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# Transverse Testicular Ectopia, A Case Report And Review of Literature

Ramjee Prasad[1], Sunil Kumar Mehra[1], Soumyodhriti Ghosh[1], Dinesh Kumar Barolia[1], Pradeep Gupta[2].
*[1]senior Resident,[2]assistant Professor.*
*Department of Pediatric Surgery, SMS Medical College, Jaipur, Rajasthan, India*

***Abstract:*** *Crossed testicular ectopia (CTE)/transverse testicular ectopia (TTE) is a rare but well known congenital anomaly, in which both gonads migrate toward the same hemiscrotum. It is usually associated with other abnormalities such as persistent Mullerian duct syndrome, true hermaphroditism, inguinal hernia, hypospadias, pseudohermaphroditism, and scrotal anomalies. About 100 cases of transverse testicular ectopia have been reported in published studies. We report a case of transverse testicular ectopia in an 18-month-old boy who presented with left inguinal hernia and nonpalpable right testis with right hemiscotum empty and left testis in left hemiscotum. On exploration, right testis was present in the left inguinal canal and left testis present in left hemiscrotum. Trans-septalorchiopexy with left herniotomy was performed by crossing the right testis through the septum with fixation and ipsilateral left testicular scrotal orchiopexy. The diagnosis could not be made preoperatively in most of reported cases.*

***Keywords:*** *testis, undescended testis, cryptorchidism, testicular ectopia*

## I. Introduction

Transverse testicular ectopia (TTE) also named testicular pseudoduplication, unilateral double testis, and transverse aberrant testicular mal-descent, is a rare anomaly in which both testes descend or migrate through a single inguinal canal or hemiscrotum [1]. Often, the diagnosis is made during surgical exploration. In the literature more than 100 cases of TTE have been reported. We report a case of TTE discovered incidentally during surgery for left inguinal hernia and left undescended testes, with right crossed testicular ectopia. Right testis is seen in left inguinal canal and left testis in left hemi-scrotum.

## II. Case report

The patient was an 18 months old male, who was admitted for the Right nonpalpable testis, left undescended testis and left inguinal hernia. The patient was born with normal vaginal delivery, with a normal Apgar score. There was no history of illnesses or poor feeding or failure to thrive (FTT). General physical examination was unremarkable. Hematological examination and biochemistry lab data was normal. In external genitalia examination, the right testis was palpable in left inguinal region with an evident hernia and the right hemiscrotum was empty. The patient scheduled for synchronous bilateral orchiopexy and left inguinal herniotomy. Only, left inguinal incision was made. Both testicular tissue and spermatic cord were found. Both testes were normal in size, shape and echotexure. The right testis with its overlying tunicavaginalis was found at the left inguinal canal with left ingunal hernia. After opening of the tunica, the fluid inside of it drained and testis was found. At the proximal part of the cord another testis was found (Fig 1). The suspicion of left testis anorchia was changed to right side transverse testicular ectopia. Then, the plan changed to releasing of cords and bilateral orchiopexy. Two cords had been separated from origin, near 6 cm. The left cord was released at the site of its bifurcation, to the most proximal site, that distal to it releasing dissection was completed (fig 2). Finally, the left testis was transferred with its cord to the left hemiscrotum easily and extra-peritoneally (fig3, 4). The right testis was crossed to the opposite side through the scrotal septum and

fixed there (Fig 5). Both testes were fixed in the sub-dartos pouch by trans-septal orchidopexy with left herniotomy. The incision was closed (fig 6)

