

Accessory Caudate Lobe: A Cadaveric Case Report

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Abstract

The liver is the very important abdominal viscera in human body. The congenital abnormalities of human liver are rare, but rarely it may be found and mostly related with caudate lobe of liver.

In our study an additional lobe was found positioned at inferolateral to the main caudate lobe (a rare anomaly accessory caudate lobe related with the caudate lobe is found).

During routine dissection, a liver from a cadaver of an adult male was found to have an accessory caudate lobe. Which was present to the left & inferior to the main caudate lobe on posterior surface. It was completely separated from caudate lobe. Porta hepatis was present below and right to the main caudate lobe and the new lobe. These developmental anomalies of liver may cause confusion during procedures like biopsy, transplantation, and lobectomies. This knowledge may be of immense use to clinicians for the diagnosis and management of hepatic diseases, morphologists and anatomists for new variant, and to embryologists for new developmental defect.

Keywords: Liver; Caudate process; Accessory caudate lobe.

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INTRODUCTION

The liver is wedge-shaped and reddish brown in color. Superiorly Liver is covered by ribs and costal cartilages. The liver is the largest gland in the human body. In the all abdominal viscera liver is the largest, occupying a position in the upper abdominal cavity. Liver occupies the right hypochondriac quadrant and epigastric quadrant and frequently the narrow end of the liver extends into the left hypochondriac quadrant and reaches up to the left anterior axillary line (out of 9 quadrants-Anatomically subdivision of abdomen). The liver have 5 surfaces - superior, anterior, right, posterior and inferior surfaces, with a sharp inferior border. The superior and right surface are shaped by the antero-lateral abdominal and thoracic walls. Therefore superior, anterior and right surfaces are continuous and no definable borders separate them from each other. The inferior border of liver directed anteriorly and inferiorly.

On the inferior surface, to the right of the fissure for ligamentum venosum & ligament of teres the liver have the porta hepatis - portal vein, hepatic artery, and hepatic duct go in liver from yhis site.

Porta hepatis separates two more lobes within right lobe: the caudate lobe lies posterior and superior and the quadrate lobe lies inferior.

The gallbladder lies in a shallow depression "The gallbladder fossa" on the inferior surface of the liver between the quadrate lobe (on the left side) and the right lobe (on the right side).

Lobes of liver

Anatomically (on the basis of its external appearance) the liver is divided into right & left lobes by peritoneal ligamentous attachments (by the falciform ligament anteriorly & superiorly, by the ligamentum venosum and fissure for the round ligament of the liver inferiorly) (Fig. 1).

