

## Case Report

# UNDESCENDED TESTES: EMBRYOLOGICAL AND CLINICAL IMPORTANCE

Veena Vidya Shankar \*<sup>1</sup>, Roopa Kulkarni <sup>2</sup>.

\*<sup>1</sup> MBBS, MD, Associate Professor, Department of Anatomy.

<sup>2</sup> MBBS, MS, Senior Professor, Department of Anatomy.  
M.S.Ramaiah Medical College, Bangalore, India.

## ABSTRACT

During the routine dissection of abdomen, two adult male cadavers, aged 55 & 67 years, presented with unilateral and the bilateral undescended testes respectively. One of them presented with unilateral and the other with bilateral undescended testes. In both cases the testes were found at the superficial inguinal ring. The histological examinations indicated normal testicular tissue. Undescended testis is the inability of the testis to reach the scrotum. In living, it has to be differentiated from testicular agenesis, ectopic testis and retractile testis. The genetic sex of the male is determined at the time of fertilization but the phenotypical sex starts as early as 4<sup>th</sup> month of intrauterine life and completed along with the descent just before birth. The embryological basis and clinical significance has been explained.

**KEYWORDS:** Undescended testis, Cryptorchidism, Ectopic testis, Superficial inguinal ring.

**Address for Correspondence:** Dr. Veena Vidya Shankar, Associate Professor, Department of Anatomy, M.S.Ramaiah Medical College, Bangalore 560054. Contact No.: Mobile +919980308735.  
**E-Mail:** veena24shankar@gmail.com

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## BACKGROUND

The testes develop before birth in the dorsal abdominal wall. The development begins as early as sixth week of intrauterine life and is completed by fifth month of intrauterine life. The testis may get arrested anywhere during its descent from dorsal abdominal wall to the scrotum [1]. The anomalies of descent include Cryptorchidism (Anorchism, Monorchism and partially descended testis), ectopic testis, and persistence of processus vaginalis & encysted hydrocele of spermatic cord [2]. Cryptorchidism is usually diagnosed during the newborn examination. Recognition of this condition, identification of associated syndromes, proper diagnostic evaluation and timely referral for urologic surgical therapy are important steps in preventing adverse consequences like sterility

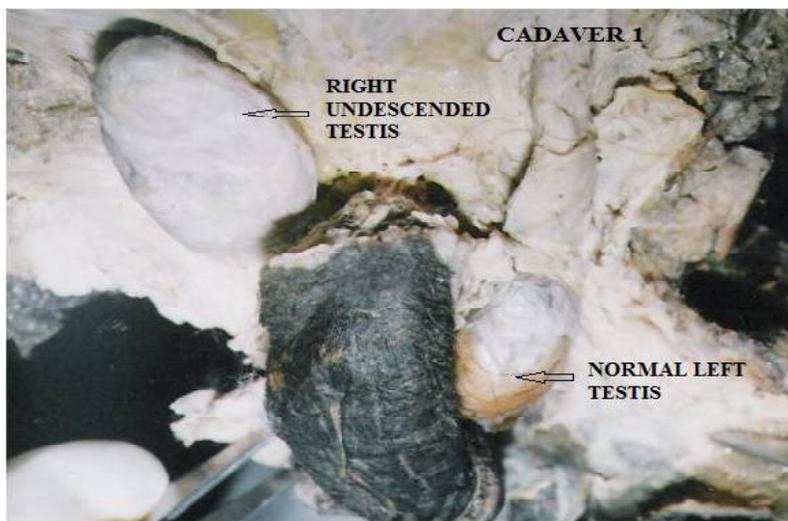
& testicular carcinoma [3].

