

## Case Report

# HYPOPLASTIC LEFT LOBE OF THE LIVER

Veena Vidya Shankar <sup>\*1</sup>, Roopa Kulkarni <sup>2</sup>.

<sup>\*1</sup> MBBS, MD, Associate Professor, Department of Anatomy, M.S.Ramaiah Medical College, Bangalore, Karnataka, India.

<sup>2</sup> MBBS, MS, Senior Professor, Department of Anatomy, M.S.Ramaiah Medical College, Bangalore, Karnataka, India.

## ABSTRACT

Congenital abnormalities of the liver are very rare. Knowledge of such anomalies will be of great help to the clinicians, surgeons, radiologists and embryologists. In the initial development, the right and left lobes of the liver are equal in size, but due to the development of neighboring organs on the left side, the left lobe regresses. This anomaly can be diagnosed in living by Computed Tomography and Magnetic Resonance Imaging. In the present case this anomaly was noticed in a formalin embalmed middle aged male cadaver, during the routine abdomen dissection for undergraduates. The left lobe of the liver was seen to be very small and separated from the right lobe by a well defined fissures. The cause of the reduced size was not known as the neighboring organs were found to be normal in size. The contours of the liver were smooth and uniform.

**KEY WORDS:** Liver, lobes of liver, hypoplastic lobe of liver, congenital defects of liver.

**Address for Correspondence:** Dr. Dr.Veena Vidya Shankar, Associate Professor, Department of Anatomy, M.S.Ramaiah Medical College, Bangalore 560054, Karnataka, India.  
Contact No.: Mobile: +919980308735 **E-Mail:** [veena24shankar@gmail.com](mailto:veena24shankar@gmail.com)

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## INTRODUCTION

The liver is the largest gland associated with the digestion of fat. It also, is a major storage centre for the absorbed food - like protein, carbohydrate, fat, minerals, vitamins etc. It is a detoxifier and a haemopoietic organ in fetal and early postnatal life [1]. The liver develops as a diverticulum from the anterior wall of the caudal most part of the foregut. After it gives off the cystic bud, the hepatic diverticulum extends towards the septum transversum as it is continuously dividing. To start with the right and the left lobes of the liver are equal in size. The development and functional segmentation of the liver is determined by the quantity of the oxygenated blood from the umbilical vein to liver

[2,3]. Lobes of the liver show minor variation which is common feature in the development of liver but the rare ones are the congenital anomalies. The anomalies are not always congenital. The Hypoplastic right lobe of the liver was seen due to trauma, hepatic surgery or cirrhosis of liver. In case of congenital anomaly of left lobe there will be gastric volvulus and congenital anomaly of right lobe may lead to development of portal hypertension. Ultrasonography, C.T. scan and MRI are useful modalities to evaluate hepatic morphology [4,5].

Congenital agenesis of liver was first described by Heller in 1870. Very few cases were reported after that and it also has been observed that the left lobe involvement is more frequent than

the right lobe. The other anomalies described in the literature are, left sided whole liver, middle located whole liver and symmetric liver (isometric liver). The agenesis of any of the lobes of liver must be distinguished from severe atrophy caused due to cirrhosis, surgical resection or intrahepatic cholangiocarcinoma [6]. The other congenital anomalies include agenesis of the lobes, absence of any of the segments, deformed lobes, reduced size of the lobes, complete atrophy of any of the lobes and hypoplastic lobes. Apart from hypoplastic livers there were presence of accessory lobes like accessory caudate lobe, Reidel's lobe etc [7,8]. Before the invention of investigative procedures like CAT scan, MRI and other contrast radiography like angiography, the diagnosis of was done only at the time of laparoscopic surgeries, autopsy or during the dissection demonstration for undergraduate medical and paramedical students. Most of such congenital anomalies were seen to be asymptomatic. After the invention of CAT scans and MRI the incidence appears to be more. The stomach appeared to be hypermotile in the absence of left lobe of liver [9,5].

