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Crossed testicular ectopia

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Crossed ectopia of the testis is a very rare anomaly. Both testes abnormally descend towards the same hemiscrotum resulting in a unilateral position with the spermatic cord of the ectopic testis originating from the appropriate side. Two cases of crossed testicular ectopia are reported. One of which had associated bilateral duplication of the vas deferens which is also extremely rare.

Index words: *CROSSED TESTICULAR ECTOPIA, TRANSVERSE TESTICULAR ECTOPIA, CRYPTORCHISM, DUPLICATION OF VAS DEFERENS.*

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ภาวะลูกอัณฑะค้างเป็นปัญหาที่พบได้ไม่น้อย แต่ลูกอัณฑะค้างชนิดที่ข้ามมาด้านตรงข้าม ทำให้มีลูกอัณฑะ 2 ลูกในข้างเดียวกันเป็นภาวะที่พบได้ยาก ลูกอัณฑะทั้ง 2 มักจะมีหลอดเลือดมาเลี้ยงและท่อนำอสุจิคนละชุด โดยมาจากด้านที่ถูกต้องของอัณฑะนั้น แสดงว่าความผิดปกติเกิดขึ้นระหว่างการเคลื่อนตัวลงมาของลูกอัณฑะ บทความนี้ได้รายงานผู้ป่วยลูกอัณฑะค้างชนิดข้ามมาด้านตรงข้าม 2 ราย รายหนึ่งพบว่ามีท่อน้ำอสุจิซ้ำซ้อน (duplication) ของลูกอัณฑะทั้ง 2 ข้าง ซึ่งนับว่าเป็นกรณีที่พบน้อยมากอีกกรณีหนึ่งร่วมกับภาวะที่พบยากดังกล่าวแล้ว

Crossed testicular ectopia is a very rare anatomical anomaly in which the affected testicle lies in the same canal as the normally descended testis. The entity has been quoted as transverse testicular ectopia,[1-3] crossed testicular ectopia[1,4,5] testicular pseudoduplication[6] transverse aberrant testicular maldescent[7], in order to describe the abnormal position and the possible embryologic maldevelopment.

This condition is associated with an inguinal hernia on the side to which the ectopic testis has descended. The blood supply and vas deferens of the affected side usually originates from the appropriate side but crosses the midline and passes through the contralateral inguinal canal.[1,8]

Duplication of the vas deferens, a rare anomaly, was reported to be unilateral and may be associated with a solitary kidney.[9-11] Bilateral duplication of the vas deferens is even more unusual in this rare condition.[12,13]

Case 1

A left indirect inguinal hernia with a right undescended testicle were diagnosed in an otherwise normal 2-year-old boy. The right testis was not palpable and the diagnosis of crossed ectopic testis was not made preoperatively. He was scheduled for left herniotomy and right orchidopexy. Herniotomy on the left side was performed first and during exploration of the left inguinal canal another testis apart from the left normally placing testis was found. Each testis had its own vas deferens and there was duplication of vas deferens of both sides. The duplicated vasa from either testis also led to the retrovesical area and joined each other 5 cm. proximal to the testes (Fig.1). There was also a large thickened wall hernial sac attached to both testes. After dissection, the hernial sac was freed, resected and transfixed at internal ring. Both testes and vas deferens were identified, the lower located testis (left side) was then brought through the scrotal septum and fixed in the right hemiscrotum while the upper one (right testis, crossed ectopia) was fixed in the left hemiscrotum (Fig.2). The right inguinal canal was not explored Subsequent ultrasonography revealed two normal-looking kindeys.

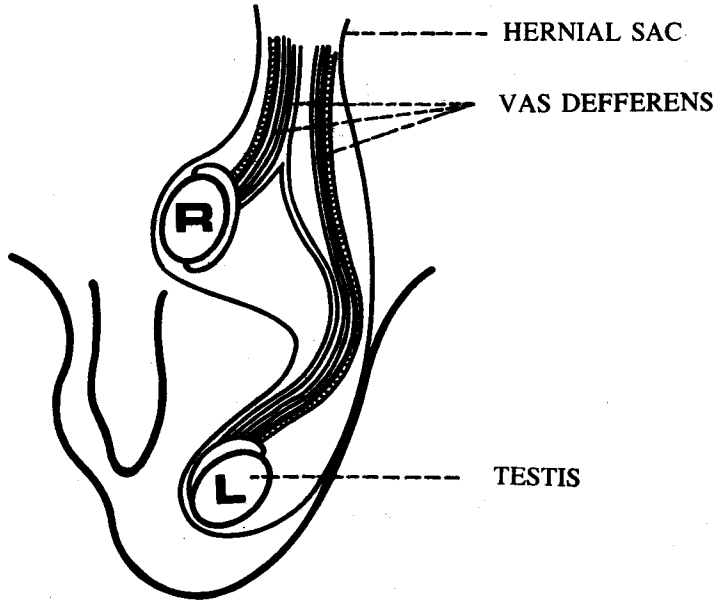

Figure 1. Schematic illustration of operative findings in case 1. Duplication of vas deferens was noted.

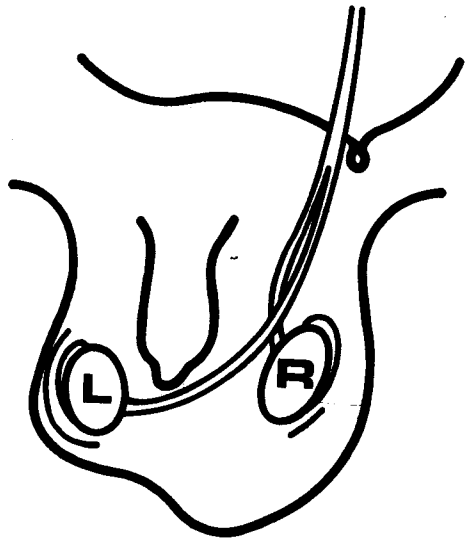

Figure 2. Bilateral paradoxical orchiopexy using transeptal incision in case 1 is demonstrated.

