Incomplete Penoscrotal Transposition with Scrotal Hypospadias - revisiting the Glenn Anderson Technique

Harish Kumar Kabilan[1*], M.N. Praveen Raju[2], Radhakrishnan C. N.[2], Anantheswar Y.N. Yelambalase Rao[1] , Ashok Basur Chandrappa[1], Srikanth Vasudevan[1]

[1]Department of Plastic and Reconstructive Surgery, Manipal Hospital, Bengaluru, Karnataka, India
[2]Department of Paediatric Surgery, Manipal Hospital, Bengaluru, Karnataka, India

Corresponding Author*
Harish Kumar Kabilan
M.B.B.S, DrNB Plastic Surgery
Department of Plastic and Reconstructive Surgery,
Manipal Hospital,
Bengaluru, Karnataka India.
E-mail: drharishkumark@gmail.com

Received: 18 Apr, 2022, Manuscript No. ACR-22-18120; **Editor assigned:** 25 Apr 2022, PreQC No. ACR-22-18120 (PQ); **Reviewed:** 29 Apr 2022, QC No. ACR -22-61500 (Q); **Revised:** 05 May 2022, Manuscript No. ACR-22-18120 (R); **Published:** 10 May, 2022, **DOI.**10.37532/22.11.2.10-11

Abstract

Peno-scrotal Transposition (PST) is a rare genital malposition due to a defect in the caudal migration of the scrotum during intrauterine life. It can be complete or incomplete, with the incomplete type being more common and both types are associated with hypospadias. Various surgical methods are described for the correction of incomplete PST. In this paper, we present our experience with a 3-year-old boy who underwent the Glenn Anderson technique for the correction of incomplete PST.

Keywords: Penoscrotal transposition • Scrotal hypospadias • Glenn Anderson technique

Introduction

The position of the external gonads and genitalia is of paramount importance between the sexes. It can be:

1. Complete (where the scrotum covers the penis, which emerges from the perineum) or
2. Incomplete (where the penis lies in the middle of the scrotum)

Though the incomplete is more common, both forms are frequently associated with severe forms of hypospadias [1].

Except in mild cases, various surgical procedures have been proposed to correct this anomaly. In this paper, we discuss one of the standard procedures for penoscrotal transposition correction - The Glen Anderson technique.

Case report

A 3-year-old male child born to a non-consanguineously married couple was brought to the paediatric surgery outpatient department. The child presented with incomplete penoscrotal transposition with severe chordee (Figure 1). The child had no other comorbidities and had a normal development history. The child was evaluated for other anomalies and was cleared for surgery. The surgical procedure is described below.

The technique generally consists of mobilization of the two halves of the scrotum as rotational advancement flaps with the relocation of the scrotal compartment in a normal dependent position.

After painting and positioning the patient under general anaesthesia, a Foley's catheter is passed into the bladder. A stitch is taken onto the glans with Vicryl 4-0 (Figure 2a and 2b).

Inverted V-shaped incision marked on the scrotum from the base extending distally and laterally, leaving the rim of skin on the penis base between 10 'o'clock and 2 'o'clock position intact.

A curvilinear incision is made above the superior scrotal folds and continued around the base of the phallus. Caudally, the incisions are joined in the midline (Figure 2c)

Incision deepened circumferentially at the level of the corona to deglove the penis. On the ventral shaft of the penis all fibrous tissue is excised (Figure 3a).

Figure 1. Pre-operative pic

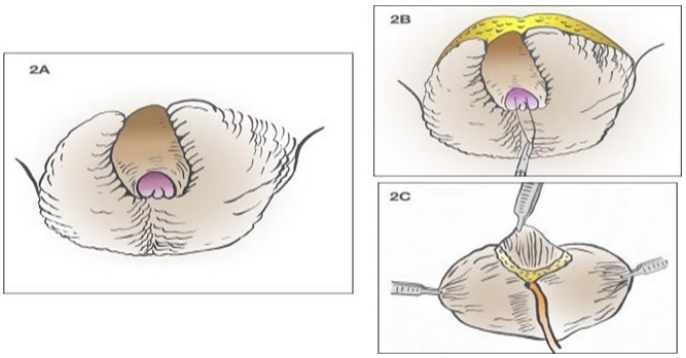

Figure 2. a) Intra-operative view before placement of the Foley's catheter, **b)** A stitch is taken onto the glans with Vicryl 4-0, **c)** The incisions are joined in the midline caudally just above the urethral opening.

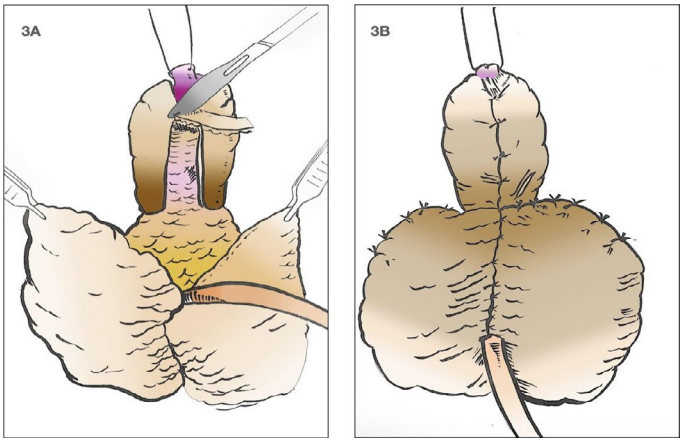

Figure 3. a) Fibrous tissue on the ventral shaft of the penis is excised, **b)** The lateral scrotal flaps are brought together beneath the phallus and closed into 2 layers.

