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Original Research Article

Efficacy of MAGPI procedure in the management of hypospadias

Ravindra G. Khasnis*, Rajshankar S.

Department of Pediatric Surgery, Karnataka Institute of Medical Sciences, Hubli, Karnataka, India

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***Correspondence:**
Dr. Ravindra G. Khasnis,
E-mail: rkhasnis3@gmail.com

ABSTRACT

Background: Hypospadias is a relatively common congenital defect of male external genitalia. It is present in approximately 1 in 300 males new born. The meatus may be located anywhere along the shaft of the penis from glans to scrotum or even perineum. The objective is to study the efficacy of MAGPI procedure in the management of hypospadias.
Methods: Detailed case study was done as per the proforma, in majority of cases patient's mother were informants, thorough clinical examination was done in all cases and looked for any congenital anomalies and family history was also taken, and any drugs intake was also taken. All the cases routine investigation was done like (Hb, BT, Ct, Wt). USG was done in required cases. Routine pre-operative preparation was done like keeping nil orally, preparing parts was done. The type of surgery for each patient was assessed after clinical examination of location of meatus: Anterior, Middle, and Posterior. On discharge, the patients and mothers were advised to bring their children for regular check up to hospital.
Results: Most common position of hypospadias was glanular and coronal. The most common surgery performed was Snodgrass technique and for distal and mid penile hypospadias and MAGPI for glanular type of hypospadias. MAGPI procedure was most commonly performed for glanular and coronal type of hypospadias. Other minor Complication was wound infection and penile torsion of mild degree and was managed conservatively.
Conclusions: There is significant difference in outcome of hypospadias surgery done by pediatric urologist and other surgeons.

Keywords: Congenital defect, Hypospadias, Pediatric, Surgery, Urologist

INTRODUCTION

Hypospadias is a relatively common congenital defect of male external genitalia. It is present in approximately 1 in 300 males new born. The meatus may be located anywhere along the shaft of the penis from glans to scrotum or even perineum.[1] The term has been credited to galenus and is derived from Greek words hypo means under and spadon meaning rent. In addition, it is associated with chordee (ventral curvature of penis) and incompletely formed prepuce.[1,2] The abnormally located meatus and the tendency towards meatal stenosis results in ventrally deflected and splayed stream. This makes the stream difficult to control and often makes it difficult for patient to void while standing.[1] Ventral chordee may lead to painful erection especially in severe chordee. In addition, unusual cosmetic appearance associated with hooded foreskin flattened glans of ventral skin deficiency has an adverse effect on psychosexual development of adolescent with hypospadias.

All of these factors are evident that early surgical correction should be offered to all boys with hypospadias regardless of severity of defect. The most gratifying, yet frustrating congenital anomaly dealt with pediatric urologist is hypospadias.[2]

The advent of safe anesthesia, fine suture materials delicate instruments and good optical magnification have allowed virtually all types of hypospadias to be repaired in infancy.[1] Regardless of technique employed for repair of hypospadias and its defects attention to penile curvature and its correction, urethroplasty, meatoplasty, and glanuloplasty and finally skin coverage are universal concerns with functionally and cosmetically normal penis.[3] Producing a functionally phallus that allows a boy to void as a pointer instead of sqater and later to become a sexually active adult elevates the surgeon to the ranks of divine.[2] The traditional saying that "see one, assist one and do one" does not hold true for the hypospadias surgeon; it should be "see many, assist many, do many, and then teach many."[3]

Present study was carried with the aims and objectives of to analyze the clinical features of hypospadias, to identify the various types of hypospadias, to find out various surgical procedures done in our hospital, to identify the age group of patients and to find out the various complications associated with the surgical procedure.

METHODS

This study is based on cross-sectional clinical study of sixteen cases of hypospadias and their management. Patients for this study were taken in our hospital, Department of Pediatric Surgery, Karnataka Institute of Medical Sciences, Hubli, Karnataka from November 2009-July 2011.

Inclusion criteria

- All the patients admitted and positively diagnosed as hypospadias
- Pediatric age group (up to 12 years)
- Patients who underwent surgical procedures for fresh hypospadias.

Exclusion criteria

- Patients who refused admission
- Patients refusing surgical intervention.

Detailed case study was done as per the proforma, in majority of cases patient's mother were informants, thorough clinical examination was done in all cases and looked for any congenital anomalies and family history was done in all cases and looked for any congenital anomalies and family history was also taken, and drugs intake was also taken. All the cases routine investigation was done like (Hb, BT, Ct, Wt). USG was done in required cases. Routine pre-operative preparation was done like keeping nil orally, preparing parts was done. The type of surgery for each patient was assessed after clinical examination of location of meatus: anterior, middle and posterior.

