However, nearly all blood clots are both porous and deformable. Clot porosity enables continuous fluid flow, which results in drag forces on the solid elements of the network¹ that promote ingestion. Clot permeability is closely related to clot perviousness, which is a measure of contrast agent accumulation within clots, detectable by computed tomography angiography.² Moreover, clot perviousness is associated with first pass success with thrombectomy.³ Clot deformation also promotes clot ingestion into a narrow bore catheter. Benchtop data has demonstrated that clots can elongate from 20% to 100% prior to breakage.⁴⁻⁵ Therefore, greater fluid flow during thrombectomy promotes greater clot ingestion through multiple mechanisms. Greater fluid flow can also promote more rapid clot ingestion during thrombectomy since the higher velocities convect clots faster during ingestion. Decreases in thrombectomy procedure time will reduce risk and post-procedure complications. New benchtop experimental and pre-clinical data will be presented that support the relevance of these mechanical mechanisms of effective blood clot removal in neurovascular applications.

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E-091 OUTCOME FOLLOWING MECHANICAL THROMBECTOMY FOR ANTERIOR CIRCULATION LARGE VESSEL OCCLUSION STROKE IN OCTOGENARIANS AND NONAGENARIANS COMPARED TO YOUNGER AGE

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Objective Pooled data of randomized controlled trials investigating mechanical thrombectomy (MT) to treat anterior circulation large vessel occlusion has demonstrated safety and effectiveness across all age groups, including ≥ 80 years of age. However, only a few nonagenarians were in the ≥ 80 years subgroup. Therefore, the benefit of MT in nonagenarians is mostly unknown.

Methods Two comprehensive stroke centers retrospectively reviewed all acute ischemic stroke patients who underwent mechanical thrombectomy for anterior circulation large vessel occlusion (LVO) stroke between 02/2016 and 08/2020. Revascularization TICI2b/3, symptomatic intracranial hemorrhage (ICH), and functional outcome using modified Rankin scale (mRS) were assessed for cases aged < 80 , 80 - 89, and ≥ 90 years. A favorable (moderate) functional outcome was defined as mRS 0 - 2 (mRS 0 - 3) or reaching pre-stroke mRS.

Results The final data set comprised a total of 736 cases. Of these, 466 aged < 80 years, 219 aged 80 - 89 years, and 51 aged 90 - 99. TICI 2b/3 revascularization was observed in 84.3% of nonagenarians, and symptomatic ICH was observed in 4% of nonagenarians. These rates did not differ across age

groups. A favorable functional outcome (19.6%), a moderate functional outcome (29.4%), and the death rate (51.0%) among nonagenarians were significantly poorer compared to aged < 80 ($p < 0.001$) and numerically lower compared to octogenarians ($p = ns$).

Conclusion A moderate outcome among nonagenarians is observed in about 30%, while mortality rates are about 50%. Withholding mechanical thrombectomy does not appear justifiable, although the absolute treatment effect among nonagenarians remains unknown.

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E-092 MECHANICAL THROMBECTOMY FOR ANTERIOR VERSUS POSTERIOR CIRCULATION LARGE VESSEL OCCLUSION STROKE: A TWO-CENTER OUTCOME ANALYSIS

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Objective While there is class I evidence for mechanical thrombectomy for anterior circulation large vessel occlusion (LVO) stroke; no high-class evidence exists for the posterior circulation. Multiple retrospective case studies have assessed thrombectomy for posterior circulation LVO but incorporated data before 2015. The authors sought to explore outcomes of post-2015 posterior LVO mechanical thrombectomy.

Methods Acute ischemic stroke patients who underwent mechanical thrombectomy for anterior and posterior large vessel occlusion (LVO) stroke between 02/2016 and 08/2020 from two comprehensive stroke centers were reviewed. Anterior and posterior LVO strokes were compared. Predictors for a favorable outcome (mRS 0-2), death (mRS 6), and futile revascularization (mRS 4-6 despite TICI 2b/3 revascularization) for posterior LVO were analyzed.

Results Collectively, 813 LVO thrombectomy cases were analyzed, and 77/813 (9.5%) were located in the posterior circulation. While favorable 90-day functional outcome rates did not differ between anterior and posterior LVO, death was significantly more frequent among posterior LVO cases. Posterior, compared to anterior location, independently predicted death in multivariable analysis. In the posterior LVO subgroup, a primary aspiration technique and successful revascularization TICI 2b/3 irrespective of time to the intervention was independently associated with achieving a favorable outcome and preventing death. Higher risk of futile revascularization, however, was independently associated with treatment beyond the six-hour time window.

Conclusion Posterior circulation LVO mechanical thrombectomy appears safe and effective in judiciously selected patients. The use of a primary aspiration technique and achieving successful revascularization appear fundamental.

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