## III. Discussion

TTE is a rare form of testicular ectopia. It was first reported by Von Lenhossek in 1886 [2]. More than 100 cases have been reported in the literature [3]. Several theories have been reported to explain the genesis of TTE. Berg [4] proposed the possibility of the development of both testes from the same genital ridge. Kimura [5] concluded that if both vasa deferentia arose from one side, there had been unilateral origin but if there was bilateral origin, one testis had crossed over. Gupta and Das [6] postulated that adherence and fusion of the developing Wolffian ducts took place early, and that descent of one testis caused the second one to follow. An inguinal hernia is invariably present on the side to which the ectopic testis has migrated. On the basis of the presence of various associated anomalies, TTE has been classified into 3 types: Type 1, accompanied only by hernia (40% to 50%); Barolia DK et.al in 2015 reported a such type of case [7], type 2, accompanied by persistent or rudimentary Mullerian duct structures (30%); and type 3, associated with disorders other than persistent Mullerian remnants (inguinal hernia, hypospadias, pseudohermaphroditism, and scrotal abnormalities) (20%). According to that classification, our case was type 1 TTE. TTE associated with fused vas deferens is extremely rare. This condition may hinder the testis from being placed into the scrotum during orchiopexy [8].

The mean age at presentation is 4 years. The clinical presentation generally includes an inguinal hernia on one side and a contralateral or sometimes a bilateral cryptorchidism [9], [10]. Usually, the correct diagnosis is not made before surgical exploration, like our case, and it is revealed during herniotomy [10]. The diagnosis of TTE can be made preoperatively by using ultrasonography [11] by an experienced sonologist. Patients with TTE are at increased risk of malignant transformation. In fact, the overall incidence of malignant transformation of gonads is 18% [12]. There have been reports of embryonal carcinoma [13], seminoma, yolk sac tumor [14], and teratoma [12]. Walsh et al. [15] in their study concluded that testicular cancer was nearly 6 times more likely to develop in cryptorchid cases whose operations were delayed until after age 10 to 11 years. Wood et al. [16] in their study showed that risk of malignancy in undescended testicles decreased if their orchiopexy performed before ages 10 to 12 years. In 2% to 97% of patients with crossed testicular ectopia, disorders of the upper and lower urinary tract system have been reported [17]. Once diagnosis of TTE is made, a conservative surgical approach in the form of orchiopexy is recommended for the preservation of fertility [10]. Laparoscopy is useful for both diagnosis and treatment of TTE and associated anomalies [18]. Management for testicular ectopia is either trans-septal or extra-peritoneal transposition orchiopexy [19], [20], a search for Mullerian remnants and other anomalies, and long-term postoperative follow-up. There were two options for left orchiopexy in our case: extra-peritoneal orchiopexy and trans-septal orchiopexy. In the extra-peritoneal technique the testis is brought to the contra-lateral hemiscrotum after its passing near the root of penis. In the trans-septal technique the testis should traverse the scrotal mediastinum to be fixed in it. In the case of fused vas deferens, unlike our case, a trans-septal orchiopexy is recommended. It may be misdiagnosed as an inguinal hernia and intersex [18] or present as an irreducible hernia, requiring urgent surgery [21].

## IV. Conclusion

TTE is a rare anomaly of which the pathogenesis remains unclear, although experimental evidence suggests that the gubernaculums may play an important role. The ectopic testis can lie in the hemiscrotum, in the inguinal canal, or at the deep inguinal ring.

The diagnosis should be considered when unilateral hernia and concurrent cryptorchidism of the contralateral side are present. In suspected cases, laparoscopy and ultrasonographic evaluation may be helpful in diagnosing of this condition before surgery. Transseptalorchiopexy is highly recommended to manage TTE. Laparoscopy, at present, is useful for both diagnosis and management of TTE and associated anomalies.

**Figures**

**Fig 1**- Exploration of inguinal canal
**Fig 2-** both testes visible in sac
**Fig 3-** Dissection of sac
**Fig 4-** Lengthening and visibility of both the cords
Fig 5- Scrotal orchidopexy
**Fig 6**- Bilateral scrotal fixation of both testes.

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**Figure 1**

**Figure 2**

**Figure 3**

**Figure 4**

**Figure 5**

**Figure 6**