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Editorial

Hypospadias Revisited

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EDITORIAL

In hypospadias surgery, despite the high rate of occurrence of the anomaly, the learning curve in achieving high success rate is variable [1,2]. Rates of complications show wide variation with urethrocutaneous fistula and meatal stenosis reported in 0–39% and 0–32% respectively [3,4]. Also, an unsatisfactory outcome is sometimes noted in an individual patient despite the impression of a satisfactory repair at operation. In earlier discussions on hypospadias, attention has been primarily on the location of the native meatus. However, factors like the degree and pathogenesis of chordee, quality and width of urethral plate (UP), glans anatomy, thickness of dartos and its blood supply also determine outcome.

GMS score (Glans-Urethral Meatus-Shaft) derived preoperatively is a recent attempt at standardizing the reports on hypospadias repair [4]. This allows grading the components of hypospadias spectrum which in turn can guide the choice and the need for modifications of surgical techniques. Total GMS score of 6 and above correlates with higher rate of complications [4]. The degree of chordee $>60^0$ is an independent variable in prediction of fistula with 25 times greater fistula rates in severe chordee compared to absent chordee [4]. Severe chordee is associated with hypoplasia of the corpus spongiosum, Buck's fascia and dartos fascia over the deficient portions of the urethra and even the proximal shaft. [4-6]. All these factors can compromise the blood supply of the tissues in the surgical field. The occurrence of urethrocutaneous fistula after chordee correction alone in those with the meatus in the normal location reinforces this concept [7].

GMS score has high inter-observer reliability. Glans width of 14 mm and above is associated with favourable outcomes [4-6]. In TIP (tubularization of incised plate) urethroplasty, width of UP before and after plate incision and quality of UP are related to outcome. Presence of distal urethral hypoplasia in native meatus requires cut back to normal urethral tissue before urethroplasty. The thickness and level of division of the available corpus spongiosum in the deficient part of urethra determines the choice of spongioplasty as a cover for the neourethra. Detailed documentation of these findings at surgery would enable objective analysis of results to the benefit of the surgeon concerned and those involved in hypospadias repair.

Certain points in the literature reinforced by personal observation are discussed on hypospadias repair with main reference to TIP procedure [4-6,8-9]. Stenosis of the neo-urethral meatus is a well recognized sequelae of TIP repair and is preventable by limiting the distal extent of the incision of UP by at least 3-5 mm proximal to the distal tip of the urethral groove [9]. By this maneuver, normal glans tissue forms the circumference of the tip of neourethra. Raw area and fibrosis in the dorsum of neomeatus are avoided. Retraction of the neomeatus under the glans wrap leading to meatal stenosis occurs if the tip of neo urethra submerges under the glans wings when the wings are approximated in the midline ventrally. Anchoring sutures of 6-0 or 7-0 polyglactin, at 3 and 9 o'clock positions of the tip of neourethra, to the sides of glans wings wrap avoids neo meatal retraction and meatus stenosis. This step ensures that the raw edges of the glans do not fuse near the tip of the neomeatus.

Urethrocutaneous fistula in TIP repair occurs commonly either at the junction of native urethra with neourethra or near the pericoronal region. Fistula at the former site is predisposed to by the presence of dysplasia of distal urethra with thin urethral wall, poor spongiosum around it and thin perimeatal skin. Occurrence of narrowing or a cul-de-sac effect due to inversion of proximal end of urethral plate (near the native meatus) also predisposes to fistula at this site. These factors have to be taken care of during surgery.

Pericoronal fistula is predisposed to by neo-meatal stenosis and constriction of the neourethra tube during glans wrap. The constriction in the pericoronal region can occur at the time of surgery or later due to postoperative oedema. Both of these occur subtly and are avoided by the conscious creation of a loose glans wrap. Loose wrap requires adequate mobilization of the glans wings commencing from at about three and nine o'clock positions of the glans edges near the corona. Distal dissection of the glans wings has to be done adequately, usually for a minimum of 4-5 mm.

Glans dehiscence following TIP repair has been reported in about 2-15% with the higher incidence in proximal hypospadias [10]. In prevention of this, apart from ensuring loose glans wrap, the dissection of glans from corpora cavernosa and urethral plate junctions needs to be done carefully in the proper plane without lacerating the proximal glans or UP. This is particularly emphasised in megameatus intact prepuce variant (MIP) where though the glans and glans groove are wide, the urethra immediately proximal to the corona can be easily damaged during dissection. In this variant, visualization of the junction of

glans, the distal urethra and corpora near the distal urethra is aided by mobilising the skin over the distal urethra in the form of a perimeatal based Mathieu flap [11].

Flaps from the dartos fascia ("waterproof" layer) and dorsal preputial skin as Byars' flaps to cover the ventral surface are commonly used in hypospadias repair [12-14]. Dartos fascial flaps may compromise the blood supply of the overlying skin corresponding to the origin of the flap, particularly when the inner layer of prepuce is used for neourethra tube or is de-epithelialized to cover the neourethra. If the dorsal skin of prepuce is subsequently used as Byars' flaps there is a risk of necrosis of the Byars' flaps [3]. The adequacy of the blood supply in Byars' flaps should be confirmed at surgery failing which the skin necrosis may show up as a surprise to the surgeon postoperatively. If adequate skin cover for ventral surface of penis is otherwise available, it is better while designing the Byars' flaps to discard the part of the outer skin of prepuce from which the dartos pedicle was derived. The issues discussed highlight some of the factors determining the outcome in hypospadias repair. The spectrum of the hypospadias abnormality, the features of the available tissues, the skill of the surgeon to adapt or modify the technique for an individual patient and attention to finer details are of importance for successful outcome.

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