

Laparoscopic liver resection: western versus eastern experience

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Hepatocellular carcinoma (HCC) is the most common primary liver tumor. It is the seventh world's most common cancer and rank second of all cancer deaths (1). It incurs a global health burden, with 782,451 new cases diagnosed worldwide in the year 2012 and a mortality of 745,517: a high incidence to mortality ratio of 1.05. Majority of patients resides in the developing world and often presented late resulting in poor prognosis. Early detection is thus crucial for capturing early disease whereby curative resection can offer the best survival outcome (2).

A wide range of treatment modalities are available for management of HCC based on disease status and liver function. Liver resection remained as the first line curative treatment for HCC with compensated liver function. Not until recently, laparoscopic liver resection (LLR) gradually established its role in surgical resection, offering less analgesic requirements, less operative blood loss, shorter hospital stay compare with their open counterparts; with a low operative mortality of 0.3% and morbidity of 11% (3-5). The latest comparative study between eastern and western experience of LLRs of HCC came from Piardi and his collaboration (6). They reviewed a total of 24 retrospective studies from eastern and western centers practicing LLRs.

This systemic review analyzed the geographical difference in selection criteria, intra-operative and post-operative parameters, as well as survival outcomes of laparoscopic hepatectomies. Recruitment criteria were variable among centers; more Child-Pugh Class B and C patients were recruited in the eastern studies. Pure laparoscopic approach was employed by most western centers while eastern centers used hand-assisted and hybrid approach in addition to pure laparoscopic hepatectomies. Operative time, transfusion rate, conversion were similar among centers. Higher average

blood loss was found in eastern centers contrary to western results, where more portal clamping was being carried out. Hospital stay, morbidity as well as survival data were similar despite the discrepancies in patient's Child's scoring, blood loss and resection margin. They concluded that LLRs may be an alternative choice for treatment of HCC.

This systemic review aimed at comparing the difference between eastern and western practice in terms of LLRs. Indeed HCC itself already represented two different spectrum of disease in the east and west (7-10). The causative factors of HCC varies with geographical distribution, as hepatitis B infection results in an endemic in developing eastern economies i.e., China, south east Asia and parts of Africa via vertical transmission; it is responsible for 50-80% of HCC worldwide (7). Hepatitis C had caused up to 25% of HCC burden in the west, an increasingly important causative factor due to needle exchange. Alcoholic hepatitis accounts for another 20% of HCC in the western population. The rising incidence of metabolic syndrome with more diabetic, obese patients resulting in non-alcoholic steatohepatitis (NASH) is a direct risk factor for HCC (8,9). Different causative factors lead to different mechanisms of carcinogenesis, thus different tumor behavior and presentation (7,11). Western population tend to have more cirrhotic patients with decompensated liver disease since tumorigenesis involved cirrhosis; while HCC patients in the east tend to present late because of clinically indolent disease in the absence of cirrhosis (10). This limits possible treatment options for HCC patients in the east, which comprise of 80% disease load worldwide. The role of screening is beyond the scope of this discussion. Suffice to say that detection of early lesions that are amenable to surgery can improve overall survival and can possibly improve the overall prognosis of this disease.

With such a heterogeneous eastern and western HCC population in mind, we can now consider the credibility of this systemic review. To answer the clinical question of how LLRs of HCC differ between east and west, 24 original articles of LLRs were selected out of 593 in search of literature, validity of which were evaluated by three independent reviewers. This review is on retrospective analysis; no randomized controlled trials were included, decreasing the power of this article. Statistical analysis is lacking in this review, making pooling of data impossible. Considering the heterogeneity among study groups and multiple confounders, interpretation can only be subjective. Most conclusions are merely observations due to geographical difference in the behavior of HCC. Although the percentage of cirrhotic patients were similar, portal clamping was common in the western group to prevent excessive blood loss. Portal clamping offered effective inflow control, but was not a routine practice in most centers worldwide (12). Patients with higher Child's grading were recruited in eastern studies. This could be attributed to more aggressive approach to resection by eastern surgeons since prognosis is in general poor in this locality of patients and surgical resection offers highest curative potential (10). Higher blood loss can thus be accounted for by the same token. With careful patient selection on tumor status and liver reserve, resection can be contemplated even for multi-focal HCC or those with vascular invasion with current surgical expertise in eastern centers (13). The current operative mortality of hepatectomy for HCC is about 5% or less in major centers. Tumor resectability can be 30% or higher in referral centers with adequate surgical expertise, in contrast to 20% in the west. This also explains the expanded indication in eastern studies, which is part of usual practice of Asian surgeons (11).

We conclude from this review that LLRs can be performed with comparable results in the east and west. With such low power and heterogeneity however, by no means we can construct significant results comparing with their open counterparts. Further evaluation on this matter with appropriate patient stratification could be beneficial to determine the true benefits of LLR and whether it can be generalized to replace open resection.

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