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Bilateral femoral cannulation is associated with reduced severe limb ischemia-related complications compared to unilateral femoral cannulation in adult peripheral V-A ECMO

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Objectives: Peripheral veno-arterial extracorporeal membrane oxygenation (V-A ECMO) is obtained through uni- or bilateral femoral cannulation. Whether one cannulation strategy is associated with a lower risk for limb-ischemia remains unknown. We aim to study if one strategy is preferable.

Methods: This retrospective cohort study included adult patients (≥ 18 years) who received peripheral V-A ECMO and were included in the Extracorporeal Life Support Organization Registry from 2014 through 2020. The primary outcome was the occurrence of limb ischemia, defined as a composite endpoint including the need for a distal perfusion cannula after six hours from implantation, compartment syndrome/fasciotomy, amputation, revascularization, and thrombectomy. Secondary endpoints included bleeding at the peripheral cannulation site, need for vessel repair, vessel repair after decannulation, and in-hospital death. Propensity score matching was performed to account for confounders.

Results: 19,093 patients underwent peripheral V-A ECMO through unilateral (n=11,965) or bilateral (n=7,128) femoral cannulation. Limb ischemia requiring any intervention was not different between both groups (bilateral vs. unilateral: OR 0.92, 95%CI 0.82-1.02); however, there was a lower rate of compartment syndrome/fasciotomy in the bilateral group (bilateral vs. unilateral: OR 0.80, 95%CI 0.66-0.97). Bilateral cannulation was also associated with lower odds of cannulation site bleeding (bilateral vs. unilateral: OR 0.87, 95%CI 0.76-0.99), vessel repair (bilateral vs. unilateral: OR 0.55, 95%CI 0.38-0.79), and in-hospital mortality (bilateral vs. unilateral: OR 0.85, 95%CI 0.81-0.91) compared to unilateral cannulation. These findings were unchanged after propensity matching.

Conclusions: Bilateral femoral cannulation is associated with fewer compartment syndrome/fasciotomy and lower in-hospital mortality compared to unilateral femoral cannulation and could become an important preventive measure for limb ischemia during peripheral V-A ECMO.

Conflict of interest: DB: Receives research support from ALung Technologies. He has been on the medical advisory boards for Abiomed, Xenios, Medtronic, and Cellenkos. He is the President-elect of the Extracorporeal Life Support Organization (ELSO) FST: Scientific Advisor for EUROSETS and XENIOS MB: Advisor for Eurosets srl (MO) Italy MLB: Member of the Medical Advisory Boards of Eurosets Srl., Medolla, Italy, and Xenios AG, Heilbronn, Germany, unrelated to this work DW: Proctor/consultant for Abbott, Scientific Advisor for Xenios/Fresenius RPB: ELSO Registry chair and reports grants from the US National Institutes of Health (R01 HL153519, R01 HD015434, and K12 HL138039) RL: Member of the Advisory Board for Eurosets and Fresenius, Consultant for Medtronic, LivaNova, COR-CYM, Abiomed, Grant for research from Medtronic All other authors: Nothing to declare.

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Improving the quality of care for patients presenting in cardiogenic shock with acute coronary syndrome to a heart attack centre. A single centre experience

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Objectives: Patients treated with venoarterial ECMO (VA-ECMO) for cardiogenic shock (CS) complicating