low complication rate.

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Table 2: Frequency of Urethrocutaneous fistula in various studies

Author(s)	Year of Study	Place of Study	No of Patients	Frequency of urethrocutaneous fistula
Zhou Y et al ¹⁴	2001	China	24	12.5%
Khairi A ¹⁵	2012	Egypt	75	11.8%
Soygur T et al ⁴	2005	Turkey	60	8.3%
Haq A et al ¹	2004	Pakistan	30	10%
Bath AS et al ¹⁸	2003	India	16	6%
Cheng EY et al ⁸	2002	USA	414	0.58%
Ikramuddin et al ¹⁷	2007	Pakistan	50	2%
Our Study	2010	Pakistan	52	9.6%

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CONTRIBUTORS

MU conceived the idea and planned the study. MA, MH & MY did the data collection and helped in the writeup of the study. KK supervised the study. All the authors contributed significantly to the research that resulted in the submitted manuscript.