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Outcome of Tubularized incised plate procedure in circumcised hypospadias

ABSTRACT

Background: The procedure Tubularized incised plate **(**TIP) urethroplasty using avascularized dartos fascia as neourethral coverage from the prepuce (foreskin) of uncircumcised patients is the standard procedure, however, in spite of the constant fact that circumcision is contraindicated in babies with hypospadias, still we see unlucky babies already circumcised before repair.

Aim of the current study: To assess the result of TIP urethroplasty in circumcised hypospadias patients and to determine how much prior circumcision will complicate or adversely affect the repair of the hypospadias.

Patients and methods: The data collection extends from March 2010 to December 2016, 40 boys with circumcised hypospadias aged between 11 months to 15 years were primarily repaired using TIP technique. Glanular, coronal, subcoronal, distal penile and midshaft were all incorporated in this study, all proximal and redo cases were excluded.

Results: In our study, fistula that needs surgical correction later on developed in four cases (10%). Two patients (5%) developed meatal stenosis get better to meatal dilatation.

Conclusion: Circumcision before hypospadias repair has a minimal adverse effect on the result of tabularized incised plate procedure in children with distal and mid shaft hypospadias.

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Introduction:

Hypospadias considered as one of the major widespread anomalies of the exterior genitalia in children [1]. Many operational procedures have been expressed for hypospadias repair [2]. In 1994, the introduction of Tubularized incised plate procedure (TIP) urethroplasty by Snodgrass, lead to a revolution in the management of different categories of hypospadias [3-5].

Tip urethroplasty usually using a flap of dartos fascia from the prepuce (foreskin) of uncircumcised patients [6]. However, still facing many hypospadiac circumcised children at our locality because of non-medical religious thoughts.

The aim of current series is to evaluate the result of (TIP) urethroplasty in circumcised hypospadias patients and to assess whether prior circumcision will complicate or adversely affect the repair of the hypospadias.

Patients and Methods:

The data collection extends from March 2018 to December 2018, 40 boys with circumcised hypospadias aged between 11 months to 15 years were primarily repaired using (TIP) technique.

Glanular, coronal, and subcoronal in addition to distal penile were all incorporated in this study, all proximal and redo cases were excluded.

All cases were operated on at Al-khansaa teaching hospital, pediatric surgery center in Mosul. The mean follow up period was 17 months (10-40 months).

Surgical Technique

Under complete aseptic technique, 2/0 traction silk suture is placed at the tip of the glans to stabilize the phallus during the procedure.

A circumcision incision is made all around the phallus and the penis is

degloved down to peno-scrotal junction in all cases.

A vascularized dartos fascial layer was dissected from the penile shaft is used to envelop the urethroplasty. When the dartos tissue during dissection looks deficient, tunica vaginalis flap was taken to cover the urethroplasty site especially in distal penile and midshaft cases.

1. Rubber tourniquet is applied at the base of degloved shaft, Figure (1).

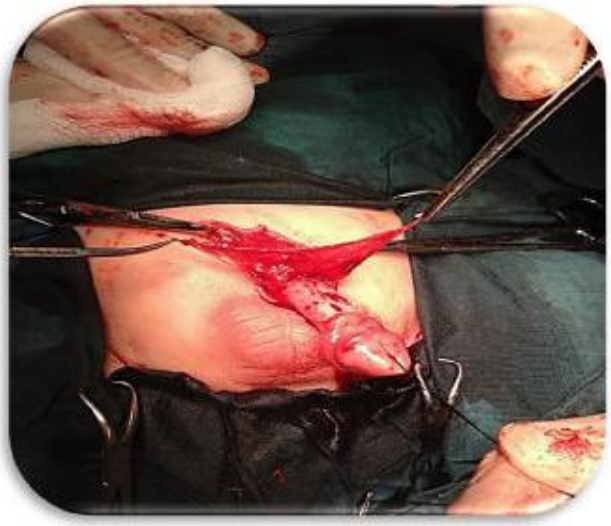

Figure (1): applying tourniquet and start degloving of the shaft

2. Degloving down to the Peno-scrotal junction, Figure (2).

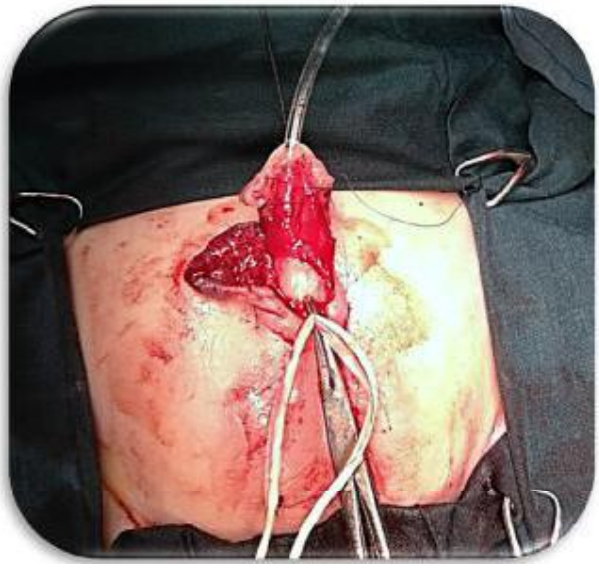

Figure (2): continue degloving till reach the peno-scrotal junction

3. Parallel longitudinal incisions are made in the glans to separate it from the lateral margin of the plate, and then using tenotomy scissor the plate is deeply incised from the meatus to the distal ending of the plate providing a gentle traction with fine forceps to the lateral edge of the plate, Figure (3).