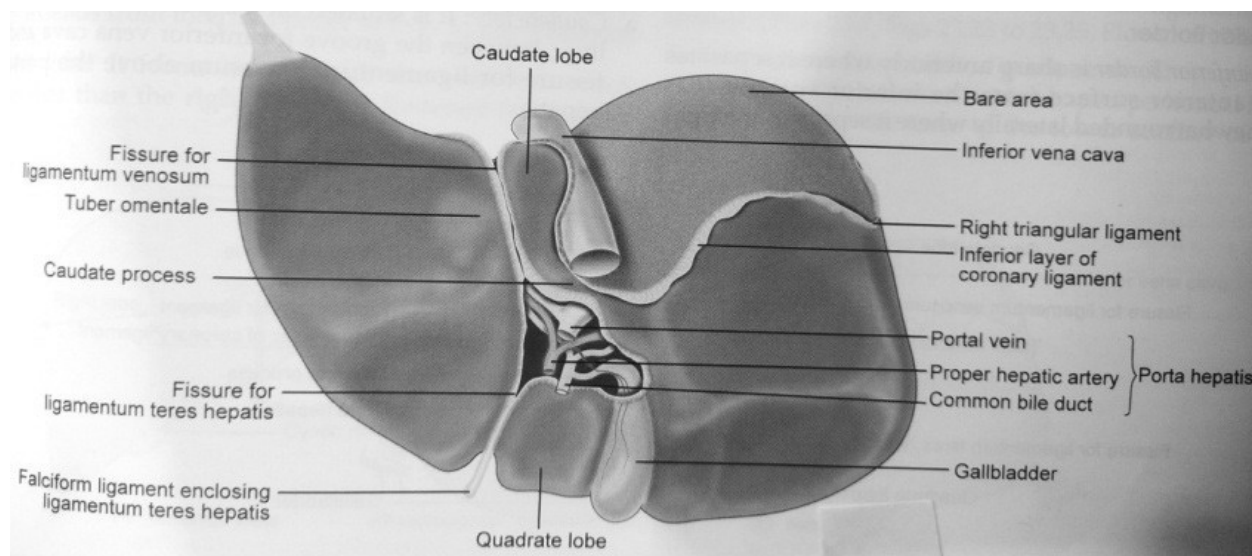


Fig. 1: Postero-Inferior view of liver in normal adult human (without anomaly)

Right lobe: The right lobe is the largest, 6 times larger than left lobes and give contribution to form all surfaces of the liver. It has 2 more lobes:

- The caudate lobe posterior and superior
- The quadrate lobe lies inferior

Left lobe: Tuber omentale is a rounded elevation that present on this lobe near the inferior border, on which lesser omentum is attached.

Caudate lobe anatomy

The caudate lobe present on the inferior and

posterior surfaces in the right lobe, situated right side of the fissure for ligamentum venosum. Above, it continues into the superior surface. The caudate process is a process that connects the right inferior part of the caudate lobe to the right lobe. In gross anatomical inspection, this lobe look to arise from the right lobe but it is functionally separate.

Boundaries of Caudate lobe

On the right - inferior vena cava

On the left - fissure for ligamentum venosum

Superiorly continuous with superior surface

Inferiorly - Porta hepatis

The caudate lobe is made up of two parts, the Spiegel's lobe and the paracaval portion, both are joined by the caudate isthmus.

The inferior surface and left part of the caudate lobe may have a small rounded projection called the papillary process.

Caudate lobe has its separate blood vessels and biliary drainage.

And very easily identify by abdominal imaging. The congenital abnormalities of human liver are rare², But rarely may be found and mostly related with caudate lobe.

So Knowledge of the caudate lobe's anatomy is important for a better hepatic surgical planning, hepatic biopsy.

The embryological basis of the anomalies of liver morphology – Dodds et al put forth a hypothesis to explain the formation of caudate lobe of liver.

According to them during second trimester during organogenesis³ the ductus venosus rotates rightward as the liver enlarges, during this rotation a small portion of the liver becomes inserted posterior to the mesentery for the ductus venosus. Afterward this part of liver gives rise to caudate lobe of liver.⁴ During this rotation & development, a small portion of caudate lobe may become separated from main caudate lobe and included in mesentery of ductus venosus to form the accessory caudate lobe.

CASE SUMMERY / CASE REPORT

Last year, in my MBBS 1st year, during routine cadaveric dissection in the Anatomy Department, Gandhi Medical College, Bhopal, M.P., I was observed a adult male cadaver having an anomaly *(accessory caudate lobe) in liver (Fig. 2).

