

The concept of tubularized incised plate hypospadias repair for different types of hypospadias

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Abstract. *Purpose:* Using the concept of tubularized incised plate (TIP) urethroplasty technique for proximal, distal, primary, secondary and complicated cases of hypospadias. *Material and methods:* From June 2002 to December 2003 TIP urethroplasty was performed in 15 patients between the age of 1–18-year-old with penoscrotal, mid shaft and subcoronal hypospadias. In 13 of them TIP urethroplasty used as the primary repair while in two of them as secondary repair. *Results:* No clinically important complications were observed in those boys who underwent primary reconstruction. One of them had meatal stenosis at the early postoperative period which was corrected by dilatation of the external meatus by feeding catheter at intervals up to 2 months postoperatively. Three boys had very narrow fistula which just allow leak of few drops of urine through urination. One boy with penoscrotal hypospadias who underwent two-stage repair had fistula. *Conclusion:* The concept of TIP urethroplasty is the procedure of choice for the treatment of proximal hypospadias and, it seems to be suitable for distal, secondary and even complicated hypospadias reconstruction. The advantages of this procedure include its simplicity, low complication rates and very good appearance of the glans with normal meatus.

Key words: Hypospadias Repair, Penis, Snodgrass Procedure

Introduction

Hypospadias is found commonly in newborn boys and it is seen in approximately 8.2 per 1000 live births [1]. The goals of hypospadias reconstruction are to bring the meatus close to glans to allow the child to void standing, removing the chordee to allow for normal intercourse and giving the phallus appearance of a normally circumcised penis when observed from distance. There are more than 200 named surgical procedure to correct hypospadias with a few common general concepts to all. TIP hypospadias repair is recently introduced, Snodgrass and his colleagues reported the correction of proximal hypospadias using this procedure [2–4]. In this operation the neourethra is constructed from the urethral plate. The key step in this procedure is midline incision of the plate which start distally from the hypospadiac meatus,

thus widened and deepens the plate sufficiently to create functional urethra without additional skin flaps.

Material and methods

From June 2002 to December 2003, 15 boys 1–18-year-old underwent TIP hypospadias reconstruction, including 1 with mid shaft, 2 with penoscrotal and 12 with proximal hypospadias. While 13 patients was with primary hypospadias, 2 patients underwent secondary repair 1 of them was with penoscrotal the other was proximal hypospadias. The chordee was observed only in one patient with mid shaft and other with primary penoscrotal hypospadias. The hospitalization period was 0–3 days. Urethral 6F feeding tube was left for 4–10 days according to wound healing in the

postoperative period. The concept of TIP urethroplasty includes three key points: midline incision, U-shaped incision, and subcutaneous flap. An 18-year-old patient who had 21-hydroxylase enzyme deficiency with severe penoscrotal hypospadias associated with chordee was repaired by using the key points of TIP urethroplasty. In this case, we modified the TIP urethroplasty as there was no need to create neo-meatus because the patient has his own original meatus (Figure 1a, b).

TIP urethroplasty can be used also for hypospadias reoperation. Snodgrass et al. reported the using of TIP technique for hypospadias reoperation in 15 patients [5]. In our study, we avoid midline incision because the edges of U-shaped incision and subcutaneous tissues were adequate to cover the neourethra without tension. So we believe that the main key points of TIP urethroplasty can form the baseline in reconstruction of secondary hypospadias.

When the plate is not open to an adequate width, an onlay island preputial flap can be used to supplement the urethral plate [6]. In rare cases when the plate is dysplastic and contributes to penile bending, it is excised and a transverse island preputial flap [7] is used to create the neourethra.

Results

The most common complications seen in hypospadias correction are fistula and urethral/meatal stenosis; however, in the hands of experienced

surgeons, these risks are uncommon, especially in proximal repairs.

The TIP urethroplasty technique results in a morphologically normal penis that looks like a penis which has been only circumcised (Figure 2). Also, the TIP urethroplasty technique can be used successfully for secondary hypospadias. A fistula occurred in one patient who underwent secondary penoscrotal hypospadias repair, another infant with primary hypospadias repair had meatal stenosis which has been overcome by dilatation of the urethra by 6F feeding tube at intervals. Three boys have clinically not important very narrow fistula, which just leaks a few drops of urine throughout urination.



Figure 2. View of hypospadiac penis repaired by TIP technique 1 year before.

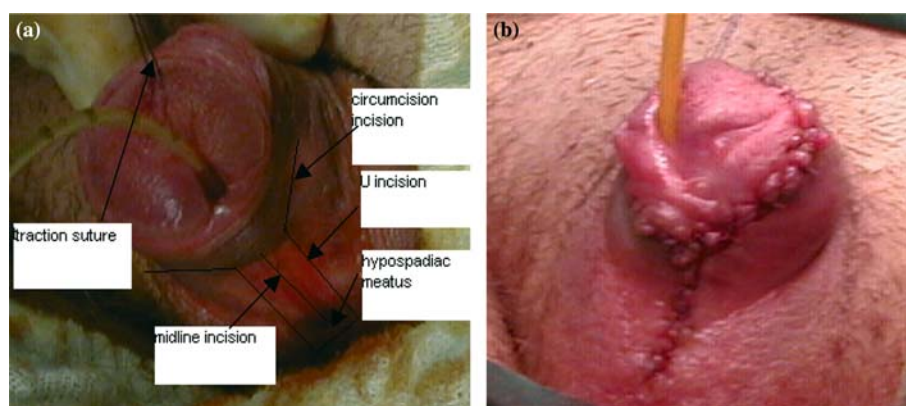


Figure 1. (a) Preoperative and (b) early postoperative view of complicated penoscrotal hypospadias with chordee in 18-year-old patient repaired by using the concept of TIP technique.

There was no strictures expected in the neourethra as the calibration of urine were normal when the boys called for control (Figure 3).

Discussion

The application of non-hair-bearing penil skin as vascularized pedicle graft and use of paramental flaps to develop the neourethra are now the preferred treatment modalities for hypospadias reconstruction. The superiority of TIP urethroplasty technique comes from few key points; midline incision by which the urethral plate is widened to create tension free neourethra, subcutaneous flap which reinforced the neourethra and decrease incidence of fistula. As the subcutaneous flap and neourethra is covered by ventral skin with good vascularity without need for skin flap thus diminish the incidence of fistula. Also we believe that not to change mederately-tension dressing is advocated for the first



Figure 3. Normal calibration of urine after TIP reconstruction.

48 hours in the post operative period. The modification of the concept of TIP urethroplasty technique can be used as the base line in reconstruction of distal, secondary and some complicated cases of hypospadias. However much more studies are needed to prove the finding of this preliminary study.

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