

# *Modification of tubularized incised plate urethroplasty in hypospadias repair for preventing fistula and meatal stenosis.*

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## **Abstract**

**Objective:** to evaluate the benefit of coverage of the urethral repair by dorsal dartos flap as a second layer for preventing fistula and V like incision on the tip of the glans for preventing meatal stenosis.

**Patients and Methods:**

Forty five children included in this study age ranged ( 11 months – 7 years), they underwent hypospadias repair between December 2008 to March 2012, all cases with distal hypospadias, same technique used for all patients, a combination of techniques used for reconstruction starting with tubularized incised plate urethroplasty with de-epithelialized or stripping of the skin from both sides of U shaped incision surrounding the urethral plate, adding a V like incision on the top (tip of glans) of the midline urethral plate incision that give wide meatus subsequently prevent meatal stenosis and no need for dilatation after stent removal, followed by harvesting well vascularized dartos flap from de-epithelialized preputial skin and transposing it ventrally by buttonholing maneuver and suturing the flap as a second layer along the neourethral suture line, finally

approximation of glans , so achieving three layer closure.

**Results :**All patients are followed for (6 months-24 months) mean was 15 months, only two patients (4.4%) complicated with small fistula at the subcoronal region at the beginning of the study operated after 6 months and the fistula closed successfully. Twenty five cases (55.5%) with Chordee were completely released with no recurrence. No dilatation was needed after removal of stent for neomeatus developed a good stream of urine with no problems regarding stenosis.

**Conclusions:** In this study hypospadias repair should achieve three layer closures by using a dartos flap as a second layer to cover neourethral suture line combined with stripping the skin on the edge of the U shaped incision to gain secure closure of the neourethra, which will prevent fistula formation. We recommend adding a V incision on the tip of the glans connected with midline urethral plate incision to prevent meatal stenosis.

**Keywords:** Hypospadias, Tubularized incised plate (TIP), Dartos flap, V like incision, Fistulae.

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## **Introduction**

**H**ypospadias is a common congenital anomaly and there are many procedures or techniques used to solve such a problem. For distal hypospadias, Snodgrass tubularized incised plate (TIP) urethroplasty is one of the procedure of choice which is versatile and gives good cosmetic outcome<sup>(1)</sup>. urethrocutaneous fistula is the most common complication<sup>(2,3)</sup>. Several procedures described for prevention of fistula<sup>(4-6)</sup>. Also, meatal stenosis is another complication after hypospadias repair<sup>(8)</sup>. In our study we combined multiple technique in preventing fistula and meatal stenosis by removing or stripping the skin from the edge of the U shaped incision around the urethral plate so exposing more subcutaneous tissue used for neourethral reconstruction and complete inversion of the urethral plate that will be the lining of the neourethra, adding a V like incision on the glans where the

new meatus placed that give wide meatus and reduce the chance for stenosis and does not need for dilatation after removal of stent. After the neourethra had been reconstructed it covered by a well vascularized dorsal dartos on lay flap by a buttonholing maneuver, that will give complete cover of the suture line.

## **Methods**

Forty five children were included in this study age ranged (11 months – 7 years), they underwent hypospadias repair "between" December 2008 to March 2012, all cases with distal hypospadias, same technique used for all patients.

After marking, glans traction stitch used (fig 1) we inject the 2% xylocaine with diluted epinephrine 1:200000 to the entire operative field to achieve hemostasis without using a tourniquet. Starting with subcoronal incision below the meatus and the inner aspect of the prepuce for degloving the penile shaft (fig 2),

orthoplasty performed by excision of all the fibrous tissue ventrally to the corpora cavernosa and complete release of chordee tested by artificial erection without need for dorsal plication. Standard Tubularized incised plate urethroplasty (fig 2) used but adding a V like incision on the top of the urethral plate midline incision on the glans that will give wide meatus, and stripping of the edges of the U shaped incision to expose more subcutaneous tissue for closure so the skin will completely inverted, the urethral plate tubularized either on 8F or 10F nasogastric tube depending on the age of patient by continuous 6/0 polyglactin suture. A well vascularized dorsal dartos flap harvested by de-epithelialized prepusial skin (fig 3-4) transposed to ventral aspect by buttonhole maneuver (5), then sutured around the neourethra to the neomeatus and laterally to the corpora cavernosa so the urethroplasty suture line covered completely (fig 6). The glans wing approximated by 5/0 polyglactin suture, this will yield three

layer closure. The penile skin suture to the subcoronal skin as a ring by 5/0 polyglactin suture. (fig 7)  
The nasogastric tube used as a stent and drainage of urine without need for suprapubic drainage and secured to the glans by 4/0 round silk. A three layer dressing include of the xeroform gauze and dry gauze with secured by plaster. Patient receive injectable antibiotics to prevent postoperative infection for five days then changed for oral antibiotic for another 5 days. After 9 days post-surgery the stent removed.



