Liver Transplant Publication Brief

Is Impaired Hepatic Arterial Buffer Response a Risk Factor for Biliary Anastomotic Stricture in Liver Transplant Recipients?

INTRODUCTION
Blood flow to the liver is partly maintained by an intrinsic autoregulatory mechanism referred to as the hepatic arterial buffer response. If portal vein flow drops, hepatic artery flow increases to compensate for the reduced portal venous flow. Portal hyperperfusion during liver transplantation will impair hepatic arterial flow due to this compensatory mechanism.

STUDY OBJECTIVE
To examine the effect of hepatic arterial buffer response (HABR) on biliary anastomotic stricture (BAS).

STUDY
Portal venous flow, hepatic arterial flow and augmented hepatic arterial flow due to the buffer response were measured intraoperatively during 234 cadaveric whole liver transplants. Liver transplant recipients with any vascular complications were excluded.

To determine and quantify recipients’ buffer response capacities, hepatic artery buffer response was calculated as increased hepatic arterial flow minus base hepatic arterial flow divided by portal venous flow.

Recipients were then divided into two groups: a low buffer capacity group (<0.074; n = 117) and a high buffer capacity group (≥0.074; n = 117) and these groups were correlated with patients with early or late biliary anastomotic stricture.

RESULTS
• Of 234 recipients, 9.8% (23) had early biliary artery stricture (≤60 days after liver transplantation); 7.7% (18%) had late BAS (>60 days after liver transplantation).
• The incidence of early biliary anastomotic stricture in the low buffer capacity group was greater than that in the high buffer capacity group (15% vs 5.1%; P = .0168).
• The incidence of late biliary anastomotic stricture and bile leakage was similar between the groups.
• A multivariate analysis determined that low buffer capacity (p = .0325) and bile leakage (p = .0002) were found to be independent risk factors affecting early biliary anastomotic stricture.

CONCLUSION
• Liver transplant recipients with low buffer capacity who may have impaired hepatic artery buffer response are at greater risk of early biliary anastomotic stricture following liver transplantation.
• Intraoperative blood flow measurements help predict the risk of biliary anastomotic stricture post transplant disease.

TAKE HOME POINTS
• Highly respected transplant center (Cleveland Clinic) uses intraoperative blood flow measurements to examine the connection between hepatic artery buffer response and biliary anastomotic stricture in liver transplant patients.
• Intraoperative hepatic arterial and portal venous blood flow measurements help determine hepatic arterial buffer response.

REFERENCES