

Abstract# 247**Poster Board #-Session: P94-I**

BLOOD USAGE DURING LIVER TRANSPLANTATION: THE IMPACT OF AN AUTOTRANSFUSION DEVICE. Lance W. Fristoe,¹ Debra L. Sudan,² Ira J. Fox,² Kishore Iyer,² Byers W. Shaw, Jr.,² Alan N. Langnas.² ¹*Clinical Perfusion Services, Nebraska Health System, Omaha, NE;* ²*Surgery/Transplant, University of Nebraska Medical Center, Omaha, NE.*

INTRODUCTION: The use of intraoperative autotransfusion (IAT) during liver transplantation (LT) has been shown to reduce banked PRBC transfusions, however, few studies have demonstrated cost reductions related to blood utilization. Concerns have also been raised that IAT use may promote coagulopathy. We performed a retrospective analysis of adult LT procedures to determine if IAT effected the cost of LT or worsened coagulopathy.

METHODS AND MATERIALS: All adult patients who underwent LT between August 1997 and November 1999 were analyzed; 114 managed with and 49 managed without IAT. Patient demographics and blood utilization requirements for both groups were reviewed and the costs associated with PRBC transfusions and IAT were compared. The total non-PRBC transfusion requirements for both groups were compared to determine if coagulopathy was associated with the use of IAT. Statistical significance was calculated using the chi-square theoretical distribution test and applying the Yates correction when applicable.

RESULTS: Both groups were similar with regard to age, gender, weight, diagnosis, previous surgery, and prior transplantation. The IAT group required significantly less ($p < 0.01$) banked PRBC (median=3) than did the non-IAT group (median=5). Of the IAT group, 54% required three units or less of banked PRBC, and 20% required no banked PRBC, compared to 24% and 6% for the non-IAT group (table 1). Both groups received similar quantities of hemoglobin, FFP, platelets, and cryoprecipitate. IAT was not associated with an increased need for FFP, cryoprecipitate, or platelets. Veno-venous bypass was used in 50% of all transplants, though significantly more often (71%) in the non-IAT group. The total supply cost for performing IAT was \$172.00, while each unit of homologous PRBC cost \$225.75. Based on the median blood usage, the use of IAT prevented the transfusion of two units of banked PRBC, saving \$279.50 per patient.

Table 1.

	Banked PRBC Units Transfused			
	0	0-3	4-10	>10
No IAT	3	12	29	8
IAT	22	61	39	14

$p < 0.01$

CONCLUSION: IAT significantly reduced the need for banked PRBC transfusions and the associated costs.

Abstract# 248**Poster Board #-Session: P95-I**

CAVAL FLOW PRESERVATION DURING OLT: FEASIBILITY OF THE BEAUJON'S PROCEDURE IN 275 CASES. Daniele Sommacale, Giuseppe Ettorre, Alain Sauvanet, François Durand, Jacques Bernuau, Jean Marty, Olivier Farges, Jacques Belghiti. *Transplantation Unit, Hôpital Beaujon, Clichy, France.*

A. Orthotopic liver transplantation (OLT) with preservation of caval flow is commonly used. However there is still controversy on its feasibility (range: 69-95%). As promoters of this procedure (1), we therefore reviewed our experience to assess the feasibility of preserving the vena cava and the caval flow.

B. Between 2-1991 to 12-1998, after exclusion of 65 patients who underwent living related, auxiliary and split liver transplantations, we analyzed the chart of 278 OLT. In 3 patients, the procedure (1) was not attempted respectively for 1 HCC close to the IVC, 1 retransplantation and 1 intentional decision. In the remaining 275 OLT the procedure (1) was attempted. In 218 (79%) cases without spontaneous portocaval shunt, we performed a temporary portocaval shunt.

Indications for the 275 OLT were cirrhosis in 132 (48%), fulminant liver failure in 52 (19%), cholestatic disease in 36 (13%), retransplantation in 16 (6%) or miscellaneous in 39 (14%) including Budd-Chiari (n=6) and polycystic liver (n=4).

C. In all cases in whom we attempted preservation of the IVC, the procedure was performed in 100% of cases and we never used the standard technique.

However, the caval flow was maintained in 246 (90%) cases. Among 29 cases in whom temporary caval clamping (TCC) was necessary, duration of clamping ranged from 5 to 20 min. (mean 11 ± 6 min) and none required the use of venous bypass. TCC in 24 cases was related to venous injury during hepatectomy or to problems of completion (revision, difficult and thrombosis) of the cavacaval anastomosis, in 5 cases. TCC frequently occurs in cholestatic disease (33%), Budd-Chiari or polycystic liver (30%) and in retransplantations (19%), than in patients with other causes of cirrhosis (5%) or with fulminant liver failure (6%). The low rate of TCC and the decrease in blood transfusion requirements in the last 2 years showed a learning curve associated with the technique.

