

Results after redo surgery for recurrent hypospadias in children

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Abstract: Background: Recurrent hypospadias is a result after hypospadias repair in which disruption of neourethra occurred completely or incompletely and/or recurrence of chordee occurred. In spite of good healing in children, recurrence of hypospadias is still high. **Aim:** The aim of this study is to detect the results of several techniques in management of recurrent hypospadias with description of difficulties that had been faced in the preoperative preparation, operative intervention and postoperative follow up. **Patients and methods:** This study is a follow up prospective descriptive study which was conducted for 40 children with recurrent hypospadias presenting with complete or incomplete disruption and or chordee after repair. For all patients, full history taking, general and local examination and routine laboratory investigations were done. **Results:** In our study 34 of 40 cases showed success. Disruption of urethra was the only picture of the only picture of recurrence i.e. no chordee recurred. 2 of 40 was complicated with fistulae single in each. Glanular deformity in 2 cases. Shaft deformity in 2 cases. Narrow stream developed in half of the cases. **Conclusion:** Recurrence of hypospadias cases is almost disruption of urethra either complete or incomplete. Recurrence of chordee is an uncommon complication of hypospadias.

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Keywords: Recurrence, hypospadias, chordee.

1. Introduction

More than 200 procedures have been described for repairing hypospadias. The emphasis of all the modern repairs is not only on creating a neourethra, but also having a good cosmetic result with a normal looking penis (**Sharma, 2005**).

The majority of patients (55.2%) with failed hypospadias repair require surgical reconstruction to fully resurfacing the glans and penile shaft (**Barbagli et al, 2012**).

Reconstruction of urethra following repeated failure of hypospadias repair is still considered as a reconstructive challenge. This is mainly due to the deficiency of healthy and well-vascularized local tissues (**Sief El-Din et al, 2010**).

For recurrent hypospadias, TIP is an excellent treatment option, with some restrictions of its use in patients with a disturbed urethral plate with an apparent scarring of the plate as it may result in an excellent cosmetic appearance of the penis (**Zakaria et al, 2012**).

2. Patients and methods:-

This randomized prospective study which was conducted to review results after redo surgery for recurrent hypospadias in children carried out on 40 patients who underwent surgical procedures done at Al-Azhar university hospitals and Abo El-Rish hospital from 2016 to 2017 with four months follow up.

Following techniques has been used in the redo of cases:

1- Tubularized incised plate (Snodgrass technique):

- Was used in 21 cases.
- Parallel longitudinal incisions at edges of urethral plate was made to create glans wings and a midline incision is made in the urethral plate.
- Urethral plate was tubularized with a two-layer running sub epithelial absorbable suture.

2- Urethral advancement and glanuloplasty (circummeatal advancement):

- Was used in 2 cases.
- Incision in the volar aspect of the penis to dissect and release the urethra.
- Small incision about 5 m. m. at volar aspect of the root of the penis to dissect and release the urethra.
- Dissection and complete release of the urethra.
- Tunneling in the glans to pull out the urethra and meatus through it after removal of catheter.

3- Meatal based flap (Mathieu)

- Was used in 2 cases.
- A Line defining the urethral plate are drawn, Incision along the marks.
- A turnover of a ventral penile skin flap, distally based at the meatus and with parallel incisions, into the glanular groove to form the neo-urethra.

- Closure of the neo-urethra using absorbable suture.

- A dartos fascia pedicle flap obtained from the dorsal prepuce and transposed ventrally to cover the entire neourethra,

3- Glanular advancement proceure (GAP):

- Was used in 2 cases.
- Placement of ventral stay sutures aligns the tissues.

- Glanular skin was (two wedges of glanular skin) excised on either side.

- The urethral plate was tubularized using continuous subcuticular sutures.

4- MAGPI Meatal Advancement and Glanuloplasty Procedure:

- Was used in 10 cases.
- A longitudinal incision was made, starting from inside the dorsal aspect of the meatus and extending distally to the end of the glanular groove.

- The edges of this longitudinal incision are brought together in a horizontal manner.

- Advancing the dorsal aspect of the meatus to the distal end of the glans groove.

5- Scrotal flap:

- Was used in one; recurrent penoscrotal hypospadias case.

- Two parallel incisions was done in the ventral aspect scrotal skin.

- Tubularization of this skin sheet.

- Longitudinal incision in the ventral aspect of penis was done.

- Complete degloving of penis.

- Rotation of dorsal penile skin to cover the neourethra.