Fig. 1 subcoronal hypospadias

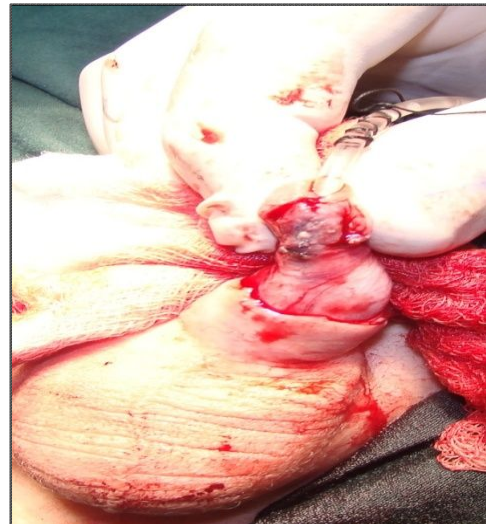


Fig. 2 penile degloving with TIP technique

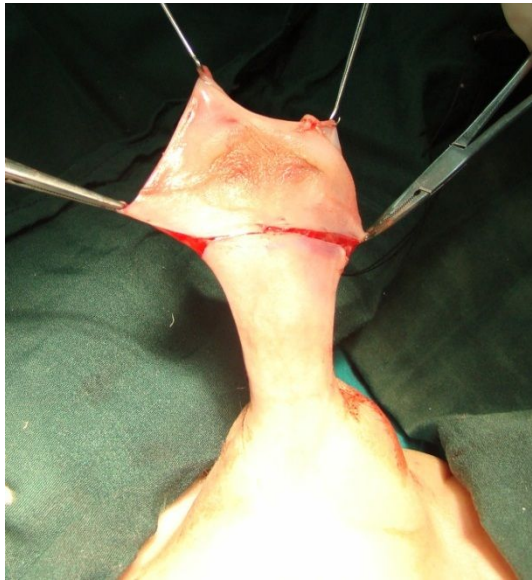


Fig. 3 dorsal dartos flap harvesting by transverse incision in the prepuce proximal to corona

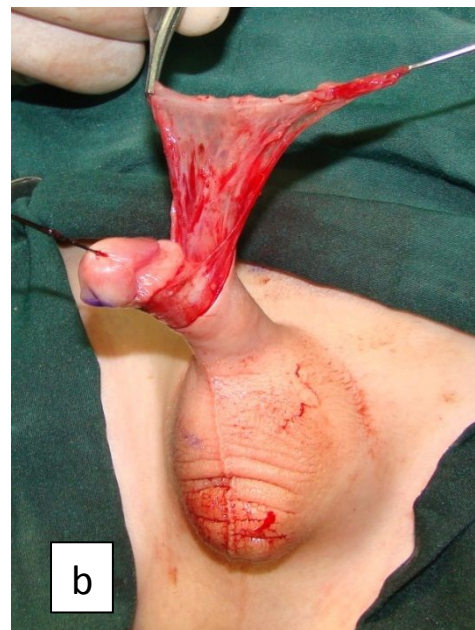


Fig. 4 a,b complete de-epithelialized dartos flap from prepuce

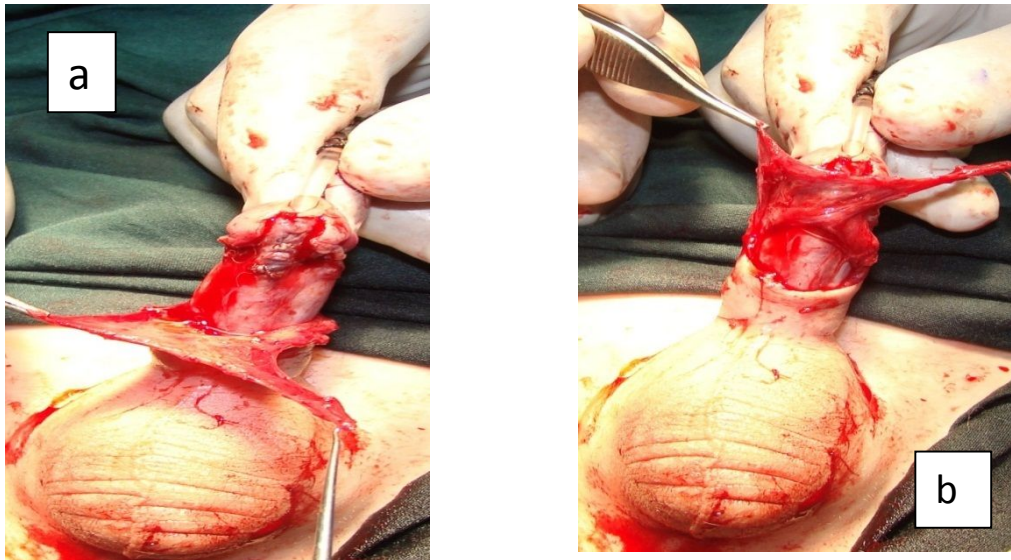


Fig. 5 transposing the well vascularized dartosflap ventrally by buttonhole maneuver.



