

## Anomalous Origin of Left Testicular Artery from Accessory Left Renal Artery: A Case Report Ambica Wadhwa

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**Abstract:** A rare origin of the testicular artery from the renal artery seems to be an unrecognized variation which may be of particular importance to the radiologists and the surgeons while operating near the renal pedicle or in the retroperitoneal region. During routine dissection, we observed the unusual origin of the left testicular artery from an accessory renal artery in a middle-aged male cadaver. The possible embryologic basis for this variation as well as its clinical significance are discussed. These kinds of anomalies are important in surgical procedures related to the abdomen, such as renal transplantation, abdominal aortic aneurysm, ureter surgery, vascular pedicles of kidney and in angiographic interventions.

**Keywords:** Vasular Variations, Renal Arteries, Testicular Arteries

### INTRODUCTION

Classically in 75% of the people, the kidney is supplied by a single renal artery; about 25% of the adult kidneys have two or four renal arteries. It is a misnomer to call such vessels as accessory; aberrant or even supernumerary and because they are not extra but essential, tissue – sustaining arteries without anastomoses between them, which correspond to the segmental branch of a single renal artery [1]. Familiarity about the possible variations in the renal arterial pattern are especially important for the personnel dealing with kidney retrieval and transplantation, various endoneurologic procedures and innumerable interventional techniques [2].

According to their site of origin from the aorta or renal arteries four main types of testicular arteries have been identified [3].

Type 1- A single testicular artery arising from the aorta

Type 2- A single testicular artery arising from the renal artery

Type 3- Two testicular arteries arising from the aorta and penetrating the same gonad

Type 4- Two testicular arteries penetrating the testes, one arising from the aorta and other from the renal artery

The testicular artery usually arises from the abdominal aorta at the level of the second lumbar vertebra, below the renal artery. In 5-6% of the individuals, it originates from the main or the accessory renal artery [4]. Awareness of variations of testicular

arteries becomes important during surgical procedures like varicocele and undescended testis [5].

### CASE REPORT

During the routine dissection of a 60 year old male cadaver, certain variations in the renal and testicular arteries were observed.



**Fig. 1: Photograph showing the origin of the left testicular artery from the accessory renal artery. The main renal artery with its origin from the abdominal aorta is shown.**

On the left side, two renal arteries originated from the left lateral part of the abdominal aorta and entered the hilum of the left kidney. The main left renal

artery arose at the level of first lumbar vertebrae 10.5 cms from the aortic bifurcation and ran into hilum of the left kidney. The accessory renal artery arose 3.5 cms lower to the main renal artery and entered the lower end of hilum of the left kidney. The left testicular artery originated from the left accessory renal artery, just distal to the origin of the latter from the abdominal aorta. Further it passed anterior to the left ureter, left psoas major and left external iliac artery (Fig. 1). The anatomy of renal and testicular artery was normal on the right side.

## DISCUSSION

In this case, there was an accessory renal artery, which arose at a lower level than the main renal artery. The reported incidence of such variations of the renal arteries ranges from 8.7-75.7% [6, 7]. The incidence of origin of gonadal arteries from the renal arteries has been reported to lie between 4.7-14% [4, 8-10]. Variations of renal and gonadal vessels have an embryological basis. The developing mesonephros, metanephros, suprarenal glands and gonads are supplied by nine pairs of lateral mesonephric arteries arising from the dorsal aorta. These arteries are divided into three groups viz: the first and second arteries, the third to fifth and the sixth to ninth arteries constitute the cranial, middle and caudal group respectively. The middle group gives rise to the renal arteries. Persistence of more than one artery of the middle group results in multiple renal arteries [4, 11]. The additional renal artery in our case could therefore be a result of a persistent lateral mesonephric artery from the middle group. Gonadal arteries can arise from any of these nine mesonephric arteries though they usually arise from the caudal group [4].

This vascular variation shows a major significance in various endourologic procedures and innumerable interventional techniques, in partial or total nephrectomy, nephrotomy, in renal transplant, surgery for abdominal aortic aneurysm and during the post operative management [2, 12]. So there is importance of the arteriography or Doppler ultrasound examination of the renal hilum, prior to any surgical procedure within the region [12]. Variations of the renal and testicular artery should also be considered in order to prevent acute hemorrhage due to their injury in renal hilar dissections and retroperitoneal surgical explorations [13]. Due to the increased demand for living donor graft in renal transplants, the knowledge of such variant anatomy of the renal and gonadal arteries is an important prerequisite to successful renal transplantation [14].

## CONCLUSION

The present case report aims at highlighting an anatomic variation and its possible embryological variations. The presence of such variations may become

a major risk when this type of gonadal artery represents the single blood supply to the gonad, without a second supply from the aorta or other arterial sources. Thus, it becomes imperative to carefully preserve the gonadal artery in order to prevent the occurrence of any vascular troubles of the gonad. With the increasing demand for kidney transplantation, living donor grafts and allografts with multiple arteries have become a necessity.

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