

Evaluation of hypospadias Repair in pediatrics by tubularized incised urethral plate (Snodgrass) technique: A study of 40 cases

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Abstract

A prospective study of 40 cases of hypospadias in children. All patients were managed at Alkhansaa teaching hospital from April 2004-October 2006, 40 cases operated on by TIP technique who had different types of hypospadias with no previous repair and there is no severe chordee with a wide urethral plate and urine was diverted with nasogastric tube 8Fr for 10 days in most of cases. The age of our patients ranged from 1-10 years and 90% were preschool. 55% had the subcoronal type, fistula developed after repair in 17.5% and we had good cosmetics and functional results. TIP technique is simple, quick, single stage procedure for distal hypospadias and offers a good functional and cosmetics results. The aim of this study was to evaluate the management of hypospadias in children by tubularized incised urethral plate (TIP) technique.

Key word: children, hypospadias, TIP, management.

Introduction

Hypospadias is a common congenital anomaly with an incidence of 1 per 125 to 300 live male births⁽¹⁾, there are nearly 200 operations reported for its correction give testimony to surgical ingenuity, the technical challenge posed by the anomaly and dissatisfaction with the results of most of the earlier repairs. Frequent modifications in technique, are a constant reminder that the ultimate goal of a normal penis remains elusive⁽²⁾.

The first account of hypospadias surgery was by Heliodorus and Antyllus (100-200 AD). Tubularization of the intact urethral plate for the repair of distal hypospadias was introduced by King in 1970, based on the technique introduced by Thiersch (1869) and Duplay (1874). In King Technique the meatus was placed at the corona and did not reach the tip of the glans⁽³⁾.

Snodgrass (1994) developed that concept and described a distal penile hypospadias repair using tubularization of an entirely incised urethral plate at the midline to be widened and easily tubularized⁽⁴⁾. Snodgrass et al. (1996), reported satisfactory functional and cosmetic results in a large series. The same author extended the use of that technique for the repair of midpenile and penoscrotal hypospadias⁽⁵⁾.

Patients and Methods

A prospective case series study done in Alkhansa teaching hospital in Mosul from April 2004 to October 2006. Forty patients admitted to our pediatric surgery center and operated on by different surgeons in the same center using the (TIP) technique. All patients evaluated regarding the age, family history, associated anomalies, and types of hypospadias, associated chordee and history of circumcision.

Traction suturing is placed in the glans just beyond the anticipated dorsal lip of the neomeatus. A circumscribing skin incision is made (1-2) mm proximal to the meatus and the shaft skin is degloved to the penoscrotal junction. If a portion of the native urethra is excessively thin, however, a "U" shaped incision is made extending to more healthy tissues. A tourniquet placed at the base of the penis provides better visualization of the operative field. The urethral plate is separated from the glans wings by parallel incisions along their junction (fig 1-a).

The glans wings are mobilized avoiding damage to the margins of the urethral plate. A relaxing incision is made using scissors in the midline from within the meatus to the end of the plate (fig 1-b). The incision should not reach the tip of glans.

The depth of the relaxing incision depends on the plate width and depth. An 8 Fr stent is secured into the bladder. A 6/0 polyglactin is preferred to tubularize the urethra, with the first stitch placed at approximately the midglans. Tubularization is completed with a 2 layer running subepithelial closure. Any adjacent dartos tissues are used to cover the neourethra and then a dartos pedicle is developed from the dorsal shaft skin, button-holed, or from the right or the left side transported to the ventrum to additionally cover the repair (fig1-c). The coronal margins of the glans are approximated with subepithelial 6-0 polyglactin. the skin edges of the glans are sutured(fig1-d).

The patients admitted to hospitals for over night observation regarding bleeding ,edema and urine output ,those with proximal meatus stayed in hospital for longer period. We follow up the patients after discharge till we remove the catheter 7-10 days, asses them for fistula or stenosis for one month.

Result

Forty patients were operated upon by tubularized incised plate. The age distribution range from one year to ten years, 36 cases (90%) were preschool and 4 cases (10%) were school age. Positive family history was found in 6 cases (15%), from these first degree relative was positive in 4 cases (10%) and second degree relative in 2 cases (5%). Subcoronal type in 22cases(55%),distal penile hypospadias in 11cases(27.5%), midshaft hypospadias in 5 cases(12.5%),coronal type in 1 case(2.5%), and penoscrotal hypospadias 1 case(2.5%).Unilateral undesended testes in 2 cases (5%).

