

Rare Variant of Right Testicular Artery: A Case Report

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Abstract

A sound knowledge of variations of blood vessels is important during operative diagnostic and endovascular procedures in the abdomen. This report describes the origin of right testicular artery from the renal artery and the origin of accessory right inferior suprarenal artery from the right testicular artery in a 60 year old male cadaver. A knowledge of the variant origin of the testicular artery is important during renal and testicular surgery. The origin and course must be carefully identified in order to preserve normal blood circulation and prevent testicular atrophy. A reduction in gonadal blood flow may lead to varicocele under circumstances. A knowledge of this variant anatomy may be of interest to radiologists and helpful in avoiding diagnostic errors.

Keywords: Renal artery; Suprarenal artery; Testicular artery; Varicocele.

Introduction

Variations in the origin of arteries in the abdomen are very common but with the invention of new operative techniques within the abdominal cavity, the anatomy of abdominal vessels has assumed much more clinical importance. The gonadal arteries arise from the front of the aorta, usually 1-2 inches (2.5-5 cm) below the renal arteries. These arteries are small and variable in their origin.[1] Each kidney receives blood supply from a single renal artery. This pattern presents in 70% of individuals. Accessory renal arteries are found in approximately 25-30%. [2]

In 14% of kidneys, the gonadal artery which usually arise from the aorta, originated from renal artery, either from main or accessory one.[3] Moreover, several variations of

suprarenal artery have been reported.[4-8] A gonadal artery with origin from an inferior polar renal artery may be injured during the percutaneous treatment of the syndrome of pielo-ureteral junction, so it becomes a major contraindication. Also, this anatomical variation enhances the importance of the arteriography or Doppler ultrasound examination of the renal hilum.

Case report

During routine dissection, we found variations in a 60 year old male cadaver with no known unfavourable medical history. The right testicular artery originated from right renal artery 2 cms distal to its origin from the abdominal aorta. The right testicular artery gave an accessory inferior suprarenal artery 1cm distal to its origin, that supplied the right adrenal gland. The right testicular artery then progressed in an oblique course outwards and caudally, crossing anterior to the right renal artery. The right main inferior suprarenal artery arose normally from the renal artery 1.5 cm from its origin from the aorta. However, no variations of renal or testicular vein were observed. On the left side, the renal, testicular and suprarenal arteries were normal in origin.

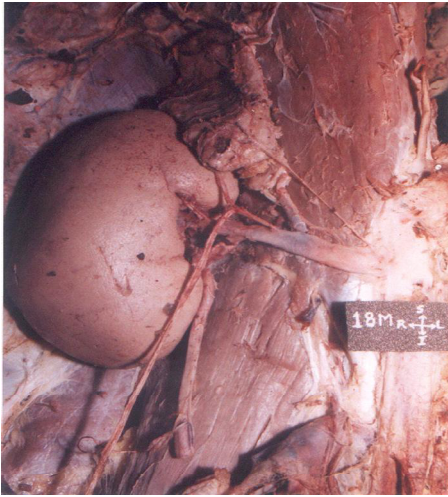
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Fig-1: Origin of right testicular artery from right renal artery and the origin of accessory right inferior suprarenal artery from the right testicular artery



Discussion

Variations in the origin, course, and branches of the testicular arteries are attributed to their embryological origin⁹. The first note on the embryological origin of the gonadal artery was made by Felix W.[10] The embryo has three sets of lateral mesonephric arteries namely cranial, middle, and caudal. One of the caudal arteries usually persists and differentiates into the definitive gonadal artery. However, the persistence of a cranial lateral mesonephric artery may result in a high-origin of the gonadal artery.[10] Çiçekciba^oi AE et al revealed that the middle group of lateral mesonephric arteries gave rise to a gonadal artery that originated from the renal artery, while that of the cranial group gave rise to a gonadal artery that originated from the suprarenal artery or from a more superior aortic level.[11] Knowledge concerning the variations of renal artery has increasing importance due to increasing rate of renal transplants, vascular reconstruction for both congenital anomalies and acquired lesions, and reconstructive surgery for abdominal aortic aneurysm¹². Several combined variations of renal, testicular and suprarenal arteries have also been reported. Salve et al. reported right testicular artery arising from right aberrant

renal artery.[13] Sylvia et al. reported bilateral variant testicular artery with double renal arteries in male cadaver. Right testicular artery originated from right upper renal artery while left testicular artery originated from left lower renal artery.[14] Brohi et al. reported a case with high origin of left testicular artery with unusual suprarenal branch from it.[8] Ozan et al reported two cases, in which gonadal arteries and accessory renal arteries arose from abdominal aorta at higher level than usual. In one of the cases, right middle suprarenal artery and parenchymal branch to the kidney originated from right testicular artery via a common trunk.[7] Variations in the gonadal vessels may influence the blood flow to the kidney and gonadal glands and cause some pathological conditions as varicocele.[15] With the advancement of new operative techniques within the abdominal cavity, the anatomy of gonadal vessels has assumed much more importance. The gonadal vessels must be preserved to avoid the possible complications following damage of these vessels. During laparoscopic surgery of the male abdomen and pelvis, many complications may arise, due to unfamiliar anatomy in the operative field.[16] The variant becomes more significant in light of the fact that testicular arterial blood flow was found to be significantly decreased in men with varicocele.[17] Additionally, anomalous Testicular artery origin may affect the testicular perfusion and testicular function. Since age-related disturbances in spermiogenesis are well described in the literature, it would be wise for the clinician to differentially diagnose age-related impaired spermiogenesis from perfusion-induced spermiogenesis.

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