Case Report

A Rare Presentation of Transverse Testicular Ectopia and Role of Laparoscopy

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Abstract

Transverse testicular ectopia (TTE) is an uncommon congenital anomaly, in which both the gonads migrate towards the same hemi-scrotum. We report a rare case of TTE discovered coincidentally during surgery in a 1-year-old boy who presented with bilateral undescended testis and right inguinoscrotal swelling. The use of laparoscopy during evaluation for impalpable testis can aid in the diagnosis of TTE, before inguinal exploration. Findings such as the vascular supply and vas deferens of the crossed testis and the identification of Müllerian structures can be confirmed by laparoscopy. Diagnostic laparoscopy was suggestive of both the testes entering in the right-sided open deep inguinal ring, while left-sided deep inguinal ring was found to be closed. There was no evidence of persistent Müllerian structures. On exploration, both testes were present in the right inguinal region. A bilateral trans-septal orchidopexy along with right herniotomy was performed.

Keywords: Laparoscopic orchidopexy, Persistent Müllerian Duct Syndrome, transverse testicular ectopia

Introduction

Transverse testicular ectopia (TTE) is a rare congenital anomaly and is also referred to as testicular pseudo-duplication, unilateral double testis, crossed testicular ectopia and transverse aberrant testis with maldescent. It presents characteristically as an ipsilateral inguinal hernia with both testes in hernia sac and contralateral undescended testis or rarely as bilateral cryptorchidism. It is usually associated with other abnormalities such as Persistent Müllerian Duct Syndrome (PMDS), Disorders of Sexual Differentiation (DSD), inguinal hernia, hypospadias and scrotal anomalies. Only a few cases of TTE have been reported in published studies.[1] It may be suspected preoperatively when an empty unilateral scrotal sac is present in association with an inguinal hernia on the contralateral side.

Case Report

A 1-year-old male child presented with complaints of bilateral undescended testis and right-sided inguinoscrotal swelling since birth. On examination, the right-sided hemi-scrotum was well developed but empty, while the left hemi-scrotum was hypoplastic. The right testis was palpable in inguinal canal, and the left testis was impalpable. The child was booked for Examination Under Anaesthesia (EUA) and further planned for diagnostic laparoscopy and proceed. On EUA, the right-sided testis was palpable in the right inguinal canal, and the left-sided testis was impalpable [Figure 1]. Hence, diagnostic laparoscopy was performed in view of non-palpable left-sided testis. We noted that the right testis was near the opened right deep inguinal ring [Figure 1]. The left deep inguinal ring was found to be closed, and left vas and vessels were crossing the midline just above the left deep inguinal ring along with the bladder dome and entering into the right inguinal canal [Figure 1]. On putting pressure with hand from outside on the right inguinal canal, the left-sided testis could also be visualised at the right deep inguinal ring [Figure 1]. There was no evidence of associated Müllerian duct remnants on laparoscopy. Moreover, testicular vessels on both the sides were found to be of adequate size, and further procedure was done through a right-sided open

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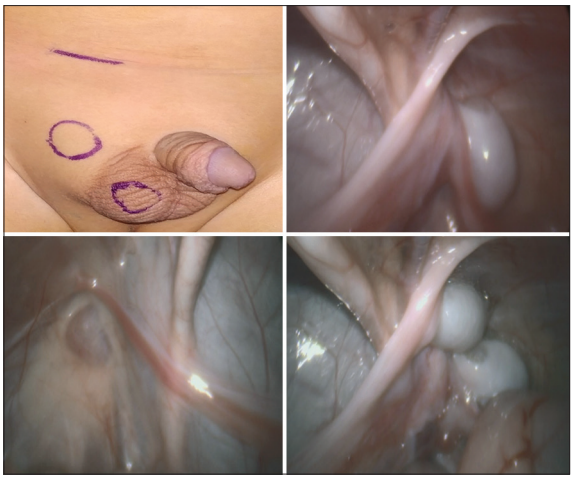


