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# Unilateral Variation of Renal Artery-Clinical Correlation –A Case Report

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***Abstract**: Normally kidneys receive arterial supply by a pair of renal arteries which arise from abdominal aorta ,Each renal artery divides into anterior and posterior divisions at or very close to the hilum of the kidney . Further it divides into segmental arteries to supply the respective segments of the kidney. In the present case, a variation in the branching pattern of right renal artery is observed. Right renal artery immediately after arising from abdominal aorta divided in to two segmental arteries which entered the kidney at its hilum, while left renal artery was normal in its origin and course. Anatomical knowledge of renal arterial variations may help to avoid clinical complications in renal transplantation, urological procedures like complete /partial nephrectomy, interventional radiological procedures and renal vascular surgeries.*
***Keywords**: Renal artery, early division, Nephrectomy.*

## I. Introduction

The renal arteries are a pair of lateral branches arising from the abdominal aorta below the level of superior mesenteric artery [1].Normally, each kidney receives one renal artery. The venous drainage of each kidney is through one renal vein, which drains the blood from the kidney into the inferior vena cava [2]. Variations in number, source and course of the renal arteries are common [3]. Common variations of renal artery are its variable number and unusual branching pattern. Early division of renal artery close to the aorta is common variation in branching pattern.The branching pattern of the main renal artery more proximal than the renal hilar level is called early division(4).According to He B, Hamdorf Jmet al(2013)early branching of renal artery is defined as the branches arising within 15 mm from the origin of the main renal artery ostium.(5). knowledge of these possible variations of renal arteries may help the surgeon in planning renal transplantation repair of abdominal aorta aneurysm, urological procedures, and also for angiographic interventions(6).

## II. Case Report

During the routine dissection in the department of anatomy, sri venkateswara medical colleage a male cadaver of about 60yrs of age, we observed variation in the branching pattern of right renal artery. The hilar region was carefully dissected, structures were defined and photographed. On the right side, Renal artery arised from the lateral aspect of the abdominal aorta just inferior to superior mesenteric artery and immediately divided into two branches, upper and lower(almost of same caliber) . The upper branch reached the lower part of hilum and divided in to two to supply the lower pole of kidney.The lower branch entered straight in to hilum ,divided in to three segmental arteries to supply rest of kidney(fig-1). structures at the hilum antero –posteriorly are renal vein , lower branch of right Renal artery, , upper branch of right Renal artery, ureter. Right supra renal arteries- three in number arised directly from abdominal aorta ,entered the gland. The left renal artery had its origin from the abdominal aorta and followed a normal course and topographical relationships in the hilum. left supra renal artery from aorta divided into two branches and entered the gland(fig-2).

This early division main renal artery with trunk length of 1mm can be confused with double renal artery so we have examined the ostia of the renal artery which was found to be single(fig-3) .This confirms that it is single artery dividing in to two branches.

## III. Discussion

The abnormalities in the renal arterial pattern are mainly due to the various developmental positions of the kidney (7).many authors reported the presence of extra renal arteries but literature on early division is limited. According to ozkan et al.(2006), early divisions in 67 (8%) patients, 32% of which occurred on the right side, 25% on the left, and 22% on the both sides(8) . The present variation also coincides with Arora Ak et al (2012)(4). Jigna. k.Parmar et al (2012) in his study on variations of renal artery reported early division with incidence of 10%(9). Gumus H et al.(2012)found early division in 27% of patients(10). According to Madyastha s,et al(2001) Such a morphological variation is important due to these branches being interpreted as additional arteries in diagnostic imaging studies . since the first 15 mm of the renal artery can be used for

anastomosis with the recipient's iliac artery, It should also be emphasised that early ramification of the main renal artery and the presence of additional arteries represent exclusion criteria in laparoscopic renal surgery(11).

## IV. Conclusion

Due to gradual increase in radiological interventions and renal surgeries a thorough knowledge of anatomy of renal vasculature and its variations is gaining importance to avoid complications.