Statistical measures

Some statistical measures as mean, standard deviation (SD), t student test, correlation coefficient (r) of two variables, Chi-square test (X²) and Probability (P) were used.

3. Results:

The Following Table shows types numbers of techniques used and rate of failure of neurthra formation:

Table 1. Technique

Technique	TIP		MAGPAI			GAP	Matheiu	CM advancement	Rochet (scrotal flap)
Number	23		10			2	2	2	1
Rate of failure	4		4			0	0	0	0
	Coronal	Subcoronal	Coronal	Subcoronal	glanular				
	2	2	1	1	2				

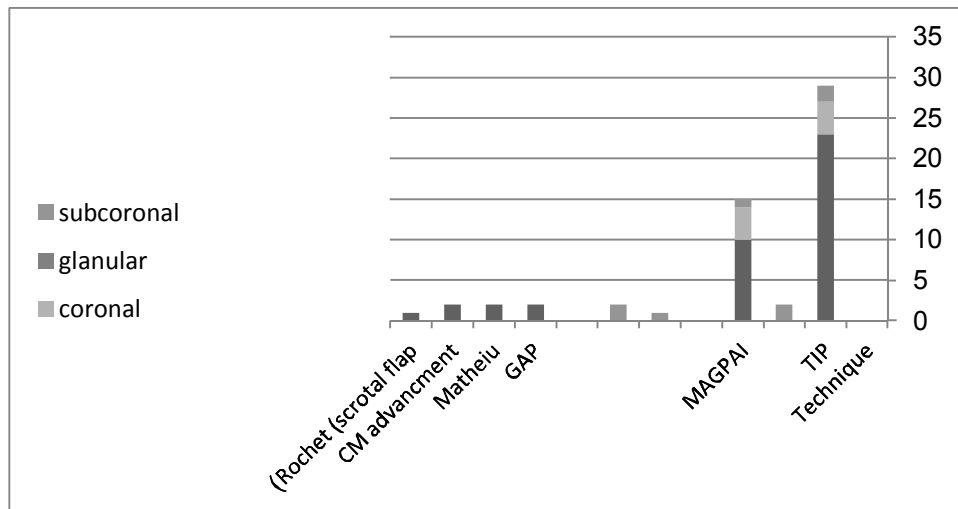


Figure 1. The numbers of techniques used and rate of failure of neurthra formation

Double urine stream occurred due to fistula formation which were single urethrocutaneous fistula in two cases which were recurrent coronal

hypospadias and recurrent penoscrotal hypospadias, Snodgrass method was used in repair of each.

UTI was manifested in 12 cases. (2 penoscrotal, glanular, 4 subcoronal, 3 coronal, distal penile).

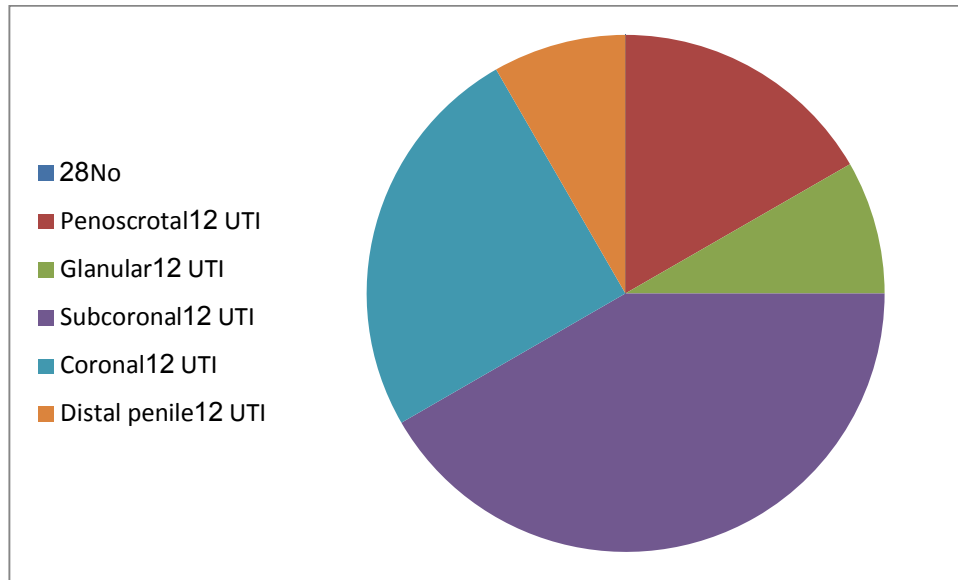


Figure 2. Penoscrotal, etc.

