Usefulness of tubularized incised plate technique in posterior hypospadias


ABSTRACT

Tubularized incised plate (TIP) technique is a method that has been used in distal hypospadias repair.

Objective: To report the authors’ experience with this technique in proximal hypospadias repair.

Materials and methods: A retrospective study on patients with proximal hypospadias who underwent correction using the TIP technique over a 5-year period was carried out. Lateral corpus spongiosum tissue was tubularized to the open urethral plate and urethral tube suture was covered by the tunica vaginalis.

Results: Only 6 (9.3%) out of 64 patients operated on with this technique presented with complications. Three (4.6%) developed fistula with associated meatal stenosis and 3 (4.6%) developed isolated meatal stenosis.

Conclusions: This technique is recommended for the correction of proximal hypospadias in patients with a well-developed urethral plate in whom curvature is not severe. The tubularization of corpus spongiosum tissue stabilizes the urethra even more and the tunica vaginalis cover eliminates the necessity of using foreskin, which could endanger the vascularity of the cutaneous covering and result in fistula formation.

RESUMEN

La técnica de plato incidido y tubularizado (PIT) se ha practicado en la reparación de los hipospadias distales.

Objetivo: Notificar la experiencia de los autores en la aplicación de este método para hipospadias proximales.

Material y métodos: Se realizó un estudio retrospectivo de los pacientes con hipospadias proximales sometidos a corrección con la técnica de PIT en un período de cinco años. En todos los pacientes se tubularizó el tejido esponjoso lateral al plato uretral abierto y se cubrió la sutura del tubo uretral con túnica vaginal testicular.

Resultados: De 64 pacientes operados con esta técnica sólo seis (9.3%) presentaron complicaciones. Tres (4.6%) desarrollaron fístula con estenosis meatal y tres (4.6%) estenosis meatal aislada.

Conclusiones: Es recomendable la utilización de esta técnica para la corrección de los hipospadias proximales en los pacientes que poseen un plato uretral bien desarrollado y cuya incurvación no sea muy acusada. La tubularización del tejido esponjoso estabiliza aún más a la uretra y la cobertura con túnica vaginal hace innecesario tomar dardos de prepucio, lo cual podría poner en riesgo la vascularidad de la cubierta cutánea y dar lugar a la formación de fístulas.
INTRODUCTION
The term hypospadias refers to the lack of embryologic development of the urethra in which the meatus can open at any place on the ventral part of the penis up to the perineum. It can present with ventral curvature with a deficiency of skin at the site and redundant dorsal foreskin. It is a common malformation affecting 1 out of every 300 live births and the urethral opening in approximately 20% of cases is at the proximal penis. Hypospadias classification is determined by the location of the meatus once chordee is corrected. The most commonly used is the Barcat classification.

Objectives in successful hypospadias repair include straightening of the penis (orthoplasty), functional urethral tube creation (urethroplasty), vertical alignment of the meatus with the conic gland (meatoplasty with glanuloplasty), transposition of the penis (scrotoplasty) and cosmetic cutaneous covering.

Proximal hypospadias correction is complex and laborious techniques using local flaps or grafts from buccal, bladder or cutaneous mucosa have traditionally been employed. Complications arising from these techniques have been reported to range from 30-70%.

In the pediatric surgery service of the Centro Médico Nacional La Raza an average of 58 hypospadias procedures are performed annually and 20-25% of them are proximal hypospadias. Local island flaps and grafts have been used in their correction and in the last 5 years tubularized incised plate (TIP) urethroplasty has been employed. This technique was initially introduced in distal hypospadias repair. Thanks to advances made in TIP, it can now be used in medial and proximal hypospadias correction.

OBJECTIVE
The objective of the present study was to analyze the results of proximal hypospadias repair with the TIP technique that was performed on patients at the pediatric surgery service of the Centro Médico Nacional La Raza between January 2000 and March 2006.
midline. Finally, the penis was covered with Byars’ flaps or their variations, forming penile raphe when possible (Images 8 and 9). The penis was dressed with gauze and tegaderm that was kept in place for 5-7 days and transurethral catheter was kept in place for 10-14 days. Name, hospital identification number,
age of patient at time of surgery, findings and follow-up care were registered and complications were evaluated in the out-patient service.

**RESULTS**
A total of 64 patients diagnosed with proximal hypospadias underwent corrective surgery with the TIP technique. Patient age ranged from 6 months to 5 years (60 months) with a mean age of 14 months. Ventral curvature presented in 100% of patients, of which 23 cases (36%) required correction by means of medial dorsal plication and the others were corrected simply through foreskin degloving (64%).

Mean hospital stay was 5 days. Generally, penile dressing was removed before the patient was released from the hospital and transurethral catheter was removed at a scheduled out-patient consultation.

Only one patient required cystostomy due to accidental dislodgement of the transurethral catheter 24 hours after surgery.

From the total of 64 patients, 6 presented with complications postoperatively at a mean time of 6 months. Three developed meatal stenosis and fistula that were repaired by urethral dilatation, meatooplasty and fistula closure and the other three developed meatal stenosis alone that was repaired by urethral dilatation.

**DISCUSSION**

Tubularized incised plate (TIP) urethroplasty can be used for proximal hypospadias correction in well-selected cases. They should be cases in which there is sufficient urethral plate for performing tubularization of the neourethra without tension once the relaxing incision has been made. Ventral curvature should initially be corrected by means of cutaneous degloving of the penis and only if there is persistent chordee, should correction be carried out by a maximum of 2 corporal plications at the dorsal midline of the penis. If more than 2 dorsal plication sutures are used to correct chordee the surgeon should be aware of the necessity to cut the urethral plate and correct ventral corpus cavernosum disproportion by means of grafts. In such cases a different technique for correcting urethral deficiency should be chosen.

Corpus spongiosum remnant tubularization at each side of the urethral plate provides additional stability.
to the urethroplasty. In addition, when suture lines are covered with testicular tunica vaginalis in proximal hypospadias there is no need to take preputial darts. The authors feel that subcutaneous foreskin tissue dissection is an aggressive procedure, since the obtained flap must be large enough to cover the entire length of the urethral tube, possibly jeopardizing vascularity of the final cutaneous covering. By using the tunica vaginalis, overlapping sutures between the neourethra and skin are avoided and a well-vascularized foreskin that is able to cover the penis results in adequate fistula-free cicatrization and a better cosmetic appearance.

International reports on proximal hypospadias repair refer to complication rates of up to 58% for buccal mucosa, 20% for island flaps and 37% for bladder mucosa tubes. These complications include urethral stricture, fistula, balanitis xerotica obliterans and urethral diverticula.3,10 Complication percentage in the present study (9.3%) showed a 40% improvement when compared with international studies.

In conclusion, many cases of proximal hypospadias can be repaired while at the same time preserving the urethral plate. Severe ventral curvature is the main contraindication for TIP technique because in those cases the urethral plate must be transected in order to straighten the penis.

**BIBLIOGRAPHY**