



Study of presence of Accessory Renal vein and length of Renal vein in 100 Human kidneys

KEYWORDS

Accessory renal vein, length of Renal Vein

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ABSTRACT

Study of Accessory Renal Vein and length of Vein is significant clinically. This study is important surgical Renal vein and length of Renal vein. Present study was done in 50 formalin embalmed human cadaver by dissection method. During study of 100 kidney no any case of accessory renal vein found. In evaluation of length of renal vein, the length on right side minimum length 15mm & maximum 28mm with mean of 20.76 ± 2.6 mm and on left side minimum length 48mm & maximum length 75 mm with mean of 60.10 ± 6.42 mm. So conclusion is that the length of renal vein of left side is 3 times more than length of renal vein of right side. The left renal vein entered Inferior vena cava higher than right renal vein in 30 cases (60%), lower in 12 cases (24%) and opposite to each other in 8 cases (16%).

INTRODUCTION:

The study of human Anatomy, literally dissection, or the separation of the body into its parts, has signified to many things to different cultures across the ages. Most common variations in case of circulatory system usually occur in form of origin, number, length, diameter etc.^{1,2} The urinary and reproductive systems develop from intermediate mesenchyme and are intimately associated with one another especially in the earlier stages of their development.³ Right renal vein is a mesonephric vein that originally drains into the subcardinal vein. It opens into that part of the vena cava which is derived from the subcardinal vein. Left renal vein develops from the mesonephric vein that originally drains into the subcardinal vein, a small part of the left subcardinal vein; and the inter-subcardinal anastomosis. As this anastomosis lies in front of the aorta, the left vein has a similar relationship.^{3,4,5} The large renal veins lie anterior to the renal arteries and open into the inferior vena cava almost at right angles. The left is three times longer than the right (7.5 cm and 2.5 cm) and for this reason the left kidney is the preferred side for live donor nephrectomy. It runs from its origin in the renal hilum, posterior to the splenic vein and the body of pancreas, and then across the anterior aspect of the aorta, just below the origin of the superior mesenteric artery. The left gonadal vein enters it from below and the left suprarenal vein, usually receiving one of the left inferior phrenic veins, enters it above but nearer the midline. The left renal vein enters the inferior vena cava a little superior and to the right. The right renal vein is behind the descending duodenum and sometimes the lateral part of the head of the pancreas. The left renal vein may be double, one vein passing posterior, the other anterior, to the aorta before joining the inferior vena cava. This is sometimes referred to as persistence of the 'renal collar'. The anterior vein may be absent so that there is a single retroaortic left renal vein. Because of its close relationship with the aorta, the left renal vein may be ligated during surgery for aortic aneurysm. This seldom results in any harm to the kidney, provided that the ligature is placed to the right of the draining gonadal and suprarenal veins, because these usually provide adequate collateral venous drainage. The right renal vein has no significant collateral drainage and cannot be ligated with impunity.^{1,2,5,6}

REVIEW OF LITARATURE:

Descriptions of variations in vascular supply are of considerable importance in kidney transplant, laparoscopic surgery, radiological interventions and penetrating injuries to abdomen.

Satyapal et al (2000)⁷: Very few cases of additional renal veins have been reported. The incidents of additional renal veins

reported to be 3.3% on right side and 2.6% on left. He has reported that left vein entered IVC higher than right in 54%, lower in 36% and opposite each other in about 10% of cases. They have analyzed 1244 pairs of kidneys and reported additional renal arteries on right side in 18.6% and on left side in about 27.6% of cases.

Henry Gray described that the large renal veins lie anterior to the renal arteries and open into the inferior vena cava almost at right angles. The left is three times longer than the right (7.5 cm and 2.5 cm) and for this reason the left kidney is the preferred side for live donor nephrectomy.³

MATERIAL AND METHOD:

This study was conducted on 50 cadavers in the dissection laboratory with age range of 60 to 80 years. The cadavers were embalmed through carotid arterial perfusion or femoral arterial perfusion with formaldehyde solution, spirit, water, glycerin, phenol crystal and eosin then preserved in weak formalin solution before dissection. Dissection was done according to Cunningham's Manual of Practical Anatomy, 15th edition.⁸

OBSERVATION:



Figure. 1

In of study evaluation about RV there was no any case of Accessory Renal Vein found. In course of Renal Vein on both side passed in front of aorta just below Superior Mesenteric Artery and left Renal Vein enter into Inferior Vena Cava little superior to right Renal Vein.