Chordee (mild) in 6 cases (15%).Circumcision in 4 cases (10%). In all patients treated by T.I.P. technique tourniquet was applied (100%).Two layers repair done in 7 cases (17.5%) which include neourethra and skin. While three layer repair was done in 33 cases (82.5%), which includes neourethra, dartos flap and skin.

We use vicryl (6/0-5/0 according to age) in 27 cases (67.5%).PDS (6/0-5/0 according to age) in 10 cases (25%).

Dexon(5/0)in 3 cases(7.5%).Thirty nine cases(97.5%)continuous suturing and 1 case(2.5%)interrupted suturing. Thirty seven cases (92.5%) tangential subepithelial suturing and 3 cases (7.5%) through and through suturing, In all cases we use sofratulle and gauze with adhesive plaster. Catheter was kept for 10 days in 35 cases (87.5%), for 7 days in 3 cases (7.5%) and 12 days in 2 cases (5%), one of them develop fistula. Bleeding and haematoma developed in 2 cases (5%).one case developed infection (2.5%).

Two cases (5%) developed stenosis and need dilatation,4 cases(10%) need calibration this seen after months. Three cases(7.5%) develop fistula with two layers repaire,4 cases(10%) develop fistula with 3 layers repair.

Which make over all incidence of fistula equal to (17.5%).regarding surgeon opinion good cosmetic results in 35 cases (87.5%), while acceptable cosmetic results in 5 cases(12.5%). The family opinion was good result in 28 cases (70%), while acceptable results in 12 cases (30%). This table shows types of hypospadias

Discussion

Surgical techniques for the repair of hypospadias are being developed continuously, implying that no single procedure is considered ideal for hypospadias .Recent study shows the ideal time is between (3-18) months as the penis growth less than 1 cm during the first 3-4 years of life ⁽⁶⁾

In our study the age range from 1-10 years, 11patients (27.5%)were operated on above 3 years of age this result goes with schultz et.al .(1983).⁽⁷⁾ In our study the most common type presented is the subcoronal hypospadias 22 patients (55%) followed by distal penile 11patients(27.5%), midshaft hypospadias 5 patients (12.5%)with 1case for coronal and penoscrotal type this result is similar to Jan et al (2004)⁽⁸⁾.

We apply TIP technique for midshaft and penoscrotal because of functional and cosmetic results achieved in the repair of distal type. 5 patients (12.5%)with midshaft and 1patient (2.5%) with penoscrotal type,2 of them developed fistula 5% which is a very good result in comparison with Selam et.al⁽⁹⁾

In present study positive family history was found in 6 cases (15%), from those 4 cases (10%) was in the first degree relative and 2 cases (5%) in the second degree relative. This fact was agreed with other studies which shows that genetic factors play a major role in incidence of hypospadias between relatives.⁽¹⁰⁾

Among 40 cases, 6 cases (15%) with chordee which is mild and corrected by degloving of the penis skin and none of them need dorsal plication or other methods of correction of chordee and we did not have a case with severe chordee in our study due to selection of cases.

Also, 4 cases (10%) had been circumcised before they consult our center for hypospadias repair. In those patients the technique was difficult and the tissue is inadequate to perform a good flap, but manage those cases by degloving the penis to the penoscrotal junction and partial mobilization of the short flap.

Among the congenital anomaly we met 2 cases (5%) with unilateral undescended testes and this is well known congenital association with hypospadias, sometimes more than one congenital anomaly could be found in the same patient⁽¹⁰⁾.

In the first 7 cases (12.5%) including four of them were circumcised we used two layer repair (neourethra and skin). Three of them (7.5%) develop fistula later on while in the rest 33 cases (82.5%) we use three layer in the repair (neourethra, dartos flap and skin) only 4 cases (10%) patient developed fistula this make a total number of patients who developed fistula are 7 patients (17.5%). Anwar et al 2004 operated on 30 patient by TIP technique with incidence of fistula reach up to 16%⁽¹¹⁾

Chenge 2002 report that fistula can be avoided by interposition of vascular dartos flap between the neourethra and skin. In our study we have 27 cases sutured by vicryl and even with this we have a good result. This types of suture material was used by other surgeon and give near the same results for all types of suture material.⁽¹²⁾ Anwar Alhaji used vicryl with incidence of fistula about 16% and this agree with our study in which the fistula rate 17.5% the fistula rate with vicryl is the most commonly used⁽¹¹⁾

