Emergency and prophylactic use of miniaturized veno-arterial extracorporeal membrane oxygenation in transcatheter aortic valve implantation.

To report our center’s experience using veno-arterial extracorporeal membrane oxygenation (vaECMO) in transcatheter aortic valve implantation (TAVI). In TAVI, short-term mortality closely relates to life threatening procedural complications. VaECMO can be used to stabilize the patient in emergency situations. However, for the prophylactic use of vaECMO in very high-risk patients undergoing TAVI there is no experience. From January 2009 to August 2011, we performed 131 TAVI. Emergency vaECMO was required in 8 cases (7%): ventricular perforation (n = 3), hemodynamic instability/cardiogenic shock (n = 4), hemodynamic deterioration due to ventricular tachycardia (n = 1). Since August 2011, during 83 procedures, prophylactic vaECMO was systematically used in very high-risk patients (n = 9, 11%) and emergency ECMO in one case (1%) due to ventricular perforation. Median logistic EuroScore in prophylactic vaECMO patients was considerably higher as compared to the remaining TAVI population (30% vs. 15%, P = 0.0003) while in patients with emergency vaECMO it was comparable (18% vs. 15%, P = 0.08). Comparing prophylactic to emergency vaECMO,
procedural success and 30-day mortality were 100% vs. 44% (P = 0.03) and 0% vs. 44% (P = 0.02), respectively. Major vascular complications and rate of life threatening bleeding did not differ between both groups (11% vs. 11%, P = 0.99 and 11% vs. 33%, P = 0.3) and were not vaECMO-related. Life-threatening complications during TAVI can be managed using emergency vaECMO but mortality remains high. The use of prophylactic vaECMO in very high-risk patients is safe and may be advocated in selected cases.