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Letter to the Editor

# Comment on "The role of graft reperfusion sequence in the development of non-anastomotic biliary strictures following orthotopic liver transplantation: A meta-analysis"

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*To the Editor:*

With great interest we read the article by Bekheit et al. "The role of graft reperfusion sequence in the development of non-anastomotic biliary strictures following orthotopic liver transplantation: a meta-analysis" [1]. The authors performed a meta-analysis of published studies comparing the outcomes of initial portal reperfusion (IPR) (sequential) versus simultaneous reperfusion (SimR) or initial arterial reperfusion (IAR). The primary objective of the study was to "compare the incidence of non-anastomotic biliary stricture, in both techniques".

While Bekheit et al. deserve to be congratulated for their effort to conduct a thorough meta-analysis, we do have some remarks about the study design, and we believe the comparison between IPR and IAR with simultaneous reperfusion deserves more attention.

Out of the seven included studies in the meta-analysis, only 2 compared IPR to IAR, which the other five studies compared IPR to SimR. Bekheit et al. justly recalls that out of the seven included studies, the missing of the delay time between the portal and arterial reperfusion is a significant shortcoming.

Furthermore, Bekheit et al. described that increased warm ischemic time can increase the risk of ischemic biliary complications. Unfortunately, these results are not stated in the meta-analysis.

In contrast to previous studies describing the role of the hepatic artery in biliary tract perfusion [2,3], several studies have shown the importance of portal venous blood flow in biliary tract perfusion [4,5]. It therefore may be that either sequence of reperfusion is sufficient, without a clearly different effect on the bile ducts between the two. This could be a possible explanation why Bekheit et al. did not find a significant difference in biliary complications between the groups.

Currently, we are analyzing our local series. It seems that the additional use of a temporary portocaval shunt facilitates anastomosing of hepatic artery, especially in IAR. None of the included series, however, described their procedure in such detail. A potential benefit of either technique might be hidden in these operative details.

In summary, current data are insufficient and incomplete. We fully agree with Bekheit et al. that a large prospective study may be necessary to evaluate if technique and sequence of reperfusion affect outcome in orthotopic liver transplantation.

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