Transposition of Penis and Scrotum

Review and a Case Report

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Introduction :

Genitourinary tract rates only next to that of face in the occurance of various congenital malformations. Of these the most uncommon are those relating to positional aberrations of the scrotum and penis. So far only 16 cases of transposition of the scrotum and penis are on record in the literature and this rather insignificant number alone speaks of rarity of this interesting congenital malady.

Gualteri (1954) has pointed out the occurance of a ventral or cranial scrotum as a normal finding in the 'Marsupial' animals. The Suggestion that this positional anomaly represents a phylogenetic reversion of type to that of 'Marsupials' is not supported by its occurance as a unilateral condition.

Bergmann (1911) was the first to report this congenital abnormality of external genitalia. It is often associated with other congenital abnormalities either of the urogenital tract or other parts of the body, the most common associated anomaly being Hypospadias,

The different cases that are reported show varying degrees of transposition. While in cases of maximum transposition the penis is completely posterior to the scrotum lying between it and the anal canal, few other cases show mild or moderate degree of transposition with the penis lying just behind the root of the scrotum. Meyer (1944) described a grossly abnormal foetus with a large penis located beneath the coccyx with grossly deformed pelvis and complete absence of urogenital tract except penis. It is interesting to note that in the same paper Meyer has reported a still born female with displaced clitoris and labia minus to the posterior end of the labia majora.

Few cases of unilateral transposition are on record in the literature. Adair and Lewis (1960) reported a distinct ectopic scrotum over the Rt. inguinal ligament with a normally placed left scrotum. Flanagan (1961) reported another unilateral transposition where the scrotum on the Rt. side was placed anterior to the root of the penis while on the left side it is normally situated. Recently Milroy (1969) reported yet an another case of unilateral transposition where the left scrotum is situated in the left inguinal region.

Embryology of external genitalia :

External genitalia in the course of their differentiation pass through an indifferent stage before it is possible to recognise distinguishing sexual characters.

The presently accepted explanation of the embryologic development of the scrotum (Fig. 1) is based on the studies of Spaulding made in 1921.

A surface elevation called the genital tubercle appears in the midline at the cranial end of the cloacal membrane. This genital tubercle lengthens and on its caudal aspect appears a central groove which extends caudally towards the proctodeum. The urogenital sinus now opens into the floor of the median groove between the genital tubercle and the proctodeum. The margins of the median groove are known as genital folds (Inner genital swellings). On either side of the genital folds and seperated from them by distinct grooves, elevations known as genital swellings (outer genital swellings) appear. These are the forerunners of the labioscrotal folds.

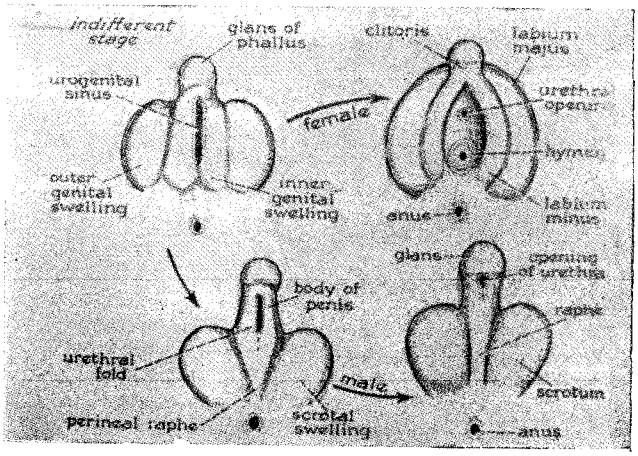

Fig. 1—Sketch Diagram showing the Normal development of external genitalia

In the male the genital tubercle becomes enlarged, to form the penis. The median groove on the caudal surface deepens owing to an increase in the size of the genital folds and these gradually begin to close over the median groove to form the penile urethra. The opening of the urogenital sinus is thus transferred to the tip of the penis. The line of closure of the groove is marked by median penile raphe.

The genital swellings situated on either side of the developing penis enlarge. This development progresses most markedly in the caudal portions which expand and unite with each other in the midline on the anal side of the root of the penis. The scrotum is thus formed.

It is conceivable that if the region of the greatest activity in the genital swellings occur in an area cephelad to its usual site, the labioscrotal folds would unite on the umblical side of the root of the penis and grive rise to this particular type of anomaly.

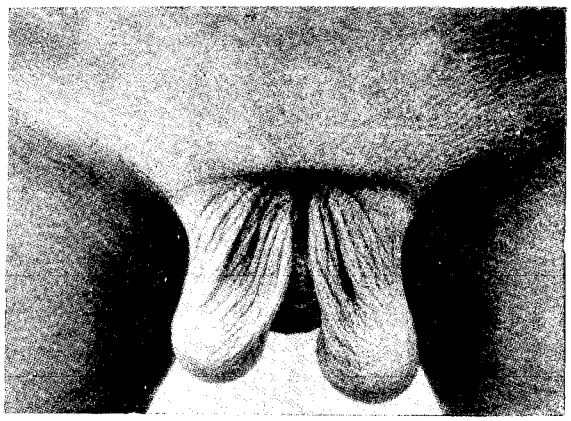

Fig. 2—Pre-operative photograph

Surgical correction :

Only 5 of the cases so far reported were subjected to operation of which two were unilateral,

Campbell in 1951, who reported the

first operated case of 10 yr. old male child, divided the partially bifid scrotum and brought the penis forward to the normal position. He closed the scrotum along the base of the penis and there by obliterated the scrotal cleft.

