Advantages and limitations of the various pharmaco-mechanical Thrombectomy Devices: When and why is each device the best one to use

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Need for speed

- CDT is well studied and allows for slow “melting” of acute clot
- Newer devices offer much faster:
  - Physical removal of clot
    - Aspiration or extraction
  - Disruption of the clot
  - Combinations

Physical Removal - Aspiration

- Penumbra Indigo CAT series (3,5,6,8)
- Poor transition into wire, you have to advance bare in arteries
- Risk of advancing clots as you push (worsening distal ischemia/embolization)
- Clogging requires removal of entire system to troubleshoot
- Use of “separator” increases $$ and laborious
- Continuous removal of clot/blood (160 mL/20 seconds) – no reperfusion system

Physical Removal - Aspiration

- AngioVac
- Large volume aspiration and protection using filtered veno-veno bypass circuit
- Requires two MASSIVE sheaths for access (22F) for inflow/outflow
- Designed for large diameter vessels, but thrombus extraction limited by diameter/chronicity
- Limits arterial applications
- Extracorporeal filter/pump expensive and not reimbursed

Combination systems

- AngioJet
- Removes soft clot through small side holes
- Sprayed saline/TPA can damage vessel walls – rupture/ aneurysmal degradation (Pulmonary and cadaveric)
- Causes hemolysis due to fragmentation of thrombus and surrounding blood
“Normal” after Angiojet

Pulmonary Microembolization?

The Patient has Dyspnea

ME

Risk of Acute Kidney Injury after Percutaneous Pharmacomechanical Thrombectomy Using AngioJet in Venous and Arterial Thrombosis

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Summary

• Be judicious in choosing the approach
• Consider the potential downsides of the product
  • Risk-benefit according to the case (renal dysfunction, contraindication to lysis, sheath size etc.)
• “old school” lysis or open thrombectomy may be better/safer
• New devices are improving old ideas
• Endovascular thrombectomy is not like a car...

Thank you