

## **Duplication of inferior vena cava (.A case report).**

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### **Abstract**

Background: Though rare but variations of inferior venacava and renal veins have been reported.

Material and methods: During routine dissection and demonstration the observation was made in a male cadaver.

Observation : The present finding was observed during routine dissection on an adult male cadaver age around 70. The cadaver had double inferior venacava on either sides of abdominal aorta ,parallel to each other.The right and left inferior venacava joined at the level of the hilum of left kidney by a transverse union or anastomosis .

There was no duplication of renal vessels .No malformation of intersegmental lumbar veins was observed.

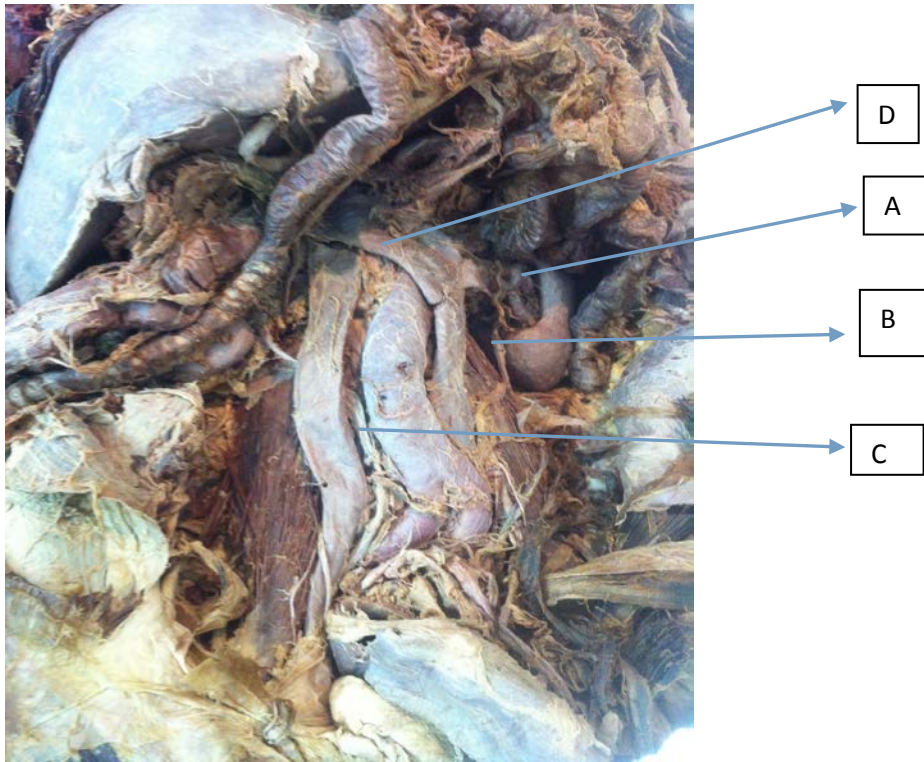
Key Words: inferior venacava, duplication, variations.

**Introduction .** A case is presented here with duplication of Inferior venacava .

Understanding the variations in vessels is very crucial. Anatomical variations in any vessel can lead to misdiagnosis. Duplication of Inferior venacava is relatively rare vascular anomaly, its incidence is 1.5% (range 0.2 to 3%).

It has association with Retroaortic left renal vein, Horse shoe kidney , Circumaortic renal collar , Crossed fused ectopia , Cloacal exstrophy , Pelviureteric junction anomaly , Dunbar syndrome..

**Case report :** The present finding was observed during routine dissection on an adult male cadaver age around 70. The cadaver had double inferior venacava on either sides of abdominal aorta , parallel to each other. The right and left inferior venacava joined by a transverse union or anastomosis at the level of left renal veins. There was no duplication of renal vessels and no malformation of intersegmental lumbar veins. The right sided common iliac veins and left sided common iliac veins went up straight without joining at any other level .the Left renal vein and left common iliac vein joined on the left side of Abdominal aorta before crossing above the abdominal aorta. After crossing the aorta a common Inferior vena cava was formed wich travelled towards the Liver like the normal course of Inferior venacava.



A= Double renal vein on left side.B= Left sided Inferior Vena cava.C= Right sided Inferior venacava. D= Level of Anastomosis between left and right Inferior Venacava.

## Discussion

Anatomical variation of the inferior vena cava occurs in 0.4-- 4% of the population (9)The most common variant is duplication of the inferior vena cava (2)Most of the variations are found during radiological procedures or during dissection on cadavers. To reduce misdiagnosis there should be a thorough knowledge of all variations .It has been reported that variations can be confused with conditions like lymphadenopathy , aortic aneurysm, and retroperitoneal cysts (4), which often leads to unnecessary interventions.

It has also been shown that such anatomical variation can cause illness, in which cases it is considered an anomaly. Wang, Lo, Yu et al.(20) described a case in which duplication of the inferior vena cava caused obstruction of the left ureter, leading to moderate hydronephrosis in a 21 year-old patient. (21)Wartmann, Kinsella Junior, Tubbs et al. described an 82 year-old woman whose post-prandial abdominal pain was attributed to the presence of a duplicated inferior vena cava positioned anterior to the aorta, at the level of the celiac trunk, which caused compression of the celiac trunk.

The duplication of the inferior vena cava can also be associated with the recurrence of pulmonary thromboembolism (PTE) when the anatomical variation goes undiagnosed and surgical procedures to prevent new episodes of PTE treat just one vein.

It has association with Retroaortic left renal vein, Horse shoe kidney , Circumaortic renal collar , Crossed fused ectopia , Cloacal exstrophy , Pelviureteric junction anomaly , Dunbar syndrome

### **Embryological background.**

The development of inferior venacava which in itself is a complex event starts by 6<sup>th</sup> to 8<sup>th</sup> week in embryonic life. A series of anastomoses and regression takes place in the primitive trunk veins like Posterior cardinal veins , Subcardinal veins, Supracardinal veins. Non Regression of left Supracardinal vein Leads to the formation of a secondary embryonic vessel, which is generally positioned to the left of the aorta in adults. However, the configuration of this supernumerary vessel and thus its embryonic origin is quite variable. Some authors have described the duplication of Inferior vena cava as complete and incomplete. Where complete, the most likely etiological cause is the persistence of the left suprasubcardinal anastomosis, of the postsubcardinal anastomosis, and probably of the intersubcardinal anastomosis, which in turn results in the persistence of the left supracardinal vein. Such a case

may also be associated with an absence of iliac anastomosis (posterior distal intercardinal anastomosis). In cases of incomplete duplication, in which the supernumerary vena cava to the left is smaller and sometimes irregular, the likely cause is inadequate regression of the supracardinal vein. (13)

In some cases the left common iliac vein gives rise to the supernumerary vena cava, without, however, any anastomosis between the common iliac veins. However, 41.7% of published descriptions refer to incomplete duplications.

### **Conclusion**

Literature reveals enormous variations in the Inferior venacava. There is a high incidence of duplication of inferior venacava amongst all variations in Inferior venacava. It is highly recommended that a clinician should have a thorough knowledge of variations of Inferior venacava and correlate it with clinical diagnosis. Radiological help coupled with the knowledge of variations can avoid misdiagnosis of retroperitoneal illness and will facilitate the procedures to prevent PTE in patients of Deep vein thrombosis (DVT).

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