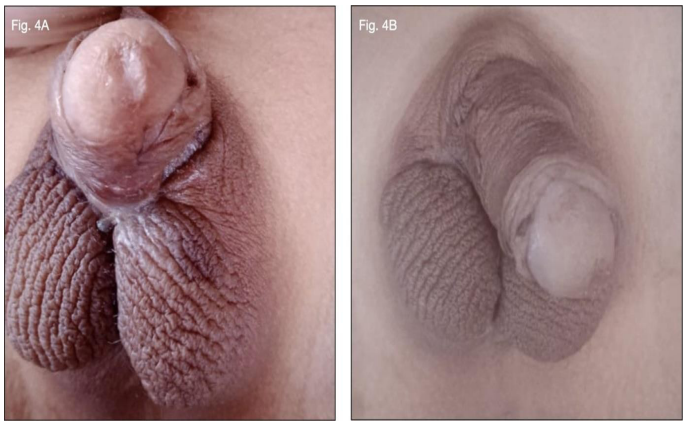

Figure 4. a) Postoperative pic i, **b)** Postoperative pic ii.

The urethral plate is incised, and the chordee is released. The incision on the scrotum deepened till the subcutaneous layer and then mobilized.

The lateral scrotal flaps are brought together beneath the phallus (Figure 3b) and the incisions are closed in 2 layers with interrupted sutures of 3-zero absorbable suture to the subcutaneous tissue and similar 4-zero suture for the skin (Figure 4a and 4b).

Discussion

During gestation, the penis and scrotum achieve their usual anatomical arrangement when, under the influence of androgens, the genital tubercle elongates to become the penis, while migration of labioscrotal folds brings the latter to a caudal and dorsal position to the penis, and then fusing in the midline. The abnormal location of the genital tubercle or abnormal migration of labioscrotal folds may be the origin of penoscrotal transposition [2].

PST may be observed in isolation or in association with [3], Simpson–Golabi–Behmel syndrome (an X-linked recessive overgrowth disorder characterized by the prenatal onset of overgrowth, supernumerary nipples, a grooved tongue or chin, chest wall malformations, cryptorchidism, hypospadias, and penoscrotal transposition) [4], and in Aarskog syndrome (an X-linked inheritance syndrome caused by mutations in the *FGD1* gene on chromosome Xp11) [5].

The standard surgery for PST is usually a staged correction [6]. The success rates of various types of proximal hypospadias repair are around 80% [7-10].

Even though single-stage surgical reconstruction is the standard for distal penile hypospadias, the same principle does not apply to proximal hypospadias. Various studies have suggested no difference between the complication rate of a single-stage (8%–61.5%) vs. multi-stage repair (15%–70%) [11]. This wide variation depends on the surgeon's skill, workload, and experience. PST associated with proximal hypospadias makes total repair even more complicated because the blood supply to the neourethra may be severed during scrotoplasty. Thus, the risk of jeopardizing the vascularity of the neourethra during the correction of PST is decreased with a two-stage repair.

The technique consists of mobilization of 2 halves of the scrotum as rotational advancement flaps with the relocation of the scrotal compartment in a normal dependant position. The technique is applicable in almost all but the most severe degrees of penoscrotal transposition [12].

Conclusion

The Glenn Anderson repair is a simple yet excellent PST repair technique in a two-staged operation, which while preserving blood supply to the neourethra achieves excellent cosmetic results.

References

1. Manjunath, K, & Venkatesh, M. "M-Plasty for Correction of Incomplete Penoscrotal Transposition ". *World J Plast Surg* 3 (2014): 138-141.
2. Fahmy, M,A,B. et al. "Spectrum of penoscrotal positional anomalies in children". *Int J Surg* 12 (2014): 983-988.
3. Dillon, B, J, & Alomari , A, I . "Angiographic demonstration of an aberrant abdominal umbilical arteryin a patient with penoscrotal transposition and caudal regression in a patient with penoscrotal transposition and caudal regression". *Surg Radiol Anat* 31 (2008): 215.
4. Griffith C, B. et al. "Genital anomalies in three male siblings with Simpson–Golabi–Behmel syndrome" *American Journal of Medical Genetics* Part A - Wiley Online Library 149 (2009):2484- 2488.
5. Garcia, N, M. et al. "Deletion mapping of critical region for hypospadias, penoscrotal transposition and imperforate anus on human chromosome 13". *J Pediatr Urol* 2 (2006): 233-242.
6. Buyukunal, C. "Evolution of Hypospadias Surgery: Historical Perspective". *Hypospadias Surg* 2 (2022):9.
7. Gillenwater, J, Y. "Gillenwater JY. Adult and Pediatric Urology". *Lippincott Williams & Wilkins* 2002.
8. 23-Paediatric-Urology_LR_full.pdf. Accessed January 26, 2022. https://uroweb.org/wp- content/uploads/23-Paediatric-Urology_LR_full.pdf
9. Gershbaum, M, D. et al. "A case for 2-stage repair of perineoscrotal hypospadias with severe chordee". *J Urol*. 168 (2002):1727-1729.
10. Snodgrass, W, T. "Tubularized incised plate hypospadias repair: indications, technique, and complications". *Urology 54* (2021): 6-11.
11. Badawy, H. & Fahmy , A. "Single- vs. multi-stage repair of proximal hypospadias: The dilemma continues". *Arab J Urol.* 11 (2013):174-181.
12. Glenn. et al. "Surgical correction of incomplete penoscrotal transposition". *The Journal of Urology* 110 (1973):603-605.

Cite this article: Kabilan KH, Raju PMN, Radhakrishnan CN, Rao YY NA, Chandrappa BA, Vasudevan S. Incomplete Penoscrotal transposition with scrotal hypospadias - Revisiting the Glenn Anderson technique. Reconstr Surg Anaplastol, 2022, 11(3), 010-011.