

CASE REPORT

Isolated giant mesenteric vein and anomalous inferior mesenteric vein insertion in the presence of cirrhosis – A cadaveric case report

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Running title: Variations in abdominal veins

Abstract

The inferior mesenteric vein is one of the tributaries of the portal vein which receives blood from the large intestine, sigmoid colon and the rectum. It usually connects with the splenic vein before draining into the portal vein. It may however show variations such as joining the superior mesenteric vein directly or to the confluence of the superior mesenteric vein and splenic vein. Varices of the inferior mesenteric vein can be seen in the presence of portal hypertension due to various reasons and this can be isolated or in association with other portosystemic collaterals.

We report a case of a giant isolated inferior mesenteric vein with an anomalous insertion. The inferior mesenteric vein was seen to be connected to the superior mesenteric vein before draining into the portal vein. Further, on the distal end it was seen to be connected to the left renal vein, which in turn had dilated and enlarged. The left testicular vein was observed draining in to the inferior mesenteric vein but was not enlarged. The superior mesenteric vein, splenic vein and portal vein were not enlarged or varicosed even though the liver showed features of cirrhosis with no obvious signs of splenic enlargement.

This report contributes to enhance the knowledge on a rare anatomical connection between portal system and the systemic circulation and will be important to surgeons operating in this area.

Keywords: Inferior mesenteric vein, Varices, Renal vein, Testicular vein, Anomalous insertion

Introduction

Inferior mesenteric vein (IMV) is one of the tributaries of the portal vein. It is a large vein that drains blood from the large intestine. It usually ascends on the posterior abdominal wall and terminates in the splenic vein (SV) behind the body of the pancreas and the SV joins the superior mesenteric vein (SMV) to form the portal vein (PV). IMV begins as the superior rectal vein at about the mid-point of the anal canal, then passes along the inferior mesenteric artery to end in the SV. It receives blood from the superior rectal veins, the sigmoid veins and the left colic vein (Snell, 2012), (Kaur et al., 2017)

In this report, we present a case of an unusual giant IMV with an anomalous insertion in the presence of cirrhosis observed during routine dissections at the Department of Anatomy, University of Peradeniya.

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Case Report

During routine dissections at the Department of Anatomy Peradeniya, a giant, IMV with an anomalous insertion was observed in a cadaver of an adult male of Sri Lankan origin.

There were no surgical scars on the abdomen and no signs of intra – abdominal surgery in the peritoneal cavity. The liver showed cirrhotic features while the IMV was enlarged with varicosities along the whole length. There was no obvious splenic enlargement.

At the proximal end, the IMV was seen to be joining the SMV and forming a common stem which in turn joined the SV, thus forming the PV. Figure 1 shows the confluence of IMV, SMV with the common stem and the SV. At the distal end, the IMV was directly connected to the left renal vein on its inferior aspect and thus the systemic circulation forming a venous arch. The superior rectal veins, sigmoid veins and left colic veins were observed to be draining into this venous arch along its course. The broadest diameter of IMV was 31.12 mm.

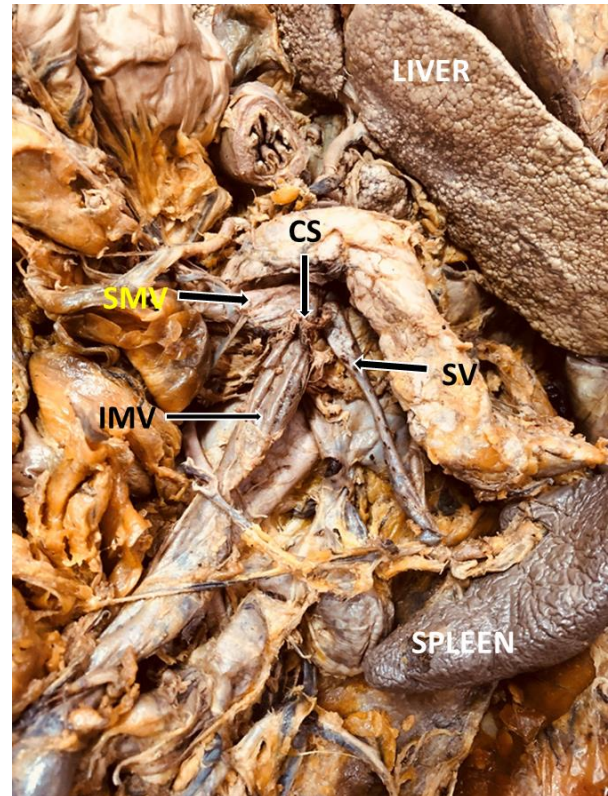


Figure 1: confluence of IMV, SMV to form common stem and confluence of common stem with SV to form portal vein.

(IMV – inferior mesenteric vein, SMV – superior mesenteric vein, SV – splenic vein, CS – common stem)

The left renal vein was also enlarged and dilated. The diameter of the left renal vein commencement at the inferior vena cava was 22.17 mm and at the confluence of IMV and renal vein it was 27.98 mm. Figure 2 shows the enlarged left renal vein, IMV and their anomalous connection.

