

Use of the Recipient Celiac Trunk for Hepatic Artery Reconstruction in Orthotopic Liver Transplant

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Introduction: Arterial complications contribute to significant morbidity and mortality after liver transplant. If hepatic artery inflow to the graft is inadequate, alternative approaches can be considered, such as supraceliac or infrarenal aortic conduits and splenic artery for arterial inflow. Up to our knowledge we report the first series of cases using the recipient celiac trunk to provide arterial inflow to the donor liver allograft in orthotopic liver transplant (OLT).

Methods: Between January-2005 and January-2012, we performed 928 OLTs , 850 cases are first transplant and 78 cases are retransplants , 143 cases are pediatric recipients and 785 cases are adult recipients .We used the recipient celiac trunk for arterial inflow in nine patients. Eight cases are first transplant and one case is a second transplant. Five cases are pediatric recipients and four cases are adult recipients. Male to female ratio is 3/6. Average follow up is 23 months. Retrospectively, we evaluated the indications, results and outcome of this technique. Doppler ultrasound of the liver (DUSL) was used to evaluate the arterial flow.

Results: Indication are size mismatch between the donor and recipient common hepatic arteries (n= 5), and poor arterial inflow in the common hepatic artery (n=4).We used this technique in 1% of OLTs.We found that this technique was used more common in pediatric recipients with a p-value of 0.008 (3.4% of pediatric recipients and 0.5% of adult recipients). No hepatic artery thrombosis or arterial strictures were encountered. None of the patients developed ischemia of the stomach or duodenum, and none of them developed pancreatic or biliary complications related to poor arterial inflow. One patient had splenomegaly and splenic infarcts prior to transplant and this was not aggravated after the transplant. Another patient underwent splenectomy at the time of the transplant due to associated autoimmune hemolytic anemia. DUSL on post-operative day 1 showed peak systolic flow ranging between (36-303 cm/sec) and resistive index ranging between (0.52-0.86). Arterial patency is 100 %.One, 3 & 5 year-patient and graft survival is 83%. One patient died 3 months after the transplant due to recurrent hepatoblastoma with a functioning graft and patent hepatic artery; all other patients are alive with a functioning graft and patent hepatic artery.

Conclusion: The celiac trunk provides adequate arterial inflow in orthotopic liver transplant when the recipient's hepatic artery is not suitable to use, especially in pediatric patients. No complications were encountered as a result of sacrificing the branches of the celiac axis. We suggest that this technique might be considered as a viable option when an inadequate recipient hepatic artery is encountered.

DATE OF TRANSPLANT	RECIPIENT AGE (Yrs) & SEX	INDICATION OF TRANSPLANT	DONOR AGE (Yrs)& SEX	FIRST VS SECOND TRANSPLANT	SPLIT VS WHOLE ALLO- GRAFT	POST OP DAY 1 DUPLEX US (PSV cm /sec , RI)	CURRENT ARTERIAL PATENCY	PATIENT SURVIVAL	GRAFT SURVIVAL
5/22/2005	0.64 F	BILIARY ATRESIA	1 M	FIRST	WHOLE LIVER	(303 , 0.8)	PATENT	ALIVE	FUNCTIONING GRAFT
4/30/2011	4.07 M	AUTOIMMUNE HEMOLYTIC ANEMIA	8 M	SECOND	WHOLE LIVER	(98 , 0.62)	PATENT	ALIVE	FUNCTIONING GRAFT
1/2/2012	5.04 F	ACUTE FULMINANT LIVER FAILURE	42 F	FIRST	LEFT LATERAL SEGMENT	(36 , 0.86)	PATENT	ALIVE	FUNCTIONING GRAFT
12/11/2011	15.73 F	PRIMARY SCLEROSING CHOLANGITIS	14 M	FIRST	WHOLE LIVER	(118 , 0.59)	PATENT	ALIVE	FUNCTIONING GRAFT
2/16/2011	16.44 F	CRYPTOGENIC CIRRHOSIS	51 M	FIRST	WHOLE LIVER	(138 , 0.52)	PATENT	ALIVE	FUNCTIONING GRAFT
1/21/2011	25.33 F	PRIMARY SCLEROSING CHOLANGITIS	26 M	FIRST	WHOLE LIVER	(49 , 0.8)	PATENT	ALIVE	FUNCTIONING GRAFT
10/4/2011	54.35 F	HEPATOCELLULAR CARCINOMA , HCV	61 M	FIRST	WHOLE LIVER	(46 , 0.84)	PATENT	ALIVE	FUNCTIONING GRAFT
7/14/2010	64.25 M	NASH HEPATOBLASTOMA	27 M	FIRST	WHOLE LIVER	(242 , 0.52)	PATENT AT DEATH	DEAD DUE TO RE-CURRENT HEPATOBLASTOMA	FUNCTIONING GRAFT AT DEATH
2/7/2006	67.15 M	ALCOHOLIC CIRRHOSIS	38 F	FIRST	WHOLE LIVER	(N/A , 0.7)	PATENT	ALIVE	FUNCTIONING GRAFT

[table]

Feasibility of Liver Transplantation with Preservation of the Inferior Vena Cava and without Veno-Venous Bypass Use in Adult Polycystic Liver Disease

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Introduction: Massive handicapping hepatomegaly due to adult polycystic liver disease (PLD) is accepted as indication for Liver Transplantation (LT). In the early series, outcome was poor because of high morbidity and/or mortality related to technical difficulties of the hepatectomy. We reviewed our surgical experience performing a hepatectomy with Inferior Vena Cava (IVC) preservation and without the use of Veno-venous Bypass (VVB) and long term outcome.

Methods: Between 1999 and 2010, 21 patients underwent LT for PLD. Median age was 50 years (range, 28-68). 5 patients with isolated PLD (no renal disease) received LT alone. 7 of the 21 patients (33%) had previous extensive surgical fenestrations of the liver cysts. Of 16 patients with combined PLD and Autosomal Dominant Polycystic Kidney Disease, 13 underwent isolated LT and 3 received a combined liver and kidney transplantation. Tacrolimus monotherapy and triple immunosuppressive regimen (tacrolimus, mycophenolate mofetil and steroids) were given respectively after isolated LT and combined liver and kidney transplantation. The median follow up was 61 months (range, 17-147).

Results: IVC sparing hepatectomy without the use of VVB could be realized uncomplicated in all patients. In patients with previous liver surgery, hepatectomy was much more difficult and surgical time was significantly longer (p=0.032). However, total blood transfusion and transfusion of Stable Solution of Plasma Protein were comparable between the 2 groups (p=0.952 and p=0.627). The allograft was routinely implanted using a large latero-lateral cavoplasty during partial IVC clamping. The 1 and 5-year patient and graft survival rates were 100% and 100% and 95% and 90%, respectively. Hepatic artery thrombosis and diffuse (ischemic type) intrahepatic biliary strictures were the causes of graft failure, respectively 3 days and 42 months after LT.

Conclusion: LT for PLD can only be justified if transplant surgery can be done without major morbidity and no mortality and if long-term outcome is excellent. Our experience in a small patient cohort confirms that LT technique based on surgical anatomy and anatomical surgery allows to obtain excellent results. Previous liver cyst surgery is usually unsuccessful at long term and it also seriously compromises the transplant procedure.