On discharge, the patients and mothers were advised to bring their children for regular checkup to hospital. The follow-up and progress were systematically recorded on personal interview at the time of review. Follow-up of operated cases was not very satisfactory as the many patients failed to turn up regularly at our request.

Statistical analysis

The data was recorded in the pre designed pre tested study questionnaire and later it was entered in the Microsoft Excel worksheet. The data was analyzed using proportions.

RESULTS

Among 16 cases in this study, youngest patient was 2 years and the eldest was 12years. The above table shows the age at presentation of patient to hospital. Most of the patient was from 1 to 3 years and school going age; this shows the level of awareness of this problem in patient and in their parents (Table 1).

Table 1: Age at presentation.

Age at presentation (years)	No. of cases	Percentage
0-1	0	0
1-3	07	43.75
3-5	03	18.75
5-10	04	25.00
>10	02	12.50
Total	16	100

Out of 16 patients, fifty percent of them came with complaints of inability to pass urine from undersurface of penis, 12.5%thin stream of urine, difficulty in passing urine 18.75%and angulations of penis 12.5%of patients, one patient with difficulty in passing urine with fever, one patient had history of squatting necessary for act of maturation (Table 2).

Table 2: Symptoms wise distribution.

Symptoms	No. of cases	Percentage
Passing urine from under surface of penis	08	50
Passing thin stream of urine	02	12.5
Difficulty in passing urine	03	18.75
Abnormal shape of penis and passing urine from under surface	02	12.5
Difficulty in passing urine with fever	01	6.25
Total	16	100

On examination 37.5% of patient had normal external urethral meatus.56.25% had pin hole type of opening. 6.25% of them had patulous opening. Thus, the majority had pin hole type of external urethral meatus (Table 3).

Table 3: Types of external urethral meatus.

External urethral meatus	No. of cases	Percentage
Normal	06	37.5
Pinhole	09	56.25
Patulous	01	6.25
Total	16	100

Out of 16 patients 12.5% were mid penile type of hypospadias, 25% were glanular 25% were coronal, two cases were posterior penile and one case was in Penoscrotal. Thus the most common type of hypospadias was glanular, coronal followed by sub coronal, mid penile, posterior penile and there was one case each of ante penile and Penoscrotal/perineal respectively (Table 4).

Table 4: Types of hypospadias.

Type of hypospadias	No. of cases	Percentage
Glanular	4	25
Coronal	4	25
Sub coronal	2	12.5
Ant penile	1	6.25
Mid penile	2	12.5
Posterior penile	2	12.5
Penoscrotal/perineal	1	0.25
Total	16	100

Out of 16 patients two had associated anomalies, 12.5% had associated anomalies, and in this study associated anomaly was of undefended testis. 14 cases (87.5%) had not associated anomalies (Table 5).

Table 5: Associated anomalies.

Anomalies	No. of cases	Percentage
Undescended testis	2	12.5
No associated anomalies	14	87.5
Total	16	100

Out of 16 cases 81.25% underwent single repair and rest underwent two stage procedures. The patients of two stage repair were asked to come at a later date for second stage repair. Thus, the single staged performed surgery was the most common type of surgery performed (Table 6).

Table 6: Stage wise distribution of surgery.

Type of surgery	No. of cases	Percentage
Single staged	13	81.25
Two staged	03	18.75
Total	16	100

For glanular type of hypospadias, in all four cases MAGPI type of procedure was performed. For coronal type of hypospadias, out of four cases, in two cases MAGPI type of procedure was performed and in two cases the Snodgrass type of procedure was performed. In sub coronal type of hypospadias, all underwent the Snodgrass type of procedure. There was only one case of ant penile type of hypospadias and it was operated by two stage procedure. There were two cases of mid penile hypospadias and out of them one was operated by Snodgrass procedure while the other underwent two stage type of procedure. Out of two cases of prox penile type of hypospadias, one was operated by using Snodgrass type of procedure while the other was operated by Duckettts type of procedure. There was only one case of peno scrotal type of hypospadias and Byar's flap was used for procedure in this case (Table 7).

Table 7: Procedure wise distribution.

Types of hypospadias	No. of cases	Procedure	Percentage
Glanular	4	MAGPI	25
Coronal	4	2 MAGPI, 2 Snodgrass	12.5 12.5
Sub coronal	2	2 Snodgrass	12.5
Ant penile	1	1 two stage	6.25
Mid penile	2	1 Snodgrass, 1 two stage	6.25 6.25
Prox penile	2	1 Snodgrass 1 Ducketts	6.25 6.25
Penoscrotal	1	Byar's flap	6.25
Total	16		100

Six cases were operated by using MAGPI procedure and none of them developed any complications. Similarly, one case was operated by using Docket procedure and not complication was recorded. The complication rate in Snodgrass procedure was at the amount of 12.5% and in Byar's flap procedure out of three, one developed the complication (Table 8).

