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ASO Author Reflections: Evaluating the Impact of Wider Adoption of Minimally Invasive Liver Resection

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Past

Minimally invasive liver resection (MILR) was introduced in the 1990s, and subsequently developed at a number of specialized centers where it was shown to be both safe and effective in comparison to open techniques.¹ These early experiences led to consensus statements supporting its use in appropriately selected patients.² Despite this growing acceptance of MILR, little was known about how it might translate into practice outside of specialized, high-volume hepatobiliary surgery centers. With a learning curve of approximately 45-60 cases, it is reasonable to question whether MILR will maintain the same risk profile in low-volume centers.³ The purpose of this study was to answer this question by comparing the outcomes of MILR to open resection (OLR) for primary liver malignancy in a national registry which is not limited to specialized centers.

Present

The study demonstrated that MILR has expanded beyond high-volume centers, and that patient selection criteria for MILR were similar regardless of treatment center volume. Primary factors influencing selection for MILR included older age, higher Charlson comorbidity score, smaller tumor size, and segmental resections. It also demonstrated that both 90-day mortality and overall survival are no different for MILR when compared to OLR.⁴ Notably this finding was true in both high- and low-volume centers, suggesting that implementation of MILR does not negatively impact the quality of care at an individual treatment center. However, the findings must be cautiously interpreted in the context of an observation that that 90-day mortality for all liver resections—both OLR and MILR combined—is lower in high-volume centers.

Future

Within the lifecycle of new surgical technologies, a significant amount of attention is focused upon initial descriptions and validation of safety and efficacy. Less attention is paid to how these technologies are best implemented, and their effectiveness once subjected to a heterogeneous set of practice environments. While this study supports the safety of wider

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dissemination of MILR, it also reinforces ongoing efforts to regionalize complex hepatobiliary surgery into centers of excellence. Though it appears MILR can be safely implemented across a range of practice settings, our data again calls into question the prudence of liver resections at low-volume treatment centers. Both surgeons and hospital systems often strive to provide the most cutting-edge treatment options for patients, but the investment of effort and money to provide these technologies may sometimes be better appropriated to efforts which have the potential to improve care for all patients. Future efforts should not be focused on how MILR can be implemented in more centers, but in how either safety of liver resection can be improved in low-volume centers or how care of patients can be effectively regionalized to high-volume centers.

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