In our study in 39 cases (97.5%) we perform continuous suturing and only one case 2.5% was used interrupted suturing. Thirty seven case (92.5%) we use subepithileal tengential suture and we did not have any complete disruption of suture line, so we prefer not to use interrupted suturing because we have good result in waterproofed continuous suturing. In the through type, we have bad result, when applied in 3 cases, 2 of them developed fistula. This agrees with other study in which they use continuous subepitheal tengential suturing as in Cheng et al study.⁽¹²⁾

Bleeding & hematoma occur in 2 cases (5 %), and this complication occurs in hypospadias surgery and no need for evacuation. Elbakry prefer evacuation of hematoma.⁽¹³⁾

Two patient (5%) developed stenosis and needed regular dilatation and 4 cases (10%), require one calibration under general anesthesia, the rest of our patient not need dilatation or calibration, this agree with other studies that calibration of urethra during follow up is routine procedure and decide who need just frequent calibration or regular dilatation.⁽¹⁴⁾

In general, an excellent cosmetic result was found, near normal glans configuration, slit like meatus which is more cosmetic than M.A.G.P.I. which give bifid glans and round opening & this is confirmed by doctor 87% & family 70% this give us that cosmetics results is good. This goes with Selami who confirm that no other procedure releably create a vertical oriented meatus & near normal configuration of the glans.⁽⁹⁾

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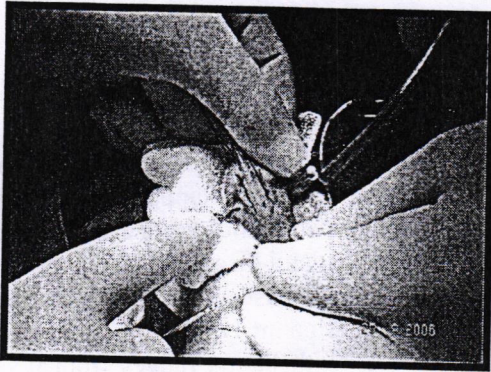
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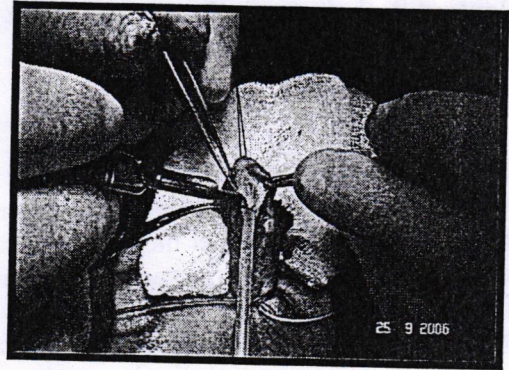
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Table (1): Types of hypospadias

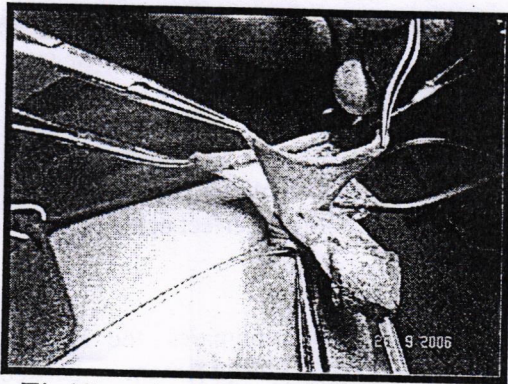
Type	Number	%
Subcoronal	22	55 %
Distal penile	11	27. 5%
Midshaft	5	12. 5%
Coronal	1	2. 5%
Penoscrotal	1	2. 5%
	40	100 %



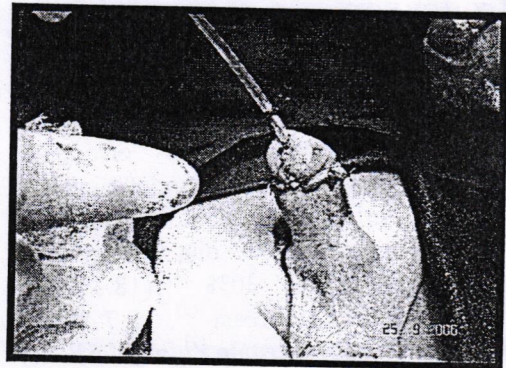
Fig(4)-a: tip technique
(U shape incision)



Fig(4)-b: tip technique
(releasing incision)



Fig(4)-c: tip technique (dartos flape)



Fig(4)-a: tip technique (final result)