

## TUNNEL FOR LIGAMENTUM TERES HEPATIS- A CASE REPORT

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### ABSTRACT

Liver may present with a variety of congenital anomalies including agenesis of lobes, deformed lobes, lobar hypotrophy, presence of accessory lobes and fissures (riedel's lobe) or absence of its segments. During an ongoing project on liver anomalies in the Department of Anatomy, King George's Medical University, UP, Lucknow, 40 specimens of embalmed liver were observed of which one of the specimens displayed a rare surface variation. A bridge composed of liver tissue was extending between quadrate lobe and left lobe of the liver. The bridge was covering fissure for ligamentum teres in such a manner that the fissure was converted into a tunnel for ligamentum teres. The knowledge of such a variation can be utilized by pathologist to identify a stromal tumor or gangrene of ligamentum teres.

**KEYWORDS:** Riedel's lobe, Quadrate lobe, Ligamentum teres, Gangrene.

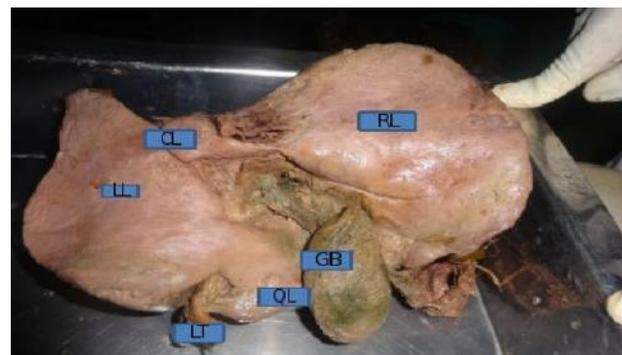
### INTRODUCTION

Liver presents four fissures that are constant anatomical structures: the fissure for ligamentum teres, ligamentum venosum, fossa for gall bladder and the transverse fissure. The fissure for ligamentum teres is created by invagination of the ligamentum teres, which is the embryonic remnant of the obliterated umbilical vein. This fissure divides the anatomical left hepatic lobe of liver into its medial and lateral segments. The umbilical vein is a connecting venous structure between the placenta and the umbilical portion of the left portal vein. The umbilical vein is located at the dorsal free margin of the falciform ligament, and it runs into the liver with the visceral peritoneum to meet the left portal vein.

During the intrauterine life, it provides oxygenated and nutrient-rich blood from the placenta to the fetus (1). Many literatures define the ligament to be clinically insignificant, however its role in the disease process and clinical procedures cannot be overlooked (2). The ligamentum teres is often used for cannulation in a variety of diagnostic and therapeutic procedures (3). Although the segmental anatomy of the liver has been extensively researched, very few studies have dealt with surface variations of the liver. We report the course of ligamentum teres through an anomalous tunnel in the liver, and discuss its possible clinical significance in this article.

### CASE REPORT

During an ongoing project on surface anomalies of liver anomalies in the Department of Anatomy, King George's Medical University, UP, Lucknow, 40 specimens of embalmed liver were observed. One liver presented with a rare variation. The liver looked healthy and was of normal size and shape. The fissure for ligamentum teres was absent. A bridge composed of liver tissue was extending between quadrate lobe and left lobe of the liver such that there was no demarcation between left lobe and quadrate lobe. The bridge was covering fissure for ligamentum teres in such a manner that the fissure was converted into a tunnel. Ligamentum teres was entering into the liver through this tunnel (fig. 1).



**Fig 1: Liver With Tunnel For Ligamentum Teres. RL- Right Lobe, LL Left Lobe, GB – Gall Bladder, CL- Caudate Lobe, QL- Quadrate Lobe, LT- Ligamentum Teres**

## DISCUSSION

There are many kinds of described congenital abnormalities of the liver as agenesis of its lobes, decrease in size of lobes, lobar atrophy, hypoplastic lobes, transposition of the gallbladder & Riedel's lobe (4). We report here one such rare variation in which the fissure for ligamentum teres was transformed into a tunnel. This is a very rare variation usually encountered during autopsies or cadaveric dissection. In this case, the ligamentum teres entered the liver through its anterior surface. Hence the left lobe was continuous with the quadrate lobe. Satheesha et al. recently reported a peculiar liver with the total absence of fissure for ligamentum teres and the quadrate lobe (5). A case of liver with the presence of complete tunnel instead of fissure for ligamentum teres on the diaphragmatic surface of the liver with absent quadrate lobe has been reported by Ebby et al. (6). Absence of fissure for the ligamentum teres has been reported in previous studies (7-9). During second month of intrauterine life liver is separated in to the left and right lobes by the falciform and round ligaments. Lack of separation might often result in fusion of lobes during the embryonic period (10). This could be one of the possible reasons for having a tunnel for ligamentum teres rather than a fissure as observed by us.

In order to diagnose primary metastatic liver diseases, hepatic imaging is commonly performed procedure. The major fissures are very helpful for describing the lobar anatomy and locating the liver lesions. Ligaments and fissures cast an echogenic shadow in ultraso-nography, hence it is important to recognize their anatomical origin in order to differentiate it from a pathological lesion (11). In cases where hepatic tissue is bridging the fissure for ligamentum teres, it would be very difficult for the radiologist to visualize and hence not possible to differentiate into lobes. A separate study demonstrated the difficulty in accessing a case of pneumoperitoneum in which air is trapped in ligamentum teres and presence of tunnelmasked the vertically directed area of hyperlucency (5). Onitsuka et al reported a metastatic liver carcinoma which developed from the pons hepatis and presented as an extra hepatic mass on ultrasonography and computed tomography (7). Tunnel may also give a false picture of pathological cavity formed in the parenchyma of liver.

## CONCLUSION

The knowledge of this type of anatomical variation of liver is of fundamental importance to the radiologist and surgeons while they perform surgical procedures,

to the radiologist for their diagnostic procedure and, for the anatomists for their routine classroom dissections and for the forensic pathologist to rule out a stromal tumor or gangrene of ligamentum teres during autopsy. It would be useful to avoid possible errors in diagnosis, and to assist in planning appropriate surgical approach that is crucial for determining the patient outcome.

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