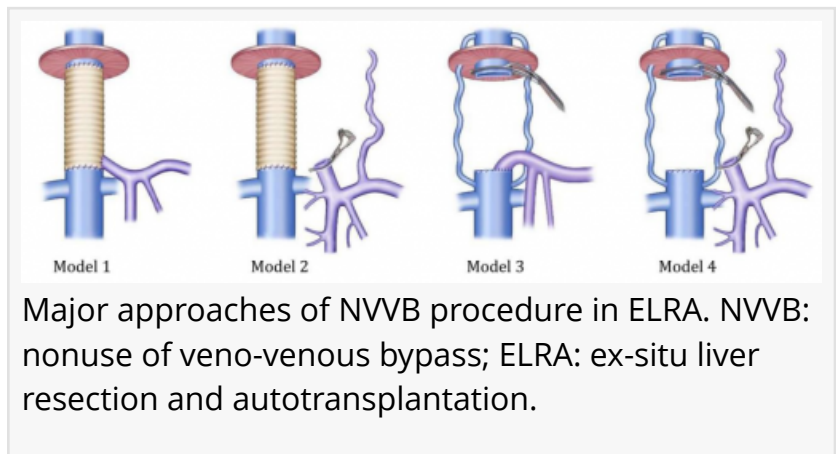


Resecting the Unresectable — Advances in Extracorporeal Liver Surgery (ELS)

FAYETTEVILLE, GA, UNITED STATES, October 20, 2025 /EINPresswire.com/ -- In the past, patients with locally advanced liver tumors or invasive parasitic disease were believed as surgically “unresectable”, leaving only the oncological or palliative interventions as their remaining hope for consolation.



[Conventional hepatectomy](#) remains the gold standard for many liver tumors, yet its limits are clear. When the tumor or parasitic lesion invades into the hepato-caval confluence, major vessels of the hilum or both, even total vascular exclusion (TVE) and in-situ hypothermic perfusion (IHP) fail to secure radical and safe resections. Allotransplantation offers another route, but the shortage of donor organs and the risks of lifelong immunosuppression make it impractical for many. For patients with advanced alveolar echinococcosis or complex malignancies, transplant options have long been bleak. Because of these challenges, there is an urgent need to explore and refine ELS as an efficient solution.

A new review published (DOI: [10.1016/j.hbpd.2024.12.005](https://doi.org/10.1016/j.hbpd.2024.12.005)) online December 19, 2024, in [Hepatobiliary & Pancreatic Diseases International](#) sheds light on how Chinese surgeons have shaped the modern practice of ELS. The article, written by a multi-institutional team, details three major surgical categories — ex-situ liver resection and autotransplantation (ELRA), ante-situm liver resection and autotransplantation (ALRA), and auxiliary partial liver autotransplantation (APLA) — and recounts major groundbreaking innovations. These contributions underscore how China’s surgical community is setting new global benchmarks for tackling the highly technique demanding liver diseases.

The review traces a remarkable surgical journey. Early attempts at bench resection carried daunting complication rates, but Chinese teams responded with innovations to refine the procedures. They pioneered the nonuse of veno-venous bypass (NVVB) technique to stabilize hemodynamics during anhepatic phase, developed novel vascular reconstruction strategies to preserve FLR vasculatures, introduced umbilical vein recanalization to secure portal perfusion,

and so on. These refinements not only simplified operations but also reduced perioperative risks. Further, by classifying indications — both in liver malignancy and alveolar echinococcosis — surgeons can now better select ideal patients, guide surgical decision-making as well as operation and anticipate patient outcomes. Clinical data showed five-year overall survival rate over 35% and 80% respectively for selected liver malignancies and alveolar echinococcosis. Precision planning using three-dimensional imaging, functional liver volume equations, and virtual surgery has further boosted predictability and safety. Together, these advances turned ELS into more than a surgical technique: it became a representative of Precision Liver Surgery paradigm, merging radical resection with best-possible organ preservation while increasing patient safety and improving long-term survival.

“ELS represents one of the most ambitious frontiers in hepatobiliary practice,” said Prof. Jia-Hong Dong, a pioneer in the field. “What was once experimental is now a refined and standardized procedure that can achieve surgical cure for patients previously labeled as inoperable. China’s collaborative innovations — from technical refinements to precise patient selection — have changed global perspectives on what is currently possible in liver surgery. By integrating advanced imaging, surgical precision, and multi-disciplinary teamwork, we are no longer constrained by traditional boundaries in treating complex liver disease”.

The impact of these advances extends beyond the operating room. By eliminating the need for donor grafts and lifelong immunosuppression, ELS has become a practical lifeline for patients with otherwise untreatable disease. As international centers adopt methods pioneered in China — such as NVVB strategies and innovative autograft reimplantation patterns — the field is poised for broader global uptake. Looking forward, integrating ELS with interventional radiology, systemic therapies, and regenerative medicine could further expand indications and outcomes. Establishing global registries and consensus frameworks will be vital to ensure this once daring, now proven surgery achieves its full potential worldwide.

References

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