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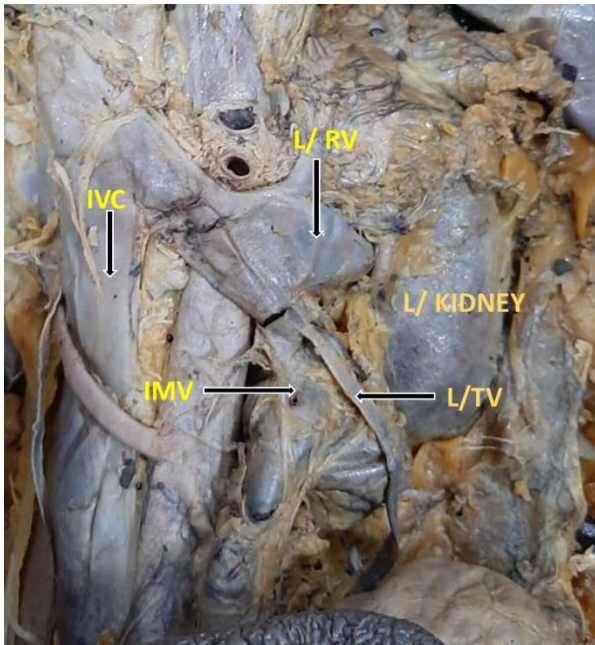


Figure 2: Enlarged left renal vein, IMV, left testicular vein and their anomalous insertion

(IVC – Inferior vena cava, L/RV – left renal vein, L/TV – left testicular vein, IMV – inferior mesenteric vein)

Figure 3 shows a diagram of the venous arch formed by the IMV.

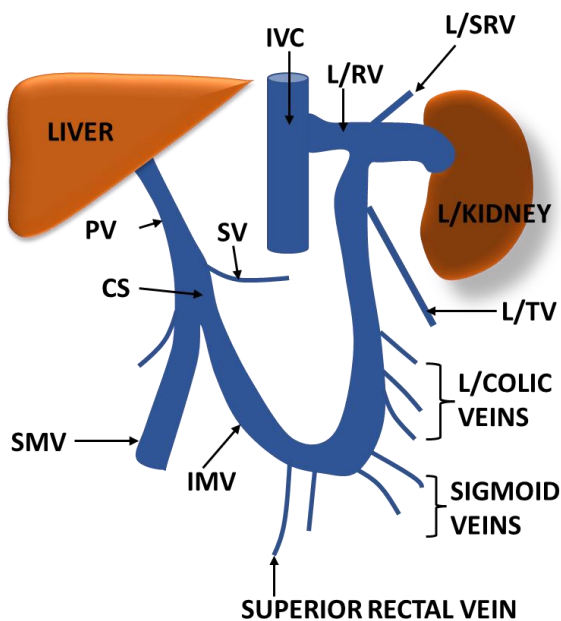


Figure 3: Diagram of venous arch formed by the inferior mesenteric vein and its connections

(IMV - inferior mesenteric vein, SMV – superior mesenteric vein, SV – splenic vein, PV – portal vein, CS – common stem, IVC – inferior vena cava, L/ RV – left renal vein, L/SRV – left suprarenal vein, L/ TV - left testicular vein)

The left testicular vein was observed draining in to the lateral side of the IMV just prior to its confluence with the left renal vein. The left testicular vein was not enlarged and its diameter was 4.69 mm. The SMV (diameter 7.56 mm), SV (diameter 7.56 mm) and PV (diameter 10.71 mm) were not enlarged.

Discussion

Cirrhosis of the liver is defined as the necrosis of liver cells followed by fibrosis and nodule formation (Feather, 2021). The end result is the impairment of liver function and gross distortion of the liver architecture leading to portal hypertension. An elevated pressure difference between systemic and portal circulation contributes to development of varices.

Liver cirrhosis accompanied by portal hypertension tend to form multiple portosystemic collaterals, between azygos and left gastric veins, between superior rectal vein and middle & inferior rectal veins, between portal tributaries of mesentery, mesocolon & retroperitoneal veins communicating with renal, lumbar & phrenic veins, between portal branches of the liver and the veins of the abdominal wall via veins passing along the falciform ligament from umbilicus, and between the portal branches in the liver and the

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veins of the diaphragm across the bare area of the liver (Feather, 2021), (Ellis, 2006).

Apart from these collaterals, IMV varicosities are also reported in the literature in the presence of portal hypertension due to numerous causes. Formation of varices on SMV is also reported. Further, large SMV varices communicating with the inferior vena cava through gonadal veins have also been reported (Akgul et al., 2003), (Federle & Clark, 1979), (Prasad et al., 2013).

Tributaries of IMV drains the large intestine, sigmoid colon and rectum. It has anatomical variations which include different drainage patterns. The more common variations include drainage in to the SMV and in to the confluence of SMV and SV (Kaur et al., 2017) (Graf et al., 1997)

The index case is unique with the IMV directly joining the left renal vein without collaterals, connecting the SMV and left renal vein and thus forming a venous arch. This venous arch has connected the portal and systemic circulations. Further, there is another portosystemic connection through the left testicular vein. As the SMV is not varicosed, this is a case of isolated IMV varix.

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Conflicts of Interests

The authors have no conflicts of interests.

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