

Case Report



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Crossed Testicular Ectopia-A Rare Anomaly  
A Case Report

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Abstract

Crossed testicular ectopia (CTE) is a rare anomaly, characterized by migration of one testis towards the opposite inguinal canal. Embryology and surgical findings suggest that CTE is a common consequence of many unclear etiologic factors, especially mechanical ones, and can be associated with Muller duct persistence. Review of literature suggests a classification of CTE into 3 types: **I** - associated with inguinal hernia alone; **II** - associated with persistent mullerian remnants; **III** - associated with other anomalies without mullerian remnants. Treatment includes transeptal orchiopexy or extraperitoneal transposition of the testis, research for mullerian remnants and other anomalies, and long term postoperative follow-up, due to the risk of becoming malignant. The authors report a new case of crossed testicular ectopia in a 1-year-old boy operated in Baquba teaching hospital, Diyala government in Iraq who presented with right inguinal hernia and absent left testes.

**Keywords:** Cryptorchidism, Crossed Testicular Ectopia.

Introduction

Cryptorchidism (from the Greek KRYPTO meaning “hidden,” and ORCHIS meaning “testis”) refers to absence of a testis from the scrotum. During embryonic life, the testes form beside the mesonephric kidneys and descend via the inguinal canal to the scrotum. If this process is faulty, a cryptorchid testis may halt along the normal path of descent (undescended or retractile testis), may travel off the normal path of descent (ectopic testis), or may die or never develop (absent testis). Therefore, the terms “cryptorchid” and “undescended” are not synonymous.[1, 2]

Isolated cryptorchidism is the most common congenital anomaly of the male genitalia, affecting almost 1% of fullterm infants at the age of 1 year. Despite intense study both experimentally and clinically for the last century, the cause of this

condition remains poorly understood. Although there have been surgical advances in the techniques of orchiopexy, areas of clinical controversy remain. [3,4] Testicular ectopia is an anomaly of testicular descent characterized by localization of the testis out of its normal migration pathway towards the scrotum. There are known five types of testicular ectopia: superficial inguinal (interstitial), femoral (crural), perineal, pubopenile, and crossed.[5, 6]

In crossed testicular ectopia (CTE), the ectopic testis is found in the opposite groin or hemiscrotum, beside the other testis. It is also called transverse testicular ectopia, unilateral double testis, testicular pseudoduplication or transverse aberrant testis. CTE is a very rare congenital anomaly, as there are about 147 reported cases since the first description by Von Lenhossek, 1886.[7, 8]

## Imaging studies

Radiologic studies to localize the testis are currently of very little value. The overall accuracy of radiologic testing for undescended testis is only 44%. [9]

Computed tomography (CT) scanning and ultrasonography yield high false-negative rates in the evaluation of a nonpalpable testis and are not recommended. Magnetic resonance angiography (MRA) has been reported to have a nearly 100% sensitivity but requires sedation or anesthesia and is expensive and may not be cost-effective. [10]

## Case report

One year-old child presented by his mother with right inguinal swelling and absent left testis. Clinical examination revealed right scrotal inguinal hernia and empty underdeveloped left scrotal sac. The absent left testicle failed to be felt in the inguinal region. Ultrasound done, which also couldn't see the absent testicle neither in the inguinal region nor intra-abdominally.

A decision made to admit the child as a day case surgery after doing a routine investigation for repairing his right inguinal hernia. A right inguinal incision done and a dissection done down to the inguinal canal and while dissecting the hernia sac away from the spermatic cord is in progress, a small swelling found to be present within the sac. After completing separation of the sac, it was opened to find that the swelling which was seen before inside, is the left testicle with its own spermatic cord (Figure 1). Separation of each testis with its own cord done. Fortunately the ectopic testis was having enough length of the spermatic cord to be transferred through the mid scrotal septum to the left scrotal sac where a conventional subdartous orchiopexy done. Then the hernia sac on the right side transfixed, cut and the testes returned to its site.