Regarding the evaluation of length of Renal Vein, from Inferior Vena Cava to the hilum of corresponding kidney. (Figure.1)

Length of Renal Vein (in mm)	Min	Max	Mean \pm SD
Right	15	28	20.76 \pm 2.6
Left	48	75	60.10 \pm 6.42

DISCUSSION:

In past Henry Gray³ described that the large renal veins lie anterior to the renal arteries and open into the inferior vena cava almost at right angles. The left is three times longer than the right (7.5 cm and 2.5 cm) and for this reason the left kidney is the preferred side for live donor nephrectomy.

In previous study Satyapal et al (2000)⁷ during evaluation incidents of additional renal veins reported to be 3.3% on right side and 2.6% on left and also conducted a study to determine the site of entry of renal veins into the IVC. He has reported that left vein entered IVC higher than right in 54%, lower in 36% and opposite each other in about 10% of cases.

In previous study Raghu Jetti (2008)⁹ reported during routine dissection in 48 year male cadaver left renal vein was 8.5 cm in length and seen coming from the hilum of left kidney below the renal artery and posterior to the pelvis of the left ureter.

In present study about the length of RV, the length of RV from IVC to the hilum of corresponding kidney, on right side min and max length 15mm & 28mm respectively with the mean of

20.76 \pm 2.6 mm, and on left side min and max length 48mm & 75mm respectively with the mean of 60.1 \pm 6.42 mm. The LRV entered IVC higher than RRV in 30 cases (60%), lower in 12 cases (24%) and opposite each other in about 8 cases (16%) of cases.

Rupert (1915)¹⁰; Pick & Anson (1940)¹¹; Satyapal et al⁷ stated presence of additional renal vein has been reported to occur in 14% cases.

In past Sharmistha Biswas (2006)¹² reported the presence of an additional renal vein on the right side draining directly into IVC during a routine dissection in a middle-aged male cadaver.

In present study of 100 kidneys there was no any case of ARV found.

CONCLUSION:

As far as renal vein variations are concerned, most of them remain unnoticed until discovered during venography, operation or autopsy as they are clinically silent. However, to a transplant surgeon, morphology acquires special significance, since variations influence technical feasibility of the operation. The level of entry of renal veins into the IVC is also important as these findings are clinically important for the angiographer, catheter design, and planning porto-renal shunt procedures. I would like to conclude by stating that, my findings in above case will add to the long list of variety of variations among the renal vessels. Knowledge of possible variations among renal vessels is essential for radiologists and surgeons.

REFERENCE

1. A.K.DATTA. Essential of Human Anatomy (Thorax & Abdomen) Part II, 8th edition, 2008; 305-306. | 2. B. D. CHAURASIA. Text book of Human Anatomy (Lower limb & Abdoman) Volume II, 5th ed 2010; 319-324. | 3. HENRY GRAY. Gary's Anatomy: Susan Standring, 40th edition, Anatomical basis of clinical practice. | 4. INDERBIR SINGH, G P PAL. Human Embryology, The Urogenital system, 18th ed.2007; 228,237-245. | 5. KEITH MOORE AND T.V.N. PERSAUD. Before we are born. Essentials of Embryology and Birth Defects. The Urogenital system. 6th ed 2003; 230-244. | 6. A.K. DATTA. Essentials of Human Embryology, The Urogenital System, 5th ed. 2007; 213-222. | 7. SATYAPAL KS, HAFJEJEE AA, SINGH B, RAMSAROOP L, ROBBS JV, KALIDEEN. Additional renal arteries, incidence & morpholmetry, Surg-Radio Anat- 1995,2000: 23:33-38. | 8. G.J. ROMANES. Cunningham's Manual of Practical Anatomy (Thorax & Abdomen) Volume II, 15th edition. | 9. RAGHU JETTI. Multiple variations of the urogenital vascular system in a single cadaver: a case report, Cases Journal 2008, 1:344. | 10. RUPERT, Incidence of single and multiple renal arteries in Negroes, American journal of physical anthropology, 1915; 5: 485-490. | 11. PICK AND ANSON. Additional renal veins: Incidence and morphometry. Clinical Anatomy, 8: 51-55. | 12. SHARMISTHA BISWAS, J.C. CHATTOPADHYAY. Variations in Renal and Testicular Veins- A case report. J.Anat.Soc. India, 2006; 55 (2) 69-71. |