



ACCESSORY LEFT RENAL ARTERY – A CASE REPORT

Anatomy

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ABSTRACT

Renal Arteries are a pair of Lateral Branches from Abdominal Aorta^{1,2}, which arises a little below the Superior Mesenteric Artery^{3,4}. The Right Renal Artery is little Longer and little higher than the Renal Artery. These arteries supplies the oxygenated blood to the kidneys. Normally Renal arteries entered the kidney through the hylum. An Accessory left Renal artery was noted in a 72 year old male cadaver during the routine dissection of Post Graduate students. This left Accessory renal artery was a branch from Abdominal Aorta been described. These artery enters the lower pole of the kidney, may obstruct the ureter and led to hydronephrosis, Normal Renal artery arise from the abdominal aorta is 70% and for the remaining 30% is aberrant renal artery have been described⁵.

KEYWORDS

Accessory Renal Artery, Renal Artery Variation, Left Renal Artery.

INTRODUCTION

Renal arteries are a pair of direct lateral branches arise perpendicularly from the abdominal aorta a little below the the origine of the superior mesenteric Artery at the level of intervertebral disc between L1 and L2 vertebrae. The Right Artery is a little longer than the left renal artery. Right Renal artery passes posterior to the Inferior vena cava, Right Renal vein, Head of the pancreas, Second part of the duodenum. Left Renal Artery usually gives out a branch little lower than the Right renal artery, and it crosses the Left crus of the diaphragm and passes posterior to the left renal vein, body of the pancreas and splenic vein.

During its extra renal course, the renal artery most notably gives off one or more inferior suprarenal arteries. Additionally, the renal artery gives off several unnamed branches for the ureter, perinephric tissue, renal capsule and renal pelvis. It ends near the hilum of the kidney by dividing into an anterior and posterior branch:

Inferior Suprarenal Artery:

supplies the adrenal gland together with the superior suprarenal artery (arising from the inferior phrenic artery) and middle suprarenal artery (arising from the abdominal aorta).

Posterior Branch:

passes behind the renal pelvis and goes on to supply the posterior region of the kidney.

Anterior Branch:

further subdivides into segmental arteries that supply the renal vascular segments. It gives off apical, anterior superior, anterior inferior and inferior segmental arteries that each supply their respective segments. Next, the segmental arteries give off lobar branches, usually one for each renal pyramid. Upon reaching the minor calyces, these further subdivide into interlobar arteries, which become arcuate arteries at the base of the pyramids. The arcuate arteries then enter the nephrons as the interlobular arteries, and finally end in the glomerulus as the afferent and efferent arterioles.

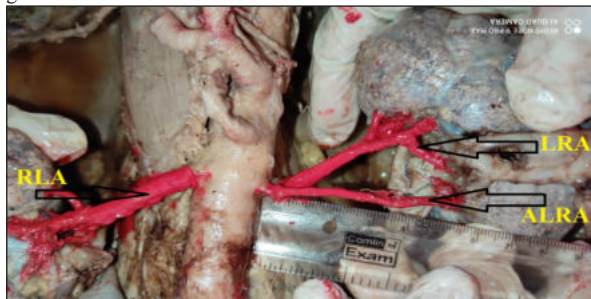


Figure 1:

