

## Case Report

# RARE VARIATION IN THE ORIGIN OF LEFT TESTICULAR ARTERY FROM LEFT EXTERNAL ILIAC ARTERY : A CASE REPORT

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## Abstract :

Testicular artery usually arises from the antero-lateral part of the abdominal aorta below the origin of the renal arteries. Very rarely variations in the origin of the testicular arteries were observed. During routine dissection for undergraduate medical students, an abnormal origin and course of the left side testicular artery was detected in a 55-year-old male cadaver. On the left side, testicular artery arose from the external iliac artery half way before its entry into front of the thigh. Later it runs in the inguinal canal to reach the testis. In contrast, right side testicular artery has normal origin and course. Such variations in the origin and course of the testicular artery are important in surgical and diagnostic interventions to avoid diagnostic and surgical errors to prevent hazardous complications like testicular hypoperfusion and atrophy.

Keywords: Rare variation, Testicular artery, External iliac artery

## Introduction :

The testicular arteries are paired vessels that usually arise from the abdominal aorta at the second lumbar vertebral level. Each artery passes obliquely downwards and posterior to the peritoneum. Descending on the posterior abdominal wall, it reaches the deep inguinal ring where it enters the spermatic cord [1, 2]. There are reports about the variant origin of testicular artery arising from the renal artery, accessory renal artery, suprarenal artery, one of the lumbar arteries, common or internal iliac artery, and the inferior phrenic arteries. Variations of these arteries have been extensively studied due to their importance in testicular physiology. Moreover, this knowledge has a practical implication during testicular surgery. [3]. To the best of our knowledge this kind of variation in the origin of left testicular artery from left external iliac artery has not

been reported in the literature before.

## Case presentation :

During routine dissection for undergraduate medical students at Department of Human Anatomy, Kasturba

Medical College, Manipal University, Manipal, we observed an abnormal origin and course of the left side testicular artery in a 55-year-old male cadaver. On the left side, testicular artery arose from the external iliac artery half way before its entry into front of the thigh. Later it runs in the inguinal canal to reach the testis. In contrast, right side testicular artery and the testicular vein have normal origin and course. This anomalous left testicular artery had a diameter of 10 mm and a length of about 32 mm from its origin to its entry into the deep inguinal ring.

## Discussion :

Anatomy of the gonadal arteries has assumed importance because of the development of new operative techniques within the abdominal cavity for operations such as varicocele and undescended testes [4]. During laparoscopic surgery of the male abdomen and pelvis many complications occurred due to unfamiliar anatomy in the operative field [5]. Awareness of variations in the testicular arteries, such as those presented in this case report, becomes important during such surgical procedures.

Variant anatomy of gonadal arteries has been reported in number of cases. Anomalies in the origin, course, and

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number of Testicular Arteries were observed in 4.7 percent of cases in a study of 150 cadavers [6]. There are few reports of a high Testicular Artery origin in the literature. Shinohara et al. found a Testicular Artery originating 1 cm superior to the origin of the inferior phrenic artery [7]. Brohi et al. described the case of a high origin of the left Testicular Artery which originated from the left renal artery [8]. Xue et al. found a right TA artery arising from the anterior surface of the abdominal aorta at the level of the left renal artery [9]. Shoja et al reported that the gonadal artery originated from the main or accessory renal artery [10]. Deepthinath et al reported a double left testicular artery, in which one originated from an accessory renal artery and the other from the main renal artery [11].

The first attempt at classification of Testicular Artery variations was made by Machnicki et al. [12]. Their study included TAs from both fetuses and adults grouped according to their origin from the aorta or renal artery. Four major types were observed: Type A - a single Testicular Artery originating from the aorta; Type B - a single Testicular Artery originating from the renal artery; Type C - two Testicular Arteries originating from the aorta that supplied the same gonad; Type D - two Testicular Arteries supplying the same gonad, one arising from the aorta and the other from the renal artery [12]. Some years later, Çiçekcibasi et al. classified the variations into four alternative types: Type I - Testicular Artery arising from the suprarenal artery; Type II - Testicular Artery originating from the renal artery; Type III - Testicular Artery of high-positional origin from the abdominal aorta, close to the renal artery lineage; Type IV - Testicular Artery duplication originating from the aorta or from various vessels [13]. Our case report is not matching with any of the above said classification and not been reported in the literature before.

Regarding the embryologic basis, explanation for individual or combined variations of renal and gonadal arteries has been related to the embryological development of both vessels from the lateral mesonephric branches of the dorsal aorta. The embryologic explanation of these

variations has been presented and discussed by Felix. The developing mesonephros, metanephros, suprarenal glands and gonads are supplied by nine pairs of lateral mesonephric arteries arising from the dorsal aorta. Felix divided these arteries into three groups as follows: the 1st and 2nd arteries as the cranial; the 3rd to 5th arteries as the middle, and the 6th to 9th arteries as the caudal group. The middle group gives rise to the renal arteries. Persistence of more than one arteries of the middle group results as multiple renal arteries. Felix also stated that although anyone of these nine arteries may become the gonadal artery, it usually arises from the caudal group [14].

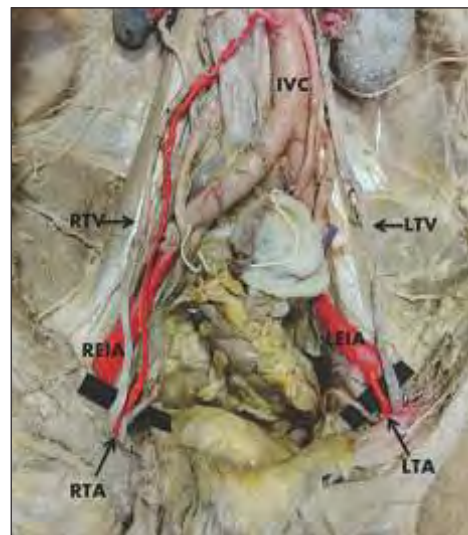


Figure - Anterior view of the male Abdomen  
IVC – inferior vena cava, REIA – right external iliac artery, LEIA – left external iliac artery, RTA – right testicular artery, LTA- left testicular artery, RTV- right testicular vein, LTV- left testicular vein

Conclusion :

Anatomical knowledge of Morphological anomalies of the gonadal arteries may be important not only for the clinical point of view but they also explain the embryological basis and some pathological conditions. The origin and course of the TA must be carefully identified and demarcated in order to preserve and prevent testicular atrophy. A deeper understanding of these variations and their special relations to adjacent vessels is especially significant in avoiding the complications in surgical and diagnostic interventions. Furthermore, radiologists should be familiar with TA variants in order to provide an accurate diagnosis during pre-clinical studies.

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