D. IVC preservation when programmed was always possible in our experience. The venous bypass was never used in our series even in transplantation where TCC was required. Caval flow preservation was possible in 90% of cases. Difficulties during hepatectomy requiring TCC were mostly observed in huge liver i.e., cholestatic disease, Budd-Chiari, polycystic liver.

1- J Belghiti et al. Am J Surg 1995; 169: 277-79.

Abstract# 249**Poster Board #-Session: P96-I**

MAJOR HEPATIC RESECTION AS A LIVER GRAFT SAVING PROCEDURE. Olivier Detry, Pierre Honore, Etienne Hamoir, Bernard Detroz, Thierry Defechereux, Michel Meurisse, Nicolas Jacquet. *Dpt of Surgery and Transplantation, CHU Sart Tilman B35, Liege, Belgium.*

Background: Retransplantation for failing graft is common after liver transplantation. However, in the present organ shortage era, every attempt to save the graft should be performed before registration of patients on the waiting list for retransplantation. The aim of this paper is to report our experience with right hepatectomy as a graft saving procedure in liver recipients. **Material and Methods:** In a consecutive series of 170 orthotopic liver transplantations (OLT) in adults, 4 male patients (mean age 45, 23 to 55) underwent right hepatectomy (Segments V, VI, VII, VIII) in the post transplant period. Causes of liver failure leading to OLT were HCV in 3 cases and acute liver failure secondary to Wilson's disease in one. Three patients developed intrahepatic biliary strictures, related to late hepatic artery thrombosis in one case. As these biliary strictures were mainly localized in the right part of the liver, classical right hepatectomy was performed (delay between OLT and right hepatectomy: 14, 75, 78 months). The fourth patient developed post transplant parenchymal infarcts in the right liver, secondary to ischemic damage to the graft. This patient underwent right hepatectomy 48 hours after OLT. In all cases, classical right hepatectomy was performed without Pringle's maneuver and without mobilization of the left liver in order to preserve its vascularization.

Results: All patients are alive without retransplantation (mean follow-up 28 months, 13 to 48). One patient developed postoperative biliary fistula treated conservatively. Mean postoperative hospital stay was 20 days.

Conclusions: Right hepatectomy may be proposed as a graft saving option in selected liver recipients with excellent outcome on both patient and graft survival.

Abstract# 250**Poster Board #-Session: P97-I**

SINGLE CENTRE EXPERIENCE WITH SPLIT LIVER TRANSPLANTATION IN ADULTS. Lucio Caccamo,¹ Alessia De Simone,¹ Giorgio Rossi,¹ Paolo Reggiani,¹ Stefano Gatti,¹ Umberto Maggi,¹ Luigi R. Fassati.¹ *Centro Trapianto Fegato, Ospedale Maggiore IRCCS, Milano, Italy.*

Organ shortage from cadaveric donors currently is a major limit to the number of hepatic transplantations. In situ split liver technique, in its standard application (left lobe for a paediatric recipient and right lobe for an adult recipient), allows to reduce this limit, as shown by its use in the paediatric patients. A new splitting technique has been recently proposed to obtain two similar grafts (segments I-IV and segments V-VIII) to be transplanted in two adults.

In order to verify the results of primary split liver transplantation (ST) in adults we compared our experience with ST versus primary whole liver transplantation (WT) performed in the same period of time. ST group counted for 8 cases (7 standard and 1 modified right grafts) and WT for 28 cases. Donors and recipients ages, donors ICU time, donors plasmatic sodium level, patients pre-transplant UNOS status, grafts ischemic time and post-transplant follow-up period (mean 11.2 months in ST vs 12 months in WT group) were found comparable between the two groups. Primary non function did not occur after both ST and WT and liver function was fair in all cases. One patient died in each group early after transplantation because of digestive bleeding (ST) and sepsis (WT), respectively. One year grafts and patients survival was 84.6% in ST group and 96% in WT group. The mean of post-transplant hospitalisation was similar between the two groups (19 days in ST versus 20 days in WT group, respectively), but 11 re-admissions have been required in 4 ST patients, compared to 19 re-admissions in 11 WT patients. The onset of biliary complication required surgery in 6 cases in 4 ST patients and in 2 WT patients, respectively, and was treated conservatively in 3 ST and 1 WT patients, respectively. In one ST patient a pseudoaneurysm occurred during the second post-transplant month in the reconstructed donor hepatic artery and was successfully repaired by surgical excision and new arterial revascularisation of the graft. A severe bile effusion occurred after the T-tube removal and required a laparotomy in one WT patient. A repair of incisional hernia was performed in 1 ST and in 2 WT patients, respectively.

In our preliminary experience the results of ST in adults showed some technical-related morbidity that frequently required both repeated hospitalisations and surgical treatments. Nevertheless, one year survival after ST did not differ from that of WT. In conclusion, splitting techniques remain an advisable strategy in the policy of extending the number of the livers available for transplantation and efforts must be applied to reduce its Achilles' heel, meaning high biliary complications rate.