

Is laparoscopic simultaneous resection of primary colorectal cancer and liver metastases beneficial?

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Laparoscopic colorectal resection (LCR) and laparoscopic liver resection (LLR) for selected patients with colorectal cancer and colorectal liver metastases (CRLM) has become a universal treatment, respectively (1,2). If a laparoscopic approach can be applied, less intraoperative blood loss, decreased morbidity, and faster recovery is expected compared to an open approach (3,4). Focusing on LLR, the previous two international consensus meetings and the recent Southampton consensus guideline have recommended minor LLR as a standard procedure for patients with CRLM (5-7). Additionally, it has been reported that simultaneous LCR and LLR (LLCR) have some short-term benefits (8,9) and can provide similar long-term outcomes compared to simultaneous open liver resection (9,10). LLCR is recommended for patients with synchronous CRLM, for which total length of the procedure is suspected to be less than 8 hours, underwent combination of LCR and LLR (11).

Simultaneous liver resection may have some perioperative advantages compared to delayed liver resection following colorectal resection because of one-time treatment, but it could synergistically increase postoperative morbidity and mortality (12,13). Expected advantages of simultaneous liver resection include shorter total operation time and total hospital stay, increased patient satisfaction, and reduced medical bills. Disadvantages may include intestinal edema after hepatic pedicle clamping, translocation of colorectal bacteria to the liver transection surface, and decreased acute phase liver regeneration (14). These phenomena may result

in a higher incidence of anastomosis leakage, postoperative infectious complications, and liver failure compared with delayed liver resection. It is well known that simultaneous and delayed liver resection for synchronous CRLM provide similar long-term outcomes (13).

We congratulate Dr. van der Poel and colleagues for publishing “Laparoscopic combined resection of liver metastases and colorectal cancer: a multicenter, case-matched study using propensity scores.” in *Surgical Endoscopy* 2018 Aug 1 (15). This is the first report of a study comparing LLCR with LCR alone using propensity score matching (PSM). Several papers have been published comparing LLCR and LLR alone. If limited to minor LLR, LLR is less invasive than LCR (16). Therefore, it is reasonable to compare simultaneous LLCR with LCR alone as done in this paper. Currently, PSM has been widely adopted as an established statistical method to compare different treatments with a minimized selection bias. It has been demonstrated that treatment effects showed no statistically significant difference between non-randomized studies using a well-designed PSM analysis and randomized control trial (17).

In this paper, 64 patients underwent LLCR, which was a median of 3% of the liver resections and 1% of the colorectal resections at the center during the study period. The mean annual number of LLCR procedures per hospital was four. Consequently, only highly selected patients can be indicated for LLCR. It is an important point that all patients in this study received minor liver resections: wedge

resections (70%), left lateral sectionectomies (11%), and segmentectomies (19%). Multiple liver resections were performed for only 25% of the patients. The rates of solitary metastasis and metastasis ≤ 3 cm were 69% and 78%, respectively. In contrast, various procedures were performed for primary colorectal lesions. From these results, LLCR can mainly be recommended only for patients with less advanced synchronous liver metastases that can be resected with none-complicated minor LLR. In fact, among patients undergoing major LLR during the study period, no patients were selected to be candidates for LLCR.

Indication of “simultaneous LLCR and major LLR” is still under debate. In open major liver resection, a long duration of pedicle clamping and loss of large liver parenchyma could cause transient portal congestion and could impair the colorectal anastomosis; therefore, sometimes a temporary stoma was made (11). But some recent papers clearly demonstrated that advances of surgical skills in laparoscopic surgery allowed the safe simultaneous LLCR and major LLR (11,18). Simultaneous laparoscopic rectal excision and major LLR should be avoided because of possibility of increasing morbidity and operative risk (19). Recommendation for such complicated cases has not been defined yet in the recent Southampton consensus guidelines for LLR (7).

Liver first approach was selected for 67% of the patients. The liver first approach was recommended to avoid the congestion of the colorectal anastomosis and contamination of the resected liver surface. If colon first approach is selected, liver transection without clamping or using selective interruption of blood flow is recommended (19). We have previously reported the usefulness of a pre-coagulation technique to reduce blood loss without interruption of blood flow (20).

In the PSM cohort, the rates of patients receiving neoadjuvant chemotherapy were significantly different, i.e., 20% in LLCR and 8% in LCR. This was acceptable because of the high frequency of neoadjuvant chemotherapy for CRLM. Neoadjuvant chemotherapy can increase postoperative morbidity (21). However, morbidity rates were similar in the two groups. It has been reported that postoperative morbidity, especially infectious morbidity, can worsen long-term, recurrence-free, and overall survival for CRLM patients (22). At this point, LLCR is a beneficial procedure. LLCR provided an equivalent operation time [206 (range, 166–308) *vs.* 197 (range, 148–231) min, $P=0.057$], significantly higher blood loss amount [200 (range, 100–700) *vs.* 75 (range, 5–200) mL,

$P=0.011$], and equivalent postoperative hospital stay [6 (range, 5–9) *vs.* 7 (range, 4–13) days, $P=0.164$], compared to LCR. To share the trocar ports for the liver and colorectal procedures, time of access and closure of extraction site could be decreased. Additionally, the assistant wound can be shortened for use in removal of the resected liver specimen and colorectal anastomosis (19). Even taking the above into consideration, it is difficult to understand the equivalent operation time for LLCR and LCR. It has reported that operation time for colorectal procedure and liver resection was almost comparable in open or laparoscopic combined procedure (11). Unknown selection bias may exist. Further a serious weakness of the current study is that control group of LCR did not always have CRLM. The operative time, intraoperative blood loss, and hospital stay for delayed liver resection was not calculated. If taken together with the data of delayed liver resection on LCR, the utility of simultaneous LLCR will be increased.

To achieve excellent long-term prognosis, it may be essential to keep the duration of liver resection and initiation of adjuvant chemotherapy within eight weeks for patients with colorectal cancer (23). Recently, it has been reported that LLR for CRLM can provide early induction of adjuvant chemotherapy compared to open liver resection (24,25). There is a possibility that LLCR can further shorten the interval because of the simultaneous achievement of LCR and LLR.

This paper clearly showed that the addition of minor LLR on LCR is feasible and does not increase operative risk compared to LCR alone in selected patients with synchronous CRLM with surgery performed in a specialized center.

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Footnote

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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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