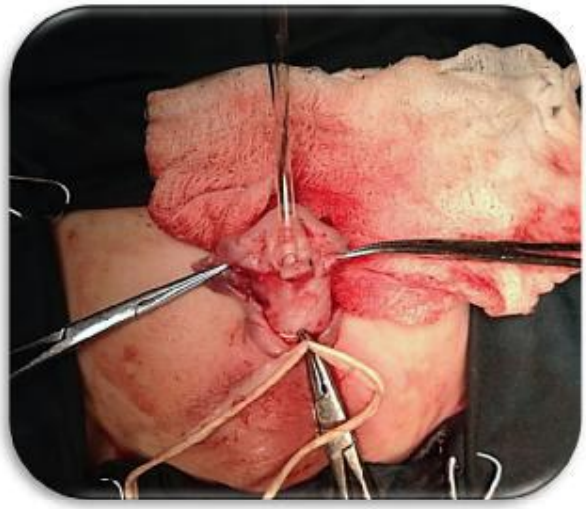

Figure (3): longitudinal incisions made in the glans

4. The urethral plate is tubularized with no tension over an 8 Fr. stent using continuous subepithelial 6/0 polyglactin suture, then covered by the vascularized dartos fascial flap, figure (4).

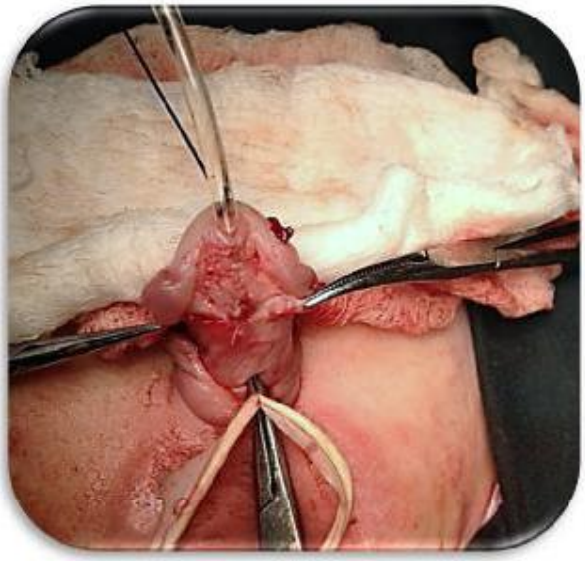

Figure (4): tubularization of urethral plate

5. The lateral glans wings are re-approximated over the neourethra with 5/0 polyglactin vertical mattress, remove the tourniquet, lastly suturing the circumcision incision with 6/0 polyglactin, Figure (5).

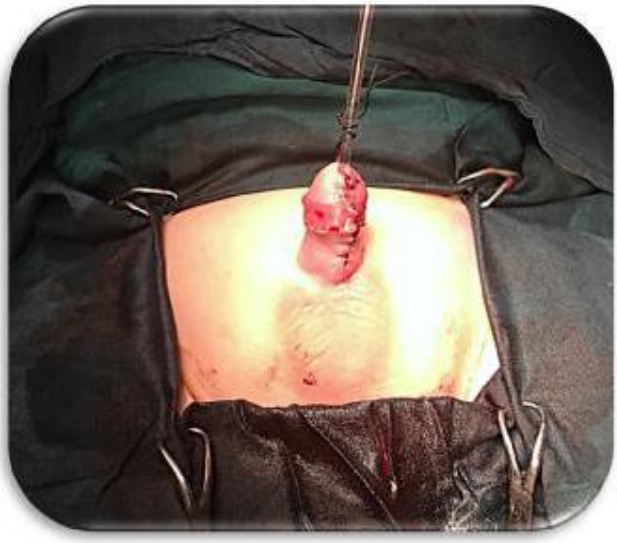

Figure (5): approximation of lateral glans wings

6. A compression dressing is applied and left in place for 48 hours, prophylactic antibiotics was started 1 hour before induction of anesthesia and continued for five days, the stent removed 7 days after surgery with calibration of urethra 20 days later.

Results:

We assess the results of urethral reconstruction in our patients according to the frequency of post-operative complications.

