



## Where are We with Liver Transplant for Unresectable Colorectal Metastases? Its Early, but Some Initial Insights are Evident

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Liver transplantation for unresectable colorectal metastases (CRLM) has been increasing in recent years, with an almost tenfold increase in cases between 2017 and 2022. While historically CRLM has been a contraindication to liver transplant, modern chemotherapy has allowed a re-analysis of patients with unresectable CRLM. In 2012, the University of Oslo group demonstrated a significantly improved overall survival (OS) in patients who underwent liver transplantation when compared with chemotherapy alone for unresectable CRLM.<sup>1,2</sup> As transplantation for these patients began to garner favor, the International Hepato-Pancreato-Biliary Association (IHPBA) published a consensus guideline in 2021 to provide a better framework for liver transplantation for unresectable CRLM.<sup>3</sup>

In this issue of *Annals of Surgical Oncology*, Sasaki and colleagues investigated the current state of liver transplantation for unresectable CRLM in the United States (US).<sup>4</sup> Utilizing the United Network Organ Sharing (UNOS) database, they collected data on both listed and transplanted patients with CRLM as a diagnosis. They included basic demographic data, MELD score, and donor characteristics for patients between December 2017 and March 2022. The goal of this descriptive analysis was to help define the current state of liver transplant for

colorectal liver metastases in the US while also urging for a national registry to optimize liver transplantation for this patient population.

Of the 64 patients included in the study period, 46 patients (71.9%) underwent liver transplant, while 8 were removed (likely due to tumor progression, but the reasons were not clear) and 10 remained on the list at the time of study completion. There were two intraoperative deaths, which is very high and does not include any patients who may have passed during hepatectomy (without implant of the organ). Indication for transplants beyond CRLM is unknown, such as liver failure from chemotherapy, biliary ischemia due to hepatic artery infusion pump, or unresectable disease without options for either systemic chemotherapy or isolation hepatic artery infusion. Living donor transplants accounted for 26 patients and 20 patients received deceased donor transplants with a median listing MELD score of 8. The organs from the 20 deceased donors used, and associated descriptions, are useful to examine, as most listed patients with CRLM have a MELD score of around 8 and received marginal organs turned down by all centers. More than half of the transplants performed were performed by only five centers (disclosure: our center is one of the five). This is important to note because the data are clustered, and are these optimal results from established, high-volume centers that are strong proponents of transplant oncology? They noted 75% and 54% disease-free survival (DFS) at 1 and 3 years, respectively, with 89% and 60% OS at 1 and 3 years, respectively. However, as with any newer field of study, the long-term data are not yet established. While this study reports data at 1 and 3 years, the data are not developed enough to report

accurate 3-year survival. We must ask ourselves if 60% 3-year survival is acceptable, while recognizing it may be better than current management in these patients.

This work by Sasaki and colleagues is the first to analyze the nature of liver transplantation in this population in the US and serves as a foundation for understanding initial descriptors and outcomes in liver transplantation for unresectable CRLM. The initial results are intriguing and consistent with the Oslo experience to date despite varied protocols, use of different donors, and a steep learning curve. Development of a national registry from evaluation or listing will require a coordinated and multidisciplinary effort and we urge the oncologic community to continue to evaluate this unique patient population.

**DISCLOSURE** S. Whitney Zingg and Shimul A. Shah declare no conflicts of interest.

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