



# Laparoscopic liver resection for hepatocellular carcinoma, is the size nodule a limitation?

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*Response to:* Tsai KY, Huang MT. Laparoscopic liver resection for large hepatocellular carcinoma. *Laparosc Surg* 2018;2:62.

Received: 18 January 2019; Accepted: 30 January 2019; Published: 11 February 2019.

doi: 10.21037/ls.2019.01.04

**View this article at:** <http://dx.doi.org/10.21037/ls.2019.01.04>

Laparoscopic liver resection (LLR) is the most growing liver surgical technique in the last ten years and, initial indications have been overpassed (1). After two consensus conferences, the first guidelines have been proposed and, regarding the hepatocellular carcinoma (HCC) the debate is still open for the surgical indications. However, numerous studies are now published about LLR for HCC. It is now accepted that minimally invasive liver surgery (MILS) has demonstrated that both robotic and laparoscopic, have improved significantly the operative and post-operative patient benefits such as less blood loss, less complications, minor length of stay and, minor readmissions rate (2). One of the most limitations for LLR was the tumor size. Nevertheless, according to the present studies, surgical resections for large HCC were routinely performed with the traditional approach. Huge HCC are often located as exophytic tumors in healthy livers. This allows surgeons to perform atypical resection with a parenchymal-sparing policy. The recurrence-free survival after surgical resection for HCC is not determinate by the type of resection (anatomical or non-anatomical) (3). Furthermore, the location of HCC nodules is no more a limitation to MILS (4). Of course, this type of surgical approach in HCC patients located in the unfavorable segment should be performed in specialized centers.

In the Editorial entitled “Laparoscopic liver resection for large hepatocellular carcinoma”, Tsai and Huang reported their personal experience for LLR for HCC >5 cm (5). Authors find in the large HCC group more number of major liver resection (51.4% *vs.* 12.9%;  $P < 0.001$ ), which determine a higher blood loss during

surgery (623.2 *vs.* 280.2 mL;  $P = 0.022$ ), longer operative time (232.5 *vs.* 156.8 min;  $P < 0.001$ ), as consequence more complication rates (18.9% *vs.* 6.9%;  $P = 0.032$ ), and longer postoperative hospital stays (9.0 *vs.* 6.8 days;  $P = 0.007$ ), pathological results shows a higher number of advanced tumor stages ( $P < 0.001$ ). All these results are connected, major resection required major operative time, often more blood loss with potentially more complication and thus more length of stay. Nevertheless, recurrence was similar between the two groups. It may be natural that bigger tumors may have a poor prognosis compared with small or early HCC resected. Accordingly, a patient with large HCC which need a surgical resection can be treated with MILS. LLR play a role as a powerful local therapy, such as locoregional therapy LLR can be repeated with low liver failure rate (6). In that way we can lengthen the overall survival of the HCC patients.

The referred article of the Tsai and Huang’s Editorial analyze the role of tumor size in case of LLR according to the short- and long-term outcomes (7). As in the author’s experience, Large HCC Group had higher conversion rates ( $P < 0.001$ ), longer operative time ( $P < 0.001$ ), higher blood losses ( $P = 0.025$ ), and longer total hospital and intensive care unit stays. But there were no differences in morbidity and mortality. According to these results, we need to ask if a liver resection for large HCC will be better tolerated with an open or a laparoscopic approach. In the majority of cases, underlying liver disease is present with or without cirrhosis. MILS seems to be superior to traditional approach because of a minimal wound incision which can preserve portosystemic collaterals and lymphatic

circulation (8). Furthermore, avoiding liver mobilization during MILS can significantly reduce refractory ascites. All this last aspect is well known for early HCC stage (9).

Therefore, further prospective studies are necessary to investigate the utility of LLR and its potential superiority to open approach for large HCC.

### Acknowledgments

*Funding:* None.

### Footnote

*Provenance and Peer Review:* This article was commissioned by the editorial office, *Laparoscopic Surgery*. The article did not undergo external peer review.

*Conflicts of Interest:* The author has completed the ICMJE uniform disclosure form (available at <http://dx.doi.org/10.21037/ls.2019.01.04>). GBLs serves as the Editor-in-Chief of *Laparoscopic Surgery*. The author has no other conflicts of interest to declare.

*Ethical Statement:* The author is accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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doi: 10.21037/ls.2019.01.04

**Cite this article as:** Levi Sandri GB. Laparoscopic liver resection for hepatocellular carcinoma, is the size nodule a limitation? *Laparosc Surg* 2019;3:5.

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