

Accuracy of MR cholangiography in the preoperative evaluation of biliary anatomy in right-lobe living related liver transplantation donors: Comparison with intraoperative cholangiography

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Purpose: The purpose of this study is to evaluate the accuracy of MR cholangiography in the preoperative evaluation of non-dilated biliary anatomy in the right-lobe living donors, compared with the intraoperative cholangiographic findings.

Material and Methods: For a 25-month period, 70 donors of the living related liver transplantation underwent both MR cholangiography (MRC) and intraoperative cholangiography (IOC). Retrospective analysis of MRC and IOC findings was performed by two radiologists who determined the type of biliary anatomy according to the modified Smadja and Blumgart's classification. The branching patterns of intrahepatic bile ducts were classified as follows: Type A (typical anatomy of confluence), Type B (trifurcation of left, right anterior and right posterior hepatic ducts), Type C (aberrant drainage of a right anterior or posterior hepatic duct into common hepatic duct), Type D (aberrant drainage of right anterior or posterior hepatic duct to left hepatic duct), and other rare complex type E. The length of the 1st order branch of R hepatic duct on MR cholangiography was measured because short length of first order branch could be warranted to the surgeons.

Results: According to IOC and surgical findings, the frequency of biliary anatomy was as follows: type A 68.5% (n = 48), type B 10% (n = 7), type C 11.4 % (n = 8), type D 7% (n = 5) and type E 2.8% (n = 2). MRCP showed the biliary system to the level of the first order branch of right hepatic duct in 97% (n = 68) and was accurately correlated with the IOC in 44 cases (92 %) of type A, 6 cases (86%) of type B, 6 cases (75%) of type C, 3 cases (60%) of type D and one case (50%) of type E. The length of the first order branch of right hepatic duct was 2 – 25 mm (mean 8.4 mm). Common errors in the determining the biliary anatomy were in the cases with the short first order branches of right hepatic ducts (n = 5) and too small caliber of intrahepatic ducts (n = 5).

Conclusion: MR cholangiography had an accuracy of 86 % for the evaluation of normal non-dilated bile ductal anatomy in living-donor liver transplantation. The short diameter of the first order branch of right hepatic duct is a common pitfall in the evaluating biliary anatomy on MRC.