

## Torsion of Unilateral Undescended Testis with Absence of Contralateral Testis and Kidney:

*Dr Deepak Kumar (Senior Resident, Department of Radio diagnosis, A.I.I.M.S. Patna)*

*Dr Rashmi Rani Bharti (Senior Resident, Department of Pathology, P.M.C.H. Patna)*

*Dr Prem Kumar (Prof& H.O.D. Department of Radio diagnosis, A.I.I.M.S. Patna)*

*Dr Ashok Kumar (Senior Resident, Department of Radio diagnosis, A.I.I.M.S. Patna)*

---

**Abstract:** Testicular torsion is frequently seen in children and young adult, but very few cases has been described in testicular torsion in the undescended testis. We presented this case to describe the clinical and radiological features of testicular torsion in the undescended testis in a young adult.

**Keywords:** USG- Ultrasonography, CT- Computed Tomography MRI- Magnetic Resonance Imaging

---

### I. Introduction

Testicular torsion in the undescended testis is a very rare disease. The incidences of testicular torsion in undescended testis have reported as 7.9-13.3% in Europe and the United State<sup>1-4</sup> and 7.1-9.1% in Japan<sup>5-8</sup>. In the present paper, a case of testicular torsion in the undescended testis with agenesis of left testis and left kidney was reported.

### II. Case Report

A 15-year-old boy was admitted to our hospital with pain lower abdomen and a progressively enlarging tender mass in the right inguinal region. there is also history of nausea, vomiting and fever. He had been seen 5 years before by surgeon who thought that the right t inguinal mass represented an undescended testis. On examination, the abdomen was soft and non tender and a tender mass is felt in right inguinal region. The left testis was also not noted in scrotal sac (left scrotal sac is empty), however left inguinal canal also appear normal.

Ultrasonography of whole abdomen including inguinal region was done. On gray scale, a round / oval hypoechoic mass of size about 3.7x3.5 cm noted in right inguinal canal. Bilateral scrotal sac was empty and no any mass lesion noted in left inguinal canal. On colour Doppler study, no any color flow noted within the right inguinal mass (testis), even on minimal PRF and power Doppler. Adjacent to testes, another twisted heterogeneous structure noted which also do not show any color flow, suggested the torsion of the undescended testis and spermatic cord. Absence of left testis and left kidney are the additional finding.

The operation was performed. Exploration of the right groin revealed a 180 counter-clockwise torsion of an undescended testis in the right inguinal pouch. The testis was found to be necrotic and an orchidectomy was performed.

Histologic examination confirmed that the mass was a necrotic torsioned testicle and it was also confirmed by pathologist in other institute. The patient had an uneventful postoperative course and was discharged on the tenth hospital day.

### III. Discussion

During embryonic and fetal life, the testes and the ovaries both descend from their original position at the 10th thoracic level, although the testes ultimately descend much farther. the descent of the gonad depends on the ligamentous gubernaculum. Between the 7th and 12th weeks (intra-abdominal phase), the gubernaculum shorten and pull the testes down to the vicinity of the deep inguinal ring within the plane of the subserous fascia while the cranial suspensory ligament regresses. The gubernacula shorten mainly by swelling at their base; this serves the secondary purpose of enlarging the inguinal canal.

The testes remain in the vicinity of the deep ring from the 3rd to the 7th month but then enter the inguinal canal in response to renewed shortening and migration of the gubernacula (inguinal-scrotal phase). The testes remain within the subserous fascia of the **vaginal process** through which they descend toward the scrotal sac. The increased abdominal pressure created by the growth of the abdominal viscera also aids the movement of the testes through the canal. By the 9th month, just before normal term delivery, the testes have completely entered the scrotal sac and the gubernaculum is reduced to a small ligamentous band attaching the caudal pole of the testis to the scrotal floor.

About 3% of full-term and 30% of premature infant boys are born with at least one undescended testis. However, about 80% of cryptorchid testes descend by the first year of life (the majority within three months), making the true incidence of cryptorchidism around 1% overall. An undescended testis found anywhere along the "path of descent" from high in the posterior (retroperitoneal) abdomen to the inguinal ring; or inguinal canal. About two thirds of cases are unilateral; one third involve both testes. In 90% of cases an undescended testis can be felt in the inguinal canal; in a minority the testes are in the abdomen.

Undescended testes are associated with reduced fertility, increased risk of testicular germ cell tumors and undescended testes are also more susceptible to testicular torsion and infarction and inguinal hernias.