RRA- Right Renal Artery

LRA- Left Renal Artery

ALRA- Accessory Left Renal Artery

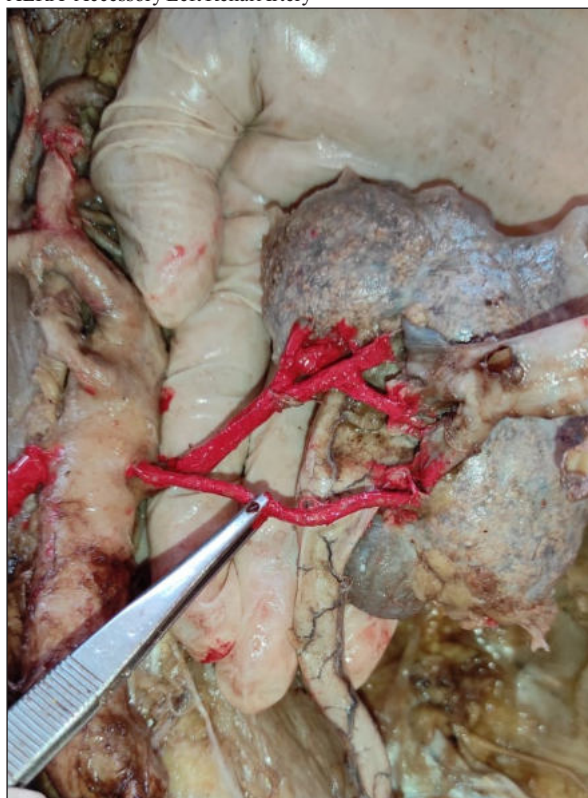


Figure2:

PROCEDURE

The abdomen was opened and layer by layer dissection is done as per Cunninghams manual of dissection. Accessory Left renal artery was encountered on observation. It was noted that an Accessory Left renal artery branch arise from the abdominal aorta just anterior to the left renal artery proper and it supplies directly to the lower pole of the kidney. Photographs of the same was taken and documented as Figure 1 & Figure 2.

CASE REPORT

During the Routine dissection class for the Post Graduation students.

we encountered the Accessory Left Renal Artery in the 72 year old male cadaver.

The Anterior abdominal wall and greater and lesser omentum were removed to expose the abdominal aorta and its branches. Normally Renal arteries are a pair of direct lateral branches arise perpendicularly from the abdominal aorta a little below the origin of the superior mesenteric Artery at the level of intervertebral disc between L1 and L2 vertebrae. But in this present case, this accessory left renal artery arises from the abdominal artery just anterior the origin of left renal artery proper and its supplies directly to the inferior pole of the left kidney. Total length of the accessory Renal Artery is 5.5cm from the abdominal aorta and till it enters the surface of the lower pole of the Kidney.

DISCUSSION

Renal artery variation are divided into two groups as early branching into segmental arteries before reaching the hilum of kidney and Accessory Renal artery. The accessory Renal arteries is defined as the vessels that supplies additional blood supply to the kidney or a part of the kidney. The kidneys are one among the most metabolically active organs in the body. They receive approximately twenty-five percent of the cardiac output via two renal arteries⁵.

During the Routine Dissection of the Post graduate scholars, We found one Accessory Left Renal Artery as shown in Figures of 72 year old male cadaver. Other Blood Vessels i.e Left Renal Veins etc, where in normal Anatomical position.

Variations in the number, origin and course of renal arteries are quite common. The normal, singular renal artery occurs in about 70% of cases, while an accessory renal artery is present in about 30% of cases⁶. The accessory renal artery most commonly arises just below, or in some cases, above the main renal artery. Rarely, it arises from the coeliac trunk or superior mesenteric artery. The origin of the renal artery can vary, in which one or both may arise from the bifurcation of the aorta or from the common iliac, internal iliac or inferior mesenteric artery. A relatively common variation is also the early branching of the renal artery before it reaches the renal hilum, occurring in about 10% of individuals.

Levine⁷, and Shimada et al⁸, reported that both renal arteries originated from abdominal aorta by single trunk. Pestemalci et al⁴, and Asala et al⁹ reported accessory renal arteries originated from common iliac artery. Origin of accessory arteries from superior and inferior mesenteric has been reported^{10,11}.

An accessory renal artery (ARA) is a vestigial structure that forms during the ascent of the kidney from the pelvis to the lumbar region. In the pelvis, the primitive kidney is supplied by vessels branching off the common iliac arteries. As the kidneys ascend, they are supplied by successively more superior vessels branching off the aorta until the main renal artery develops at the second lumbar vertebral body. Concurrently, inferior primordial branches involute and disappear. Failure of these inferior embryonic vessels to degenerate results in ARA^{12,13}.

CONCLUSION

Knowledge of the renal artery has grown its importance with increasing numbers of renal transplants, vascular reconstructions and various surgical and radiologic techniques being performed in recent years; as well as during nephrectomy and segmental resection. Renal vascular injuries increases in the event of aberrant anatomy and variations. The Knowledge of both normal and abnormal variations of kidney and its vascular variants is crucial for decreasing operative and postoperative morbidities and mortality while performing the renal surgical corrections. So the knowledge of variations of renal arteries are useful for surgeons and anatomists

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