Figure 1: On Testicular Examination

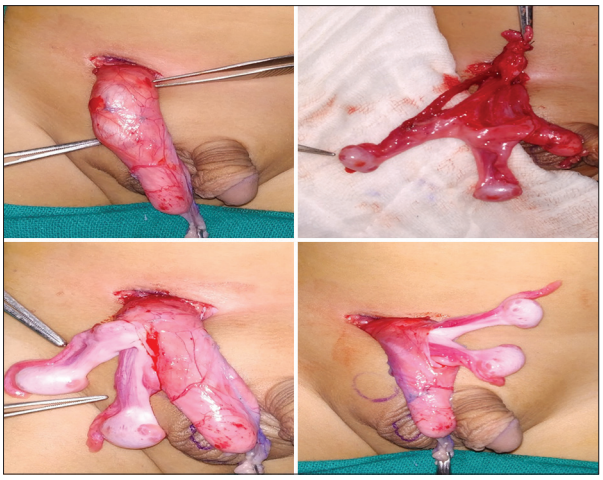


Figure 2: Intra-operative Findings

inguinal exploration. Both testes were found in a common hernial sac with a common mesorchium proximally and were separated by a length of about 5 cm distally [Figure 2]. Both testes were separated from the hernial sac and herniotomy was done. A trans-septal orchidopexy was done in which both the testes were placed into their respective hemiscrotums. In this procedure, the left-sided testis was placed and fixed in the left hemiscrotum through a window in the scrotal septum from the right-sided scrotal incision, while the right-sided testis is fixed to the same side. Post-operative period was uneventful. On follow-up after 3 months, both testes were normal in size and location.

Discussion

TTE is an uncommon anatomical abnormality where both the gonads migrate towards the same hemiscrotum. Approximately, a hundred cases have been reported in literature,[1] and it was first described by Von Lenhossek.[2] Embryologically, several theories regarding the origin of TTE have been suggested including adhesion and fusion of developing Wolffian canals, aberrant gubernaculum, testicular adhesions, defective formation of the internal inguinal ring and traction on a testis by persistent Müllerian structures. PMDS may result from the failure of synthesis or release of Müllerian duct inhibitory factor (MIF), the failure of end organs to respond to MIF or defect in the timing of the release of MIF. It seems possible that the mechanical effect of the persistent Müllerian duct structures prevents the testicular descent or leads to both testicles descending towards the same hemi-crotum producing TTE.[3] The ectopic testis may lie in opposite hemiscrotum, in the inguinal canal or at the deep inguinal ring. An inguinal hernia is invariably present on the side to which the ectopic testis is migrated.

On the basis of the presence of various associated anomalies, TTE has been classified into three types:[4]

- Type 1 – accompanied only by hernia (40% to 50%)
- Type 2 – accompanied by persistent or rudimentary Müllerian duct structures (30%)
- Type 3 – associated with disorders other than persistent Müllerian remnants (hypospadias, DSD and scrotal abnormalities) (20%).

The mean age at presentation is 4 years. It generally presents as an inguinal hernia on one side and a contralateral or sometimes a bilateral cryptorchidism.[5,6] The diagnosis of TTE can be made preoperatively by close clinical examination and the use of ultrasonography by an experienced sonographer.[7] Patients with TTE are at increased risk of malignant transformation with the overall incidence of malignant transformation of gonads approximately 18%.[8]

Laparoscopy is useful for both diagnosis and treatment of TTE and associated anomalies.[9] Apart from the diagnosis, laparoscopy helps in identifying associated Müllerian duct and other gonadal anomalies. It also facilitates in the mobilisation of testis, if required for orchidopexy. Moreover, if the testis is found to be atrophied intra-abdominally, laparoscopic orchidectomy can be performed simultaneously.

Management for testicular ectopia is either trans-septal or extraperitoneal transposition orchiopexy,[10,11] a search for Müllerian remnants or other anomalies and a long-term postoperative follow-up. In extraperitoneal technique, the testis is brought to the contralateral hemiscrotum crossing the root of penis. In trans-septal technique, the testis should traverse the scrotal septum to be fixed in it. TTE may also be misdiagnosed as an inguinal hernia, intersex[9] or present as an irreducible hernia requiring urgent surgery.[12]

Conclusions

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

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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