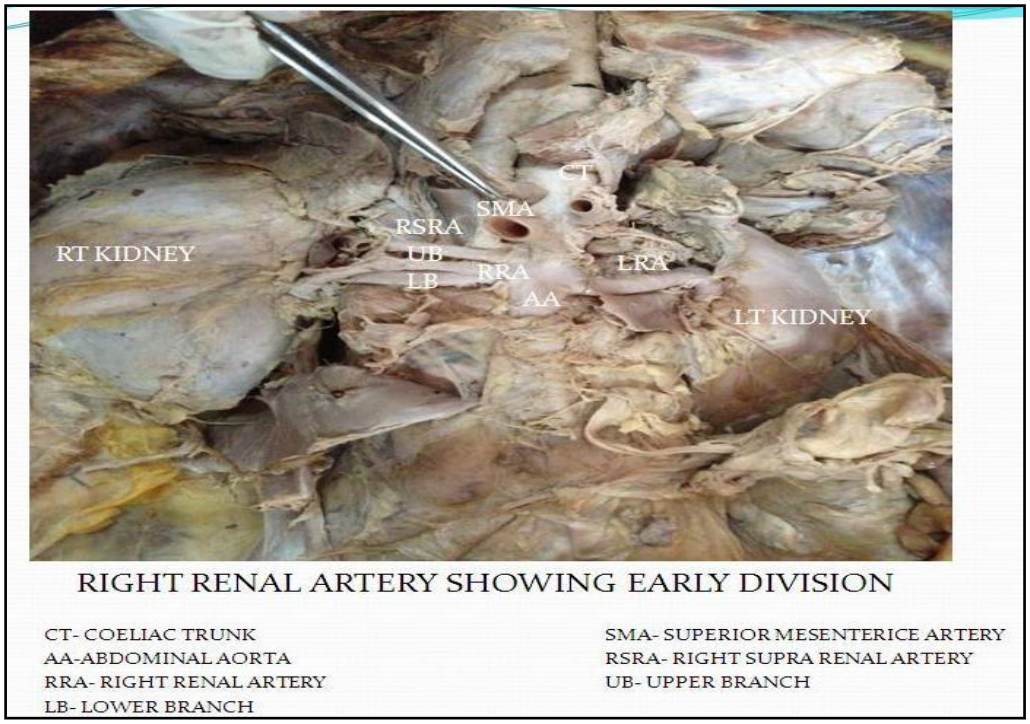


**Fig 1:** showing division of right renal artery


**Fig 2 :** narmal left renal artery and suprarenal artery dividing into two branches

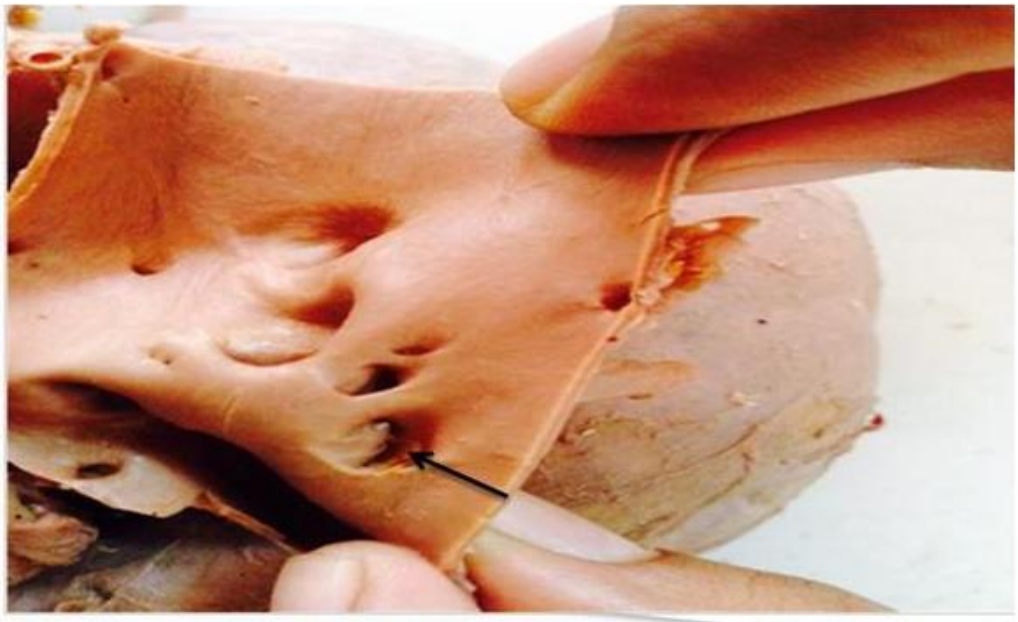

**Fig.3 Aorta cut open to show Single Right Renal ostium**

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