

Comparison of Snod Gross and Para-meatal Based Flap Technique for Hypospadiasis

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Objective: To compare the two surgical procedures Snod gross & paramental based flap technique for mid & distal penile hypospadias including cosmosis. **Study design:** Randomized Clinical interventional trail. **Place of study:** This study was conducted in the Urology Department of Assir Central University Hospital ABHA, KSA and Department of Urology & Renal transplantation, Jinnah Hospital, Lahore from June 2002 to Dec 2004. **Material & Methods:** Thirty-two patients were selected for this randomized clinical intervention study with mid shaft & distal hypospadias fulfilling the inclusion criteria. Snod Gross and paramental based flap technique was assigned randomly to patients comprising of two groups of sixteen each. Watertight closure was made with 6/0 vicryl. Tourniquet or 1:10000 epinephrine were used. Follow up at 2 weeks, three months; 6 months post catheter or stent removal and the patient were assessed on criteria of cosmosis, time for surgery and complications associated with the procedure. **Results:** Thirty-two patients who underwent procedure of Snodgross & paramental-based flap in the management of mid shaft & distal penile Hypospadias. Age ranged from 2–12 years. The mean age was 5.23±4 years. The presentation of patients was dystocia of external meatus with misdirected stream in sixteen (50%) patients, spraying of urine in six (25%) and narrow stream in 4(13%) patients. Eighteen patients were having distal penile and fourteen were having mid shaft hypospadias. Following Snod grass technique all patients had good cosmetic results without any complication. Following paramental based flap, one patients (6.3%) develop wound dehiscence, three patients (18.8%) develop urethral fistula, two patients (12.5%) showed metal retrieval and twenty patients showed good cosmosis. In our study, comparison between Snodgross & paramental-based flap, the success rate was 100% and 62.4% respectively. **Conclusions:** Success with Snod gross procedure is better with no complications and good cosmosis. Complications rate was 37.6 % in-patient with para-meatal technique.

Key words: Snodgrass technique. Paramental technique. Comparison

Hypospadias is a hypoplasia of the tissue forming the ventral aspect of the penis beyond the division of the corpus spongiosum¹. It is congenital malformation of the urethra in which external urethral meatus opens on the ventral surface of the penis. It is associated with absence of distal urethra and corpus spongiosum. Three main features, a ventral position of meatus, a dorsal hood and a ventral curvature on erection characterize it². Hypospadias occurs in approximately 1 in 300 new born males.³ The main objective of hypospadias repair is to provide straight penis with meatus at the tip of glans and good cosmetic results in single stage^{4,5}. Several surgical techniques are employed for repairing hypospadias. The repair of hypospadias may be either multi staged or single stage repair⁶. In multi staged repair the chordee is released first and urethral reconstruction is done on a second stage after an interval of 6 to 12 weeks. The main disadvantages of multistage repair are high morbidity, longer exposure to anesthesia, inconvenience to the patient and poor blood supply of scared skin from previous surgical procedure⁷. In single stage repair the chordee correction and urethral reconstruction is done in same sitting⁸. Various single staged procedures are being practiced. Snodgross and paramental-based flap are commonly used. In Snod Gross procedure, a midline longitudinally relaxing incision is made to widen the urethral plate. This incision extends from the ectopic urethral meatus up to the glans and subsequently tabularized around an 8 F catheter. A dorsal pedicle is dissected from the dorsal prepuce and shaft skin.

It is then brought ventrally to further separate the neourthra from subsequent skin closure. Finally the glanuloplasty is done and meatus is secured to the glans⁹. In paramental-based skin flap, non-urethral tissue is folded and sutured to the edge of urethral plate using absorbable sutures. Rotating the pre-putial skin by splitting it in midline covers the ventral penile defect. For glanuloplasty lateral glans flaps are advanced over repair. There is not an operation for hypospadias that will be uniformly and totally successful. We here share our experience of a study carried out to compare the efficacy safety and complications of both the techniques.

Objectives: To compare the Snodgross and Paramental based flap techniques for mid & distal penile hypospadias including cosmosis.

Study design: Randomized Clinical interventional trail.

Place of study: This study was conducted in the Urology Department of Assir Central University Hospital ABHA, KSA and Department of Urology & Renal transplantation, Jinnah Hospital, Lahore from June 2002 to Dec 2004.

Material & Methods:

Thirty-two consecutive patients presenting with mid shaft & distal hypospadias were selected according to inclusion criteria of study. Patients were randomly assigned the two techniques used for hypospadiasis. All patients were available and observed for follow up for a period of two weeks; three months and six months post catheter or stent. The patients were assessed on criteria of cosmosis, time

for surgery and complications associated with the procedure. Rate of success of procedure and rate of complication average time of operation and duration of length of stay was compared. Chi-square test was used to check the statistical significance between two proportions.

Detailed medical history was taken and thorough local & systemic examination was done. Standard Snodgross technique (Group A) & standard Para meatal-based techniques (Group B) were applied. Watertight closure was made with 6/0 vicryl. Tourniquet or 1:10000 epinephrine were used. Patients were not aware of the technique to be used.

Inclusion criteria:

- Age 2-12 years
- Flat urethral plate
- No previous penile surgery apart from standard circumcision
- No other urological abnormalities

Exclusion criteria:

- Age < 2->12 years
- -Graved urethral plate
- Previous penile surgery apart from standard circumcision
- Concurrent urological abnormalities

Operational definitions: Good cosmosis was defined as at the end of surgery the glans should be conical, meatus should be slit shaped and at the tip.

Ethical considerations: The consent from the parents was taken for the procedure and detailed discussion was done

to explain the technique applied to the subjects and their effects and complication was also discussed.

