



Dorsal Vertical Island Tube Urethroplasty in Children With Hypospadias- Our Experience In 60 Patients.

KEYWORDS

Hypospadias,chordee, dorsal, urethroplasty.

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ABSTRACT Aim:To assess the results and complications of dorsal vertical island tube (DVIT)

Urethroplasty.

Patients& Methods: 201 patients were operated for hypospadias in two referral hospitals during the period of February 2008- March 2013.Out of 201 children 30 were with peno scrotal,7with scrotal and14 with proximal penile having severe chordee, required two staged urethroplasty.In 26 babies with glanular or coronal hypospadias MAGPI procedure was done. In 64 babies with mid and distal penile hypospadias with healthy urethral plate, tubularisedincised urethra plate urethroplasty(TIP) was done. Rest of 60 babies with mid or distal penile hypospadias with unhealthy urethral plate or requiring urethral plate excision due to chordee, were choosed for dorsal vertical tube urethroplasty. These 60 babies with DVIT were followed up for at least 12 months to assess complications like urethrocutaneous fistula, meatal stenosis, megalourethra or urethral diverticulum, stricture, penile torsion/rotation.

Results: A total of 60 patients with mid or distal penile hypospadias in whom DVIT was used during the study period were included in the study. The mean age was 3.8years ranging from 8months to 12years.All patients were followed up for minimum of one year.

Eleven patients developed complications (18.3%). Commonest complication

Urethrocutaneous fistula was seen in six patients (10.0%).Three patients d

Meatalstenosis (5%).two patients developed diverticulum (3.3%). In 49 patients stream

Was good, no fistulas, on torsion, no skin necrosis, no glans dehiscence occurred during the follow up.

Conclusions: Dorsal vertical island tube is good alternate toTIP, in mid and distal penile hypospadias, where urethral plate is unhealthy or excised to correct chordee. We report DVIT has acceptable rate of complications and good cosmetic results.

Introduction: Hypospadias has been reported to occur approximately in one out of 100-300 live male births.The greatmajority(87%) were mid, coronal andglanular.The neourethra may be created by tubularization of native urethral plate, especially if there is deep glanular groove¹ or by various flaps if urethral plate is unhealthy. The concept of flaps was accomplished by Hodgson² and Asopa etal³ in the early 1970s.This was further developed bystandoli^{4,5}. In1979and widely popularized by Duckett⁶ in 1980. The main disadvantage Ofthese preputial flaps is torsion or rotation of penis and sometimesouter skin necrosis. DVIT has been introduced by scuder⁷ to overcome above problems and it was popularized by perovic⁸ in1994 and santanelli⁹etal in2001.We present our experience with dorsal vertical island flaps

Patients&Methods:A total of 201 children with hypospadias were admitted in two referral hospitals between February 2008 and march 2013. Among 201 children, 30 were admitted withpeno scrotal,7with scrotal and14 with proximal penilehypospadias. All of them had moderate to severe chordee and required two staged urethroplasty. 26 babies with glanular or coronal hypospadias MAGPI procedure was done.Tubularised incised urethra

plateurethroplasty(TIP) was the option in 64 patients with healthy urethral plateand with or without mild degree of skin chordee. In rest of 60 babies with mid or distal penile hypospadias with unhealthy urethral plate or requiring urethral plate excision due to chordee, were opted for dorsal vertical island tube urethroplasty. All these surgeries were done by two consultant surgeons, using the same technique. These 60 babies with DVIT were followed up for at least 12 months to assess complications likeurethrocutaneous fistula, meatal stenosis, megalourethra or urethral diverticulum, stricture and penile torsion.

Surgical technique: The procedure of dorsal vertical island flap has already been described by perovic in 1994⁸. Briefly after glans stitch,penile deglovingis done preserving native urethra and a collar of inner preputial layer around Corona (10mm).Chordee correction tested. If chordee persist even after degloving the penis we proceed to DVIT. The urethral plate transacted and excised from glans to meatus. Urethral meatus spatulated,the length of urethra required is measured and marked on the dorsal outer preputial and distal penile skin vertically. The length of the tube is usually measured in excess (1:1.25) to the length of urethra.This is because the distal part of the tube, which has

