Editorial

Laparoscopic liver resection for metastatic melanoma: a tale of caution and reason for optimism

Gregory C. Wilson, David A. Geller

Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, University of Pittsburgh Medical Center, Pittsburgh, PA, USA

Correspondence to: David A. Geller. Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, University of Pittsburgh Medical Center, 3471 Fifth Avenue, Suite 300, Pittsburgh, PA, USA. Email: gellerda@upmc.edu.

Comment on: Aghayan DL, Kazaryan AM, Fretland ÅA, et al. Laparoscopic liver resection for metastatic melanoma. Surg Endosc 2018;32:1470-7.

Received: 10 May 2018; Accepted: 26 May 2018; Published: 28 May 2018.

doi: 10.21037/ls.2018.05.06

View this article at: http://dx.doi.org/10.21037/ls.2018.05.06

Reports of laparoscopic liver resection (LLR) date back to the early 1990's (1,2). These reports were predominantly confined to retrospective case series from single institutions with a low number of overall patients. As acceptance of these technique grew and utilization expanded, an international consensus meeting was held in 2008 was held in Louisville, KY to review the safety of feasibility of this technique (3). Recommendations from this meeting established baseline terminology and efficacy of LLR. Final recommendations for LLR were conservative and limited to minor hepatic resections in carefully selected patients. The overall conclusion from this consortium was that patient safety and procedure efficacy should be monitored with a centralized registry as LLR is more broadly accepted. Six years later, a second international consensus conference was held in Morioka, Japan (4). This conference reviewed all current literature on LLR and concluded that while major laparoscopic liver resections were still considered explorative, minor LLRs, defined as resection of 2 or fewer Couinaud segments, were standard clinical practice. The committee's literature review concluded that LLR was not inferior to open resection regarding operative morbidity and mortality, margin negativity, and overall survival. Based on these recommendations, the utilization of LLR for malignant disease has continued to expand in specialized centers most notably for hepatocellular carcinoma (HCC) and colorectal liver metastases (CLM) (5-7). LLR has repeatedly been shown to have superior perioperative outcomes and equivalent long-term oncologic results when compared to open resection (8-12). Perhaps the most convincing data on the benefits of LLR comes from the recently published randomized controlled trial on laparoscopic versus open resection for CLM (13). This study is the first to definitively demonstrate similar short-term oncologic outcomes between open and laparoscopic resection with better perioperative outcomes of decreased postoperative complication rates in the laparoscopic cohort (19% *vs.* 31%, P=0.012) and length of stay (53 *vs.* 96 hours, P<0.001) (13). Similar results have been shown for the management of HCC with improved perioperative outcomes and similar oncologic results in LLR when compared to open resection (14,15).

The surgical management of metastatic liver disease is not a new concept and has been studied for a number of different primary malignancies including melanoma (16). In a systematic review of liver resection for non-colorectal, non-neuroendocrine liver metastases there appears to be a benefit to resection across a wide array of pathology with expected overall survival ranging from 16–44 months. Regarding melanoma specifically, eighteen studies were reviewed and expected median overall survival was 21.8 months (16). Faries *et al.*, reported on their experience with 1,078 patients with melanoma liver metastases (MLM) at a single institution (17). 5.4% of these patients were candidates for liver resection or ablation. Median overall survival was 24.8 months in the surgical cohort compared to 8 months in the non-surgical group. Similar results have been demonstrated at other high-volume institutions (18,19). The current literature as it stands would suggest a benefit for surgical resection of melanoma liver metastases in highly selected patients. Of note, the only predictors of improved overall survival after resection of MLM

were complete surgical resection (R0 resection) and stabilization of disease on systemic therapy prior to surgical resection (17). The latter point becomes particularly important today because the advent of combined immunotherapy (20) and BRAF/MEK inhibition (21) has dramatically improved the expected response rates and survival in metastatic melanoma. These results all favor an expanded role for the surgical management of melanoma metastases.

