



TUBULARIZED INCISED PLATE URETHROPLASTY FOR DISTAL HYPOSPADIAS-A PROSPECTIVE STUDY

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ABSTRACT

Objectives: The objectives of this study are to assess the outcomes of Tubularized incised plate(TIP)urethroplasty for distal hypospadias such as cosmetic appearance of the penis, functional outcome(voiding) and complications.

Methodology: This is a prospective study of 25 patients with distal hypospadias over 2 years period between January 2015 to January 2017 at GGH, Guntur, Andhra Pradesh treated with TIP urethroplasty, to assess postoperative cosmetic, functional outcomes and its complications

Results: Most of the patients who underwent surgery were in 0-5 age group (64%) followed by 6 -10 age group(20%). Most of the patients presented with subcoronal hypospadias(48%). 80% of them had fair cosmetic outcomes and 88% voided with good stream. Urethro cutaneous fistula occurred in 3 cases constituting 12% of complication rate.

Conclusion: TIP repair gives favourable outcomes with low complication rates. Given its versatility and results with reference to cosmesis and functional voiding, this technique is the most preferred one for distal Hypospadias repair.

KEYWORDS : Hypospadias, Tubularized incised plate (TIP)urethroplasty, Snodgrass procedure, Tubularized incised urethroplasty

INTRODUCTION:

TIP urethroplasty was developed by Snodgrass in 1994 as a modification of Thiersch- Duplay technique. Historically, the Thiersch-duplay technique was developed in part for repairing an epispadias case and in particular for repairing a hypospadias case. Thiersch tubularized the dorsal urethral plate to repair an epispadias penis in 1869, and Duplay tubularized the ventral urethral plate in a hypospadias penis in 1874

The TIP technique is essentially a tubularized repair based on Thiersch- Duplay technique in which full thickness longitudinal midline incision is made on the urethral plate. TIP procedure is popular because it is technically simple, effective and versatile. It gives excellent glans cosmesis with vertically slit meatus and low complication rate. This procedure is currently being recognized as the surgical technique of choice for distal hypospadias according to a survey of pediatric urologists⁶. Several modifications were made to the original technique. We used vascular subcutaneous tissue flap(dartos) to interpose between the new urethra and skin. The objectives of our study are to assess the outcomes which include cosmetic appearance of the penis, functional outcome (voiding) and complications.

METHODOLOGY:

This is a prospective study on 25 patients with distal hypospadias treated at our centre during the period between January 2015 to January 2017. All the patients were treated with TIP repair. In all the patients demographic data, preoperative clinical features, intraoperative meatal location, presence of chordee, postoperative cosmetic and functional outcomes and complications were studied. The cases of distal hypospadias repaired by TIP procedure were included in this study. Patients with mid and posterior hypospadias, hypospadias with severe chordee requiring urethral plate transection and hypospadias requiring two stage procedures were excluded.

The result is defined as successful when the penis is anatomically straight, cosmetically good, and functionally voiding with good urinary stream and is considered failure when there is a complication that requires another surgical procedure.

RESULTS: This study was done on 25 patients with distal hypospadias. Median follow up period was 6 months with a range of

1-12months.

Table 1: Age at presentation

AGE GROUP	NUMBER OF PATIENTS	PERCENTAGE OF PATIENTS
0-5	16	64
6-10	5	20
11-15	0	0
16-20	3	12
21-25	1	4

Most of the cases presented between 0-5 age group constituting 64% of cases followed by 6-10 age group constituting 20% of cases.

Table 2: Site of distal hypospadias

SITE	NUMBER OF PATIENTS	PERCENTAGE OF PATIENTS
Glanular	5	20
Coronal	6	24
Subcoronal	12	48
Distal penile	2	8

Most of the patients presented with subcoronal hypospadias constituting (48%) which is followed by coronal(24%), glanular(20%), distal penile(8%).

COSMETIC ASSESSMENT:

In our study we used the most recent attempt for objective assessment of postoperative outcome, the Penile Perception Score(PPS), which seems to be the most reliable instrument to assess penile self-perception after hypospadias repair and for appraisal of the surgical result by patient, parent and uninvolved surgeon.

Meatal shape, glans shape, foreskin appearance and curvature are assessed postoperatively.

Table 3: Cosmetic assessment

SCORE	NUMBER OF PATIENTS	PERCENTAGE OF PATIENTS
Satisfactory	20	80
Unsatisfactory	5	20

Cosmetic appearance was satisfactory in 80% of cases

FUNCTIONAL OUTCOMES:

Functional outcomes were assessed with a set of questionnaire like satisfaction with voiding, stream, spaying, and straining. Post void residual volume was measured using ultrasound. Neourethra was calibrated as per the age group.

