

Inferior mesenteric vein variation in draining pattern: A cadaveric study

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Abstract

Background and Objectives: This article examines the variation in the drainage pattern of inferior mesenteric vein. During the routine cadaveric dissection of the abdomen at the department of Anatomy of HBTMC and Dr. R.N Cooper hospital, Mumbai, in one of the cadaver it was found that the Inferior Mesenteric Vein (IMV) drained into the confluence of splenic and Superior mesenteric vein. Generally, Anatomy resources consistently state that, the Inferior Mesenteric Vein anatomically joins and drains into the splenic vein. However, the Inferior Mesenteric Vein can also join and drain into the Superior mesenteric vein or the junction between the splenic vein and the Superior mesenteric vein. **Material and Method:** Study carried out on 30 cadavers during the period of 3 years in the Department of Anatomy of HBTMC and Dr. R.N .Cooper hospital, Mumbai. **Conclusion:** It has been observed that all the three sites of drainage are not reported in the Anatomy textbooks. Prerequisite information of the drainage pattern of Inferior Mesenteric Vein is important for surgeons to choose adequate technique and to avoid injury to inferior mesenteric vein.

Key Word: inferior and superior mesenteric vein, splenic vein, dehiscence.

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INTRODUCTION

Anatomy resources consistently state that the inferior mesenteric vein anatomically joins and drains into the splenic vein. However, the inferior mesenteric vein can also join and drain into the superior mesenteric vein or junction between the splenic vein and superior mesenteric vein. The inferior mesenteric vein drains blood from the rectum, sigmoid colon, descending colon, and splenic flexure. Together the ascending superior rectal vein, along with sigmoid veins and left colic vein forms the inferior mesenteric vein. These veins are accompanied by the arteries of same name. A known data of the drainage pattern of inferior mesenteric vein would be helpful to the

surgeons to redecide on the adequate technique and to avoid injury during colorectal surgeries, especially at the time of inferior mesenteric vein ligation. It is observed that anatomical variations around inferior mesenteric vein compromised blood supply to the left colon, congestion, ischemia and different levels of colitis or anatomical dehiscence. Hence some surgical complications like colic congestion and ischemia due to venous drainage compromise can be prevented. The complexity of these procedures places an even higher importance on extensive preoperative knowledge of mesenteric venous anatomy, its relationship to arterial anatomy, and the improved quality of preoperative computed tomography (CT) gives the surgeon a tool to “map out” planned resections and reconstructions¹.

MATERIAL AND METHODS

Study carried out on 30 cadavers during the period of 3 years irrespective of age and sex in the Department of Anatomy of HBTMC and Dr. R. N. Cooper hospital, Mumbai. During the routine cadaveric dissection of the abdomen in one of the cadavers it was found that the inferior mesenteric vein drains into the confluence of splenic and Superior mesenteric vein. Generally, it is known that inferior mesenteric vein drains into the splenic

vein. Dissection was done meticulously and clean to rule out the variation and photographs were taken with and without coloring the vessels. Figure (1) shows the drainage of inferior mesenteric vein at the confluence of superior mesenteric and splenic veins. Figure (2) is the

same figure after highlighting the veins with blue paint, along with splenic artery colored in red. Figure(1) sv=splenic vein, sa=splenic artery, imv=inferior mesenteric vein, smv=superior mesenteric vein Figure(2)