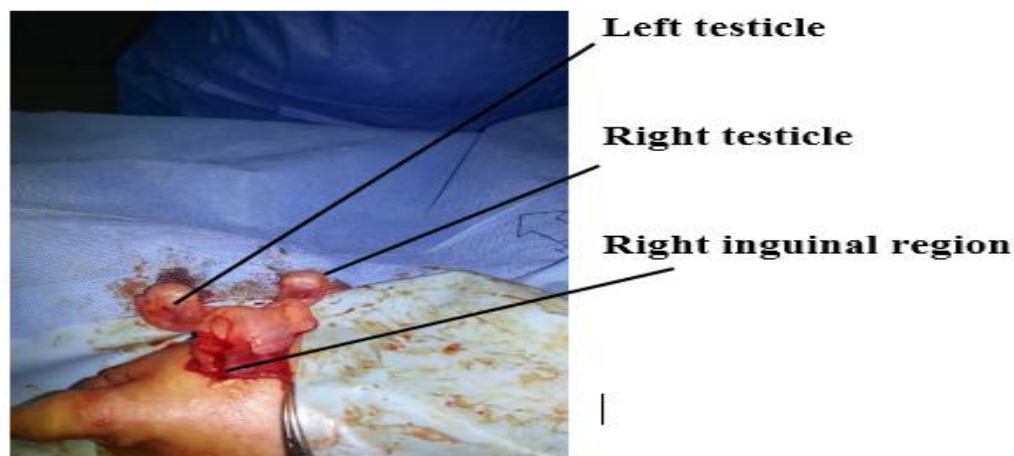


Figure 1. Ectopic left testicle within right inguinal hernia sac

## Discussion

In 1886, von Lenhossek described the first case of transverse testicular ectopia and, in 1895, Jordan described the syndrome of transverse testicular ectopia with persistent Mullerian ducts. [11] Transverse testicular ectopia is a rare anomaly in which the testis is seen either in the contralateral inguinal canal or in the hemiscrotum. An inguinal hernia is invariably present on the side to which the ectopic testis has migrated. About 147 well-documented patients with this condition have been reported. Usually the right

testis is ectopic, but, as in the present case, the left side has also been reported. [12]

On the basis of the presence of various associated anomalies, transverse testicular ectopia has been classified into three types: those associated with inguinal hernia alone (40–50%); those associated with persistent or rudimentary Mullerian duct structures (30%); and those associated with other anomalies without Mullerian remnants, e.g. inguinal hernia, hypospadias, pseudohermaphroditism and scrotal abnormalities (20%) [13]. Our case is the most common variety of TTE.

The etiology of this condition is incompletely understood. Various theories have been put forward, such as: (a) Failure of the gubernacular mechanism and, consequently, failure to open the inguinal canal and the descent to the opposite side is due to adhesions to the testes with normal gubernacular mechanism and inguinal rings, (b) Rupture of the gubernaculum and dysfunction of the genitofemoral Nerve, (c) Both testes arising from the same genital ridge, (d) True crossover of the testes, (e) Adhesion and fusion of the Wolfian duct in early embryonic life and the subsequent descent of both testes on the same side, (f) An aberrant ring on the normal side, (g) Both testes lying in the same processus vaginalis prior to descent [14].

There are many theories attempting to explain the etiology of the isolated TTE. The first serious explanation was given by Lockwood through multiple insertion theory [15]. Gupta and Das assumed that merging of the developing Wolf canals is taking place early and that descent of one testis stimulated the other to follow. However, Gray and Skandalakis consider that crossed ectopia occurs later, since the testes have separate sperm canals [15]. Berg states that the real crossed ectopia occurs only if special sperm canals reach each testis [15]. In a patient with TTE and PMDS, it is thought that a MIF does not have a direct role in the descent of the testes. Therefore, it is likely that the mechanical effect of the persistent Mullerian duct structures produce cryptorchidism by preventing normal testicular descent [16].

Literature review shows that most of the cases are diagnosed during surgery for a hernia or exploration for undescended testis. TTE can rarely present with torsion of the testis, while some children present with obstructed inguinal hernia [17].

The aim of surgical management is fixation of the testes into the scrotum, a search for Mullerian duct remnants and other anomalies, and long-term follow-up due to the risk of malignancy. Fixation is accomplished either by transseptal orchiopexy or extraperitoneal transposition of the testis [18]. Presently, laparoscopy for both the diagnosis and management of this presentation and even a combined approach of an inguinal method assisted by laparoscopy has been described [19].

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