Prone Retrieval and Femoro-Jugular VV-ECMO in a Patient with BMI 58 kg/m²: Staged Vascular Access Strategy in Super Obesity

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Background: Super obesity poses formidable challenges for venovenous extracorporeal membrane oxygenation (VV-ECMO), encompassing impaired vascular access geometry, excessive cannulation depth, and the requirement for emergent cannulation in non-supine positioning — scenarios for which standardized protocols provide limited guidance and evidence remains scarce.

Case Description: A super-obese male (BMI 58 kg/m²) with refractory hypoxemic respiratory failure (P/F ratio 53) secondary to community-acquired pneumonia required VV-ECMO after failure of maximal mechanical ventilation and vasopressor support. At team arrival, the patient was in prone position, deeply sedated, and norepinephrine-dependent. A staged vascular access strategy was implemented: a left basilic peripherally inserted central catheter (PICC) was placed in prone position, enabling removal of the right internal jugular central line and optimizing cannulation geometry prior to repositioning. VV-ECMO was established via ultrasound-guided Seldinger technique using an Amplatz Super Stiff® guidewire to navigate deep vascular structures in the context of extreme body habitus. Femoro-jugular cannulation (25 Fr drainage, 19 Fr return) was achieved with the drainage cannula strategically positioned at the right atrium to optimize flow dynamics, reaching 6 L/min at 4,455 rpm with immediate hemodynamic and respiratory stabilization, followed by successful transfer to a referral ECMO center. Early hemolysis manifested as hemoglobinuria without hemoglobin decline; rotation reduction led to complete resolution without clinical compromise.

Conclusion: Safe VV-ECMO cannulation in super obesity requires staged vascular access planning, reinforced guidewire techniques, and strategic cannula positioning to optimize flow. This case underscores the need for individualized protocols in anatomically complex patients requiring emergent extracorporeal support.