

The hepatic portal vein- normal and variant anatomy.

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Background. According to Terminologia Anatomica (2019) the hepatic portal vein bifurcates into left and right branches; the left branch supplies segments II, III and IV and the right branch divides secondarily into two branches – the anterior branch supplying segments V and VIII and the posterior branch supplying segments VI and VII. Variants are frequent and account for 20 to 35% of the population.

The purpose of this abstract is to review normal and variant portal vein anatomy and their implications for liver surgery.

Material and methods. A primary review was performed in PubMed and Google Scholar databases for a period of 10 years: from 2012 to 2022. The following key words were searched: hepatic portal vein, origin, branching, variant anatomy. Included articles were cadaver studies, imaging examinations, case reports, full articles studied without restrictions.

Results. The normal anatomy of the hepatic portal vein branching was found in 67 - 89% of cases and its variations in 11 - 33% of cases. The most frequent variant was the portal vein trifurcation with division into left, right anterior and right posterior branches occurred in 3.6 - 10% of cases, and the early origin of the right posterior branch directly from the hepatic portal vein with an incidence of 4

- 10.8%. The right branch trifurcation, in which a separate branch for segment VII is present, was observed in 1 - 7%, and the other type of trifurcation, in which a branch for segment VI is a separate branch, was revealed in 1 - 8%. The other rare forms of the hepatic portal vein branching were found with the incidence of 1 - 8%.

The hepatic portal vein trifurcation and the early origin of the right posterior branch are very relevant in liver transplant surgery; the segmental variations are important for right or left hepatectomy.

Conclusions. These variants must be diagnosed before hepatectomy, living donor transplantation, and before complex interventional procedures.

Keywords: hepatic portal vein, variant anatomy.