

“Study of Cadaveric Liver Lobe Anomaly”

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ABSTRACT:

Liver is the largest abdominal viscera occupying major part of right hypochondrium & Epigastrium many of its anomalies go unnoticed in life as it remains asymptomatic.

Background and Objective: *Anomalies of liver lobe, found in this region have drawn attention for the study so as to avoid the misdiagnosis. Aim of our study is to find out the various types of liver lobar anomalies prevailing here.*

Methods: *Present study was conducted by keen examination of 60 cadaveric livers obtained from the routine dissection of MBBS-I year students in Department of Anatomy, Chhattisgarh Institute of Medical Sciences (CIMS), Bilaspur (C.G.) India. Department of Pathology, CIMS contributed in excluding the diseased livers.*

Result: *Our observation shows out of 60 livers 29 livers (48%) were found to be anomalous, accessory lobes in 6 livers (10%), hypoplastic left lobe in 20 livers (33.3%), quadrate and left lobe connection showing either absence of fissure for ligamentum teres or bridging ligament in 4 livers (6%), absence of quadrate lobe in 2 livers (3%), accessory fissure in 3 livers (5%), tongue like projection of left lobe in 9 livers (15%).*

Conclusion: *It was finally concluded that maximum number of livers had hypoplastic left lobe with other livers having various other abnormalities like accessory lobes, tongue like projection, quadrate and left lobe connections, and absence of quadrate lobe. The study is to add on the knowledge of these variations for the anatomists, surgeons and imaging specialists.*

Keywords: *Variations, Accessory Lobe, Accessory Fissure, Hypoplastic*

Access this article online	
Quick Response Code:	Website: www.innovativepublication.com
	DOI: 10.5958/2394-2126.2015.00023.7

INTRODUCTION

Liver the largest abdominal viscera occupies most of the part of the right hypochondrium and epigastrium, frequently extending into left hypochondrium in adults.

The liver develops in the third week of intrauterine life as an outgrowth of endodermal epithelium at distal end of foregut. This hepatic diverticulum consists of rapidly proliferating cells which penetrates septum transversum. The hematopoietic cells, Kupffer cells and connective tissue cells are derived from mesoderm of septum transversum.¹

Grossly the liver is divided into anatomical subdivisions of right, left, caudate and quadrate lobe. The anatomical divisions are on the basis of surface peritoneal and ligamentous attachments. The variations are mainly the irregularities in the lobes. Some of the uncommon liver anomalies include either lobar atrophy or complete absence of a lobe of liver. The subdivisions of right and the left lobes are

anteriorly demarked by the presence of falciform ligament and posteriorly by the fissure for ligamentum teres and ligamentum venosum. Presence of the accessory lobe can occur at different parts. A well-known accessory lobe is the Riedel's lobe which was first recognised as the anatomical variant of liver. It is an inferior extension of the right lobe. The variants of other lobes are less recognised. Some of the other variants like accessory caudate lobe which has a pedicle that can undergo torsion giving rise to an accessory mass. The hepatic anomalies can be divided into two categories, the one being the defective development and the other being excessive development.²

MATERIAL AND METHODS

The study has been conducted in the Department of Anatomy CIMS, Bilaspur (C.G.) India. The cadaveric livers were obtained during routine dissection of embalmed bodies in practical teaching of MBBS-I year students. The material used in the present study comprises of 60 livers from cadavers of age ranging from 21 years to 73 years over a period of 10 years as the liver cirrhosis and other diseases were excluded after the gross and microscopic examination by the Department of Pathology. Livers with normal parenchyma were included in the study. The liver specimens were numbered and photographs were taken along with

proper documentation. Different types of lobar abnormalities and accessory lobes and fissures were observed and tabulated.

DISCUSSION

In the present medical era of advanced diagnostic techniques, adequate knowledge of anatomy along with the variations will definitely be beneficial for imaging specialists for an appropriate diagnosis and for the surgeons to plan better management. Liver anomalies cause malformed liver, agenesis of lobes, absence of segments, deformed lobes, atrophy or hypoplastic lobes.³ Apart from these lobar abnormalities, accessory lobes have been reported. These accessory lobes carry a risk of torsion.^{4,5} Usually the accessory lobe is uncommon and asymptomatic. Liver tissue in communication with the main liver tissue is termed as accessory lobe, whereas the liver tissue without any communication with the main liver tissue is termed as ectopic liver.⁶ Some of the other malformations are also reported along with the presence of accessory lobe.³ In our study the malformations of other organs was not observed. Accessory hepatic lobe is rare congenital anomaly and is usually asymptomatic found during laparotomy. Reported cases of symptomatic accessory hepatic lobe diagnosed during surgery presenting with nonspecific complaint of abdominal pain.⁷ Congenital agenesis of liver lobe affects the left lobe more than right lobe.⁸ In our study hypoplastic left lobe along with the accessory caudate lobe was observed, which is quite rare. Development of such anomalies needs to be elucidated. According to a study regarding formation of caudate lobe in second trimester, the ductus venosus rotates towards right side as liver enlarges hence small part of the liver is inserted behind the mesentery giving rise to caudate lobe.⁹ During this process part of the liver may be separated forming accessory caudate lobe.

