

Case Report

Double left renal vein : Case Report

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Abstract :

Double left renal vein is a rare venous anomaly. During a routine undergraduate dissection of abdomen of a 52-year-old male cadaver, a variant pattern of left renal vein was encountered, one in front and another behind the abdominal aorta has been reported. The developmental changes which occur in sub-cardinal, supra-cardinal, sacro-cardinal veins that may lead to congenital venous anomalies. A knowledge of such patterns is important for renal surgeons operating for renal transplantation, renal trauma and nephrectomy.

Key words: Double left renal vein, pre-aortic left renal vein, retro-aortic left renal vein, inferior vena cava

Introduction:

The highly complex embryological development of the left renal vein compared to its right counterpart results in greater variations. Renal veins develop from persistent pre-aortic anastomotic plexus of sub-cardinal veins crossing anterior to abdominal aorta⁽¹⁾. A knowledge of different types of variations depicted by renal vein is extremely important in exploration and treatment of renal trauma, renal transplantation, renovascular aneurysm and conservative or radical renal surgery⁽²⁻⁴⁾. Double left renal vein one in front (pre-aortic) and another behind (retro aortic) the abdominal aorta has been reported in 6.5% cases⁽⁵⁾. One such case was encountered in our department which is being reported here.

Case report:

During the routine undergraduate dissection of abdomen of a 52-year-old male cadaver in the Department of Anatomy, NIMS Medical College, Jaipur double left renal veins were found, one left renal vein passing in front of aorta, pre-aortic left renal vein (PA-LRV), another left renal vein passing behind it to drain into the IVC –defined as a retro-

aortic left renal vein (RA-LRV)(figure:1 and 2). Pre-aortic left renal vein was at the level of L1. Post-aortic left renal vein was at the level of L2. Left testicular vein and left supra-renal vein were draining into pre-aortic left renal vein.

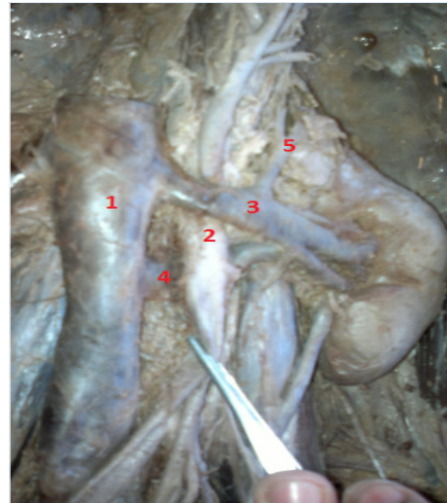


Figure:1 ,left renal veins. 1.inferior vena cava,2.abdominal aorta
3.pre aortic left renal vein ,4.retro aortic left renal vein,5.left supra-renal vein

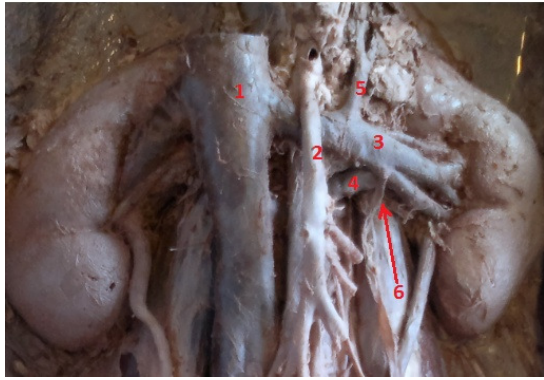


Figure 2:left renal veins. 1.inferior vena cava,2.superior mesenteric artery 3.pre aortic left renal vein ,4.retro aortic left renal vein,5.left supra-renal vein ,6.left testicular vein

Discussion:

According to Singh and Pal⁽⁶⁾, veins of abdomen are derived from a series of longitudinal venous channels (Figure 3) viz right and left posterior cardinal veins; right and left subcardinal veins; right and left supracardinal veins ; intersubcardinal anastomosis which may be anterior/posterior or both to aorta; supracardinal-subcardinal anastomosis; and anastomosis between subcardinal and right hepatocardiatic channel.

The left renal vein is derived from (Figure 3):

- a) Mesonephric vein that originally drains into left subcardinal vein.
- b) A small part of left subcardinal vein.
- c) Intersubcardinal anastomosis which may be pre-aortic or post-aortic.

As the anastomosis which lies in front of aorta usually persists and the one which lies behind the aorta disappears, left renal vein has similar relationship with aorta (figure 4). Also the part of right subcardinal vein where intersubcardinal anastomosis joins forms part of IVC so left renal vein drains into IVC. The left suprarenal vein is remnant of the part of left subcardinal vein above the intersubcardinal anastomosis. Thus it drains into left renal vein.

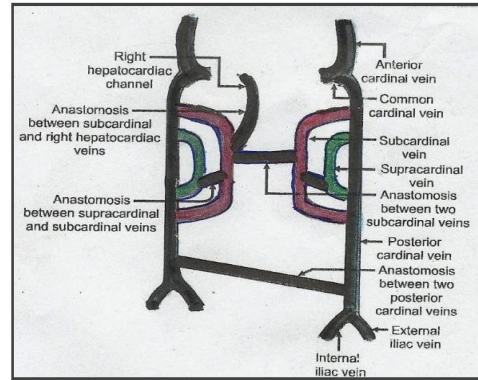


Figure:3,Development of renal vein

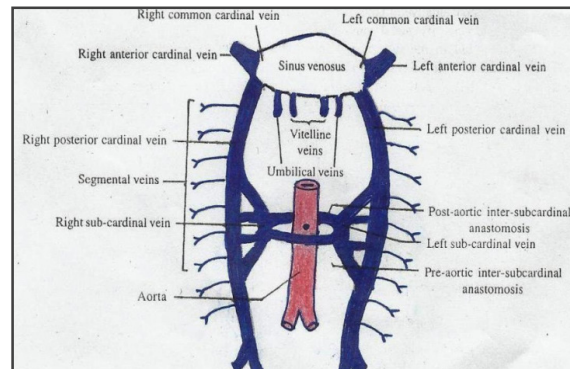


Figure:4 Inter sub-cardinal anastomosis

The knowledge of anatomy of renal veins and its anatomic variations is very important in various clinical aspects. The renal vein can be catheterised via femoral vein and blood taken to measure rennin. This may be of value in assessing the haemodynamic significance of a renal artery stenosis. Venography will demonstrate renal vein thrombosis and invasion by tumour⁽⁷⁾. Renal vein should be ligated during nephrectomy. Thus renal surgeons should pay due attention for the presence of double renal vein otherwise one additional vein would be left unligated and massive haemorrhage could occur. Lack of knowledge of persistence and missed pre-operative computed tomographic scan may result in to massive haemorrhage during encircling the tape around the abdominal aorta during surgery of abdominal aortic aneurysm(AAA)⁽⁸⁾. Major venous anomalies (retro-aortic left renal vein Left renal vein collar, left sided

inferior vena cava and caval duplication) should be taken into consideration in abdominal aortic aneurysm operations⁽⁹⁾.

Conclusion:

Identification of RA-LRV is very important for a surgeon that approaches retroperitoneal region for various surgical procedures like renal transplantation,

vascular reconstruction for congenital and acquired lesions, repair of abdominal aortic aneurysm etc. variation in the left renal veins noticed in cadaveric dissections should be included in surgical training programmes, even if they are not necessarily for incision in routine anatomy education in medical schools.

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