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**ARTICLE OF THE MONTH**

Braun HJ, Pulcrano ME, Weber DJ, Padilla BE, Ascher NL. The Utility of ECMO After Liver Transplantation: Experience at a High-volume Transplant Center and Review of the Literature. *Transplantation*. 2019; 103 (8): 1568 – 1573

**Abstract:**

“**Background**. Extracorporeal membrane oxygenation (ECMO) artificially supports respiratory and cardiac function when conventional techniques fail. ECMO has been described as a treatment modality for acute pulmonary and cardiac failure following orthotopic liver transplantation (OLT). Here, we present a series of adult OLT recipients placed on ECMO after transplantation for both respiratory and cardiac indications and review the literature on the role of ECMO in the setting of OLT.

Methods.For the patient series, we cross-referenced all patients who underwent OLT at our institution between 2007 and 2018 with the ECMO database of our institution and described these cases. For the literature review, we identified cases and series that described the use of ECMO after liver transplantation in adult recipients.

**Results.** A total of 1792 patients underwent OLT. Eight patients were placed on ECMO (0.4%), 5 men and 3 women aged 28 to 68 years (4 venovenous and 4 venoarterial). Three of (38%) 8 patients survived to discharge and are alive today. In the literature, we identified 3 series and 12 case reports of ECMO following OLT, with the majority of the literature derived from the Asian OLT experience.

**Conclusions.** ECMO following liver transplantation should be considered as a viable rescue strategy in patients with severe cardiopulmonary failure. ECMO is particularly effective if the cause of cardiopulmonary failure is recognized promptly and is thought to be transient. This is the largest series in the United States and demonstrates a 38% survival rate, which is comparable to other reports in the literature from Asia.”

COMMENTS MADE BY CROUCH, CARA MD

**Summary:**

This article was chosen from a recent issue of *Transplantation* because it provides both a review of the utility of ECMO as rescue therapy in the setting of severe refractory hemodynamic instability after liver transplantation as well as a single institution case series. The authors present a series of 8 patients from their own institution who were cannulated for ECMO (either VA or VV) after undergoing OLT, four received VV ECMO and four received VA ECMO. Of the eight patients presented, four patients were successfully decannulated and of those, three patients survived to discharge. Indications varied from hepatopulmonary syndrome, ARDS, mechanical IVC obstruction, right heart failure and massive pulmonary embolism. The authors provide brief case summaries of these eight patients. Only one patient from their institution was cannulated intraoperatively and this patient survived. The authors point out in the discussion that only one of the eight patients presented received standard heparin anticoagulation while cannulated. The authors go on to examine 15 studies from a literature review and provide a succinct summary table of the outcomes of these studies. The majority of studies reviewed describe VV ECMO use and most articles are based on experience in Asia.

The authors recommend consideration of ECMO in post-liver transplant patients “who develop severe, acute respiratory and cardiac failure with 24 to 48 hours of transplantation who are unresponsive to conventional therapies.” They recognize that some of the patients from their case series were cannulated well after surgery and in the setting of acute on chronic cardiopulmonary distress and that these patients are likely not ideal candidates for this rescue modality. However, in patients with an acute decompensation that is expected to be reversible, ECMO should be considered a reasonable option. Though the survival rate reported by the authors is only 38%, which is in line with other reviews, the mortality without any intervention would be expected to be near 100%.

**References:**

1. Braun HJ, Pulcrano ME, Weber DJ, Padilla BE, Ascher NL. The Utility of ECMO After Liver Transplantation: Experience at a High-volume Transplant Center and Review of the Literature. *Transplantation*. 2019; 103 (8): 1568 – 1573

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