Mcilvoy in 1955 treated a retroposed scrotum associated with prostatic urethral diverticulum. He first operated on the diverticulum through suprapubic route. The penis was then dissected away from the anal canal by making an incision around the complete circumference of the penis at its junction with the anal canal. A stab wound was then made along the inferior part of the scrotum and another through the superior portion. The penis was then passed through a tunnel made from one of these stab wounds to the other. The skin at the base of the penis was sutured to the lower part of the scrotum while the skin in the distal positions of the penis was sutured to the skin at the upper margin of the scrotum.

Forshall (1956) described the first operative technique for this anomally associated with hypospadias. He made a horizontal incision at the base of the ventral aspect of the glans penis and corpora cavernosa were fully exposed after excising the fibrous bands, thus correcting the chordee. The horizontal incision was carried round the dorsum of the penis just proximal to the reflection of the foreskin from the corona and the dorsal aspect of the corpora cavernosa was dissected free. An incision was then made in the midline between the two scrotal sacs and the penis was brought forwards through the cleft. The scrotal skin flaps were sutured so as to obliterate the scrotal cleft and to cover the shaft of the penis. The boy was readmitted after 2 years for correction of retracted penis and was corrected with marked improvement by releasing it from the pubic skin and covering the shaft of the penis with full thickness graft.

Case Report:

Vidyapathi, boy aged 10 years was admitted in the ward of the department of Plastic Surgery, P M.C.H. on 17.9.69. On examination of the external genitalia the root of the penis was 1" posterior to the root of the scrotum which was partially bifid. The penis was 8 cm. in length and was curved ventrally. Prepuce was deficient on the ventral aspect and there was a penile hypospadias. The scrotum was well developed and both the testes fully descended. No other associated congenital malformations were evident.

After preliminary investigations he was operated on 14.10.69 under general endotracheal anaesthesia with ether, oxygen and nitrous oxide.

A Foleys catheter was passed into the bladder through the urethral meatus. Penis was released from the scrotum by a single Z—incision with the central limb at the shaft of the penis. Chordee was corrected by excising completely the fibrous band extending from the level of the external meatus to the level of the corona. The meatus was found to shift further proximately and thus occupying the penoscrotal position. One Z flap was used to cover the raw area over the ventral aspect of penis distal to the meatus and the scrotum was sutured. Patient had an uneventful post-

operative period. Sutures were removed on 8th day and the catheter on 10th day and was discharged on 30.10.69 with the advice to report after 6 months for urethroplasty.

Summary :

One case of retroposition of the penis and scrotum associated with penile hypopspadias and partially bifid scrotum is presented (Fig. 2—4). The literature regarding the previous reported cases and the surgical correction is reviewed, along with an account of the embryology of the external genitalia.

Table I

Previous Reported Cases

Author	Year	Age of the Patient.	Associated anomaly.
Bergmann	1911	Several months	Hypospadias.
Hinmann	1935	Still born	Nil
Hontan	1935	3 years	Hypospadias.
Francis	1940	Few months after birth	Absence of urinary tract
Campbell	1951	11 months	Nil
Huffmann	1951	1 week	Congenital cystic kidney
Gross	1953	——	Imperforate anus
Mcguire	1954	40 years	Nil
Gualteri	1954	5 days	Double parasitic monster
Mcilvoy	1955	10 months	Diverticulum of Prostatic Urethra
Forshall	1956	18 months	Hypospadias
Chapell	1958	6 week	Congenital Pancytopaenia (Fanconi type)
*Adair	1960	13 months	Diphallia
*Flanagan	1961	6 weeks	Absence of left kidney & ureter + multiple skeletal deformities.
Remzi	1966	11 years	Vesical diverticulum.
*Milroy	1969	46 years	Left inguinal hernia.

**Unilateral Transposition.*

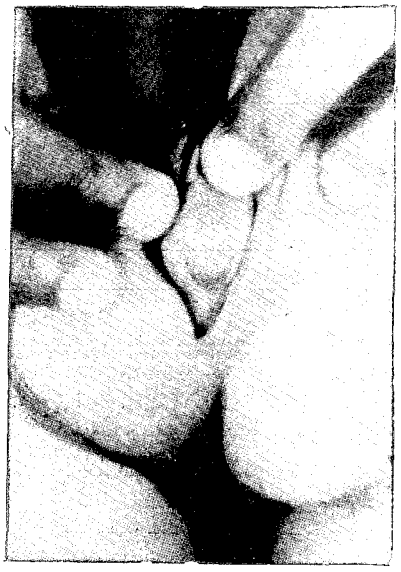

Fig. 3—Preoperative photograph showing hypospadias

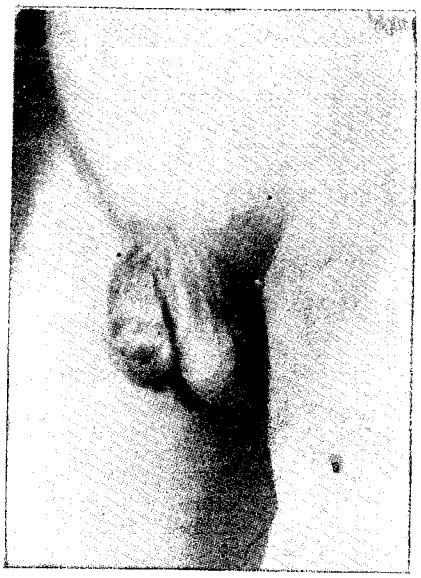

Fig. 4—Post-operative view showing the correction of chordee and transposition

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