Case 2

A 1 1/2 year old boy was referred with the diagnosis of left inguinal hernia. The examination was identical to the previous case, right cryptorchism was also detected. The provisional preoperative diagnosis of crossed testicular ectopia was then made. At operation two testes were found on the left side, one was in the left hemiscrotum and another (ectopic one) was just below the external ring. Left herniotomy was done and the upper located testis was freed. Again the left testis was brought through the transeptal incision and fixed on the right hemiscrotum, the crossed ectopic one (right testis) was fixed at the left side. The postoperative period was uneventful. The ultrasonographic examination of the kidneys and abdomen was done and revealed a normal finding.

Discussion

Fewer than 100 cases of crossed testicular ectopia (CTE) have been reported[3,5] since Lenhossek[14] first described this entity in 1886. Recently, the age at presentation became lower than in previous reports due to the early surgical correction of the inguinal hernia, which was the most common presentation, and of cryptorchidism. In the majority of cases, the diagnosis of CTE was not made preoperatively.

No firm conclusions could be drawn about the pathoembryogenesis from literature review. However, it is likely that more than one mechanism is responsible for the abnormal descent. Hormone seems to cause the least effect for at least one testis descend normally. Reports of a common vas deferens,[15,16] duplication or double vas deferens[9,10,13] including the first case in this report, and remnant mullerian duct[16,17] indicate that the mullerian duct didnot regress totally so the wolffian ducts of both side still adhere together and to the mullerian duct thus the entire thing descend on only one side. This condition may be caused by the two testes abnormally originated or present in one side. However both testes should have developed from separated genital ridges and the crossing over should have occurred later because they have their own separated blood supply and spermatic cord in the majority of cases[8,18] CTE is also different from unilateral duplication of the testis because the gonads are of normal size, clearly separated unlike that of supernumerary kidney formation. The role of the gubernaculum in the descent of the testes is yet unclear but no identifiable gubernaculum or such attachment from the CTE were recorded in most of the reports, which is of interest in that this may be one of the contributing factors and supports the suggestion of abnormal descent in CTE. Genitourinary developmental anomalies have been documented in over 20% of CTE, ie, defective mullerian regression,[19-21] hypospadias,[22,23] seminal vesicle cyst,[24] ureteropelvic junction obstruction.[24] Variation in the anatomical malposition and malinsertion of the vas deferens can occur. Duplication of vas deferens is also a rare entity. Few cases have been reported and were associated with ipsilateral absence of the kidney,[9,10] and crossed testicular ectopic.[5,9,12,13] Fusion of the duplicated ducts may occur at various locations. In our first case, ductal fusion was observed at internal ring (Fig 1). The

fusion may be an important factor for adequate mobilisation of both testes and for fixing in their original side.

Transeptal or transcrotal fixation, during which the ectopic testis was placed in the appropriated side (Fig 3) across the scrotal septum, was recommended and has been used in most of the cases reported.[25] If the dissection precluded adequate mobilisation to allow the ectopic testis to be brought down to its original side, both testes were brought down on the same side. In both our reported cases, the testes were fixed in each hemiscrotum but the technique was different. The normal-placed testis was brought through the septum to be fixed in the contralateral side and the ectopic testis was brought down and fixed in the hemiscrotum of that side. Even if both testes were not placed in their original side, the operative technique was easier because the vas of the ectopic testis was comparatively shorter due to the longer distance it must travel (Fig.2 and 3) and the function of both testes should not be different using either techniques.

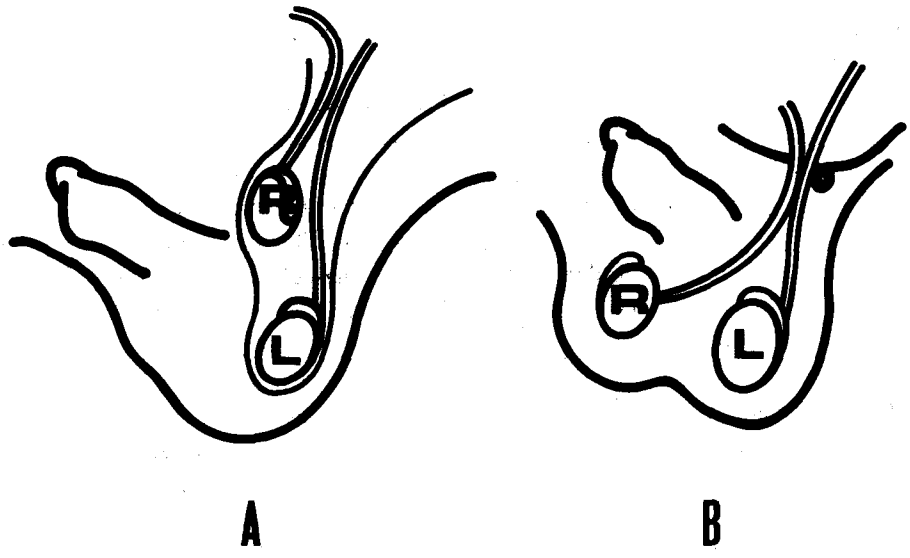

Figure 3. Technique of transeptal bilateral orchiopexy in most reports. A) before operation. B) after operation.

Summary

Two cases of crossed testicular ectopia are reported, one with an associated rare amomaly of duplication of the vas deferens. The pathophysiology, clinical manifestations and the treatment are discussed. The author's technique for orchidopexy in such cases is also introduced and its advantages discussed.

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