

## Case Report

# BILATERAL VARIATION OF RENAL VEIN: A CASE REPORT

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## ABSTRACT

The renal vasculature is found to vary and is often complex. The proper knowledge of renal vasculature is essential while performing surgical procedures. This case report is about the bilateral variation found in both the right and left renal veins which may be useful from the clinical point of view.

**KEY WORDS:** Right Renal Vein, Left Renal Vein, Inferior Vena cava, Hilum.

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## INTRODUCTION

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 (7.5cm & 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 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 retro aortic 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].

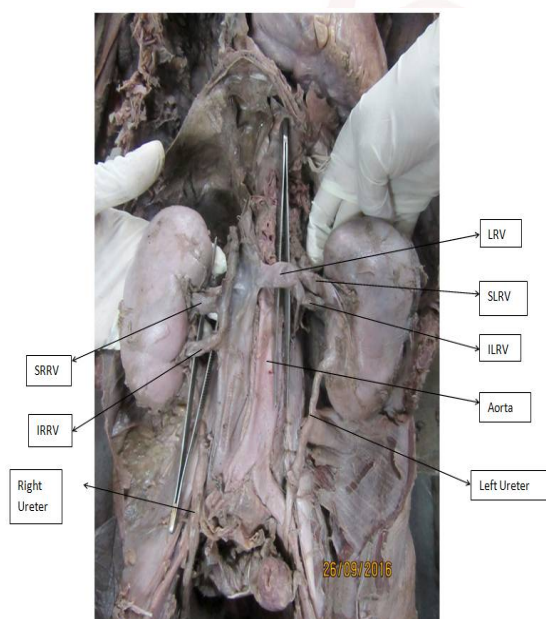
## CASE REPORT

During a routine cadaver dissection of a 65 year old male in Govt. Ayurveda Medical College,

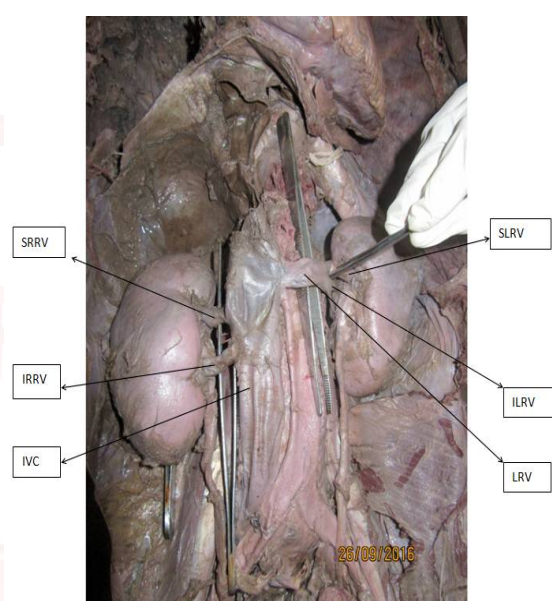
Tripunithura, Kochi, bilateral variation was found in the renal veins. The right kidney drained into the inferior vena cava (IVC) through two veins i.e., a superior right renal vein (SRRV) and an inferior right renal vein (IRRV). The superior right renal vein (SRRV) originated directly from the upper part of the hilum of right kidney whereas the inferior right renal vein (IRRV) originated from the lower part of the hilum almost 3cm below the superior one. SRRV runs slightly upwards and joined the inferior Vena cava (IVC) on its right lateral aspect. IRRV runs obliquely upwards and joined IVC on its right lateral

aspect 2 cm below the junction of SRRV with IVC. The left kidney drained into the inferior vena cava through two veins i.e., a superior left renal vein (SLRV) and an inferior left renal vein (ILRV). Both the veins originated from upper part of the hilum close to each other and after travelling a distance of 4cm united to form a single large left renal vein (LRV) which drained into the inferior vena cava. The right renal artery (RRA) and the left renal artery (LRA) were found posterior to the right and left superior renal veins respectively.

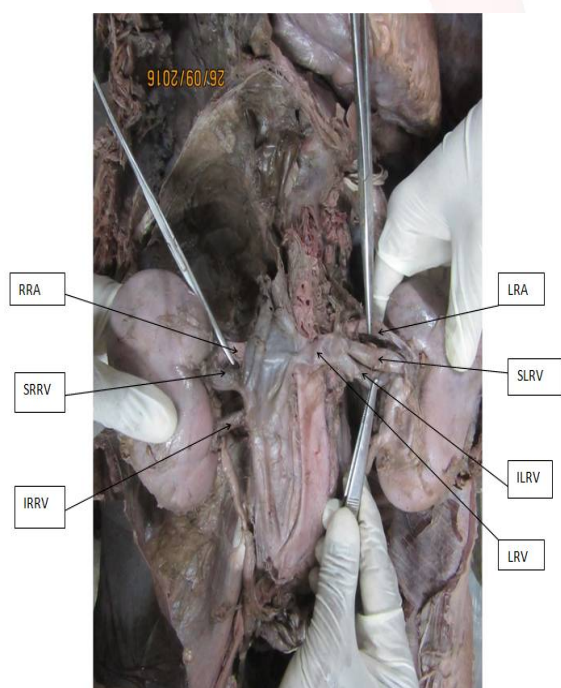
**Fig. 1:** Showing the Variations in the Renal Vein.



**Fig. 2:** Showing the Variations in the Renal Vein.



**Fig. 3:** Showing the Variations in the Renal Vein.



## DISCUSSION

Variations in the vasculature of renal vessels are not uncommon. Supernumerary renal vein is an additional renal vein arising from the renal hilum and draining into the inferior vena cava [2]. Satyapal KS et al (1995) states that statistically significant changes have been noted in the drainage pattern of right and left renal veins. 306 kidneys were studied and three major patterns of draining were observed.

**Classification type IA.** This group consisted of 2 primary tributaries only-an upper and a lower-and occurred in 118 (38.6%) of the 306 kidneys.

**Classification type IB.** In addition to upper and lower primary tributaries, a posterior primary tributary is present. This type was observed in 77 (25.2%) cases.

**Classification type IIA.** The existence of more than 2 tributaries, e.g. upper, middle and lower,

formed this type. A maximum of 5 primary tributaries were identified. Type IIA was noted in 36 (11.8%) cases.

**Classification type IIB.** In addition to the primary tributaries present in type II A, a posterior primary tributary was present in 31 (10.1 %) of the 306 kidneys.

**Classification type III.** This group consisted of any of the previous classification types together with an additional renal vein or veins and occurred in 44 (14.4%) cases [3].

Kumar N et al (2015) reports a case of an accessory right renal vein draining into the posterior aspect of inferior vena cava.[4].Naveen Kumar et al (2012) reports a case of bilateral variations at the hilum involving both renal veins and arteries[5]. Yekappa Suma H et al has reported a case of retro-aortic left renal vein [6].

In this case there is presence of a single supernumerary renal vein arising from the right kidney and draining separately into the inferior vena cava whereas on the left side, the renal vein draining to the IVC is single though it emerges from the hilum as double.

## CONCLUSION

The variations in the renal vasculature often go unnoticed but are very significant from the surgical point of view.

## ABBREVIATIONS

**IVC** – Inferior Vena cava  
**SRRV** – Superior Right Renal Vein  
**IRRV** – Inferior Right Renal Vein  
**LRV** – Left Renal Vein  
**SLRV** – Superior Left Renal Vein  
**ILRV** – Inferior Left Renal Vein  
**LRA** – Left Renal Artery  
**RRA** – Right Renal Artery

**Conflicts of Interests: None**

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