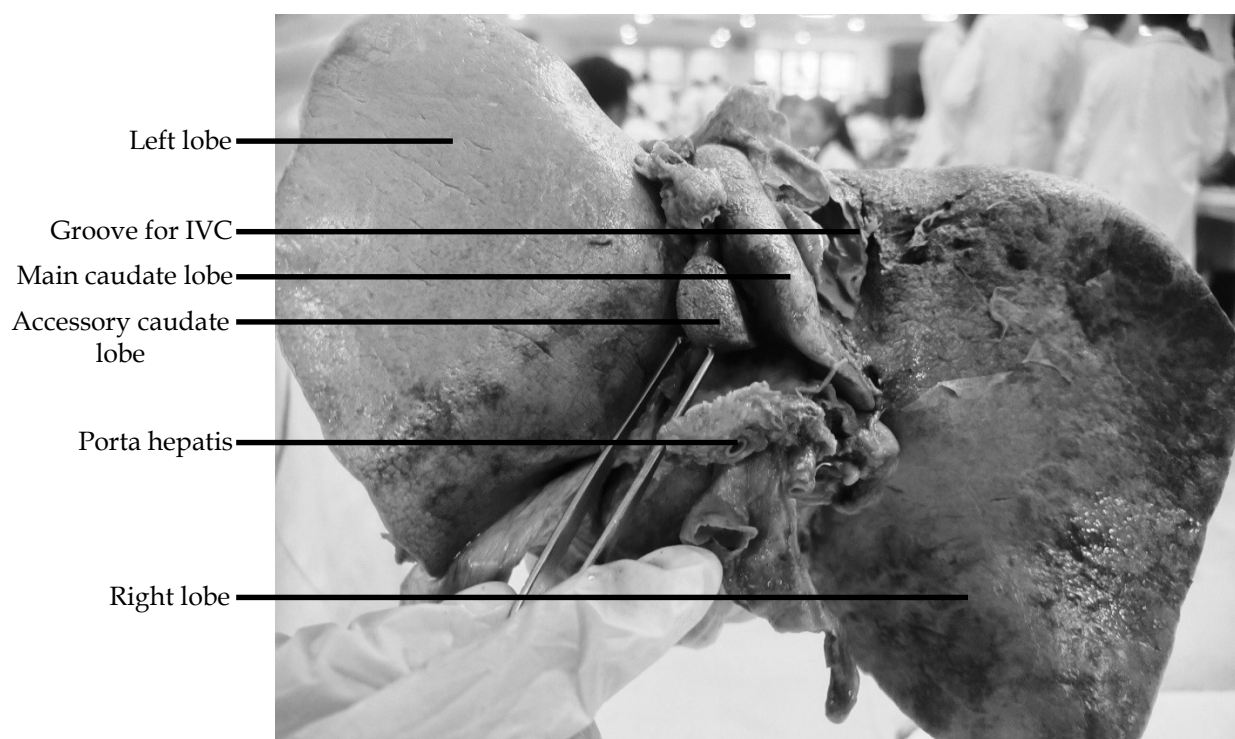


Fig. 2: Postero-Inferior view of liver in our study

I found - On gross examination / Anatomically liver is divided into right and left lobes based on the attachment of its peritoneal ligaments - falciform ligament, ligamentum Teres and ligamentum venosum. Right lobe is much more larger then left lobe and have 2 more lobes:

- Lobes on posterior surface - Caudate lobe
- Lobes on inferior surface - Quadrate lobe

But I also found An additional lobe positioned at inferolateral to the main caudate lobe. It was separated by well-defined fissure from caudate lobe. The fissure for ligamentum venosum was present in the Right of accessory caudate lobe. Porta hepatis was present inferior to right side to the accessory caudate lobe (Fig. 3).

