

CASE REPORT

SOURCE OF ORIGIN OF TESTICULAR ARTERY: A CADAVERIC STUDY

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ABSTRACT: The male gonadal arteries named as testicular arteries usually arises as lateral branches of abdominal aorta. Sometimes there may be variations in the origin of testicular artery and it may arise from renal, supra renal and lumbar artery. So the knowledge about the variations in testicular artery origins are essential for surgical procedures like renal vascular surgeries and renal transplantations.. Therefore study was designed to estimate the normal and abnormal origin of testicular artery. In the present study among 40 dissected cadavers we found two variations in the origin of testicular artery.

KEYWORDS: Testicular artery variations, Suprarenal artery, Lumbar artery.

INTRODUCTION: The testicular arteries are two long, slender vessels which arise anteriorly from the aorta a little inferior to the renal arteries. Each passes inferolaterally under the parietal peritoneum on psoas major. The right testicular artery lies anterior to the inferior vena cava and posterior to the horizontal part of the duodenum, right colic and ileocolic arteries, root of the mesentery and terminal ileum. The left testicular artery lies posterior to the inferior mesenteric vein, left colic artery and lower part of the descending colon. Each artery crosses anterior to the genitofemoral nerve, ureter and the lower part of the external iliac artery and passes to the deep inguinal ring to enter the spermatic cord and travel via the inguinal canal to enter the scrotum.^[1] According to Notkovich^[2] the gonadal arteries have been classified into three types based on their anatomical relationship to the renal vein: Type I – the gonadal arteries arise from the aorta behind or below the renal vein and pass downwards and laterally into the inguinal canal. Type II – the artery arises from the aorta above the level of renal vein and crosses in front of it. Type III – the gonadal arteries arise from the aorta behind or below the renal vein and course upwards to arch over the renal vein. Like Ali Gurses^[3] reported bilateral variations of renal and testicular arteries. In the present study we investigated the origin of testicular artery in male cadavers and discussed their clinical significance.

MATERIALS AND METHODS: The posterior abdominal walls of 40 adult male cadavers were dissected. Out of which 30 cadavers from the Department of anatomy, Sri Lakshminarayana Institute of Medical Sciences, Puducherry and 10 cadavers from the Department of anatomy, Maharajah's institute of medical sciences, Vizianagaram constituted the material for the study. The abdominal cavity was opened by routine dissection procedure, and the retroperitoneal structures were exposed. The connective tissue surrounding the great vessels and their branches and tributaries were removed to provide a clear field of vision. The testicular arteries were observed, in particular for their origin. The data collected from there was noted and compared with statistics from other sources cited in literature.

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RESULTS: Among 40 cadavers, in one cadaver we found right testicular artery arising from right renal artery [Fig. 1] and in another cadaver it was in much lower level close to the origin of inferior mesenteric artery [Fig. 2]. In the remaining cadavers testicular arteries are arising from abdominal aorta at normal site. In the present study the incidence of variation in the origin of testicular arteries is 0.025%.



Fig. 1

AA - Abdominal aorta
RTTA - Right testicular artery
RTRA - Right renal artery



Fig. 2

AA - Abdominal aorta
IVC – Inferior vena cava
IMA – Inferior mesenteric artery
CIA - Common iliac artery
RTTA - Right testicular artery

DISCUSSION: O. Panyanetinad 2011^[4] found that bilateral accessory renal artery and the right testicular artery did not directly originate from abdominal aorta. It formed common trunk with right inferior suprarenal artery. This common trunk arose from right main renal artery, while left testicular artery originated from abdominal aorta as usual. Sarita Sylvia 2009^[5] found that bilateral double renal arteries along with variant testicular arteries which arise from upper renal arteries. S. Bindhu et al 2010^[6] found that multiple vascular anomalies i.e., right accessory renal artery, right testicular artery arising from right renal artery and obturator artery arising from the posterior division of internal iliac artery. Vishal Manoharro salve 2009^[7] also noted that the right testicular artery originated from Rt. Accessory renal artery.

During the ascent of kidney, it receives blood supply sequentially from arteries in its immediate neighborhood i.e., middle sacral and common iliac arteries and later from the arteries arising from aorta caudal to the suprarenal arteries.^[1] In the present study [Fig. 1] the right renal artery might be the vascular sprout from the lateral splanchnic artery which is giving rise to right

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testicular artery. Variations of the testicular arteries are based upon their embryonic origin. The first note on the embryological origin of the gonadal artery was made by Felix in 1912^[8] and he mentioned that nine lateral mesonephric arteries are divided into the cranial, middle and caudal group, the persistence of a cranial lateral mesonephric artery results in a high-origin of the gonadal artery, probably from the suprarenal or from a more superior aortic level.

Moore & Persaud, 1993^[9] mentioned that when the gonads descend the new embryonic splanchnic arteries develop and the higher one atrophies, one of the caudal arteries usually persists and differentiates into the definitive gonadal artery.

Çiçekcibaşı AE (2002)^[10] mentioned that the persistence of a cranial lateral mesonephric artery results in a high-origin of the gonadal artery and persistence of more than one lateral mesonephric arteries results in doubled, tripled or quadrupled gonadal arteries.

In the present study the probable reason for lower origin (fig. 2) is due to the neo vascular sprout which is lower than the normal one which might be persisted as adult testicular artery.

CONCLUSION: In the present work two variations were found among 40 dissected cadavers. Surgeons should be aware of such variations of the gonadal arteries when operating near a renal pedicle. To avoid the surgical complications a detailed anatomical knowledge of these variation and a supportive angiogram is essential.

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