

## Peer Review File

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### Reviewer A:

Thank you for allowing me to review the manuscript. This is the guideline for minimally invasive donor hepatectomy in living donor liver transplantation LDLT. The manuscript is important but should be made minor revise. Here below are my concern.

**Comments 1#:** This guideline is mainly written for living donor surgery. I suppose title of the manuscript should be changed.

**Response 1#:** Thanks for your suggestion. We have changed the title to "Chinese guidelines for minimally invasive donor hepatectomy in living donor liver transplantation (2024 edition)". (Page 1, Line 1-2, highlighted by red color)

**Comments 2#:** Line 139: Small liver syndrome is not common. It should be changed to small for size graft syndrome.

**Response 2#:** Thanks for your suggestion. We have changed the "small liver syndrome" to "small-for-size syndrome". (Page 16, Line 313 highlighted by red color)

**Comments 3#:** Line 141: The authors mentioned on donor fatty liver. The authors just mentioned risk of graft dysfunction in the recipient. The authors should mention donor risk, especially when donors are performed right hepatic lobectomy for fatty liver.

**Response 3#:** Thank you for this valuable suggestion. As you mentioned, fatty liver is also very important for safety of donors. We have made some editions in the main text, as " However, using steatotic liver grafts from living donors remains controversial

regarding donor safety and recipient outcome (60-62). The studies demonstrated that with approximately 20%-50% macrovesicular steatosis did not compromise graft function or recipient outcomes and were safe in donors for right hepatic lobectomy (63, 64). Despite all this, when frequently encountering donor candidates with mild to moderate macrovesicular steatosis in the LDLT setting, weight loss before donation may be a good strategy for increasing donor safety and confidence in the recipient's outcome, except when the urgent condition of recipient does not allow for it (65-68)."

(Page 16, Line 317-324 highlighted by red color)

**Comments 4#:** Line 329: Argon scalpels might have risk to increase intraperitoneal pressure under pneumoperitoneum.

**Response 4#:** Thanks for the suggestion. In the past three weeks, we have held a committee meeting. Based on your suggestion, we strongly agreed with your important suggestion and have removed "Argon scalpels " from the text.

**Reviewer B:**

This is a very comprehensive guideline and certainly it will give us guideline to standardise the practice of MIS surgery in living donors.

**Comments 1#:** For recommendation 11, should be done in experienced centres, can the authors be more specific on the number of cases needed?

**Response 1#:** Thanks for your valuable comments. Considering the varying number of cases needed reported so far, after discussion by the committee, we have added the relevant content to the learning curve section of the main text, as " Boeing et al. demonstrated that the learning curve for pure laparoscopic donor left lateral

sectionectomy was completed after 25 procedures(120). However, due to the deeper positioning, anatomical complexity, and larger graft weight of the right hemiliver than the left lateral sectionectomy, more cases need to be learned. Hong et al. (121) used the cumulative sum method to analyze the operation time of laparoscopic living donor right hepatectomy by the same surgeon and believed that the learning curve of this operation is 65–70 cases and that the formulation of standardized procedures and sharing of experience can shorten the learning curve.", rather than including it in the recommendation comments. (Page 34, Line 704-711, highlighted by red color)

**Comments 2#:** For recommendation 14, level of evidence is II, but there are actually not many papers comparing 2D and 3D/4K laparoscopy in MIS donor surgery, what is the reason of level II evidence?

**Response 2#:** Thanks for your important suggestion. We have provided many high-level evidence for 3D MIS surgery, but currently the evidence for MIS donor surgery is indeed limited. After discussion by the committee, we have changed the level of evidence to level III. (Page 24, Line 499-500, highlighted by red color)

**Reviewer C:**

This review, presented as Chinese guidelines for minimally invasive surgical techniques in living donor liver transplantation, aims to promote a more standardized, safe, and effective development of minimally invasive surgery in various living donor liver transplantation centers in China. It is commendable that it addresses minimally invasive donor surgery in living donor liver transplantation, a field that many centers

are increasingly interested in and actively performing. However, there are several points to consider:

**Comments 1#:** There are several international consensus statements on minimally invasive surgical techniques for living donor liver transplantation. This review does not seem to offer much novel information compared to these recent international consensus statements. It may be more appropriate for a specific area journal rather than HBSN, which is international.

**Response 1#:** Thanks for your valuable comment. As you said, there is indeed few consensus published, but as one of the countries that widely perform minimally invasive donor hepatectomy in living donor liver transplantation, China has accumulated a lot of experience in this field. Based on this, the Branch of Organ Transplant Physicians of Chinese Medical Doctor Association and the Branch of Organ Transplant of Chinese Medical Association organized experts to summarize some hot or/and difficult issues in this field and conducted a vote on recommendation strength. Therefore, we believe that this guideline will not only benefit Chinese liver transplant experts, the international experts in this field will also be very interested in this clinical guideline.

**Comments 2#:** Recommendation 4 should be revised to include more details and references to studies that mention possible higher complications, such as biliary complications, on the recipient side, especially in pure laparoscopic donor right hepatectomy. Even if the authors believe there is no difference in the outcomes for recipients, they should still mention the opposing opinions in the manuscript.

**Response 2#:** Thank you for your valuable suggestion. Considering that biliary complications, often referred to as the 'Achilles' heel' of liver transplantation, are of great concern to most transplant surgeons, we have decided to revisit this section after committee discussion. We have added the relevant content to the safety and advantages section of the main text, as " Simultaneously, minimally invasive surgery for living liver transplant donors does not significantly impact the long-term survival of recipients and the occurrence of postoperative complications (28, 30, 31, 44-48). However, in the research conducted by Hong et al., it was observed that the incidence of both early and late postoperative biliary complications in the cohort undergoing pure laparoscopic donor right hepatectomy was higher compared to the conventional donor right hepatectomy group. The researchers postulated that this could be attributed to the surgeons' propensity for excessive utilization of energy devices for biliary dissection during laparoscopic procedures.(12) In contrast, another study encompassing 506 laparoscopic donor right hepatectomy cases posited that meticulous donor and recipient evaluation could effectively mitigate the incidence of biliary complications.(44) Furthermore, no significant disparity was discerned in the incidence of postoperative biliary complications between the minimally invasive and open surgery groups in two separate meta-analyses.(32, 47)" (Page 14-15, Line 271-281, highlighted in red). However, as the vast majority of studies indicate no difference in long-term prognosis for recipients between minimally invasive donor hepatectomy and open donor hepatectomy, and only a few studies present a controversy regarding biliary

complications, we have presented this controversy in the main text as per your suggestion, but have not modified Recommendation 4."

**Reviewer D:**

I carefully reviewed the manuscript entitled "Chinese guidelines for minimally invasive surgical techniques in living donor liver transplantation". This guideline was developed jointly by the Branch of Organ Transplant of Chinese Medical Association and the Branch of Organ Transplant Physicians of Chinese Medical Doctor Association as a China-specific guideline for minimally invasive surgical techniques in living donor liver transplantation. The content covers a wide range of topics, covering all the topics necessary for minimally invasive living donor liver transplantation. It thoroughly reviews a large amount of literature, and the content is very convincing. This guideline will be useful not only as a guideline specific to China, but also as a global guideline. No revisions are necessary, so it can be published as is.

**Response:** We are deeply honored and sincerely grateful for your appreciation and recognition of our work. Your affirmation serves as a tremendous inspiration and motivation for us, and it is the highest honor we could receive. We will continue to strive for excellence, hoping to continue earning your support and encouragement in our future endeavors. Once again, thank you for your appreciation and recognition