

Laparoscopic liver resection in patients with liver cirrhosis—the path towards standard of care

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Provenance: This is an invited Letter to the Editor commissioned by Editor-in-Chief Yilei Mao (Department of Liver Surgery, Peking Union Medical College Hospital, Chinese Academy of Medical Sciences, Beijing, China).

Response to: Hibi T, Kitagawa Y. Laparoscopic liver resection for hepatocellular carcinoma in cirrhotic patients: a potential game changer toward global standardization of care. *Hepatobiliary Surg Nutr* 2017;6:203-4.

Submitted Aug 10, 2017. Accepted for publication Sep 07, 2017.

doi: 10.21037/hbsn.2017.09.02

View this article at: <http://dx.doi.org/10.21037/hbsn.2017.09.02>

I am writing in response to Professor Taizo Hibi's Editorial "*Laparoscopic liver resection for hepatocellular carcinoma in cirrhotic patients: a potential game changer toward global standardization of care*".

Laparoscopic liver resection (LLR) had been picking up momentum in the past decade. The development of technology including high definition display system and effective instrument for laparoscopic liver parenchymal transections had accelerated its growth.

The two important consensus meetings which brought in the wisdom of experienced and yet "dare to innovate" surgeons, act as catalyst to bloom the pace of LLR development (1,2).

In the second International Consensus Conference on LLR (ICLLR) held in Morioka, Japan in 2014, many of leading hepatobiliary surgeons who did not perform LLR were invited as jury. They gave critical comments with rigorous discussions which ended up in a list of questions that needed to be answered. These questions became important research topics to be studied in the coming future (2).

One of the advantages of LLR was the presence of pneumoperitoneum during surgery. This condition was indeed an advantageous tool to counter balance the notorious bleeding tendency in patients with liver cirrhosis (3-5).

In the study I published in 2016 which involved 110 patients with liver cirrhosis who undergone LLR, an obvious advantage of reduced blood loss, shorter operation time, shorter hospital stay and lower medical complication

rate were observed (6). Studies from other centers showed similar advantages (7-11). In the western literature, indication of liver resection was greatly governed by the Barcelona Clinic Liver Cancer classification (12). However, the same rule could not be applied in Asia Pacific region where hepatocellular carcinoma (HCC) and cirrhosis were endemic. The APASAL guideline and Hong Kong liver cancer classification system tended to advocate a more aggressive surgical approach for patients with HCC and cirrhosis whenever technically feasible (13,14).

The use of LLR definitely increased the potential resectability in this group of patients. The use of laparoscopic approach led to smaller wound creations that would eventually reduce postoperative pain. For major liver resection, although a bigger wound would be needed for specimen retrieval, it was usually created as a transverse incision at the lower part of the abdomen. It is where these wounds were created led to less distress during pulmonary rehabilitation, particularly in elderly patients.

In the current study, there seemed to be a potential bias on patient selection as the open group consist more patients with anatomical resection when compared to laparoscopic group. The reason behind this could be explained by the learning curve effect of LLR. In order to practice safe LLR, the first 1/3 of the cases consisted of only straight forward cases. The second 1/3 of the cases consisted of a mixture of intermediated difficulty cases and the last 1/3 of cases consisted of difficult cases. If this analyzed would be

repeated in near future, the case selection bias would be less obvious due to anatomical resection cases accumulation. But on the other hand, smart case selection was a good clinical practice that allowed this study to end up in lower complication rate and zero mortality.

The path to becoming a global standard of care is still long. There are two criteria that need to be fulfilled: (I) the majority of the surgeons should have acquired the skills and can safely practice this approach; (II) nearly all the patients can be operated by this approach without straight case selections.

I believe we have reached a stage where we could achieve a better shorted outcome without compromising oncological results by operating in minimally approach when this operation was carried out by surgeons who have fully acquired the expertise.

The journey of a thousand miles begins with a single step.

Acknowledgements

None.

Footnote

Conflicts of Interest: The author has no conflicts of interest to declare.

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Cite this article as: Cheung TT. Laparoscopic liver resection in patients with liver cirrhosis—the path towards standard of care. *HepatoBiliary Surg Nutr* 2018;7(1):68-69. doi: 10.21037/hbsn.2017.09.02