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Original Research Article

A study of complications and outcome of hypospadias repair at a tertiary care hospital of south Gujarat, India

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ABSTRACT

Background: In clinical practice, many factors influence the choice of surgical technique for hypospadias repair. With this background, we evaluated various methods of surgical repairs of hypospadias with their complications and outcomes.
Methods: This prospective study was conducted at a tertiary care hospital of South Gujarat, India including 32 patients of hypospadias. All patents were followed after an interval of one week, one month, three months and six months after discharge and complications were recorded.
Results: Out of 32, 20 (62%) of patients were having distal hypospadias while 11 (35%) had proximal hypospadias. Eleven patients were operated with TPIF repair and Snodgrass repair each while 4 patients were operated with stage 1 and stage 2 repair each. In TPIF group, 7(60%) patients developed superficial skin necrosis which in Snodgrass group, 5 (45%) patients developed wound infection and oedema. Delayed complications were seen in only 2 cases of surgical repair. Out of 32, 31(96%) patients had satisfactory shape of penis while 1 (4%) patient had sub-optimal cosmetic result.
Conclusions: Most common type of hypospadias was distal type in our study. Approximately one third patients were had their hypospadias repaired by TPIF Repair and same percent by Snodgrass Repair. Skin necrosis and wound infection were the most common early complication of the hypospadias repair. Urethral fistula remains the most worrying complication of surgery. TPIF Repair is one of the method which reduces rate of complications.

Keywords: Hypospadias, Lateral base repair, MAGPI, Snodgrass Repair, TPIF repair

INTRODUCTION

Hypospadias is one of the most common congenital malformation affecting the external male genitalia.[1] The incidence is approximately 1 in 250 male newborns, although its incidence seems to be increasing.[2]

Hypospadias is defined as an insufficient development of the urethral fold and the ventral foreskin, with or without penile curvature. The urethral opening is located more proximally anywhere between the tip of the penis and the perineum.[3]

Hypospadias classification is based on the position of the meatus, within three categories: distal or anterior hypospadias with the meatus on the glans penis, at the corona, or subcoronal.

Mid-penile hypospadias with an urethral opening located on the distal penile shaft, midshaft, or on the proximal penile shaft. Proximal or posterior hypospadias have a penoscrotal, scrotal, or perineal urethral meatus location. Distal hypospadias is the most common finding in the Western world. In Asia more proximal forms are observed.[3]

Literally countless techniques for hypospadias repair have been described. In large, systematic reviews of various types of hypospadias correction, no urethroplasty technique appears to be definitively superior. Moreover, comparison between series in the literature is challenging because of a lack of reliability in reporting outcome, which complicates creation of universal recommendations.[4,5] In fact, on first examination proximal hypospadias can become midpenile after dissection. In general, the technique for repair will be chosen intraoperatively with the decision-making process based on the assessment of anatomy: the native meatus location, penile curvature and size, and on the aspect of the ventral skin before and after development.[6]

In trying to describe the reconstructive techniques for hypospadias repair one could state that there are as many techniques and their modifications as there are surgeons who perform hypospadias repair. Therefore, it is impossible to obtain a consensus based on outcomes and provide guidelines. In clinical practice, many factors influence the choice of surgical technique, including ‘‘personal taste, upbringing, situational preference, training, experience and personal success’’.[7] For that reason, we evaluated various methods of surgical repairs of hypospadias with their complications and outcomes.

METHODS

All patients with age greater than 12 months who underwent Hypospadias repair in the surgery department of Surat Municipal Institute of Medical Education and Research, Surat from January 2011 to December 2013 were included in the study. Approval from Institutional ethical committee was taken before initiation of the study. Written informed consent was taken from the parents of the study participants.

Patients with hemoglobin less than 9 gm%, patients having any other associated anomaly which required treatment on a priority basis and patients with proven or suspected intersex state were excluded from the study.Basic clinical examination was done for all the participants. All patients underwent routine investigations as per anesthesia fitness, hemoglobin levels, urine routine and microbiological examination, renal function test, X-ray chest and USG- abdomen for associated anomalies screening.