Fig. 6 dartos flap completely covers the neourethral repair line



Fig. 7 complete closure

**Results:**

The mean range of follow was 15 months (6months –24 months), 2cases(4.4%) developed fistulain the subcoronal region, 43 cases was successful repair with no fistula, and 25 (55.5%) cases with chordee were completely straightened and no meatal stenosis in all 45 children with good cosmetic appearance.

**Discussion:**

Hypospadias repair as described by Snodgrass( TIP)is used for treating distal and midshafthypospadias (1).Post-operativeurethrocutaneousfistula is the most

common complication, three layer closure or interposition of well vascularized tissue as a second layer is essential technique for prevention of fistulae.

Many procedures described to reduce or prevent fistulae formation like Yamataka et al. who utilized to remove the most superficial skin from both sides of U shaped incision to expose more subcutaneous tissue along suture line to prevent post-operative fistula (6), while Retik and Borer using asymmetrical rotation of subcutaneous dartos tissue flap harvested from preputial and shaft skin to cover the neo urethra (4).

By using asymmetric dartos flap and rotated over the neourethra does not provide ideal cover and may lead to penile rotation as we see in previous repair, also Miroslav in his study noted that (5).

Miroslav et al., used a dorsal well vascularized dartos flap by buttonholing maneuver transposed ventrally for prevention of fistulae (5).

We start to combine multiple techniques in one session to reconstruct distal hypospadias with low complication rate (4.4%) regarding fistulae with no meatal stenosis in all cases. After penile degloving, the U shaped incision of the urethral plate was stripped to expose the subcutaneous tissue for more secure closure and it is the first step to prevent fistula, this step is important as described by Yamataka (6).

In Snodgrass technique also had a post-operative meatal stenosis as described by Shimotakahara A. et al. in his study for prevention of meatal stenosis by using dorsal inlay graft (8). In our study the urethral plate incised in the middle part starting from the hypospadias meatus to the tip of the glans and adding a V incision on the glans connected with midline incision to create wide enough neomeatus that lower the incidence of meatal stenosis and no need for dilatation after removal of stent.

Dorsal dartos flap are well vascularized and follow axial course of blood vessel (7). De-epithelialized preputial skin started below the

prepuce proximally to the and continued distally to the inner aspect of prepuce leaving 5mm coronal skin for suturing, beside cutting the

dartos flap and rotated it ventrally to cover the neourethra we adopted buttonhole technique to transpose it ventrally as described by Miroslav (5), and sutured to glans wings, to the tip of neourethra, and to the laterally to the corpora cavernosa, this step is important to create second layer closure over the neourethra, and decrease the chance for urethrocutaneous fistula.

### **Conclusion:**

We conclude that combination of multiple techniques, like well vascularized dartos flap and stripping the skin on the edge of U shaped incision are important steps that give multiple lines of defence to prevent fistula, also adding V like incision on the glans tip to prevent meatal stenosis and omitting dilatation after stent removal.

### **Reference**

- 1- Snodgrass W. Tubularized incised plate urethroplasty for distal hypospadias. *J Urol* 1994; 151: 464- 5.
- 2- Snodgrass W, Koyle M, Manzoni G, Hurwitz R, Caldamone A, Ehrlich R. Tubularized incised plate hypospadias repair: results of a multicenter experience. *J Urol* 1996;156: 839-41.
- 3- Borer JG, Bauer SB, Peters CA et al. Tubularized incised plate urethroplasty: expanded use in primary and repeat surgery for hypospadias. *J Urol* 2001; 165:581-5.
- 4- Retik AB, Borer JG. Primary and reoperative hypospadias repair with the Snodgrass technique: *World J Urol* 1998; 16:186-91
- 5- Miroslav L, Djordjevic, Sava V, Perovic and Vojkan M. Vukadinovic. Dorsal dartos flap for preventing fistula in the Snodgrass hypospadias repair. *BJU International* 2005, 95:1303-1309.
- 6- Yamataka A, Shimotakahara A, Koga H, Miyano G et al. Modified Snodgrass tubularized incised plate urethroplasty prevents fistula formation in hypospadias. *Pediatr Surg Int* 2012.
- 7- Perovic S, Vukadinovic V. Only island flap urethroplasty for severe hypospadias: a variant of the technique. *J Urol* 1994; 151:711-4.
- 8- Shimotakahara A, Nakazawa N, Wada A, Nagata S et al. Tubularized incised plate urethroplasty with dorsal inlay graft prevent meatal stenosis and neourethral stenosis: a single surgeon's experience. *J Pediatr Surg* 2011, 46(12):2370-2.

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