In a recent study by Aghayan and colleagues (22), a retrospective review on their series of LLR in the management of MLM at the Oslo University Hospital, Norway is presented. This series consists of a total of 11 patients with predominantly ocular melanoma that underwent a total of 13 resections for MLM. All of the reported procedures were done with curative intent. The time period from primary diagnosis to metastasectomy varied across the cohort ranging from 0–149 months. The majority of procedures were non-anatomic, parenchymal sparing resections. Only one case had to be converted from laparoscopic to open and 85% of cases achieved an R0 resection. There were no perioperative deaths and morbidity was quite low. 91% of this cohort had recurrent disease within a median of 5 months from LLR. Only one patient remained disease free at last follow-up. Four patients (36%) had liver only recurrence, while the remainder developed liver and/or extrahepatic disease following LLR. Median overall survival was 30 months with 1-, 3-, and 5-year overall survival of 82%, 45%, and 9%, respectively. Unfortunately, the authors do not provide us any insight into the overall denominator with the total number of patients evaluated over this time period with MLM that were not candidates for surgery. Additionally, there is no mention of systemic therapy received by these patients nor the length of stable disease prior to metastasectomy.

The current literature, including this report by Aghayan *et al.*, on resection for MLM heeds caution. Certainly there is considerable selection criteria that must be evaluated prior to undergoing LLR for MLM as evidenced by the simple fact that only 11 patients underwent such a procedure over a 13 year time period at this specialty referral center in Oslo, Norway. The literature would suggest that only 5% of patient with MLM are eligible for surgical resection/ablation. In this current series, the overall denominator is unknown but, the authors are able to demonstrate the safety and feasibility of LLR in selected patients with MLM. Despite curative intent for each procedure, essentially all patients recurred within 1 year and overall survival was quite poor. The only long-term survivor in this cohort had metastatic melanoma of unknown primary, an established positive prognostic variable (23). These results, consistent with the remainder of the literature, further support the notion that even in highly selected patients with isolated metastatic disease, disseminated micrometastatic disease is the norm not the exception. Fortunately, the advent of immunotherapy and BRAF inhibition has revolutionized the treatment of metastatic melanoma and offers the ability to better control disease at initial presentation as well as treat occult micrometastatic disease in the adjuvant setting. This improved systemic therapy certainly opens the door for a more aggressive approach to patients with isolated liver metastatic disease and LLR will almost certainly prove to be the preferred method when feasible. These patients should be managed in a multidisciplinary clinic where all the available treatment modalities can be fully integrated into a clear and comprehensive treatment plan. Ideally future clinical trials will help us guide both patient selection and treatment sequencing in this complex clinical problem.

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: Both authors have completed the ICMJE uniform disclosure form (available at http://dx.doi.org/10.21037/ls.2018.05.06). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are 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.

