

Intraoperative use of the Imacor™ TEE probe in orthotopic liver transplantation*

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Introduction

Hemodynamic instability secondary to volume fluctuations during orthotopic liver transplantation (OLT) influences outcome¹. Intraoperative estimates of preload are required to guide volume management. Central venous pressure (CVP) is used although it does not accurately reflect preload. Trans-esophageal echocardiography (TEE) used in OLT can provide estimation of cardiac filling. Barriers to its use include cost, availability and extensive training required for certification. The Imacor™ TEE probe is a simplified, miniature monoplane device developed for critical care settings. Mid-esophageal four-chamber and trans-gastric two-chamber views can be obtained. The esophageal probe (5.5 mm diameter) may be less traumatic than the traditional TEE probe (13 mm diameter), benefiting patients with esophageal varices.

Methods

We describe our experience using the Imacor TEE Probe in OLT. Prior to its use, CVP measurements were used for preload estimation. A lower than baseline CVP was achieved during pre-anhepatic and anhepatic phases to aid in blood loss reduction and allograft engorgement. With reperfusion, hypotension occurred. Volume replacement targeted the preoperative CVP with addition of vasopressors for further blood pressure support. In June of 2010, we employed the Imacor™ probe in OLT. This device has been used, complication-free, in more than 40 patients. Baseline views were compared with views acquired

during anhepatic and reperfusion phases. Fluids were administered or withheld accordingly on determination of cardiac filling.

Results

During reperfusion the left ventricle was under-filled, even after re-establishment of the pre-operative CVP. CVP and left ventricular volume did not correlate in over 75% of the cases. Use of this device guided our intraoperative resuscitation, leading to directed therapy with volume and less vasoactive therapy for hemodynamic support.

Conclusion

Due to our small sample size, it is not known if use of the Imacor™ TEE probe affects outcome in OLT. It is well established that hemodynamic instability in OLT does¹. With the Imacor device, we have been able to assess cardiac filling and provide directed intraoperative resuscitation and hemodynamic stabilization. Its ease of use and clarity of information regarding cardiac filling and function have allowed us to rely less on CVP. To our knowledge, there has been no reported use of the ImaCor device in OLT.

References

1. Krenn C, Hoda R, Assessment of Ventricular Contractile Function During Orthotopic Liver Transplantation. *Transplant International*, 2004;17(2): 101-104.

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