I- Age at operation in relation to the type of hypospadias:

Table (1) shows the distribution of the study sample according to age at operation and type of hypospadias and reveals that, 37.5% of the patients are at (2-6) age group, 32.5% at the age above the 6 years, and 30.0% under the age of 2 years. Regarding the type of hypospadias, the Glanular, coronal, and

subcoronal representing 67.5%; 27.5% of them are within the (2 -6) age group. The distal and mid penile representing 32.5% of the patients; 12.5% of them are ≥6 years.

Table (1): Age at operation in relation to the type of hypospadias.

Age at operation (years)	Type of hypospadias		Total
	Glanular, coronal, and subcoronal	Distal penile and mid penile	
0-2	8 (20.0%)	4(10.0%)	**12 (30.0%)**
2-6	11(27.5%)	4(10.0%)	**15 (37.5%)**
≥6	8 (20.0%)	5(12.5%)	**13 (32.5%)**
Total	**27 (67.5%)**	**13(32.5%)**	**40 (100.0%)**

II- Postoperative complications in relation to age:

Table (2) demonstrates the distribution of post operative complications in relation to age and displays that, four patients develop fistula and only two get meatal stenosis. Two out of the four fistula cases are in the patients older than 6, no stenosis noticed under the age of 2 years.

Table (2): Postoperative complications in relation to age.

Age at operation (years)	Type of hypospadias		Postoperative complications	
	Glanular, coronal, and subcoronal	Distal penile and mid penile	Fistula	Meatal stenosis
0-2	8	4	1	0
2-6	11	4	1	1
≥ 6	8	5	2	1
Total	**27**	**13**	**4**	**2**

III- Postoperative complications in relation to the type of hypospadias:

Table (3) shows the distribution of post operative complications in relation to the type of hypospadias and demonstrates that, patients with glanular, coronal, and subcoronal developed fistula in one patient and meatal stenosis in another. While in patients with distal and mid penile, 3 patients developed fistula and one patient get meatal stenosis.

Table (3): Postoperative complications in relation to the type of hypospadias.

Postoperative complications	Fistula	Meatal stenosis	Stricture	Dehiscence
Glanular coronal subcoronal	1	1	0	0
Distal penile Mid penile	3	1	0	0

Discussion:

In our series, the incised plate was tabularized without tension with delicate continuous subepithelial suturing. A second next layer of vascularized dorsal pedicle flap was taken from penile shaft skin to cover neourethra by dissection of this flap to the peno-scrotal junction to ensure that this flap will be fixed and heal without tension.

Pieretti *et al*., evaluated the hypospadias patients who undergone circumcision, they studied respectively 48 boys which were corrected by either urethral plate tubularization or MAGPI procedure and found that the prior circumcision had no effect on the outcome of their hypospadias correction, according to their research. [7].

Snodgrass conducted a retrospective examination of hypospadic patients who had been circumcised prior to surgery and had an undamaged prepuce. Preceding circumcision did not cause difficulties for later hypospadias correction in these patients, according to the findings [8].

Moreover, in the study done by Kazemi and Gholizade, where 30 circumcised children, as well as, 30 children having no history of circumcision, were allocated in the current work and underwent operation for hypospadias correction and repair. The results of two groups were compared. Surgery and hospitalization took an average of 55.61±58.11 minutes and 3.17±1.79 days among the uncircumcised group. Surgery and hospitalization took an average of 66.17± 33.65 minutes and 3.7±1.62 days among the circumcised group. There was no apparent distinction between the two groups' criteria and other problems [9].

In our series, fistula that need surgical correction later on developed in 4 cases (10.0%) which is slightly higher than recorded (5.4%, 6.1%, and 6.5%) in other series for intact prepuce [7-9]. This may be due to lack of enough tissue to cover neourethra especially for mid and distal penile cases. Interestingly, in the 12 patients, the tunica vaginalis was utilized as vascularized layer had no fistula and healing occurred without complications. Two patients (5.0%) developed meatal stenosis compared to (2.0-3.0%) in other series [10], responded to one or two times urethral dilatation, while in the study of Khirallah and El-dossuky, which included 43 patients with distal penile hypospadias (coronal, subcoronal and distal penile), the fistula was developed in three cases with no stricture or meatal regression developed [11].

This complication happened in early cases which corrected later on with

better estimation during meatal reconstruction [12]. The incidence of complications in our study revealed to be higher in older age group which may be due to retraction of the flap, uncontrolled erection or lack of tissue to cover long urethral gap, and there are inconsistent reports concerning whether increasing age at operation leads to a higher complication rate in other studies [13, 14].

Conclusion:

Circumcision before hypospadias repair has a minimal adverse effect on the result of tabularized incised plate procedure in children with distal and mid shaft hypospadias. Dorsal dartos pedicle flap should be obtained from penile shaft to cover the neourethra without tension. Better result than expected can be given to patients with circumcised hypospadias using TIP procedure. Older aged patient may need other layer to cover neourethra like tunica vaginalis flap with excellent results.

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