Williamson suggested that torsion was approximately ten times more common in cryptorchidism<sup>9</sup>. The frequency of testicular torsion was higher in the teen-age group than in infants below 10 years of age, whereas the torsion of the undescended testis showed a similar incidence in both age groups. Delay of diagnosis is common, markedly reducing the salvage rate of the affected testis. Some cases are misdiagnosed as strangulated inguinal hernia, acute appendicitis, orchitis or so on. Clinical symptoms of torsion of the undescended testis is 1) sudden onset of lower quadrant pain, with or without vomiting, 2) presence of a progressively enlarging tender mass in the inguinal canal or at the external inguinal ring, with absence of intra scrotal testis,

The differential diagnosis between torsion and other causes for the acute inguinal mass could be achieved by means of ultrasonography or MRI.

Damage to the gonad varies with the degree of torsion, its tightness, and its duration. Immediate surgical exploration is the treatment of choice to reduce torsion of an undescended testis. Orchiopexy should be performed if the involved testis is viable, and prophylactic fixation to the scrotum of the contra-lateral testis is recommended.

#### **Radiological appearance of testes and epididymis :-**

On US, the normal testicle is slightly echogenic with homogeneous echotexture. The testicle is surrounded by a fibrous band, the tunica albuginea, which is often not visualized in the absence of intrascrotal fluid. However, the tunica is often seen as an echogenic structure where it invaginates into the testis to form the mediastinum. The epididymis is located posterolateral to the testis and measures 6–7 cm in length. At sonography, it is iso/hyperechoic to the normal testis and has equal or diminished vascularity. The head is the largest and most easily identified portion of the epididymis. It lies superior and lateral to the upper pole of the testicle and is often seen on paramedian views of the testis.

On MR imaging, the normal testis has a homogeneous appearance, with intermediate signal intensity on T1-weighted images and high signal intensity on T2-weighted images relative to skeletal muscle. The relatively high signal intensity of the testis on T2-weighted images allows excellent contrast from solid lesions, which invariably have lower signal intensity on T2-weighted images. T1-weighted images are useful for depicting increased signal intensity in certain tissues, such as fat and methemoglobin. The tunica albuginea appears as low signal intensity on T1 and T2 weighted images.

The epididymis has signal intensity characteristics similar to testicular parenchyma on T1-weighted images but lower signal intensity on T2-weighted images<sup>10</sup>.

#### **Torsion of undescended Testis**

If torsion of undescended testes occur, then it appears hypoechoic in texture in early phase (4-6hr) on gray scale, and then texture becomes heterogeneous due to vascular congestion, haemorrhage and infarction (after 24hr). On color doppler, there is absence of identifiable intratesticular flow noted. However, presence of color or power doppler signal does not exclude torsion.

MRI shows twisted cord as multiple low intensity curvilinear structure radiating in a whirlpool pattern. Testes become enlarged and appear hyperintense on both T1 and T2 W image due to subacute hemorrhage. On contrast enhanced T1W image, there is usually lack of contrast uptake by the affected testes. However, in some cases, markedly reduced contrast uptake by affected testis has been observed. MR imaging can also demonstrate an intra abdominal undescended testis, which can be difficult to detect with US. Phosphorus MR spectroscopy has been helpful in evaluation of acute torsion. On MR spectroscopy, there is decreased level of B-ATP and phosphomonoester and increased level of inorganic phosphorus.

#### **Reference**

- [1]. Baker K, Paper FP: Torsion of the testis. Br. J. Urol., 36; 35-41, 1964.
- [2]. Macmoca MF : Torsion of the testis in childhood. Br. J. Surg., 62; 35--41, 1974.
- [3]. Rundle JSH, Primrose DA, Carachi R : Cryptorchidism in cerebral palsy. Br. J. Urol., 54; 170-171, 1982.
- [4]. Ankerhold J, Gressmann C : Hoden-descensusstorungen beim fruhkindlichen Hirnschaden. Z Kinderheilk. 107; 15-25, 1969.
- [5]. Umezaki R, Yoshida M : Strangulation of the spermatic cord. A case report and review of the cases in Japan. The Journal of Tokyo Womens' Medical College, 34; 275-284, 1964.
- [6]. Kakuda K : A case of testicular torsion. The Nishinippon Journal of Urology, 34; 55-58, 1972.
- [7]. Maeda T, Ooyama T, Nishio S, et al: Two cases of testicular torsion in undescended testis. Jap. J. Urol., 66; 517, 1975.

- [8]. Aoshima S : Torsion of the undescended testicle: A case report and review of thirty-five cases in Japan. Jap. I Clin. Urol., 30; 961-964, 1976.
- [9]. Williamson RCN : Torsion of the testis and allied conditions. Br. J. Urol., 36: 35-41, 1976.
- [10]. Pretorius E. MRI of the male pelvis and bladder. In: Siegelman ES, ed. Body MRI. Philadelphia, Pa: Elsevier Saunders, 2005; 372-386.