poor blood supply is excised during urethroplasty. The width of the tube is usually reconstructed in a such a way that the neo urethra should admit 7-9F in infants and 10-12F in older children. After marking the flap the island flap carefully dissected on vascular pedicle. Two lateral flaps dissected from island flap without compromising blood supply. These lateral flaps would be used to cover the ventral aspect of penis. The island flap is converted into tube over feeding tube with interrupted sutures using 6-0 vicryl (Figure 1). The DVIT is transposed ventrally by buttonholing the centre of the mesentery at its base (Figure 2). The transposed tube lies perfectly in the position of urethral plate without rotation or torsion of penis. Another important advantage of this transposition is that the suture line of the tube lies exactly against corpora. Now the tube is anastomosed to the spatulated urethral meatus. The distal part is placed between widely mobilized glans wings or passed through tunnel made in the glans. The suture lines are covered with mesentery of the flap with some interrupted sutures of 6-0 vicryl. Glanuloplasty completed with 5-0 vicryl. The excess of the distal tube is excised and suture to the glans to create wide meatus. Preputial flaps fashioned. The ventral cover is provided by rotating lateral flaps. Feeding tube left for one week. These children are followed up after discharge.

Results: A total of 60 patients with mid or distal penile hypospadias in whom DVIT was used during the study period were included in the study. The mean age at the time of surgery was 3.8 years (ranging from 8 months to 12 years). Hypospadias was distal penile in 22 patients and in rest it was mid penile. 42 children with hypospadias had chordee. Dorsal plication was required in 2 patients to correct residual chordee after excision of urethral plate. The mean follow up period was 12 months (1-48). No patient was lost to follow-up. Eleven patients developed complications (18.3%). Commonest complication was urethrocutaneous fistula, seen in 6 patients (10.0%). 3 patients developed meatal stenosis (5%). Two patients developed diverticulum (3.3%). There were no instances of flap necrosis. None of them had torsion/rotation of penis. In 49 patients stream was good, no fistulas, no skin necrosis and no glans dehiscence was observed during the follow up period.

Discussion: Many techniques were described in the literature using vascularized flaps to reconstruct neo urethra in patients with hypospadias^{2,3,4,5,6}. Dorsal vertical flap technique was first described by Scuderi⁷ in 1983, later it was popularized by Perovic⁸ and others^{9, 14}. We report our experience using this technique. The main advantage of this technique is, using of dorsal vascularized flap which is brought down ventrally by button holing the mesentery, causing no torsion/rotation of penis, which was a common problem after island flaps^{3,6}. None of our patients had this problem. Another advantage of this technique is that, the suture line of the tube is in approximation with corpora and it does not require cover with vascularized tissue as in TIP, because the mesentery itself acts as a cover. A total of 11 (18.3%) patients developed complications, which is comparable with other series of mid or distal penile hypospadias repairs using various techniques including TIP^{10,11,12,13}

The commonest complication in our series was urethrocutaneous fistula occurring in 6 (10.0%) of 60 patients, which is favourably comparable to other reports using preputial flaps, who has reported fistula rate of 18% of their patients¹⁰. Most of our fistulas were seen only at the proximal end of the anastomosis which can be closed easily later on.

Meatal stenosis is a difficult problem to treat, after urethroplasty. 3 (5%) of our patients developed meatal stenosis after DVIT. Higher incidence of meatal stenosis had been reported by some authors¹⁴ after longitudinal dorsal island tubes in their patients. The stenosis in DVIT is mainly due to compromised blood supply to the distal part of the tube compounded by tight closure of the glans over the skin tube. We modified our technique in that, we take excess length of skin tube than actual urethral length required and later we excise the excess, distal avascular part. We also reconstruct meatus as wide as possible.

Skin cover is not a major problem because two lateral flaps are well vascularized due to axial blood supply and we rotate them to cover the ventral aspect of penis. Glans dehiscence has been reported by some authors¹⁴ after dorsal longitudinal island flap. It is not seen in our patients as most of the times we make tunnel instead of glans wings.

Conclusion: Dorsal vertical Island tube is good alternate to TIP, in mid and distal penile hypospadias, where urethral plate is unhealthy or excised to correct chordee. We report DVIT has acceptable rate of complications and good cosmetic results.



Figure 1. Dorsal vertical tube is being prepared



Figure 2. Button hole is made in the mesentery.



Figure 3. Appearance after surgery

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