Table 4 Functional(voiding) outcomes

Voiding	Number of patients	Percentage of patients
Satisfactory(normal)	22	88
Unsatisfactory(fistula)	3	12

Post void residual(PVR) urine was nil.Voiding was satisfactory in 88% of patients.

COMPLICATIONS

Table 5: Fistula and the age group

Age groups	Number of patients
0-5	0
5-10	0
10-15	0
15-20	1
20-25	2

Table 6: Complication rate

COMPLICATION	NUMBER OF PATIENTS	PERCENTAGE OF PATIENTS
Fistula	3	12
Meatal stenosis	0	0
Stricture	0	0
Diverticulum	0	0
Glans Dehiscence	0	0

The only complication which occurred in our study was urethrocutaneous fistula(UCF). UCF occurred in 3 cases in the adult age group (15-25) constituting complication rate of 12%.

Table 7: Success vs failure rate

	Number of patients	Percentage of patients
success	22	88
Failure	3	12

Success rate in our study was 88%. All of them voided well.

REPRESENTATIVE IMAGES



Figure 1pre operative clinical image



Figure 2 Tubularization



Figure 3 Graft harvesting



Figure 4 Appearance at voiding on 10thpost operative day.

DISCUSSION:

Hypospadias is a congenital penile defect in which urethra opens on the ventral aspect of either the penis, scrotum, penoscrotal junction or perineum. It is due to incomplete development of urethra and its incidence is 0.3% to 0.8% of the male new borns.

The treatment of hypospadias is said to be successful when it produces normal looking straight penis, vertically oval slit like meatus at the tip, conical glans, giving an appearance of circumcised penis and achieving straight urinary stream. Objectives of our present study which analysed 25 cases of distal hypospadias were to assess the cosmetic outcomes, functional outcomes and complications.

TIP procedure is simple, effective, versatile and durable in achieving excellent cosmesis, vertically oriented meatus and functionally normal voiding. This technique has the advantage of not using flaps or grafts for constructing neourethra.

The local complications of TIP repair are urethrocutaneous fistula, meatal stenosis, glans dehiscence, stricture and diverticulum. On analysing data of different studies which included patients with distal hypospadias the overall complication rate ranged between 2-33%. Snodgrass⁷ reported only 2% complication rate in 51 patients with distal hypospadias in 2006. In the study group of 25 patients with distal hypospadias done by Chatterjee¹, he reported 7% complication rate. Sharma's³ study showed 20%, whereas Study by Mustafa² showed a highest complication rate of 33%. Furthermore, studying the individual complication rates, Snodgrass^{5,8} reported fistula rate ranging from 2% to 5%, 2% to 3% of meatal stenosis and 1.5% glans dehiscence⁵ in his studies. Likewise, Chatterjee¹ and Sharma³ also stated fistula to be the only complication in their study with 7% and 20% respectively. Our study showed 12% of complication rate, UCF, being the only complication. Most of these studies show that the complication rate with TIP repair is low and among these, fistula is the most common complication.

The success rate for distal hypospadias with TIP repair in different studies was ranging from 67-100percent.Two studies done by Snodgrass⁴ showed highest success rate of 100% and 98% each. Further Sharma and Chatterjee also showed a higher success rate of 80% and 93% respectively. Mustafa showed a success rate of 67%. Our study had a success rate of 88%.

Table 8: Success rate in various studies

Author	Year	Number	Success rate percentage
Snodgrass	1996	148	100
Chatterjee	2004	25	93
Mustafa	2005	12	67
Sharma	2005	5	80
Snodgrass	2006	51	98
Present study	2018	25	88

The success rate in our study was 88% which is comparable to other studies

Table 9: Overall complication rate in various studies

Author	Number	Overall complications percentage
Sharma	5	20
Mustafa	12	33
Chatterjee	25	7
Snodgrass	51	2
Present study	25	12

The complication rate in our study was 12% which is in the range of our comparable studies

Table 10: Individual complications

Author	Number	Fistula	Meatal stenosis	Glans dehiscence
Sharma	5	20	0	0
Mustafa	12	25	8	0
Chatterjee	25	7	0	0
Snodgrass	51	2	0	0
Snodgrass	137	5	3	2
Present study	25	12	0	0

Our study being relatively small constituting only 25 cases, the only complication which occurred was UCF(12%).

CONCLUSION:

TIP repair for anterior hypospadias is simple, effective, durable and versatile. This procedure is currently being recognized as the surgical technique of choice for distal hypospadias according to a survey of pediatric urologists⁶. By using this standard technique the urologist can achieve predictable outcome and low complication rate.

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