Operative time, intra-operative and immediate post-operative complications and duration of hospital stay were recorded for each patient.

All patents were followed after an interval of one week, one month, three months and six months after discharge and complications were recorded. Results were considered satisfactory when the boy achieved a glanular meatus, single forward stream, unimpeded voiding, good cosmoses and no need for secondary surgery for the urethra. All the data was entered in Microsoft Excel software and descriptive statistics were analyzed.

RESULTS

Total 32 patients with Hypospadias were included in the present study. Among them, 20 (62%) of patients were having distal hypospadias while 11 (35%) had proximal hypospadias (Table 1).

Table 1: Type of hypospadias among study participants (N=32).

Type of hypospadias	Site of urethral opening	N =32 (%)
Glanular (N=1)	Glanular	1 (3)
Distal (N=20)	Coronal	9 (28)
	Distal penile	9 (28)
	Mid penile	2 (6)
Proximal (N=11)	Proximal penile	4 (13)
	Penoscrotal	7 (22)
	Perineal	0 (0)

As shown in Table 2, 11 patients were operated with TPIF repair and Snodgrass repair each while 4 patients were operated with stage 1 and stage 2 repair each.

Table 2: Choice of operation among study participants.

Type of hypospadias	Choice of operation						Total
	TPIF Repair	Snodgrass Repair	Stage 1	Stage 2	Lateral base repair	MAGPI	
Glanular	0	0	0	0	0	1	1
Distal	9	9	0	0	1	0	19
Proximal	2	2	4	4	0	0	12
Total	11	11	4	4	1	1	32

In TPIF group, 7 (60%) patients developed superficial skin necrosis which require no treatment and 1 (9%) developed wound infection which progressed to urethral fistula formation. In snodgrass group, 5 (45%) patients developed wound infection & oedema, these patients were treated with antibiotics and local dressing but 3

(27%) ultimately developed urethral fistula. In stage 2 repair group 2 (50%) patients developed wound infection, among this 1 (25%) patient developed wound dehiscence which treated with wound closure and 1 (25%) patient develop urethral fistula formation. In our study total 5 (16%) patients developed urethrocutaneous fistula out of which 3 required reoperation and 2 healed with expectant management (Table 3).

Table 3: Immediate complications of surgical repair.

Immediate complications	TPIF repair N = 11 (%)	Snodgrass repair N = 11 (%)	Stage 1 N = 4 (%)	Stage 2 N = 4 (%)	Lateral base repair N = 1 (%)	MAGPI N = 1 (%)
Bleeding	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Wound inf.	1 (9)	5 (45)	0 (0)	2 (50)	0 (0)	0 (0)
Wound dehiscence	0 (0)	0 (0)	0 (0)	1 (25)	0 (0)	0 (0)
Oedema	0 (0)	5 (45)	0 (0)	0 (0)	0 (0)	0 (0)
Skin necrosis	7 (64)	3 (27)	0 (0)	1 (25)	0 (0)	0 (0)
Flap necrosis	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Urethral fistula	1 (9)	3 (27)	0 (0)	1 (25)	0 (0)	0 (0)

As shown in Table 4, delayed complications were seen in only 2 cases of surgical repair.

In stage 2 repair group, 1 (25%) patients developed meatal stenosis for that urethral dilatation was done while 1 (25%) patient developed penile torsion in Lateral based pedical flap method. Out of 32 patients of hypospadias, 8 (25%) patient developed wound infection, 1 (3%) developed wound dehiscence, 5 (16%) patients developed oedema, 11 (34%) patients developed skin necrosis and 3 (9%) patients developed urethral fistula in perioperative period.

Table 4: Delayed complications of surgical repair.

