

## Publication Brief

# Intraoperative portal vein blood flow predicts allograft and patient survival following liver transplantation.

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### BACKGROUND

The shortage of liver allografts for transplantation means that the success of each transplant is critical. Studies have examined the variables predictive of successful liver transplants with respect to donor and recipient factors in order to help transplant surgeons match donors with recipients in order to improve outcomes. Because successful liver transplantation requires the establishment and perfusion of the appropriate vascular and biliary conduits, along with optimization of intraoperative cardiovascular parameters and minimalization of blood loss, the University of Washington transplant team decided to examine the results of using direct intraoperative measurements to improve outcomes and identify patients at risk. They hypothesized that operative variables might predict survival following liver transplantation.

### METHODS

Perioperative variables, including anastomotic time in minutes; hepatic artery blood flow in mL/min; portal vein blood flow in L/min; cardiac index; estimated blood loss in liters; packed red blood cells transfused in liters; complete reperfusion, yes vs. no; fast reperfusion, yes vs. no; not producing bile at close, yes vs. no, were collected and analyzed from 469 liver transplants performed at the University of Washington during 2003-2006. Logistic regression determined the variables' contributions to survival at 30, 90 and 365 days.

### RESULTS

Variable	Patient Survival		
	30 days	90 days	365 days
Portal Flow >1L	significant	significant	significant
Complete reperfusion	only significant predictor of survival		
Hepatic artery flow (>250 mL/min) combined with portal flow			significant predictor of survival
Subset of 100 transplants with more aggressive vascular revisions			improved survival

### DISCUSSION

Portal vein blood flow is a significant predictor of survival after liver transplantation. Initially, the liver's survival is based on portal vein blood flow. However, subsequent biliary problems and patient demise resulted from both poor portal vein and inadequate hepatic artery blood flow. The data suggested that during the initial 90 days following transplantation, the liver's survival is based on portal vein blood flow, regardless of hepatic artery flow. However, subsequent problems are likely to reflect a combination of both poor portal vein and inadequate hepatic artery blood flow. Ultimately, these operative variables predict allograft and patient survival.

### TAKE HOME (QUOTES)

"Intraoperative portal vein blood flow predicts allograft and patient survival following liver transplantation." "Recognition of appropriate inflow and conduit is among the surgeon's foremost responsibilities and offers an opportunity to effect a change in outcome."

### Reference

Spitzer AL, Dick AA, Bakthavatsalam R, Halldorson JB, Salvalaggio PR, Reyes JD, Perkins JD, "Intraoperative portal vein blood flow predicts allograft and patient survival following liver transplantation," HPB (Oxford). 2010 Apr;12(3):166-73. (Transonic Reference # TX11358AH)