## MATERIALS AND METHODS

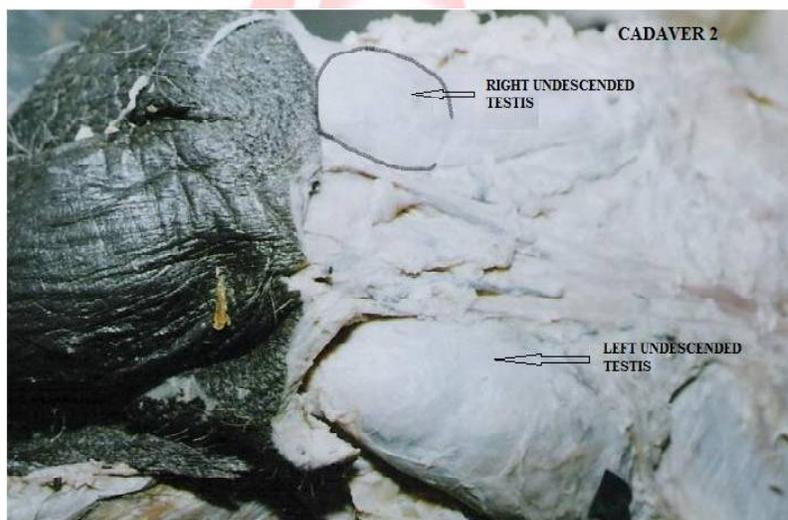
During the routine cadaver dissection, in the Department of Anatomy, M.S.Ramaiah Medical College, Bangalore, undescended testes were observed in two adult male cadavers aged 55 & 67 years. The part was neatly dissected and photographs were taken. The testicular tissues were sent for histopathological examination.

## OBSERVATIONS

In the first cadaver aged 55 years, there was unilateral right undescended testis seen at superficial inguinal ring with following measurements. Right testis: length - 6.2 cm, width - 4.1 cm and thickness - 1.3 cm. The measurements in the left testis were in the normal range.



**Fig. 1:** CADAVER 1 - Unilateral right undescended testis with the normal left testis.



**Fig. 2:** CADAVER 2 - Bilateral undescended testes.

In the second cadaver aged 67 years, bilateral undescended testes were noted at superficial inguinal ring with the following measurements. Left testis: length - 8.5cm, width - 4.5cm and thickness - 2.4cm. Right testis was less than left by 1cm in all the dimensions.

The testicular tissues sent for histopathology were reported to be normal.

### **NORMAL DESCENT OF THE TESTES**

The factors responsible for the descent are still not clear. The testes develop in the dorsal abdominal wall. Besides the role of testosterone; the rapid longitudinal growth of the dorsal abdominal wall compared to the slower growth rate of the testes, and active contraction of the lower fibers of the internal oblique on the convex smooth surface of the testes are considered as important factors for the gonadal descent in males. The gubernacular tissue being made up of mainly hyaluronic acid offers a route of least resistance to the descending testes. Testicular enlargement, atrophy of mesonephric kidneys

and mesonephric ducts also contribute to the descent of testes. The testes appear in the iliac fossa by the 4<sup>th</sup> month of fetal life, in the deep inguinal ring at 7<sup>th</sup> month, in the inguinal canal during 7<sup>th</sup> and 8<sup>th</sup> month and in the scrotum at birth [1,2,4].

### **DISCUSSION**

The undescended testis can be seen anywhere in the path of descent up to superficial inguinal ring [1]. In living humans, there are four testicular anomalies in which the scrotum is empty - absent testis, undescended testis, ectopic testis and retractile testis [5].

The incidence of undescended testis is higher on the right side, is probably due to later descent on right as opposed to left & therefore more likely to result in arrest due to mechanical factors. The commonest location is superficial inguinal pouch [6,7]. In the present study the testes have descended up to superficial inguinal ring and had stopped to descend further.

The undescended & normally descended testis does not vary with respect to their size & location [8]. The size is not affected by embalming procedure & fixation can give rise to secondary shrinkage when exposed for a longer period [9,10].

About 1/3<sup>rd</sup> of premature and 3 to 5 % of the full term male newborns are with undescended testis at birth, but by three months of age the incidence is reduced to 0.8% without any change in the incidence between 3 month of age and adulthood [3]. The unilateral or bilateral undescended testis is as high as 3-4 % in full term newborns is greater with increasing prematurity - 17% with birth weight of 2.00 – 2.5 kg and up to 100% with birth weight < 900 gms. Bilateral undescended testes were observed in 30% of cases [11]. The incidence of Cryptorchidism in patients with testicular cancer has been reported as 9.8% [12].

The cause of Cryptorchidism in most of the full term male infants, without any other genital abnormalities is not known; it can be sporadic and idiopathic. Undescended testis may also be associated with hormonal malfunction, excessive consumption of alcohol, pain killers and coffee by the mother during pregnancy, exposure to pesticides, gestational diabetes, cloacal extrophy, Prader Willi and Noonan syndromes [13].

## CONCLUSION

The observations of undescended testes in two male cadavers indicate that it was more frequent on the right side. This anomaly affects the males in the society and is still a prevalent disorder with numerous unknowns related to its cause and effects. The surgical intervention (Orchiopexy) can be implemented from 6 months to one year of life to prevent sterility or carcinoma of testis.

**Conflicts of Interests: None**

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