### MATERIALS AND METHODS

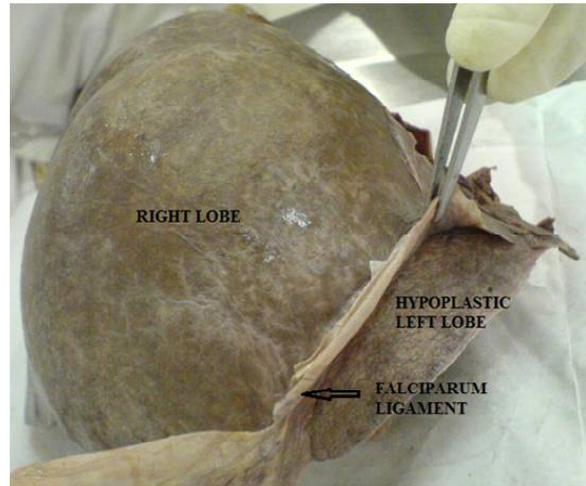
During the routine cadaver dissection for undergraduates, in the Department of Anatomy, M.S.Ramaiah Medical College, Bangalore, hypoplastic left lobe of liver was noticed in a formalin embalmed middle aged male cadaver. All observations were documented and measurements were taken using a digital Vernier slide caliper ("Yamayo Digimatic Caliper Classic"), with least count of 0.01 mm. Liver specimen was digitally photographed.

### OBSERVATIONS

The left lobe of the liver was seen to be very small and separated from the right lobe by well-defined fissures and falciform ligament was attached at its normal site. The cause of the reduced size was not known as the neighboring organs were found to be normal in size. The contours of the liver were smooth and uniform. Enlarged papillary process with following measurements were observed – length - 21.67 mm, width – 29.83 mm & thickness – 14.50 mm. Single major right hepatic vein measuring 17.9

mm was opening into the upper part of inferior vena cava.

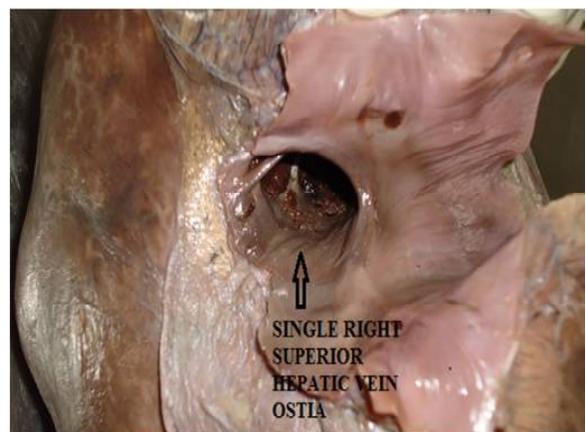
**Fig. 1:** Anterior view - Hypoplastic left lobe of liver.



**Fig. 2:** Inferior view - Hypoplastic left lobe.



**Fig. 3:** Superior view - Single right superior hepatic vein ostia.



### DISCUSSION

The anomalies of the liver are classified in to congenital and acquired. Congenital are again divided into hypertrophic and atrophic. The congenital atrophic lobes of liver were identified by the absence of any scar on the anterior abdominal wall and cicatritial tissue on the liver.

The contour of the liver is smooth in such cases [10]. The acquired would have had the irregular surface, scar in the organ and wall of abdomen. In the present study there is a very thin part of the left lobe of liver, without any scar on the anterior abdominal wall and no cicatricial tissue on the surface of the liver. It had a smooth contour indicating that the anomaly is a congenital one. Some authors have reported that the left lobe of the liver was very small and the gall bladder extended to the left and was directed forward and downward. The ligamentum teres was in the form of a fibrous cord below the rudimentary left lobe of the liver. There was no trace of ductus venosus and a streak like hepatic tissue was seen [10].

Normally the hypoplastic right or left lobes of liver are asymptomatic. But agenesis of right lobe may be associated with portal hypertension or any other biliary tract disease or any other congenital anomalies [9]. It was also noted that the congenital absence or hypoplastic left lobe of the liver is more common than that of right lobe of liver. During the period from 1870 to 1923 (53 years), only six cases of right lobe hypoplasia were reported, but between 1956 and 1987 (31 years) about 24 cases of left lobe hypoplasia were reported. Some of these anomalies were associated with additional anomalies like intestinal malrotation, choledochal cyst and partial or complete absence of right side of diaphragm. In case of living the total absence of left lobe of liver is made out only by MRI or CT scan. The incidence of such anomalies is more commonly seen in males. In case of agenesis of right lobe there would be absence of right hepatic vein [8].

## CONCLUSION

Therefore it is very essential to know the anomalies of the liver before any surgery is planned in the region of biliary or extra-biliary region; before porto-systemic anastomosis is planned. The most important fact is that, before any intervention it is necessary to evaluate the functions of the liver.

**Conflicts of Interests: None**

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