A study on 41 liver specimens showed the presence of 14.6% accessory lobes and 12.1% of

accessory fissure.¹⁰ In our study of 60 livers Accessory lobes were present in 10% and accessory fissure was found in 5% cases. Accessory fissures are usually found on anterosuperior surface of liver,¹¹ which is consistent to our study. The accessory fissures can be misdiagnosed in imaging techniques.¹² If fluid is collected in this area then there can be a misinterpretation for a cyst, abscess or hematoma.

Defective development of left lobe can give rise to gastric volvulus. Congenital variations in left lobe are more than right lobe. Elongation of left lobe of liver has been observed in various autopsy findings. It has been found that when left lobe is deformed it folds upon itself.¹³ Tongue like projection of left lobe was found in our study in 15% cases.

As a whole the anomalous liver found in our study is 48% which seems to be quite high, but is usually unnoticed being asymptomatic. Possibilities of these variations must always be kept in mind before planning hepatobiliary surgeries. The knowledge of various liver variants are important for anatomists, surgeons and imaging specialists.

RESULT

Present study reveals the variation of liver in various forms lobar anomaly, accessory fissure, accessory lobe and absence of lobe. Out of 60 cadaveric livers 29(48%) were found to be anomalous showing variations related with lobes and fissures. Our observation showed accessory lobes [Figure No.1.] in 4 cases (6.6%), hypoplastic left lobe [Figure No.2] in 20 cases (33.3%). Quadrate and left lobe connection showing either absence of fissure for ligamentum teres or bridging ligament were found 4 cases(6.6%) [Figure No.3A and 3B.], absence of Quadrate lobe [Figure No.4.] in 2 cases (3.3%), accessory fissures [Figure No.5.] in 3 cases (5%). An accessory fissure or groove was observed on the anterosuperior surface of right lobe. Tongue like projection of left lobe [Figure No.6.] was seen in 9 cases(15%).

Table: 1

S.No.	Type of Variations	Number of Cadaveric Livers	Percentage
1.	Accessory lobes	04	6.6%
2.	Hypoplastic left lobe	20	33.3%
3.	Quadrate and left lobe connection showing absence of fissure for ligamentum teres or bridging ligament	04	5%
4.	Absence of quadrate lobe	02	3.3%
5.	Accessory fissure	03	5%
6.	Tongue like projection of left lobe	09	15%



Fig. 1: Hypoplastic Left Lobe and accessory caudate process

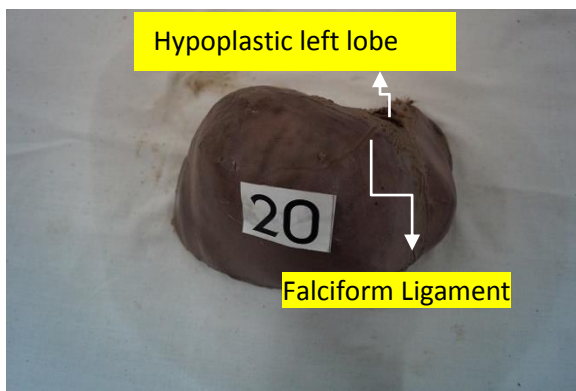


Fig. 2: Hypoplastic left lobe



Fig. 3 A: Absence of fissure for ligamentum teres.



Fig. 3 B: Ligament Bridging Quadrate, left lobe and fissure for ligamentum teres



Fig. 4: Absence of Quadrate lobe



Fig. 5: Accessory Fissure.

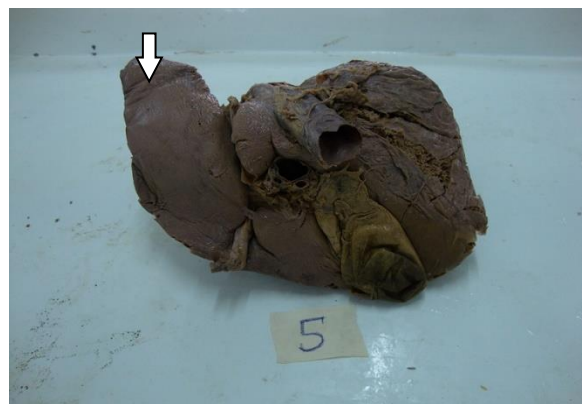




Fig. 6: Tongue like projection of left lobe.

CONCLUSION

It was finally concluded that hypoplastic left lobe was the commonest anomaly. Other abnormalities were accessory lobes, tongue like projection of left lobe, quadrate and left lobe connections and absence of quadrate lobe. The study is to add on the knowledge of these variations for the anatomist surgeons and imaging specialists...

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