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Assessment of the outcome of the tubularized incised plate (T.I.P) technique in the management of distal hypospadias; prospective single-centre study

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ABSTRACT

To assess the consequence of tubularized incised plate urethroplasty on primary hypospadias repair. Total of 42 male patients underwent hypospadias repair in AL-Diwaniyah Teaching Hospital/Iraq. from April 2016 to April 2018. The levels of the hypospadias defect, age at operation, type of sutures and dressing, type of catheter and time of removal and complications were verified. Tubularized incised plate urethroplasty done for all patients and mean patients age at operation was 4.4 years (range 1 year to 8year). Post-operative follow up was 1 to 3 months. Generally, meatal stenosis, dehiscence due to infection and an urethrocutaneous fistula occurred in 3, 2 and 6 patients, respectively. T.I.P. urethroplasty has come to be the favourite surgical procedure of distal hypospadias cases at our hospital. The technique has a small number of complications in addition to prove success and adaptability that continue to increase its application.



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INTRODUCTION

Hypospadias is a congenital anomaly in which the urethral end is in the underside surface of the penile shaft or in the perineum (Charles *et al.*, 2010). The incidence of hypospadias has been calculated as 1 in 250 male live-births. The overall incidence of hypospadias population is (0.7%), and from this percent, the increase of hypospadias in different racial groups are in White (0.8%), Black (0.6%) and Asian (0.5%). The cause of the high incidence of hypospadias in white could be a result of lower testosterone levels in utero as serum testosterone level in black women in the early pregnancy is

(48%) greater than serum testosterone in white pregnant women (Holland and Smith, 2003).

Hypospadias causes great concern because of the aesthetic deformity and because both parents and the patient profess insecurity about the sexual potential of the child (Charles *et al.*, 2004). The most common classification of hypospadias is Browne classification which is depending on the site of the meatus into Glandular, distal penile, proximal penile, penoscrotal and perineal, but the meatus may be close to the tip of the glans yet have significant curvature so the author, therefore, prefers a classification based not on the original site but on the new location after orthoplastic (Patrick *et al.*, 2007).

Chordee is fibrous tissue buried on the ventral part of the penile shaft to the meatus. The presence or absence of chordee can often be diagnosed at the time of original examination, but if there is any doubt, an artificial erection test should be done as the first step in the original procedure (Snodgrass, 1999).

The goals of hypospadias management are the relief of chordee for a sexually adequate penis, placement of urethral opening at the tip of the glans penis and to restore of normal urination with least

complications including hematoma, infection, flap necrosis, meatal stenosis, fistula, stricture, and diverticulum (Duckett and Baskin., 2002; Zaontz and Dean, 2009). A one-stage operation is preferable whenever a reasonable outcome is expected with, but never hesitating to use a multiple stages operation when it appears to be necessary (Micheal *et al.*, 2008).

PATIENTS AND METHODS

The study was started in Al-Diwanya teaching hospital/ Iraq from April 2016 to April 2018, 42 patients of primary hypospadias 4 patients (13.3%) were coronal, 7 patients (23.3 %) were sub coronal, and 19 patients (63.4%) were the distal shaft. Their mean of age at surgery was 4.6 years (range 1.5 years to 8.5 years), and patients with hypospadias and chordee were present in 5 patients of them. They had been primarily operated on by single stage surgery for reconstruction of the urethra by tabularized incised plate urethroplasty.

Preoperatively, the following investigations were for all patients in the form of hematocrit value, renal function test, urinalysis, Chest X-ray and Ultrasound; to detect any associated anomalies.

Operatively, under general anaesthesia, the tabularized incised plate was done for all patients.

All cases were followed up in the first visit which was 10 days after removal of the catheter by history and physical examination for checking the meatal shape, urine stream and the straightening of the penis during an erection. The second visit was one month after the first one, and the third visit was 3 months since the operation. Good outcome defined as a slit-shaped, vertically oriented meatus with a satisfactory stream in its girth, direction, and jetting.

Data were analyzed using the Statistical Package for Social Sciences (SPSS, version 19). Chi-square test of association was used to compare between proportions. When the expected count of more than 20% of the cells of the table was less than 5, Fisher's exact test was used. A p-value of ≤ 0.05 was considered statistically significant.

RESULTS

Our study included 42 patients with a mean patients age at surgery was 4.4 years (range 1 year to 8. years). There were 5 patients (12%) coronal, 10 patients (24 %) subcoronal and 27 patients (64%) distal shaft. Chordee was found in 5 patients (17%). Re observing the cosmetic results and urination of the patients in the first, second and third postoperative visits, urinary stream and the postoperative complications were assessed. The complications of the operation were seen in 11 patients

(26.7%), 6 (14%). Patients developed a urethrocutaneous fistula; these fistulae were later on treated surgically (repaired by two layers) after 6 months from the first operation. Two patients (4%) developed postoperative wound dehiscence due to infection, which was treated surgically after 6 months from the first operation, which did well.

Three patients (7%) developed meatal stenosis, periodic meatal dilatation was done for them and ended with micturition in the normal stream. As shown in table 1.