Results:

Thirty-two patients underwent procedure of Snodgross & Parameatal based flap in the management of mid shaft & distal penile hypospadias. Age of the patients ranged from 2 – 12 years. The mean age was 5.23 ± 4 years. All patients in both groups presented with dystocia of external meatus. Sixteen (56.2%) presented with misdirected stream, six (25.0%) spraying of urine and four (18.8%) narrow stream (Table no: 1). Eighteen patients (56.3%) were having distal penile and fourteen (43.7%) (Fig 1) were having mid shaft hypospadias. The common anomalies associated with hypospadias were not seen in our study. Following Snod gross technique all patients had good cosmetic results (100.0%) without any complication. Mean operative time was 35.5min for Snod gross technique and mean operative time for parameatal based flap technique was 55.4min. Average hospital stay was 4 days for both Snod Gross technique and parameatal based flap technique.

Following parameatal based flap, three patients develop urethral fistula (18.8%), two patients (12.5%) showed meatal retrieval, one patients (6.2%) develop wound dehiscence, and only ten patients (62.5%) patients showed good cosmosis. In our study, Snodgross & parameatal-based flap, the success rate was 100% and 62.4% respectively and was statistically significant (P< 05). (Table 2)

Table1: Type of surgical procedure * Presentation of hypospadias:

Presentation	Snod Gross (n=16)	Parameatal based flap technique (n=16)	Total
Dystocia of external meatus with misdirected urine stream	9(28.1%)	9(28.1%)	18(56.2%)
Dystocia of external meatus & spraying of urine	4(12.5%)	4(12.5%)	8(25%)
Dystocia of External meatus & Narrow urine stream	3(9.4%)	3(9.4%)	6(18.8%)

Table2: Type of surgical procedure * Type of cosmoses Crosstabulation:

Cosmoses	Snod Gross (n=16)	Parameatal based flap technique(n=16)	Total
Good cosmosis (slit meatus & conical glans)	16(100%)	10(62.5%)	26(81.3%)
Meatal retrieve	-	2(12.5%)	2(6.3%)
Fistula	-	3(18.8%)	3(9.4%)
Dehiscence	-	1(6.2%)	1(3.1%)

Table 3 Type of surgical procedure * mean operative time and mean hospital stay.

	Snod Gross (n=16))	Parameatal based flap technique (n=16)
Mean operative	35.5 min	55.5 min
Mean hospital stay	4 days	4 days
Dystocia of External meatus & Narrow urine stream	3(9.4%)	3(9.4%)

Chi-Square Tests:

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.815	3	.061
Likelihood Ratio	9.715	3	.021
Linear-by-Linear Association	6.099	1	.014
N of Valid Cases	32		

Chi Square shows a significant association between type of procedure and cosmoses. (p <.05)

Discussion:

The existence of more than 200 techniques of hypospadias repair testifies that there is no single definite technique available for treating hypospadias. The recommendation in hypospadias surgery remarkably improved in the past decade. The techniques of 1980s were refinement of the procedure introduced earlier in the century, while procedure of today are refinement of procedure used in 1980¹⁰. Culp in 1968 after studying the 50 cases concluded that ideal procedure should produce maximum correction with minimum possible complications. It is clear no single procedure is ideal in every case but surgical procedure varies according to type of hypospadias, presence or absence of chordee and also the choice of surgeon¹¹. It is very difficult to specify the ideal procedure, but ideal procedure is that which produce following results, Normal looking straight penis, slit shaped meatal opening should be at tip, after correction he should have normal coitus provide maximum correction with minimum complications¹². Time of surgery is also a point of controversy. Most of hypospadiologists recommended correction between 6 & 12 months of age Risk of complications further decreased by use of optical magnification and fine instruments.¹³ Hypospadias can also be managed as day case surgical procedure, so management of the younger aged infant at home is much easier.¹⁴

Despite large number of operative techniques for hypospadias repair only a few of them are being practiced in most of the center. We conducted this study to assess the efficacy of a new techniques. Sixteen patients in each group were operated upon and analyzed. They belonged to rural as well as urban areas. Age of patient range from 2 - 12 years, the mean age was 5.23 years. In general the hypospadias repair is performed when the age is 6 - 9 months or in older children at the time of referral. But in previous studies Elder et al¹⁵ in 1987 showed that the number of patients repaired at the age ranged from 7 - 27 years and Hendren et al¹⁶ in 1988, reported that the number of patients treated at the age ranged from 9 months to 22 years. In this study many of the patients came in adult age for infertility having hypospadias. Reason could be illiteracy and lack of basic health facilities. The common anomalies associated with hypospadias were not seen in our study. The chances are generally less in distal than in proximal hypospadias.

The over all success rate in Snod gross and paramental based flap technique was 100% and 62.4 % respectively in paramental based flap technique. The difference was statistically significant ($p < .05$). The failure in-group B flap was due to postoperative infection.

The traditional objectives of hypospadias repair were with straight penis with glanular meatus to permit voiding and to allow effective coitus. In recent years several techniques have been developed to improve cosmesis.¹⁷ Result of Snod gross urethroplasty have led to re-

evaluation of older surgical techniques. Urethral plate preservation is required in this procedure. A midline incision of plate results in significant widening. The urethral plate then tabularized and urethroplasty is completed. The incision of urethral plate heals by re-epithelialization without significant fibrosis.⁹ This method has become popular because it produces vertically oriented normal looking meatus which is cosmetically superior to other techniques¹⁸. In those cases that required division of urethral plate for correction of chordee, an alternate procedure should be selected.

Conclusions:

Success with Snod gross procedure is better with no complications and good cosmesis and is also a more physiological procedure.

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