

1. Reviewer No54001:

This review article described usefulness of contrast-enhanced ultrasound (CEUS) during perioperative period in patients undergoing liver transplantation. The author argued that CEUS must be a technical solution for diagnosing various kinds of co-morbidity, original disease, and complications and thus can be a complete substitute for CE-CT. However, I could not understand that what the authors argued in real. In most situations for those which the authors argued and considered CEUS as beneficial, CEUS may be replaceable with Doppler US and CE-CT. Furthermore, in practical clinical situations, many vascular complications after LT is suspected by Doppler US and subsequently confirmed by CE-CT. If CE-CT could be completely replaced by CEUS, it is extremely useful and beneficial. However, I do not consider so at this stage. At best, only in limited situations, CEUS can be a substitute for CE-CT. Hence, I think that what the authors should emphasize is not general usefulness of CEUS. The authors should describe that what situation is adequate for CEUS rather than CE-CT.

Response: Thank you for your recommendations. There's no doubt about that CE-CT is important in diagnosis of various kinds of co-morbidity, original disease, and complications during perioperative period. The CEUS guidelines^[68] also emphasize that CT or MRI are needed (unless contraindicated) in kinds of clinical strategy decided. In fact, whether CEUS may be replaceable with other imaging technique was not the point of our review, but the possible and potential application of CUES after liver transplantation based on the reports until now. During our literature review, we had to take note that less researches focused on the comparison between CEUS and CE-CT, except a comparative research by Rossi et al^[38]. We believe that Rossi's research would be possible inspiration for future researches about comparison among imaging technique, which would be useful to decide adequate technique for kinds of clinical situation. As previously mentioned, the possible and potential application of CEUS after liver transplantation is the emphasis in our review. It's believed that CEUS allows "greater diagnostic confidence and provides more information on the basis of conventional ultrasound", which is the point of our review. We also add it in the part of Conclusion.

2. another comments:

Please show the concrete data. I can understand the CEUS can be used in detecting abnormality of hepatic artery, portal and hepatic veins and biliary tree. However I cannot know specific ability and limitation of CEUS. For example, they do not show any data on place of CEUS among of imaging studies in detecting PVT (sensitivity and specificity). Although the authors

describe that PVT might be missed on CEUS, based on our experience (P5, L1), but they show no data of their experience.

Response: Thank you for your recommendations.

(1) We had added the concrete data in detecting PVT(P5,L4) and hepatic artery stenosis(P8,L29) in the revised manuscript, and the concrete data(sensitivity and specificity) of detecting hepatic artery thrombosis(P7,L27) and obstruction of the MHV tributaries(P13,L2), diagnosis of ITBLs(P11,L23) had already been shown in the manuscript. But no concrete data was shown in visualization of the biliary anatomy and variations of living liver donors and detection of arterial steal syndrome, diagnosis of recurrent malignancy and parenchymal infarction, as the studies of them were case report or case series studies.

(2) The specific ability of CEUS is performing at the bedside safely and allowing greater diagnostic confidence and providing more information on the basis of conventional ultrasound and the CEUS examination may be limited because of surgical wound, subcutaneous emphysema, intervening bowel gas or complex anatomy in patients with split liver transplantation.

(3) As we mentioned that PVT might be missed on CEUS in our preliminary study, the concrete data had been added in the revised manuscript (P5,L26).