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LIVER TRANSPLANTATION IATROGENIC EXTRAHEPATIC BILE DUCT INJURIES: A SYNTHESIS OF CURRENT EVIDENCE

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Iatrogenic bile duct injuries (IBDI), most commonly sustained during cholecystectomy, represent a serious complication with life-altering consequences. While most injuries can be managed with surgical or endoscopic interventions, a subset of patients progresses to end-stage liver disease (ESLD) due to secondary biliary cirrhosis (SBC), recurrent cholangitis, or acute liver failure (ALF) from concomitant vascular damage (Lauterio et al., 2017). In these catastrophic scenarios, liver transplantation (LT) emerges as the only definitive salvage therapy. Given the rarity of this indication, evidence is derived from case series, database analyses, and systematic reviews. This review synthesizes findings from the available literature to elucidate the indications, outcomes, and unique challenges associated with LT for iatrogenic bile duct injuries.

A review of the literature on LT for IBDI was conducted, synthesizing evidence from single-center series, multicenter analyses, national registry data, and systematic reviews.

LT for IBDI is uncommon but critical, representing only 0.06% to 3.4% of all LT procedures (Garcia et al., 2017; Spiers et al., 2023). The primary indication is SBC from chronic obstruction and multiple failed repairs, with patients undergoing a median of two surgical interventions before listing (de Santibanes et al., 2008; Spiers et al., 2023). The interval from injury to transplantation ranges from 60 to 144 months but is significantly shorter with concomitant vascular injury, which can precipitate ALF (HR 10.69) (Tsaparas et al., 2021).

The perioperative period carries significant risk. IBDI is the strongest independent predictor of early graft loss, conferring an eightfold increased risk of failure within seven days ($p < 0.001$, OR 8.4) and a nearly threefold increased risk of 30-day mortality ($p = 0.03$, OR 2.9) (Garcia et al., 2017). Median 30-day mortality is 20.0%, considerably higher than the 3-5% for other indications (Spiers et al., 2023). This elevated risk stems from technical complexity in a re-operative field, dense adhesions, chronic sepsis, and complex vascular reconstructions (de Santibanes et al., 2008; Lauterio et al., 2017). Urgent transplantation for ALF from vascular injury presents even greater challenges, often requiring venovenous bypass, temporary portocaval shunts, and vascular conduits (Lauterio et al., 2017).

The MELD score often underestimates morbidity, failing to capture chronic sepsis and malnutrition, potentially delaying transplantation (Spiers et al., 2023). Despite perioperative challenges, long-term survival is encouraging. The UNOS analysis demonstrated 1- and 5-year survival of 84.3% and 76.2% (Garcia et al., 2017). De Santibanes et al. (2008) reported 75% 5-year survival, and Tsaparas et al. (2021) showed 70.6% 10-year survival.

LT for IBDI is a rare but vital salvage therapy for patients developing ESLD after failed primary management. The procedure carries elevated risks of early graft loss and perioperative mortality due to cumulative technical and septic burden. However, patients surviving the initial post-transplant period achieve excellent long-term outcomes. The evidence underscores the importance of early referral to specialized centers, as multiple failed repairs at non-specialist institutions commonly precede transplantation (de Santibanes et al., 2008; Tsaparas et al., 2021). Inadequate MELD scoring highlights the need for exception criteria to ensure timely access to transplantation (Spiers et al., 2023). An international registry is warranted to further improve outcomes for this challenging patient cohort.