Tunnel for ligamentum teres: a rare variation of the liver


Abstract

Introduction
Ligamentum teres hepatis, an embryological remnant derived from the obliterated left umbilical vein is lodged on the fissure for the ligamentum teres on the inferior surface of the liver. We report here an anomalous case where the ligament passed through a tunnel instead of a fissure.

Case report
The fissure for ligamentum teres was obliterated by bridging of liver tissue across the quadrate and left lobes. This bridging converted the fissure into a tunnel through which ligamentum teres coursed to its destination. A small fissure extended from the left end of porta hepatis to this tunnel. Lack of separation of lobes, in the early embryonic period might have led to this variation.

Conclusion
Anomalies like this can often mislead the radiologists or surgeons either in diagnosis or interpretations of liver diseases.

Introduction
The ligamentum teres also known as ‘round ligament of liver’ is the fibrous remnant of the left umbilical vein. It extends from the umbilicus to the left branch of the portal vein, within the liver. During the intrauterine life, it provides oxygenated and nutrient-rich blood from the placenta to the foetus. The ligamentum teres with small paraumbilical veins lie in the free margin of the falciform ligament and then enters its fissure extending from the inferior border to the left end of the porta hepatis on the visceral surface of the liver. The ligamentum teres is often used for cannulation in a variety of diagnostic and therapeutic procedures. Though the ligament is claimed to be clinically insignificant by a few, its role in the disease process and clinical procedures cannot be overlooked. 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 the dissection classes for medical undergraduate students, we noticed a rare variation on the visceral surface of the liver in an adult male cadaver aged approximately 65 years. The liver looked healthy and was of normal size and shape. The fissure for ligamentum teres was absent. The ligamentum teres entered the liver through a tunnel on the visceral surface of the liver. The tunnel for the ligamentum teres was situated to the left of the quadrate lobe (Figures 1 and 2). A small fissure extended from the porta hepatis towards this tunnel. Between this fissure and the tunnel, the quadrate lobe extended freely into the anatomical left lobe of the liver.

Discussion
The anomalies of the liver such as presence of additional lobes or absence of existing lobes are not uncommon. However, reports on the anomalies on its ligaments or fissure for these ligaments are scanty. We report here one such rare variation in which the fissure for ligament teres was transformed into a tunnel through which ligamentum teres coursed to its final destination.

Figure 1: The liver with a tunnel for the ligamentum teres. RL, right lobe; LL, left lobe; PH, porta hepatis; GB, gall bladder; QL, quadrate lobe; LT, ligamentum teres; FL, falciform ligament.

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Due to the presence of this tunnel, the demarcation between the quadrate lobe and left lobe of the liver was not very clear. Absence of fissure for the ligamentum teres has been reported in previous studies. A case of liver with the presence of complete tunnel instead of fissure for ligamentum teres has been reported by Ebby et al. But in that case the tunnel was found on the diaphragmatic surface of the liver and the quadrate lobe was absent. The liver is separated between the left and right lobes by the falciform and round ligaments in the second month of gestation. Lack of separation might often result in fusion of lobes during the embryonic period. This could be one of the possible reasons for having a tunnel for ligamentum teres rather than a fissure as observed by us. In the supine position of the body, the fissure for ligamentum teres contains some air and its anatomical abnormality of the same in 29.63% of individuals. Satheesha et al. recently reported a peculiar liver with the total absence of fissure for ligamentum teres and the quadrate lobe. In this case, the ligamentum teres entered the liver through its anterior surface. Joshi et al., have noted various shapes of the quadrate lobe such as triangular, rectangular and pear shaped.

Conclusion

The knowledge of the possibility of absence of fissure for ligamentum teres and presence of a tunnel in its place could be very important for surgeons and radiologists. The tunnel might be confused for a pathological cavity formed in the parenchyma of the liver: This tunnel might surprise the surgeon during the laparoscopic liver surgeries.

References