

Original article:

Study of variations of branching pattern of hepatic artery proper:

Observational study

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Abstract:

Introduction: Knowledge of hepatic arterial variations is important for the surgeons performing liver transplant and hepato-biliary surgeries. The normal hepatic arterial anatomy is found only in 50 – 80% of cases as described in classic text books . With this background present study was planned to study of variations of branching pattern of hepatic artery proper.

Materials and methods: The present observational qualitative study was planned and done in our department. Routine dissection of 16 cadavers in the department of anatomy, as a part of teaching process for first year M.B.B.S. students was done.

Observations: In three of the male cadavers the following branching pattern was observed. In one, a moderate size branch (hepatic artery proper) was given of close to the origin of common hepatic artery which divided into a right and left branches and a third branch entering into the groove for ligamentum teres. The left branch gave cystic artery and divided into two and followed the above and the right branch divided into two at the Porta hepatis

Conclusion: The variations are so many that it is not always possible to compare directly but however a knowledge about these variations is essential in this region of pin hole surgery

Keywords: hepatic artery , hepatic surgery

Introduction:

Knowledge of hepatic arterial variations is important for the surgeons performing liver transplant and hepato-biliary surgeries. The normal hepatic arterial anatomy is found only in 50 – 80% of cases as described in classic text books ^{1,2} . There is documented number of variations worldwide as well as in India. With the advancement of laproscopic surgery of gall bladder we wanted to observe the branching pattern of hepatic artery in detail at the Porta hepatis . ³With this background present study was planned to study of variations of branching pattern of hepatic artery proper.

Materials and methods:

The present observational qualitative study was planned and done in our department. Routine dissection of 16 cadavers in the department of anatomy, as a part of teaching process for first year M.B.B.S. students was done. The hepatic artery and their variations were done by observations and careful dissections with the help of other faculties and students.

Observations:

In three of the male cadavers the following branching pattern was observed. In one, a moderate size branch (hepatic artery proper) was given of close to the

origin of common hepatic artery which divided into a right and left branches and a third branch entering into the groove for ligamentum teres. The left branch

gave cystic artery and divided into two and followed the above and the right branch divided into two at the Porta hepatis



Figure: 1, 2, 3

Discussion:

Variations in the hepatic artery branches are exceedingly common and investigated by a whole series of workers, these include Eisendrath(1918); Flint; Thompson; Anson and Michles among the others. These branches are the segmental branches which arise early from the main trunk .^{4,5}

In the other a large branch, the common hepatic artery was seen arising and divided into four branches. One descended down as the gastro duodenal, another was right gastric, and the third branch (hepatic artery proper)divided into two and entered the liver substance separately at the fissure for ligamentum teres, fourth branch gave cystic branch and entered the Porta hepatis, a branch was seen arising from the cystic artery and entering the liver. In the third, male cadaver the hepatic artery proper ended in a bunch of branches .⁶

Knowledge of variations of CHA may be important in cholecystectomy, pancreaticoduodenectomy, as well as during hepatic artery infusion chemotherapy.⁷ Volpe et al reported that injuries to hepatic arterial supply are more likely to be involved in pancreaticoduodenectomy, especially in the region of porta hepatis. The presence of variations of the normal hepatic artery anatomy is found in 50 to 80% patients. .⁸These variations may predispose patients to inadvertent injury during open surgical procedures or percutaneous interventions. The aim of this study was to study the branching pattern and surgical in situ relation of hepatic artery.

Conclusion:

The variations are so many that it is not always possible to compare directly but however a knowledge about these variations is essential in this region of pin hole surgery

References:

1. Anson,B.J.,Lyman,T.Y. and Lander, H.H.The abdominal viscera in situ;A study of 124 consecutive cadavers, Anat Rec.,76:28.,1951
2. Eisendrath,D.N. Anomalies of the bile ducts and blood vessels, as the causes of accidents in biliary surgery, J.A.M.A.71;864,1918.
3. Flint E.R., Abnormalities of right hepatic, cystic and gastro duodenal arteries, and of the bile ducts. Br.J.Surg.10; 509;1923.
4. Michles, M.A; the hepatic,cystic and retroduodenal arteries and their relations to biliary duct; with samples entire coeliacal blood supply. Ann.surg. 133, 503, 1952.
5. Thompson, I.M., On the arteries and ducts in the hepatic pedicle; a study in statistical human anatomy. Uni. California Publ., Anat., 1;55,1933
6. Abdullah SS, Mabrut JY, Garbit V, et al. Anatomical variations of the hepatic artery: study of 932 cases in liver transplantation.Surg Radiol Anat. 2006; 28:468-73.
7. Covey AM, Brody LA, Maluccio MA, Getrajdman GI, Brown KT. Variant hepatic arterial anatomy revisited: digital subtraction angiography performed in 600 patients. Radiology. 2002; 224:542-7.
8. Santis De M, Ariosi P, Calo GF, Romagnoli R. Hepatic arterial vascular anatomy and its variants. Radiol Med. 2000; 100:145-51.