Table 8: Procedure wise complication.

Procedure	Operated no. of cases	Complications	Percentage
MAGPI	6	0	0
Snodgrass	6	2	12.5
Byar's flap	3	1	6.25
Ducketts	1	0	0
Total	16	3	18.75

DISCUSSION

Authors found that the most common age group affected was 1-3 years followed by 3-5 years. Ozturk H et al study showed that maximum cases at the age of presentation were in the age group of 1-3 years.[4] The youngest patient in this study was two years and the eldest one was 12

years compared to Ozturk H et al study where youngest was 6 months old and the eldest one was 13 years old. [4]

In the present study anterior or distal hypospadias cases were maximum about 62% and the posterior hypospadias were minimum. This is in comparison to figures mentioned as 70% for anterior and 20% for posterior.[5] A population based study in Nova Scotia conducted from 1980 through 2007 identified hypospadias in 0.76%. The hypospadias was glanular in 77.8% of the cases, coronal in 14% of the cases and within penile shaft in 6.2% of the cases and proximal to the penile shaft in 2.2% of the cases.[6] These results differ significantly from those reported earlier by Ducketts JW et al who reported in their study of 1289 hypospadias cases, 49% were described as anterior, 21% were described as middle, and 30% were described as posterior.[7]

The most common position of external meatus is glanular and coronal in this present study followed by glanular and coronal (25% each) and least was Penoscrotal type (6.25%). Compared to study conducted by Shapiro SR et al the most common type was sub coronal followed by coronal and glanular and least was posterior type and the incidence was high compared to present study which indicate least severe types of hypospadias in this study and also indicates the severity was increased in developed countries compared to developing countries.[8] More the sever types of hypospadias more complex of surgeries are needed and also associated with more complications and variable outcome.[8-10]

According to a study conducted by Singh M et al the special emphasis was placed on evaluating the correlation history of consanguinity and incidence of congenital malformation in offsprings.[11] The religious sanction of marriage among blood relatives is well known in Islamic countries. The history of consanguinity was obtained in almost one third of the population. In the present study history of consanguinity was obtained in five patients who show the existence of correlation between blood relatives and congenital malformations.[11]

In the present study Snodgrass and MAGPI procedure was most commonly performed for mid penile and distal hypospadias respectively. Snodgrass procedure was most commonly performed for mid hypospadias Byar's flap for two stage procedure. In a study conducted by Ozturk H et al the maximum number of cases were of coronal and they have performed Mathieu for most of the cases followed by tip and most of the glanular was corrected by MAGPI as seen in the present study.[4]

Most of the cases of severe hypospadias staged procedure was done and have used only flap technique and in present study Byar's flap was done. In the present study Snodgrass procedure was done to distal and mid penile hypospadias and has replaced the Mathieu technique done by Ozturk H et al and similar procedures were done to glanular type of hypospadias.[4]

In the study conducted by Bhupendra et al about 43 cases had chordee out of 48 and most of them of mild degree and needs no correction and the severity of chordee was more in patients with more proximal type of hypospadias which needs correction and which also reduces the severity of hypospadias after correction.[12] In the present study 13 cases had chordee and 3 cases did not and they were of mild degree which needs only single stage correction along with urethroplasty.[12]

The study conducted by Shukla AR et al showed 8-10% of cases of hypospadias has undescended testis which was seen in more proximal type of hypospadias and in present study of 16 cases two showed bilateral undescended testis on in the case of proximal hypospadias and the other was in the case of coronal type of hypospadias which shows that it can also occur in distal type of hypospadias also. [13]

One patient had short penis and the scrotum was well developed and had normally placed testis. One patient had undergone suprapubic cystostomy for urethral calculus and retention of urine before study period and at present had normal passage of urine. In the study conducted by Awad M et al 3.9% of the cases had developed torsion wound infection and torsion were seen also in the present study which shows of the possible cause of complication may be due to unsterile instruments and proper care of the patient attendees regarding local hygiene, which may reduce the incidence of potentially preventable complication.[14] Few have developed edema off the skin which may be due to tight bandage and has resolved in its own.[14]

CONCLUSION

Hypospadias repair has become one of the most common procedures performed in recent decades by pediatric surgeons. For reasons not clear at this time, varied incidence of hypospadias appears to be increasing due to the various advances and approaches have brought down the incidence of surgical complications. If the tried and proven methods are scrupulously followed, good results should be obtained in every case anything less than this suggest that the surgeon is not temperamentally fitted for this kind of surgery.

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