References

1. Azagra JS, Goergen M, Gilbart E, et al. Laparoscopic anatomical (hepatic) left lateral segmentectomy-technical aspects. Surg Endosc 1996;10:758-61.
2. Kaneko H, Takagi S, Shiba T. Laparoscopic partial hepatectomy and left lateral segmentectomy: technique and results of a clinical series. Surgery 1996;120:468-75.
3. Buell JF, Cherqui D, Geller DA, et al. The international position on laparoscopic liver surgery: The Louisville Statement, 2008. Ann Surg 2009;250:825-30.
4. Wakabayashi G, Cherqui D, Geller DA, et al. Recommendations for laparoscopic liver resection: a report from the second international consensus conference held in Morioka. Ann Surg 2015;261:619-29.
5. Nguyen KT, Gamblin TC, Geller DA. World review of laparoscopic liver resection-2,804 patients. Ann Surg 2009;250:831-41.
6. Belli G, Limongelli P, Fantini C, et al. Laparoscopic and open treatment of hepatocellular carcinoma in patients with cirrhosis. Br J Surg 2009;96:1041-8.
7. Adam R, de Gramont A, Figueras J, et al. Managing synchronous liver metastases from colorectal cancer: a multidisciplinary international consensus. Cancer Treat Rev 2015;41:729-41.
8. Wei M, He Y, Wang J, et al. Laparoscopic versus open hepatectomy with or without synchronous colectomy for colorectal liver metastasis: a meta-analysis. PLoS One 2014;9:e87461.
9. Beppu T, Wakabayashi G, Hasegawa K, et al. Long-term and perioperative outcomes of laparoscopic versus open liver resection for colorectal liver metastases with propensity score matching: a multi-institutional Japanese study. J Hepatobiliary Pancreat Sci 2015;22:711-20.
10. Nguyen KT, Marsh JW, Tsung A, et al. Comparative benefits of laparoscopic vs open hepatic resection: a critical appraisal. Arch Surg 2011;146:348-56.
11. Ciria R, Cherqui D, Geller DA, et al. Comparative Short-term Benefits of Laparoscopic Liver Resection: 9000 Cases and Climbing. Ann Surg 2016;263:761-77.
12. Schiffman SC, Kim KH, Tsung A, et al. Laparoscopic versus open liver resection for metastatic colorectal cancer: a metaanalysis of 610 patients. Surgery 2015;157:211-22.
13. Fretland AA, Dagenborg VJ, Bjornelv GMW, et al. Laparoscopic Versus Open Resection for Colorectal Liver Metastases: The OSLO-COMET Randomized Controlled Trial. Ann Surg 2018;267:199-207.
14. Memeo R, de'Angelis N, Compagnon P, et al. Laparoscopic vs. open liver resection for hepatocellular carcinoma of cirrhotic liver: a case-control study. World J Surg 2014;38:2919-26.
15. Tranchart H, Di Giuro G, Lainas P, et al. Laparoscopic resection for hepatocellular carcinoma: a matched-pair comparative study. Surg Endosc 2010;24:1170-6.
16. Fitzgerald TL, Brinkley J, Banks S, et al. The benefits of liver resection for non-colorectal, non-neuroendocrine liver metastases: a systematic review. Langenbecks Arch Surg 2014;399:989-1000.
17. Faries MB, Leung A, Morton DL, et al. A 20-year experience of hepatic resection for melanoma: is there an expanding role? J Am Coll Surg 2014;219:62-8.
18. Rose DM, Essner R, Hughes TM, et al. Surgical resection for metastatic melanoma to the liver: the John Wayne Cancer Institute and Sydney Melanoma Unit experience. Arch Surg 2001;136:950-5.
19. Pawlik TM, Zorzi D, Abdalla EK, et al. Hepatic resection for metastatic melanoma: distinct patterns of recurrence and prognosis for ocular versus cutaneous disease. Ann Surg Oncol 2006;13:712-20.
20. Wolchok JD, Chiarion-Sileni V, Gonzalez R, et al. Overall Survival with Combined Nivolumab and Ipilimumab in Advanced Melanoma. N Engl J Med 2017;377:1345-56.
21. Long GV, Stroyakovskiy D, Gogas H, et al. Combined BRAF and MEK inhibition versus BRAF inhibition alone in melanoma. N Engl J Med 2014;371:1877-88.
22. Aghayan DL, Kazaryan AM, Fretland AA, et al. Laparoscopic liver resection for metastatic melanoma. Surg Endosc 2018;32:1470-7.
23. van der Ploeg AP, Haydu LE, Spillane AJ, et al. Melanoma patients with an unknown primary tumor site have a better outcome than those with a known primary following therapeutic lymph node dissection for macroscopic (clinically palpable) nodal disease. Ann Surg Oncol 2014;21:3108-16.

doi: 10.21037/ls.2018.05.06
Cite this article as: Wilson GC, Geller DA. Laparoscopic liver resection for metastatic melanoma: a tale of caution and reason for optimism. Laparosc Surg 2018;2:30.