Delayed complications	TPIF Repair N=11 (%)	Snodgrass repair N=11 (%)	Stage 1 N=4 (%)	Stage 2 N = 4 (%)	Lateral base repair N=1 (%)	MAGPI N=1 (%)
Persistent chordee	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Urethral stricture	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Meatal stenosis	0 (0)	0 (0)	0 (0)	1 (25)	0 (0)	0 (0)
Penile torsion	0 (0)	0 (0)	0 (0)	0 (0)	1 (100)	0 (0)
Diveticulum	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Table 5: Complications of hypospadias repair in perioperative and follow up period.

Complications	Wound inf. N (%)	Wound dehiscence No. (%)	Oedema No. (%)	Skin necrosis No. (%)	Urethral fistula No. (%)	Meatal stenosis No. (%)	Penile torsion No. (%)
Perioperative period	8 (25)	1 (3)	5 (16)	11 (34)	3 (9)	0 (0)	0 (0)
1 Month	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)
3 Months	0 (0)	0 (0)	0 (0)	0 (0)	2 (6)	1 (3)	0 (0)
6 Months	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

One (3%) patient developed penile torsion after 1 month while 2 (6%) patients developed urethral fistula and 1(3%) developed meatal stenosis after 3 months (Table 5).

In present study of 32 patients, 31 (96%) patients had satisfactory shape of penis while 1 (4%) patient had sub-optimal cosmetic result. Out of 32 patients, 31 (96%) patients had straight orientation of the penis after operation but 1 (4%) patient developed penile torsion.

DISCUSSION

Hypospadias repair is one of the most challenging problems for operating surgeons due to its high complication rate. The technique of repair for

hypospadias kept evolving as none of the current methods is without complications even in the best of hands.[8] The choice of operation for repair of hypospadias is determined by a number of factors including the configuration of glans and meatus and associated degree of penile curvature and mostly preference of individual surgeon.

Another important consideration in hypospadias surgery is the final cosmetic results. A careful pre-operative evaluation, precise surgical technique and appropriate post-operative care are required to achieve the desired objectives of hypospadias surgery.[9]

Most commonly used classification of hypospadias relates to the location of the meatus however, the severity of hypospadias can't always be defined by original site of the meatus.

Severity of hypospadias should be classified according to the new location after correction of chordee. In our study of 32 patients, 6 (19%) patients of hypospadias having meatus at midpenile region in both groups and as compare to study of Quetta10 where 49 (52%) patients of hypospadias having meatus at subcoronal/ distal penile region and 35 (37.4%) patients of hypospadias having meatus at midpenile/ proximal penile region.

In this study acute complications like wound infection occurred in 25% patients operated. Penile torsion occurred in 3% patients in both the groups, Urethral fistula develop in 15% patients and Meatal stenosis develop in 3% patients operated for hypospadias repair.

Wound infections occurred in 25% patients operated in our study, which is much higher than Quetta (TPIF repair) in which wound infection occurred in 3% patients, But fistula formation occurred in 15% patients operated in our study, much lower than fistula formation (20%) in study of Quetta (TPIF repair), factors affecting are careful pre-operative evaluation, precise surgical technique and appropriate post-operative care and may be because of smaller sample size.[10] Fistula formation occurred in 15% patients operated in our study, slightly higher than a study done by Wacksman et al. in which fistula formation occurred in 5.4% patients but meatal stenosis occurred in 3% patients in that study, penile torsion occurred in 3% patients operated in our study and in 2.7% patients in that study which is comparable.[11] In our study patient's penis appearance was observed during post-operative period in ward and in follow up period in OPD.

In our study of 32 patients, 31 (96%) patients had satisfactory shape of penis and post operatively 1 (4%) patients had poor cosmetic outcome. In present study of 32 patients, 31 (96%) patients have straight orientation of the penis after operation but 1 (4%) patient had developed penile torsion.

CONCLUSION

Most common type of hypospadias was distal type in our study. Approximately one third patients were had their hypospadias repaired by TPIF Repair and same percent by Snodgrass Repair. Skin necrosis and wound infection were the most common early complication of the hypospadias repair. Urethral fistula remains the most worrying complication of surgery. TPIF Repair is one of the method which reduces rate of complications especially urethrocutaneous fistula with good cosmetic outcome.

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