

Choledochoduodenostomy is a safe alternative to choledochojejunostomy for biliary reconstruction in liver transplantation providing better post-operative outcomes and efficient post-operative biliary access.

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Introduction

Duct-to-duct (D2D) anastomosis is the standard biliary reconstruction in cadaveric, whole-graft, liver transplantation. When D2D anastomosis is not possible, a choledochojejunostomy (CDJ) is traditionally used. CDJ has associated complications such as post-operative cholangitis, strictures, bile leaks, and difficult biliary access. Choledochoduodenostomy (CDD) is an alternative to Roux-en-Y anastomosis and theoretically provides easier postoperative endoscopic biliary access, but concerns also exist that the rates of cholangitis are increased in this type of biliary reconstruction. The objective of this study was to evaluate a 10-year experience of the different biliary anastomosis techniques at our center. We hypothesize that CDD has comparable rates to D2D reconstructions, but superior outcomes to CDJ in liver transplantation.

Methods

Retrospective review was conducted from September 2011 to March 2020 on patients that received liver transplants at this single-center study. Patients were categorized by their biliary reconstruction. The primary outcome of interest was the rate of cholangitis. Secondary outcomes included utilization of ERCP in post-operative setting, post-ERCP complications, and biliary strictures. Outcomes were adjusted based on severity of recipient liver disease (MELD score) and type of donor (living versus cadaveric) and included in a regression analysis.

Results

590 patients were included in the analysis. The median MELD 27 with 36% of recipients being female, and 16% receiving living donors. Within the cohort, 328 recipients received liver transplant with traditional D2D anastomosis while 189 and 73 recipients received a CDD or CDJ anastomosis, respectively. The rate of cholangitis was significantly higher in CDJ compared to D2D and CDD (34% vs 21% vs 21%, $p=0.042$), respectively. When controlling for MELD and graft type, CDJ had a OR of 2.5 for developing cholangitis ($p=0.005$) compared to D2D and no increased risk was associated with CDD ($p=0.738$) compared to D2D. ERCP rates were comparable between groups, but complication rates were higher in the D2D group (21% vs 9.6% CDJ, vs 13.2% CDD $p=0.014$). However, in regression analysis, MELD score and graft type were significant for complication rates, not biliary reconstruction. Biliary strictures were higher in the CDJ group 38% vs D2D 14% vs CDD 19%, $p<0.001$), which persisted as a significant risk factor after controlling for MELD and graft type (OR 2.2 $p=0.021$) but no increased risk in CDD to D2D ($p=0.438$).

Conclusion

CDD continues to be a safe alternative to CDJ biliary anastomosis when traditional D2D anastomosis cannot be performed as demonstrated by graft survival and mortality rate. CDD is also advantageous to CDJ in lower rates of cholangitis post-operatively and comparable rates in D2D anastomosis.