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Case Report

An uncommon case of transverse testicular ectopia presented as unilateral inguinal hernia: uncover impact of laparoscopy and management options

Nitin Jain[1], Simmi K. Ratan[2]*

[1]Department of Pediatric Surgery, Amrita School of Medicine, Amrita Vishwa Vidyapeetham, Faridabad, Haryana, India
[2]Department of Pediatric Surgery, Maulana Azad Medical College, New Delhi, India

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***Correspondence:**
Dr. Simmi K. Ratan,
E-mail: drjohnsimmi@yahoo.com

ABSTRACT

Transverse testicular ectopia (TTE) is an extremely rare congenital anomaly in which both testes descend through the same inguinal canal. Patients with this condition often present with an inguinal hernia and an impalpable contralateral testis. This condition is not usually diagnosed preoperatively and the ectopic testis is usually discovered incidentally during herniotomy or findings are noted at the time of diagnostic laparoscopy. Sometimes but not commonly, TTE cases associated with intersex conditions like persistent Mullerian syndrome, which may prevent normal testicular decent. Here, we report a four year old male child presented with impalpable left undescended testis and right inguinal hernia. Diagnostic laparoscopy revealed closed left internal ring with absence of vas deferens and testicular vessels. While on the right side, vas and vessels found to be entering the wide open internal ring and left testis was located just inside the ring with its own vas and vessels supply. Consequently, trans-septal contralateral orchidopexy involving fixing the right testis in left hemiscrotum as right testis had adequate cord length and left testis was fixed in the right hemiscrotum due to its short cord length was done.

Keywords: Diagnostic laparoscopy, Inguinal hernia, Inguinal canal, Transverse testicular ectopia, Undescended testis

INTRODUCTION

Transverse testicular ectopia (TTE) is an uncommon condition where both the gonads migrate toward the same inguinoscrotal region.[1] The condition usually presents with undescended testis on one side and inguinal hernia on the side to which the ectopic gonad has migrated.[2] The diagnosis is not usually made preoperatively and in fact most of the cases are diagnosed on surgical exploration. This entity was first described by Von Lenhossek in 1886.[3] There are many other names given for this condition in an attempt to describe its possible embryologic maldevelopment. The entity has been called: transverse testicular ectopia, crossed testicular ectopia, testicular pseudo duplication, unilateral double testis, transverse aberrant testicular maldescent.[4]

CASE REPORT

A four years old male child got worked up in out-patient with the diagnosis of right inguinal hernia. His left hemiscrotum was underdeveloped and empty. Left testis was not palpable anywhere along the inguinal area. The penis was displaced towards the left. Right testis was palpable at the mid-inguinal area.

After the routine workup child was planned for diagnostic laparoscopy in view of impalpable testis on left side. On diagnostic laparoscopy, left internal ring was found to be closed with absence of vas deferens and testicular vessels. Further examination of the retroperitoneum demonstrated a band of vessels originating from the area of the left kidney, crossing the midline at the pelvic inlet

and going towards the ectopic testis which was located just inside the right internal inguinal ring. The ipsilateral right sided testicular vessels and vas deferens were easily visible exiting the right internal ring as well (Figure 1). The diagnosis of transverse testicular ectopia was made and exploration of right inguinal region was done. At exploration, two normal, equal and separate testes were found. Each had its own epididymis, vas and blood supply (Figure 2).

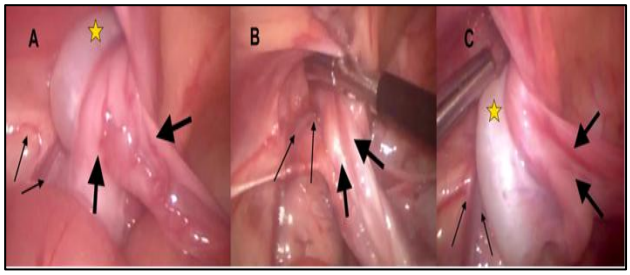

Figure 1 (A-C): Thin arrows representing vas and vessels of ipsilateral right side entering the wide-open internal ring and thick bold arrows representing vas and vessels of ectopic left testis (marked with yellow star) located just inside the right internal ring.