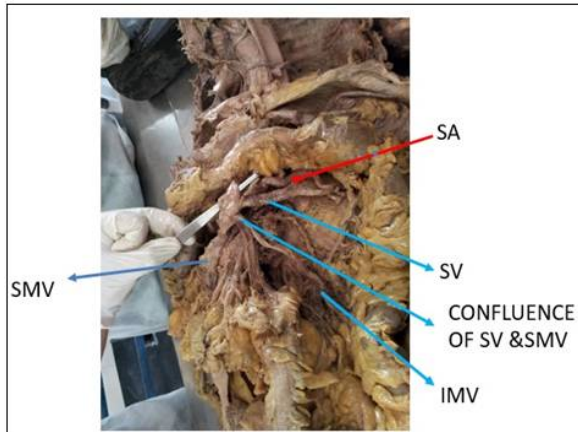


Figure 1

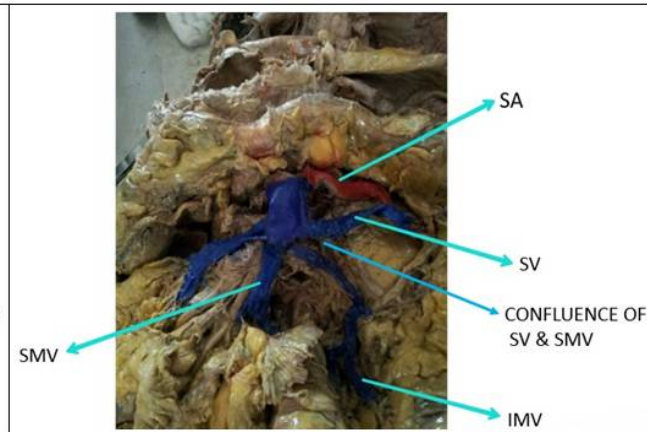


Figure 2

DISCUSSION

Inferior mesenteric vein is a continuation of superior rectal vein, its main tributaries are sigmoid and left colic vein. It lies usually at left anterior pararenal space, anterior to left psoas muscle and behind duodenojejunal junction. IMV is located close to the ligament of Treitz and passes below lower border of pancreas to join the splenic vein. In surgical practice inferior mesenteric vein is ligated at the lower border of pancreas for more medial mobilization and tension free anastomosis to prevent vascular ischemia. Surgeons call it “critical zone of IMV”. A study based on 113 cadaveric dissection done by Weinhaus, A.J. *et al*² at the University of Minnesota reported that the inferior mesenteric vein drained into the splenic vein in 36.3% of cases, the superior mesenteric vein in 41.6% of cases, and the junction between the superior mesenteric vein and the splenic vein in 21.2% of cases². It is also observed that variability of the collateral blood supply to the splenic flexure and its relation to make it a part of our concern during colorectal surgical procedure. The drainage pattern of inferior mesenteric vein will help the anatomical landmarks need to be recognized during colorectal procedures, especially at the time of inferior mesenteric vein ligation. The inferior mesenteric vein (IMV) emerges from small veins that drain the sigmoid colon. It runs medial to the descending colon gathering its draining veins within the mesocolon in the left anterior pararenal space. Here it is usually located lateral to the superior and inferior mesenteric artery and anterior to the left ureter and gonadal veins. It passes behind or lateral to the duodenojejunal junction. Finally it drains either into the splenic vein, the confluence of splenic vein and superior mesenteric vein, or into the superior mesenteric

vein (SMV). Krumm *et al*³ analysed 916 abdominal CT-scans to document anatomic variations of the IMV. These authors found that the IMV typically drains into the splenic vein (approx. 40%), into the portal confluence (approx. 30%), or into the SMV (approx. 20%) these anatomic details were best seen on coronal images. This knowledge is important for gastrointestinal surgery, e.g. transplantation planning, pancreatic cancer surgery, etc. Another interesting point in this study was the small distance to the portal venous system from where the IMV drained either into the splenic vein (1.66cm) or into the SMV (0.75cm), respectively. Such anatomic knowledge is also important for colour duplex sonography; the examiner must take care to visualise the portal confluence and its surroundings including the draining vessels. Otherwise thrombosis, cancerous invasion, etc. might be missed. This kind of studies are helpful for the vascular resection in patients with pancreatic adenocarcinoma, and preoperative knowledge of each patient’s anatomy is crucial in planning for resection and reconstruction. The ability to identify a patient’s mesenteric venous anatomy with preoperative CT scans can also avoid major blood loss by anticipating the course of the veins. Avoiding injury to these branches also prevents injury to the SMA that can occur in an attempt to control venous bleeding with sutures. The surgeons must be aware of mesenteric venous variants to perform peripancreatic surgery.

CONCLUSION

In the present case report it was found that the inferior mesenteric vein drains into the confluence of splenic vein and superior mesenteric vein, generally it drains into the splenic vein. It has been observed that all the three sites

of drainage i.e. at splenic vein, superior mesenteric vein and confluence at splenic and superior mesenteric veins are not reported in the books. It is imperative that all these common drainage sites of the inferior mesenteric vein should be stated in Anatomy resources, so that students can learn realistic Human Anatomy including its common variations. The aim of this case report is to draw attention to the variable drainage pattern of the inferior mesenteric vein and kindly see to it that students are taught about these common variations and should be included in the Anatomy textbooks.

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