****

**ARTICLE OF THE MONTH**

Croome KP, Lee DD, Croome S, et al. The impact of postreperfusion syndrome during liver transplantation using livers with significant macrosteatosis. *Am J Transplant*. 2019;00:1–10.

**Abstract:**

“The impact of postreperfusion syndrome (PRS) during liver transplantation (LT) using donor livers with significant macrosteatosis is largely unknown. Clinical outcomes of all patients undergoing LT with donor livers with moderate macrosteatosis (30%-60%) (N = 96) between 2000 and 2017 were compared to propensity score matched cohorts of patients undergoing LT with donor livers with mild macrosteatosis (10%-29%) (N = 96) and no steatosis (N = 96). Cardiac arrest at the time of reperfusion was seen in eight (8.3%) of the patients in the moderate macrosteatosis group compared to one (1.0%) of the patients in the mild macrosteatosis group (P = .02) and zero (0%) of the patients in the no steatosis group (P = .004). Patients in the moderate macrosteatosis group had a higher rate of PRS (37.5% vs 18.8%; P = .004), early allograft dysfunction (EAD) (76.4% vs 25.8%; P < .001), renal dysfunction requiring continuous renal replacement therapy following transplant (18.8% vs 8.3%; P = .03) and return to the OR within 30 days (24.0% vs 7.3%; P = .002), than the no steatosis group. Both long-term patient (P = .30 and P = .08) and graft survival (P = .15 and P = .12) were not statistically when comparing the moderate macrosteatosis group to the mild macrosteatosis and no steatosis groups. Recipients of LT using livers with moderate macrosteatosis are at a significant increased risk of PRS. If patients are able to overcome the initial increased perioperative risk of using these donor livers, long-term graft survival does not appear to be different than matched recipients receiving grafts with no steatosis.”

COMMENTS MADE BY SCHLICHTING, NICOLETTE MD

**Summary:**

This article, from the March 2019 issue of the American Journal of Transplantation, was chosen to highlight the effect of liver macrosteatosis on postreperfusion syndrome during liver transplantation. The number of patients listed for liver transplantation continues to exceed the number of available donors. As a result, there has been an increase in the use of extended criteria donors (ECD), e.g. elderly patients, patients with viral hepatitis, patients with fatty liver, and donation after cardiac death (DCD). Due to the rising rates of obesity, more donors have macrosteatosis of the liver, so it behooves us to determine what risks are associated with utilizing these organs in addition to assessing post-transplantation outcomes.

Postreperfusion syndrome (PRS) is defined as a syndrome of severe hemodynamic instability with a decrease in mean arterial pressure >30% below baseline for at least 1 minute during the first 5 minutes following allograft reperfusion, hemodynamically significant arrhythmias, or asystole. Donor age, long ischemia time, and liver steatosis have been identified as risk factors for postreperfusion syndrome, and this study is the first to evaluate the effect of significant macrosteatosis on posteperfusion syndrome and the subsequent short- and long-term outcomes.

Croome et al compared the clinical outcomes of 96 patients receiving allografts with moderate macrosteatosis to propensity score matched recipients of grafts with mild macrosteatosis and no steatosis. Eight patients (8.3%) in the moderate macrosteatosis group experienced cardiac arrest upon reperfusion compared to 1 (1%) patient in the mild macrosteatosis group and 0 (0%) patients in the no steatosis group (p = 0.004). The cardiac arrest resulted in intraoperative death in four of these eight patients, and a fifth patient died soon after arriving in the intensive care unit (ICU). The moderate macrosteatosis group had greater pressor and transfusion requirements, higher rates of PRS, early allograft dysfunction (EAD), and need for postoperative renal replacement therapy (RRT), as well as lower rates of ICU bypass, however there were no statistically significant differences in patient and graft survival rates.

This study is important as there is currently an inadequate supply of organs available for transplantation leading to the use of ECD donors. The authors demonstrate that recipients of liver allografts with moderate macrosteatosis are more likely to develop PRS, EAD, coagulopathy, and renal dysfunction requiring RRT. They suggest that these organs be allocated to patients with lower MELD scores as they may be able to better tolerate these complications. Based on the results of this study, it appears that these increased risks may be isolated to perioperative period in the setting of PRS as survival rates are similar. It is critical that transplant anesthesiologists understand the increased risks associated with utilization of moderately macrosteatotic allografts and be prepared to manage the resultant complications.

**References:**

1. Croome KP, Lee DD, Croome S, et al. The impact of postreperfusion syndrome during liver transplantation using livers with significant macrosteatosis. *Am J Transplant*. 2019;00:1–10.

Please email [Library@transplantanesthesia.org](https://mail.mountsinai.org/owa/redir.aspx?C=cn2EUDPjtGavvoLxQFNFWTuNzPAAtQnVaZGVKAvSjSh9OGBHdjTWCA..&URL=mailto%3aLibrary%40transplantanesthesia.org) with future article suggestions!