



EP-040

Evaluation For The Anatomical Correctness Of Fusion Image Of 3-dimensional Hilar Structure Including Portal Vein, Hepatic Artery And Bile Duct

SeungWook HAN¹, Jinsoo RHU*¹, Gyu-seong CHOI¹, Jong Man KIM¹

¹Department Of Transplantation Surgery, 성균관대학교 삼성서울병원, REPUBLIC OF KOREA

Background : Profound knowledge of hilar anatomy is imperative for donor surgeons, and three-dimensional (3D) imaging holds potential to enhance comprehension. Our study introduces fusion imaging, combining vascular structures from computed tomography and bile ducts from magnetic resonance cholangiopancreatography, to assess anatomical accuracy against surgical videos.

Methods : Donors undergoing 3D image fusion from March to July 2023 were analyzed for anatomical correctness. Utilizing Mimics medical and 3-matic software, we conducted 3D modeling and fusion. Anatomical accuracy was gauged by the relationship between the right hepatic artery and common hepatic duct. The fusion image categorized the right hepatic artery as posterior, mixed, or anterior to the common hepatic duct. Surgical videos confirmed the actual relationship.

Results : Among 58 living donor liver transplantations, 47 cases qualified. Fusion images indicated: 34 cases (group 1) with the right hepatic artery posterior to the bile duct; 6 cases (group 3) anterior; and 7 cases (group 2) exhibiting mixed positions. Notably, 5 cases within group 2 displayed an anterior hepatic artery. While group 1 showed no anterior hepatic artery cases, 14.3% in group 2 and 66.7% in group 3 presented this configuration. Statistical analysis revealed a significant tendency for the right hepatic artery to be anterior.

Conclusions : Fusion imaging provided reasonably accurate insights into hilar anatomy through the right hepatic artery-bile duct relationship. However, inherent fusion errors prevent 100% accuracy, warranting further enhancement.

Corresponding Author : **Jinsoo RHU** (jsrules@gmail.com)