Table 1: Distribution of data according to studied variables

variables	No	%	P value
Age			
1-3 years	16	38	0.001
4-6 years	20	48	
7-8 years	6	14	
Location			
Choronal	5	12	0.001
Sub choronal	10	24	
Distal shaft	27	64	
Chordae			
No	37	88	0.032
Yes	5	12	
Complications			
N0	31	74	0.002
Fistula	6	14	
Wound dehiscence	2	5	
Meatal stenosis	3	7	
Total	42		

Table 2: Thirty-one patients ended by a slit-shaped, vertically oriented meatus with a satisfactory stream in its girth, direction, and jetting.

Variables	Outcomes		
	Good	Poor	P value
Age			
1-3 years	13	3	0.5
4-6 years	13	7	
7-8 years	5	1	
Location			
Choronal	5	0	0.09
Sub choronal	9	1	
Distal shaft	17	10	
Chordae			
No	27	10	0.7
Yes	4	1	
Complications			
No	31	0	0.001
Fistula	0	6	
Wound dehiscence	0	2	
Meatal stenosis	0	3	

Concerning the outcome, patients age, location of the hypospadias defect and presence or absence of

Table 3: Comparison between our results with that of Snodgrass, Savas Demir and Kazemi Rashed

Our results		Results of Snodgrass		Complications
%	No.	%	No.	
26.7	11/42	38.1	51/142	Overall complications
14	6/42	14.8	21/142	Fistula
7	3/42	12	17/142	Meatal stenosis
4	2/42	9.4	13/142	wound dehiscence
0	0	2.1	3/142	Bleeding
Our results		Results Savas Demir		Complications
%	No.	%	No.	
26.7	11/42	19	4/21	Overall complications
14	6/42	9.5	2/21	Fistula
7	3/42	4.8	1/21	Meatal stenosis
4	2/42	4.7	1/21	wound dehiscence
Our results		Results of Kazemi Rashed		Complications
%	No.	%	No.	
26.7	11/42	10.8	4/37	Overall complications
14	6/42	8.1	3/37	Fistula
7	3/42	0	0/37	Meatal stenosis
4	2/42	0	0/37	wound dehiscence
0	0	2.7	1/37	Bleeding

Chordee were not significantly affected the outcome P value (0.5, 0.09 and 0.7) respectively. Eleven patients had complications with the poor outcome; the complications rate was significantly affecting the outcome (p-value was 0.001).

DISCUSSION

Surgical correction of hypospadias is indicated where the deformity is severe, interferes with voiding or is predicted to interfere with sexual function (Laurence, 2000).

Surgery of hypospadias aims to correct penile curvature, reconstruct a new urethra and bring the new meatus to the tip of the glans (Mark *et al.*, 2000).

Our results in these 42 patients seeing the success and complications rate, which are equivalent to that of formerly available studies with primary cases.

In our study, the success rate was 73.3% and a complication rate of 26.7%. The fistula was seen in 6(14%) patients, meatal stricture in 3(7%) patients and wound dehiscence due to infection in 2(4%) patients.

There was some variance in complication rate and outcome among our study and those of other studies like that done by Snodgrass, Savas Demir and Kazemi Rashed. Their complication rates were (38.1%), (19%) and (10.8%) respectively (Preston *et al.*, 2003).

Fistula formation developed in (14.8%), (9.5%) and (8.1%); meatal stricture in (12%), (4.8%) and (none); and wound dehiscence due to infection in

(9.2%), (4.7%) and (none) respectively (Kazemi *et al.*, 2004). The most important complications were Fistula (Elbakry, 2000). With refined surgical techniques, fine suture materials and special dressing, the results of surgery after hypospadias repair have improved significantly (Steckler and Savas, 1997).

In our study, the fistula developed probably due to the inadequate subcutaneous layer was brought onto the suture line; in few cases, the polyglycolic acid interrupted sutures were used for the repair and type of dressing. Meatal stenosis which is probably due to the inadequate spacing of the channel through the glans for the neourethra and over-enthusiastic closure of distal meatus but responds well to the periodic meatal dilatation and ended with micturition in the normal stream. Wound dehiscence due to infection, which is probably due to the contamination in the ward because of slip dressing.

In comparing our study with other studies like that done by Snodgrass (5), as shown in table 3, they reported their study in repairing hypospadias by single-stage using TIPU in 142 patients in a period of 9 years, the two results were approximately the same and the difference may be due to large number of patients and the long duration of follow up in their study.

In comparing our study with that of Savas Demir who reported his results in one stage repair using TIPU in 21 cases, the results were also approximately the same as well as that of our study.

In comparing our study with that of Kazemi Rashed who reported his results in one-stage repair using TIPU in 37 cases, the results were better than our study.

CONCLUSION

Tubularized incised plate urethroplasty has to turn out to be the favoured surgical procedure of primary hypospadias repair at our hospital. The technique has little complications in addition to prove the success and easy technique with practicality that continues to expand its applicability and desirability.

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