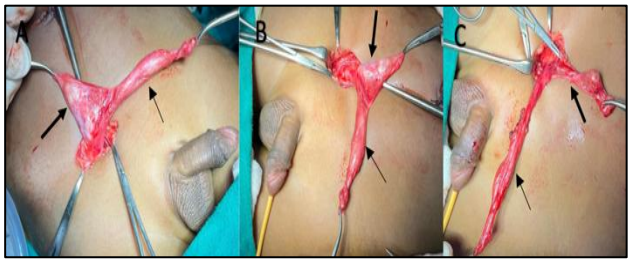

Figure 2 (A-C): Findings of TTE at exploration, two normal, equal and separate testes were found. Right testis is shown by thin arrows and had adequate cord length while ectopic left testis is shown by thick and bold arrows that depict inadequate cord length even after adequate mobilisation.

The gubernaculum of left testis could not be identified. Adequate cord length could not be achieved for the left testis even after adequate mobilisation while right testis had adequate cord length. In view of this, we performed a trans-septal contralateral orchidopexy involving fixing the right testis in left hemiscrotum as right testis had adequate cord length and left testis was fixed in the right hemiscrotum due to its short cord length.

Post-operative period was uneventful. Follow-up investigations including karyotyping, ultrasound kidney and urinary bladder with pelvis (to rule out Mullerian structures that may be present in persistent mullerian duct syndrome) and hormonal profile (LH, FSH, Testosterone, anti-mullerian hormone) were done and found to be normal in accordance with healthy male child. Testicular ultrasound was done after 4 months suggestive of normal growth, volume and flow pattern.

DISCUSSION

Transverse testicular ectopia is an uncommon condition first reported by Lenhossek et al in 1886.[3] Several theories have been postulated to explain the occurrence of transverse testicular ectopia. Berg proposed the possibility of the development of both testes from the same genital ridge.[5] Gupta and Das postulated that fusion of the developing wolffian ducts takes place early and when descent of one testis starts, it is followed by the second one.[6] Gray et al and Skandalakis et al observed that in most cases both the ducti have remained separate, a crossing over must have occurred later.[7] Kimura suggested 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.[8]

Despite wide variety of theories, the exact mechanism is still not fully understood. The mean age at presentation is 4 years. Such cases usually present with undescended testis on one side and inguinal hernia on the side to which the ectopic gonad has migrated. The diagnosis is not usually made preoperatively and in fact most of the cases are diagnosed on surgical exploration. Meticulous examination will show two testes on the hernial side with nonpalpable testis on the contralateral side.[2] Recently, magnetic resonance imaging and magnetic resonance venography have been suggested for preoperative location of impalpable testes but laparoscopy is useful for both diagnosis and treatment of TTE and associated anomalies.[9,10] 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%); 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 belonged to type-1 TTE.

There are two surgical options for such condition: Extra-peritoneal orchidopexy and trans-septal orchidopexy. 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 our case, child was planned for diagnostic laparoscopy in view of impalpable testis on left side. On diagnostic laparoscopy, left internal ring was found to be closed with absence of vas deferens and testicular vessels. While on the right side, vas and vessels found to be entering the wide-open internal ring and left testis was located just inside the ring with its own vas and vessels supply. Laparoscopy also revealed absence of any remnant mullerian duct structures. There are two main surgical methods, including trans-septal orchidopexy and standard orchidopexy through the ipsilateral inguinal canal after separating the two testes. In the present case, right testis had adequate cord length while adequate cord length could not be achieved for the left testis even after

adequate mobilisation. In view of this, trans-septal contralateral orchidopexy was performed involving fixing the right testis in left hemiscrotum as right testis had adequate cord length and left testis was fixed in the right hemiscrotum due to its short cord length based on the modified Ombre Danne technique.[4,11] In 2% to 97% of patients with transverse testicular ectopia, disorders of the upper and lower urinary tract system have been reported.[12] Like all dysgenetic testes, infertility and progression to malignancy are relatively frequent with TTE.[13] We emphasize that associated mullerian ductal structures, if any, should be ruled out by laparoscopy.

CONCLUSION

The diagnosis of this uncommon entity should be considered when unilateral hernia and associated undescended testis of the contralateral side are present. Laparoscopy is useful for both diagnosis and management of TTE and associated anomalies. Treatment includes transseptal orchidopexy or extra-peritoneal transposition of the testis, search for mullerian remnants and other anomalies and long-term postoperative follow-up.

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