Table 2. Narrow stream of urine was noticed in 20 cases of 40:

Technique	TIP	MAGPAI	GAP	Matheiu	CM advancement	Rochet (scrotal flap)
Number	23	10	2	2	2	1
Narrow urine stream	13	6	0	0	0	1

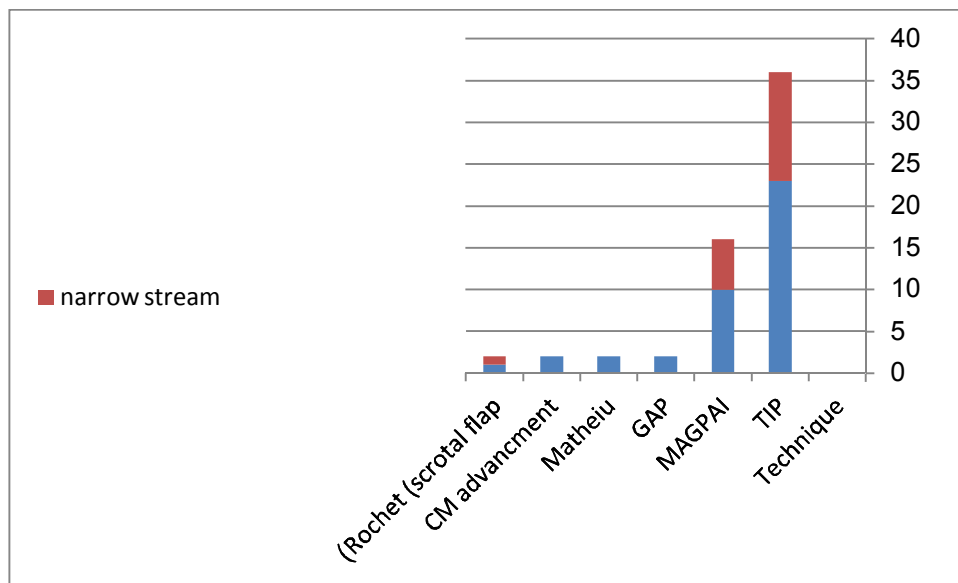


Figure 3. Narrow stream

4. Discussion:

The important factors determining the outcome are the severity of hypospadias, the degree of curvature and the condition of the spongiosum and the urethral plate (Bhat et al, 2016).

Whenever the urethral plate is wide enough to be closed without the relaxing incision in the dorsal

aspect of the urethral plate the tubularization technique is called GAP repair. This was described by Zoantz long before the publication of the Tip repair and was based on the old Thiersh Duplay techniques (Subramaniam et al, 2011).

The aim of hypospadias surgery is the creation of a straight penis with slit-like meatus at the tip of a

glans with enough skin coverage. TIP urethroplasty is the most common procedure used for hypospadias repair since its introduction in 1994 by Snodgrass. (Aboutaleb, 2014).

The concept that factors aside from meatal location affect hypospadias repair and outcomes is not novel, and degree of ventral curvature and urethral plate quality are often cited as important factors (Arlenemail. et al, 2015).

It is the ventrum of the urethra, which is most exposed to breakdown in the second stage operation and any pressure can cause this incision to come apart. For this reason we place a suprapubiccystotomy in most cases at the time of second stage repair. The urethral catheter is left but plugged and the suprapubiccystotomy serves to drain the bladder while healing takes place (Craig et al, 2014).

This strategy avoids any ventral pressure on the incision from a full urinary drainage bag pulling on the catheter (Craig et al, 2014).

Whereas factors such as catheter dislodgement and blockage, presence of postoperative erections, constipation-related straining, and interference with dressings were associated with increased complication rates (Cimador and Vallasciani, 2013).

One research team have reported an increased complication rate in patients receiving hormonal stimulation, suggesting that hormonal stimulation might actually interfere with wound healing (Gorduz D. B., Gay C. L., 2011).

This hypothesis is supported by in vitro and in vivo studies to show that α -dihydrotestosterone inhibits wound closure by inhibiting re-epithelialisation (Gilliver and Hardman, 2011).

Furthermore, some studies have reported an imbalance in the proportion of structural tissue-building epithelial tissue factors (such as cadherin E and claudin) to destructive epithelial tissue factors (for example, metalloproteinase 2) in the ventral penile tissue, but not the dorsal penile tissue, of patients with hypospadias (Vallasciani and Manzon, 2013).

Alsodue to the poor surrounding tissue quality in individuals who have undergone multiple hypospadias revision, revascularization of the newly repaired tissue is paramount (Craig et al, 2014).

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