

Hepato-Pancreatico-Biliary

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Novel benchmark values for redo liver transplantation – does the outcome justify the effort?

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Objective: In the era of organ shortage, redo liver transplantation (reLT) is frequently discussed in terms of expected poor outcome, high cost

and therefore wasteful resources. However, there is a lack of benchmark data to reliably assess outcomes after reLT. The aim of this study was to define the ideal reLT case, and to establish clinically relevant benchmark values for best achievable outcome in reLT.

Methods: We collected data on reLT between January 2010 and December 2018 from 22 high volume transplant centers on three continents. Benchmark cases were defined as recipients with model of end-stage liver disease score ≤ 25 , absence of portal vein thrombosis, no mechanical ventilation before surgery, receiving a graft from a donor after brain death. In addition, early reLT including those for primary non-function (PNF) were excluded. Clinically relevant endpoints covering intra- and postoperative course were selected and complications were graded by severity using the Clavien-Dindo classification and the comprehensive complication index (CCI). The benchmark cutoff for each outcome was derived from the 75th percentile of the median values of all benchmark centers, indicating the "best achievable" result. To assess the utility of the newly established benchmark values, we analyzed patients who received reLT for PNF (non-benchmark patients).

Results: Out of 1110 reLT 413 (37.2%) qualified as benchmark cases. Benchmark values included: Length of intensive care unit and hospital stay: ≤ 6 and ≤ 24 days, respectively; Clavien-Dindo grade $\geq 3a$ complications and the CCI at 1 year: $\leq 76\%$ and ≤ 72.2 , respectively; in-hospital and 1-year mortality rates: $\leq 14.0\%$ and $\leq 14.3\%$, respectively. The cutoffs for transplant-specific complications such as biliary complications at 1 year, outflow problems at 1 year and hepatic artery thrombosis at discharge were $\leq 27.3\%$, $\leq 2.5\%$ and $\leq 4.8\%$, respectively. Patients receiving a reLT for PNF showed mean outcome values all outside the reLT benchmark values. In-hospital mortality rate was 34.4% and the mean CCI at discharge 68.8.

Conclusion: ReLT remains associated with high morbidity and mortality. The availability of benchmark values for outcome parameters of reLT may serve for comparison in any future analyses of individuals, patient groups, or centers, but also in the evaluation of new therapeutic strategies and principles.