

Background: In high-risk PE, systemic thrombolysis is the first-line treatment but carries a high risk of bleeding in patients on venoarterial extracorporeal membrane oxygenation (VA-ECMO)^{1,2}. Evidence is emerging to support mechanical thrombectomy (MT) in VA-ECMO^{3,4,5}, but uptake is variable in Australia due to limited local expertise⁶. Indeed, there are additional risks associated with concurrent VA-ECMO use and we will describe strategies to minimise this.

Clinical Example: We performed a case of MT on VA-ECMO in a 30-year-old female using The FlowTrievers System (Inari Medical) (Figure 1). Significant clot was retrieved (Figure 2) with rapid stabilisation of vital signs. The patient survived past discharge with no adverse sequelae from MT.



Figure 1: The FlowTrievers System (Inari Medical). Images provided courtesy of Inari, now part of Stryker.

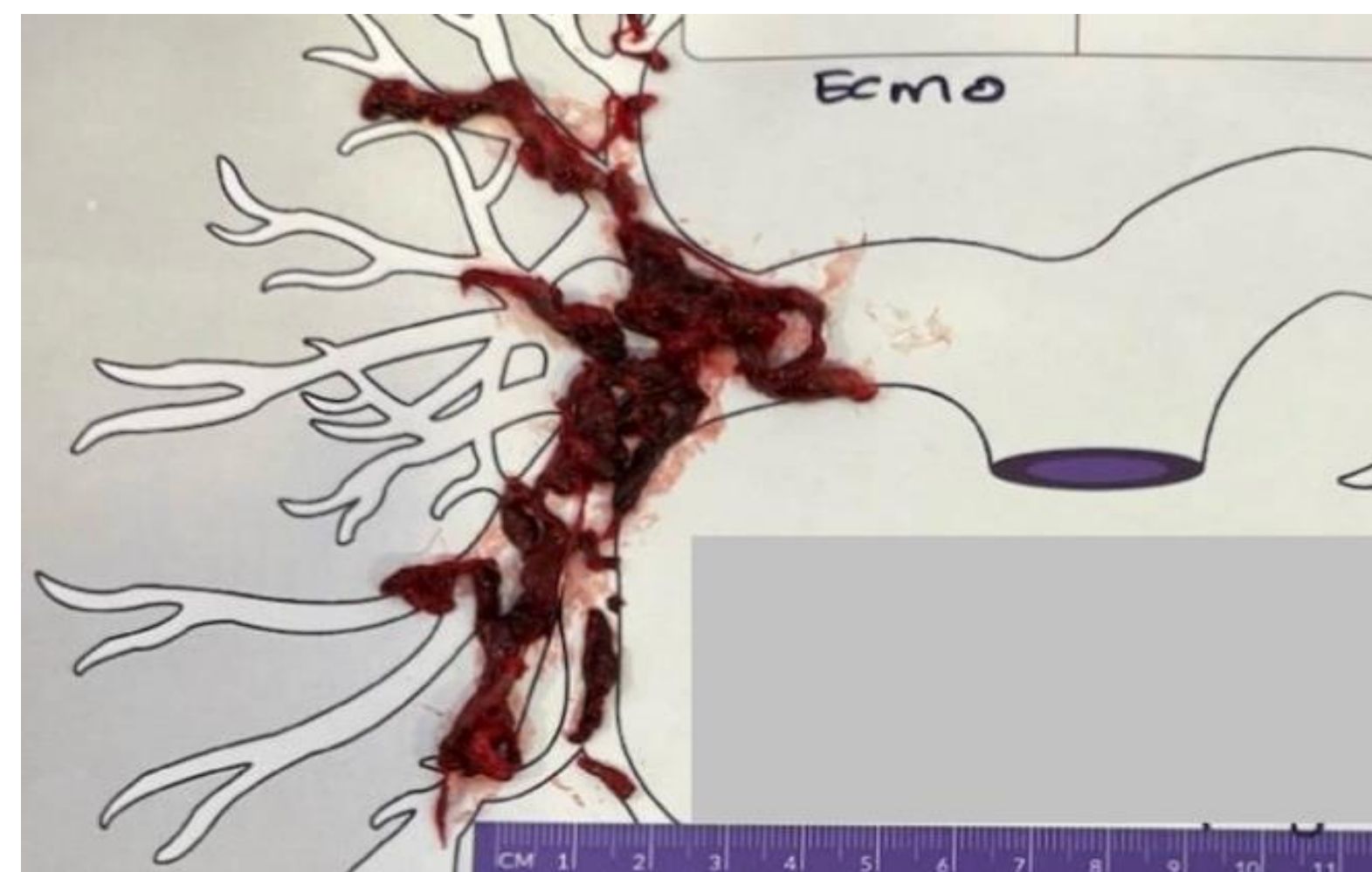


Figure 2: Clot aspirated during MT.



Figure 3: Digital subtraction angiography A) before and B) after MT.

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References:



Strategy 1: Usually, MT is performed via the the *right* common femoral vein. Therefore, VA-ECMO catheters should ideally occupy the *left* common femoral vessels only, to reduce the risk of dislodging VA-ECMO catheters when performing MT.

Strategy 2: VA-ECMO intake catheters should be clamped before clot aspiration to reduce the risk of clot aspiration into the VA-ECMO circuit. This also reduces the risk of air embolus but requires efficient communication with the ICU team to minimise disruption to cardiac output. To this end, we aim to clamp for <10 seconds per aspiration.

Strategy 3: If large clot obstructs the aspiration catheter, the sheath and catheter should be withdrawn whilst applying manual suction to draw the clot into the iliac vessels. This allows obstructing clot to be managed in a lower flow environment away from the VA-ECMO intake.

Strategy 4: VA-ECMO inherently reduces pulmonary arterial pressure, therefore this cannot be used to assess procedural efficacy. Instead, digital subtraction angiography images (Figure 3) and patient vital signs should be relied upon⁷.

Conclusion: Mechanical thrombectomy is increasingly utilised to treat high-risk PE. In patient on VA-ECMO, this procedure becomes inherently more challenging, however by employing strategies to minimise risk, it can be performed safely and effectively.