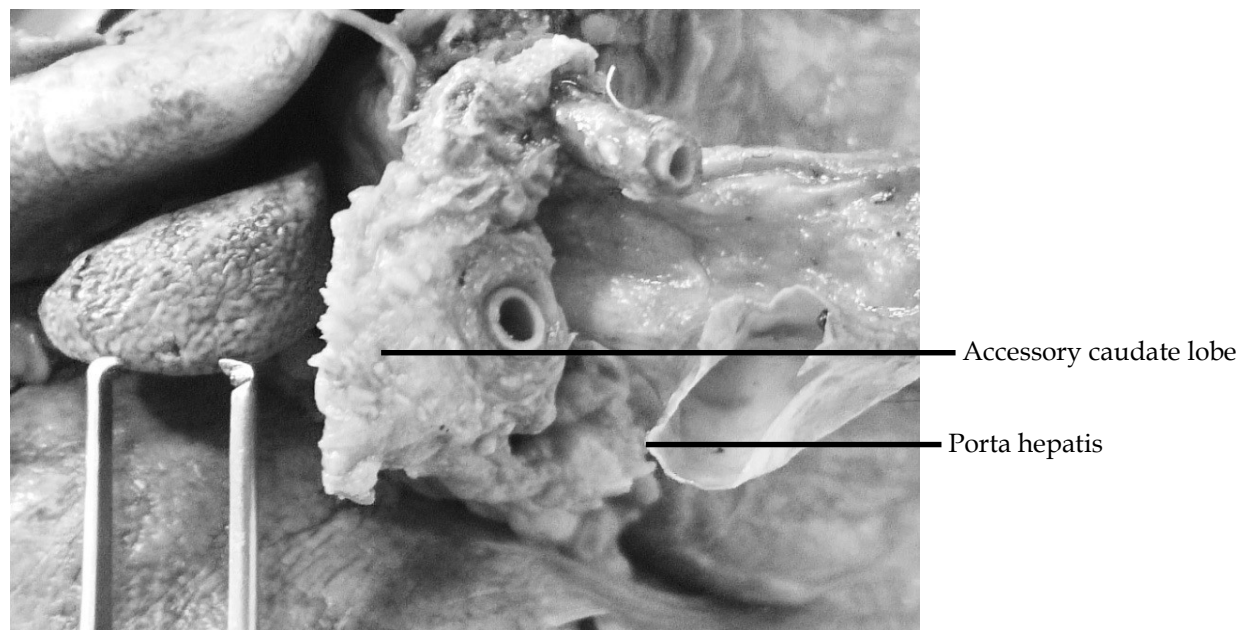


Fig. 3: Showing relation of accessory caudate with Porta hepatis in our study

I study that according to various authors - The accessory lobe is sometimes associated with malformations of other organs like diaphragm and suspensory ligments of the liver.⁵ But in our study, no such malformations were found. It is necessary to keep in mind any kind of liver anomalies for the correct preoperative diagnosis, for the planning biliary surgery or a surgery for portosystemic anastomosis. Such accessory lobes also create confusion in interpretation of CT and MRI.

In our study The dimensions, length, width, and height of the accessory caudate lobe were 13 mm, 9 mm and 23 mm, respectively.

I studied that according to some authors the hepatic lobe malformation is not always congenital, and diagnosis of this variant requires evidence of liver dysfunction.^{6,7} Because it was observed in a cadaver and history is not available, therefore it cannot be said that any liver dysfunction was present when the cadaver is live.

DISCUSSION

Drawback of these developmental anomalies of liver - That it may cause confusion to clinician during procedures like biopsy, transplantation, and lobotomies.

So finding of this anomaly /unique configuration of caudate lobe with a process have a importance for anatomists, and it is duty of a anatomist to aware such morphological changes and circulate

knowledge to clinicians for making the diagnosis and management of hepatic diseases and to embryologists for a new developmental defect. Therefore, it is necessary to make a case report on it.

Most of the liver anomalies are congenital (since birth). Also these anomalies associated with other malformations of liver-such as agenesis of the any lobes, absence of segments, deformed lobes, decrease in lobe size, atrophy of the lobes, and hypoplastic lobes.⁸ Other than these anomalies, multifarious accessory lobes also have reported by various authors arising from superior or by inferior surface of the liver.^{9,10} Accessory caudate lobe observed in the current study was clearly seen.

CONCLUSION

Historically/according to gray's anatomy¹¹, the liver has divided on the basis of its gross appearance into - right, left, caudate and quadrate lobes, separated by various peritoneal ligaments. Additional liver lobes have been reported but are rare. But in this case study this rare additional lobe is found.

Conflict of interest: None

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