

## Pons hepatis : Report of two cases

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**Key words :** pons hepatis, liver, round ligament, quadrate lobe, left lobe.

To the Editor,

The pons hepatis is defined as a prolongation of the hepatic substance bridged over the umbilical fissure between the quadrate and left lobes of the liver. The reported incidence of the pons hepatis is quite different (1-3). Although some anatomy textbooks neglect to define the pons hepatis, others (1, 4, 5) well document it.

During routine dissection studies we encountered two unusual structures in the visceral surface of the liver (Fig. 1). Histological examination of these structures by hematoxylin-eosin staining and cytokeratin-19 immunohistochemistry revealed that there were numerous vessels and bile ducts as seen in normal liver tissue contents. According to its direction and content, they were considered as pons hepatis. In Case 1 (52-year-old male cadaver), it was a string-like structure (1.8 cm in length and 0.35 cm in width). Additionally, a superficially located intrahepatic vessel and its branches were laid in the gall bladder's fossa (Fig. 1A). In Case 2 (47-year-old female cadaver), it was a bulky structure and divided by a single fissure into two parts (Fig. 1B). The quadrate and left lobes were appearing as united lobes covering the umbilical vein.

Pons hepatis has been subjected to various classifications. Couinaud (1) classified the pons hepatis into three types : Type I – no communication, Type II – as membranous or string-like fibrous tissue, Type III – a large parenchymal bridge. In the latter, the quadrate and left lobes appear as united lobes covering the umbilical vein. Subtypes of the type III was also reported by Onitsuka *et al.* (2). According to Couinaud's classification (1) the pons hepatis in Case 1 corresponded to the Type II. However, the pons hepatis in Case 2 did not correspond to any form of Couinaud's classification or Onitsuka's subtypes. We think that further series of the pons hepatis should be studied to update aforementioned classifications.

From embryological point of view, in the human embryo, the umbilical vein was within the parenchyma of the liver. In the later stage it became extrahepatic. The parenchymal bridge uniting quadrate and left lobes over the umbilical sulcus was explained as a persistence of the embryonic liver (1). The two different appearances of

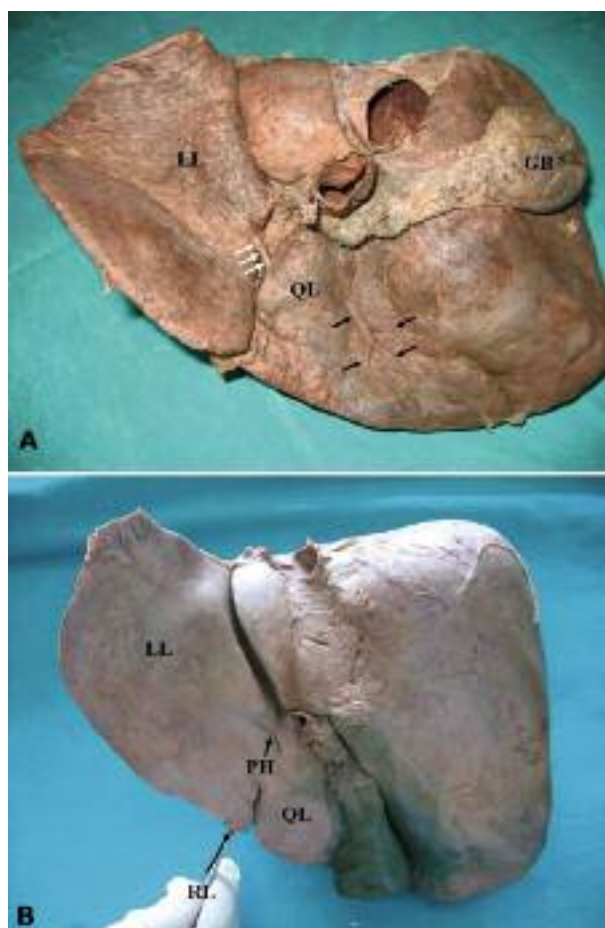


Fig. 1. — Photograph of the pons hepatis. A : String-like pons hepatis. GB : gall bladder, LL : left lobe ; QL : quadrate lobe ; black arrowhead : intrahepatic vessels, white arrows : pons hepatis. B : A single fissure divided the pons hepatis into two parts. LL : left lobe ; PH : pons hepatis ; QL : quadrate lobe ; RL : round ligament ; black arrowhead : fissure divided the pons hepatis into two parts.

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This study was presented at the Ninth Congress of European Association of Clinical Anatomy. 5-8 September 2007, Prague-Czechoslovakia.

Submission date : 05/01/2009

Acceptance date : 11/05/2009

the pons hepatis in our cases may support the above hypothesis.

Intrahepatic, or less common, intraperitoneal bleeding after percutaneous liver biopsy is a potential fatal complication (6). We think that superficially located intrahepatic vessels in case 1 should be kept in mind to prevent uncontrolled bleedings during laparoscopic and percutaneous procedures of the gall bladder and liver.

The pons hepatis might have significant clinical implications. A variety of tumor models potentially developed liver metastases have been introduced (7). Cancer cells in the liver can move from the one lobe to another through vessels and bile ducts. Moreover, in a recent study, Onitsuka *et al.* (2) reported a metastatic liver carcinoma developed from the pons hepatis. We think that it is important for the physicians to be aware of the existence of the pons hepatis. Additionally, it has also worthy of note for physicians who dealing with the diagnostic procedures. Physicians must have vigilance

during imaging studies in order not to misinterpret such variation as a pathologic feature.

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