

Veno-venous extracorporeal lung support as bridge to or through lung volume reduction surgery in patients with severe hypercapnia



Ali Akil

Ibbenbueren General Hospital, Germany

Abstract

Extracorporeal lung support (ECLS) represents an essential support tool especially for critically ill patients undergoing thoracic surgical procedures. Lung volume reduction surgery (LVRS) is an important treatment option for end-stage lung emphysema in carefully selected patients. Here we report our experience with the application of veno- venous ECLS (VV ECLS) as bridge to or through LVRS in patients with end-stage lung emphysema and severe hypercapnia. Between January 2016 and January 2020, 126 patients (46 females, mean age of 63 years) with end-stage lung emphysema and severe hypercapnia due to failure of the breathing pump underwent LVRS. Low-flow VV ECLS was applied either as bridge to or through LVRS and peri-operatively continued to support respiratory therapy and recovery. Data were recorded prospectively. In 73 patients, uniportal video-assisted thoracoscopic LVRS (VATS-LVRS) was performed. 19 patients underwent simultaneous bilateral LVRS. In 10 patients VV ECLS was implemented pre-operatively, in the remaining cases intra-operatively and continued postoperatively in all patients. Mean length of postoperative VV ECLS support was 5 ± 1 day. The 90-days mortality rate was 9,5 % (12 patients). Postoperatively, a significant improvement was observed in quality of life, exercise capacity and dyspnea symptoms. VV ECLS in patients with severe hypercapnia undergoing LVRS is an effective and well tolerated treatment option. In particular, it increases the intraoperative safety, supports de-escalation of ventilatory strategies and reduces the rate of postoperative complications in a cohort of patients considered “high risk” for LVRS in the current literature.

Biography

Ali Akil is a consultant for Thoracic Surgery and leader of the ECMO section at the Ibbenbueren General Hospital, Germany. His clinical interests are thoracic oncologic surgery as well as lung volume reduction surgery. Scientifically, he develops and applies ECMO approaches for establishing functional operability especially in patients with end stage lung emphysema.

