**Complete penoscrotal transposition: A three-stage procedure**

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**ABSTRACT**

Complete penoscrotal transposition (CPST) with an intact scrotum is a rare anomaly in which the scrotum is located cephalic to the penis. It is the most severe degree of malformation of a spectrum of abnormalities in scrotal development. There are few cases reported in the literature, and there are few descriptions of the technique for correction and results. We describe a new case of CPST and its sequential correction.

**Key words:** Complete penoscrotal transposition, penis, agenesis, procedure, treatment

**INTRODUCTION**

Complete transposition of the penis and scrotum is an uncommon congenital malformation of the external genitalia in which the scrotum is located cephalic to the penis.[1,2] There have been described fewer than 20 cases of complete penoscrotal transposition (CPST) with an intact scrotum.[3-6] Most of the reported cases of CPST are sporadic. CPST is often characterized by major and sometimes life-threatening associated malformations involving the urogenital, cardiovascular, intestinal, and skeletal systems.

**CASE REPORT**

A 3.6 kg newborn boy was noted at birth to have a complete transposition of the external genitalia. A 3.5-cm-long, hypospadic and hypoplasic penis arose from the perineum, just above the anus and beneath a normal scrotum with both normal testis inside [Figure 1]. Abdominal ultrasound showed a multicystic pelvic left kidney. The hormonal study and caryotype were normal. Testosterone cream was given topically during 15 months before surgical correction.

At 18 months, we performed the first surgical procedure achieving penis advancement to the level of the scrotum [Figure 2]. When he was 30 months old, we performed the second procedure advancing the penis without the urethra, achieving a satisfactory position of the penis above the scrotum and a scrotal hypospadias [Figures 3 and 4]. In a third surgical procedure, he underwent a Snodgrass technique for hypospadias correction.

After this three-stage procedure, we achieved a satisfactory penis position and excellent cosmetic results [Figure 5].

**DISCUSSION**

Complete penoscrotal transposition is the most severe malformation among scrotal development abnormalities. Fewer than 20 cases have been reported in the literature.[1,3-7] The embryological sequence responsible for this malformation remains unclear; however, it has been suggested that an abnormal positioning of the genital tubercle in relation to the scrotal swellings during the critical fourth to fifth week of gestation could affect the migration of the scrotal swellings.[8,9] During normal development scrotal swellings migrate inferomedially during the 9th–11th week, and fuse in the midline caudal to the penis by the 12th week of gestation.[10] As Chadha et al.
suggested, the phallic tubercle is intrinsically abnormal and affects the corporal bodies development explaining the flaccid and hypoplastic penis. Others suggested that a failure of labioscrotal migration due to a unilateral or bilateral gubernaculum defect leads to anomalies such as incomplete, complete transposition or ectopic scrotum. It has been suggested that many cases reported as penile agenesis may actually represent cases of concealed CPST.

Some reviews report a high incidence of associated urogenital malformations such as flaccid penis, hypospadias, urethral atresia, or bifid scrotum. CPST is often characterized by major associated malformations. The detection of CPST should warrant careful clinical evaluation to rule out other anomalies. Renal abnormalities such as renal agenesis, ectopic pelvic kidney, or dysplastic kidneys are the most frequent extragenital malformations associated. Parida et al. reported other less frequent abnormalities: mental retardation (60%), imperforate anus (33%), central nervous system abnormalities (29%), preaxial limb defects (24%), and congenital heart disease (19%). The presence of a multicystic pelvic kidney in the case that we report advocates that review.

There is not any description of the technique for correction and results of these so severe cases of PST. We describe a
three-stage procedure for correction. In the first procedure, we tried to advance the penis to the level of scrotum without disconnecting the urethra from the corpora cavernosa. In the second procedure, it was necessary to disconnect the urethra from the corpora cavernosa to achieve the penis position above the scrotum. Extreme penoscrotal transposition with severe hypospadias and chordee is difficult to differentiate from penile agenesis with a midline skin tag anterior to the anus. In both cases, the penile reconstruction and repositioning are often unsatisfactory and female sex reassignment, unlike ethically controversial, may be a prudent therapeutic in selected cases.

We think that surgical correction is possible in selected cases by achieving a satisfactory penis position and excellent cosmetic results.

REFERENCES

1. Chadha R, Mann V, Sharma A, Bagga D. Complete penoscrotal transposition and associated malformations. Pediatr Surg Int 1999;15:505-7.
2. Avolio A, Karmarkar S, Martuccillo G. Complete penoscrotal transposition. Urology 2006;67:1287.
3. Redman JF, Bissada NK. Complete penoscrotal transposition. Urology 2007;69:181-2.
4. Cohen-Addad N, Zarafu IW, Hanna MK. Complete penoscrotal transposition. Urology 1985;26:149-52.
5. Parida SK, Hall BD, Barton L, Fujimoto A. Penoscrotal transposition and associated anomalies: Report of five new cases and review of the literature. Am J Med Genet 1995;59:68-75.
6. Wilson MC, Wilson CL, Thicksten JN. Transposition of the external genitalia. J Urol 1965;94:600-2.
7. Kain R, Arulprakash S. Complete penoscrotal transposition. Indian Pediatr 2005;42:718.
8. Belman AB. The Penis Urol Clin North Am 1978;5:17-29.
9. Bloom DA, Wan J, Key D. Disorders of the male external genitalia and inguinal canal. In: Kelalis PP, King LR, Belman AB, editors. Clinical Pediatric Urology. 3rd ed. Philadelphia: Saunders; 1992. Vol. 2. p. 1015-49.
10. Corliss CE. The urogenital system. Patten's Human Embriology. New York: Mc-Graw Hill; 1976. p. 342-88.
11. Beasley SW, Hutson JM, Kelly JH, Howat AJ. Testicular function in 12 cases of penile agenesis. J Urol 1987;137:317.
12. MacKenzie J, Chitayat D, McLorie G, Balfe JW, Pandit PB, Blecher SR. Penoscrotal transposition: a case report and review. Am J Med Genet 1994;49:103-7.