Title

Axillary/Subclavian vs Femoral Arterial Cannulation for Peripheral VA-ECMO in Cardiogenic Shock: A Systematic Review and Meta-analysis

Authors:

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Background:

Femoral arterial cannulation is the default peripheral access strategy for venoarterial extracorporeal membrane oxygenation (VA-ECMO) in many centers, but it may increase the risk of lower-extremity ischemia and access-site complications. Whether axillary/subclavian inflow is associated with different clinical outcomes in adults receiving peripheral VA-ECMO for cardiogenic shock remains uncertain.

Methods:

We performed a systematic review and meta-analysis of retrospective comparative cohort studies evaluating axillary/subclavian versus femoral arterial cannulation for peripheral VA-ECMO in adult cardiogenic shock. PubMed/MEDLINE, Embase, and Cochrane were searched through March 8, 2026. Two reviewers independently screened studies, extracted data, and assessed risk of bias using the Newcastle-Ottawa Scale. Random-effects meta-analyses were performed using Mantel-Haenszel risk ratios (RRs) with 95% confidence intervals (CIs).

Results:

Five studies comprising 1,256 patients were included. In the primary analysis, axillary/subclavian cannulation was not associated with a significant difference in in-hospital mortality compared with femoral cannulation (RR 1.10, 95% CI 0.89–1.37; P=0.37; I^2=55%). Cannulation-related limb ischemia numerically favored axillary/subclavian access but was not significantly different and showed substantial heterogeneity (RR 0.37, 95% CI 0.07–2.02; P=0.25; I^2=83%). No significant associations were observed for ischemic stroke (RR 1.27, 95% CI 0.84–1.92; P=0.26; I^2=0%), successful ECMO weaning/explantation (RR 0.90, 95% CI 0.65–1.26; P=0.55; I^2=67%), or clinically significant bleeding (RR 1.27, 95% CI 0.90–1.79; P=0.17; I^2=54%). Mortality findings were directionally consistent in sensitivity analyses.

Conclusions:

In currently available retrospective comparative cohorts, axillary/subclavian versus femoral arterial cannulation for peripheral VA-ECMO in adult cardiogenic shock was not associated with a significant difference in in-hospital mortality or other pooled clinical outcomes. Although upper-extremity inflow was directionally associated with less limb ischemia, the estimate was imprecise and highly heterogeneous, and current data do not support a preferred access strategy.