Introduction EXCELLENT (NCT03685578) is a prospective, single-arm, multicenter, real-world international registry of mechanical thrombectomy (MT) for stroke with the EmboTrap device as first line treatment. The study entails thrombus analysis of specimens collected with each MT pass.

Aim of the Study To compare rates of mRS 0–2 at 90 days and clot characteristics in subjects with and without first pass effect (FPE).

Methods FPE was defined as mTICI 2c/3 after one pass and non-FPE as mTICI 2c/3 after >1 pass as adjudicated by an independent core lab. Clot analysis was performed by independent central labs blinded to clinical data. mRS at 90 days was scored by investigators blinded to procedural data.

Results Overall mTICI2c/3 rates were 63.7% (326/512). FPE was achieved in 37.1% (190/512) and non-FPE in 26.6% (136/512) subjects. 90 day mRS 0–2 or equal to pre-stroke was achieved in 47.2% (75/159) with FPE and in 42.1% (51/121) non-FPE patients. All-cause 90-day mortality was 19.1% (34/178) in subjects with FPE and 26.4% (34/129) in subjects with non-FPE. Major thrombus components (mean% $\pm$ SD) were as follows: RBC: FPE 45.88 $\pm$ 20.54, non-FPE 39.08 $\pm$ 18.23, and first pass mTICI<2c/3 40.96 $\pm$ 18.84; Fibrin: FPE 24.72 $\pm$ 13.82, non-FPE 29.09 $\pm$ 15.76 first pass mTICI<2c/3 29.20 $\pm$ 14.58.

Conclusions The high rate of ‘real-world’ FPE observed in EXCELLENT was associated with improved clinical outcomes. Clots retrieved with FPE had higher RBC and lower fibrin content compared to non FPE and to first pass mTICI <2c/3 e. These preliminary findings await confirmation from analysis of the full dataset.

Disclosure EXCELLENT is sponsored by Cerenovus. Dr. Jovin is a consultant for Neuravi, Codman Neurovascular, Stryker (PI DAWN; unpaid), Fundacio Ictus (PI REVASCAT; unpaid), and holds stock in Anaconda, Silk Road, and Blockade Medical.

EP47*

INVESTIGATION OF CURRENT AND NOVEL TREATMENT STRATEGIES FOR ICA AND MCA OCCLUSIONS IN AN *IN-VITRO* THROMBECTOMY MODEL

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Introduction Various mechanical thrombectomy devices and techniques including Stentriever and Aspiration Catheters are used in the treatment of acute ischemic stroke.¹ Balloon Guide Catheters (BGC) are commonly used to achieve flow control. A new generation of ‘Super-bore’ 088” catheters are currently being tested clinically.^{2,3}

Objective/Aim We evaluated the in-vitro revascularization performance of current and novel thrombectomy approaches.

Methods National University of Ireland Galway Research Ethics Committee approved the study. Clot analogues from human blood were used to create ICA (20 mm) and MCA (10 mm) occlusions in an In-vitro thrombectomy model. Thrombectomy setups tested were; ADAPT: Millipede 088, SOFIA, SOFIA+BGC and Combination; Millipede 088+Solitaire, SOFIA+BGC+Solitaire, SOFIA+Solitaire. 10 replicates of each test were performed. Endpoints were First Pass Effect

(FPE), Second and Third-pass success and procedural-related distal emboli from 50–1000 μ m.

Results The Millipede 088 catheter achieved the highest rate of FPE in both ICA (60%) and MCA (100%) occlusions and had the lowest number of procedural-related emboli compared to all other device setups, followed by the Millipede 088 +Solitaire technique. Of the currently used techniques, the use of a Solitaire in combination with a SOFIA lead to a higher rate of FPE in ICA occlusions (40% vs 20%, SOFIA +BGC+Solitaire vs SOFIA+BGC), but a lower rate of FPE in MCA occlusions (50% vs 60%, SOFIA+BGC+Solitaire vs SOFIA+BGC).

Conclusions The novel 0.088” aspiration catheter achieves the best FPE rates in both ICA and MCA occlusions. In terms of existing techniques, ADAPT is more effective in the MCA, while the stentriever provide a benefit in the ICA.

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EP48*

SAFETY AND EFFECTIVENESS OF MECHANICAL THROMBECTOMY FOR PRIMARY ISOLATED DISTAL VESSEL OCCLUSIONS: A MONOCENTRIC RETROSPECTIVE COMPARATIVE STUDY

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Background Distal vessel occlusions represent about 25–40% of acute ischemic stroke (AIS), either as primary occlusion or secondary occlusion complicating mechanical thrombectomy (MT) for large vessel occlusion.

Objective Our aim was to evaluate safety and effectiveness of MT associated with the best medical treatment (BMT) in the

management of AIS patients with distal vessel occlusion in comparison with the BMT alone.

Methods Retrospective analysis was conducted on AIS patients treated by MT+BMT for primary distal vessel occlusion between 2015 and 2020, and were compared with a historic cohort managed by BMT alone between 2006 and 2015 selected based on the same inclusion criteria. A secondary analysis was conducted using propensity score matching (PSM) including the following: NIHSS, age and treatment with intravenous thrombolysis (IVT) as covariates.

Results Of 650 patients screened, 44 patients with primary distal vessel occlusions treated by MT+BMT were selected and compared with 36 patients who received BMT alone. After PSM, 28 patients in each group were matched without significant difference. Good clinical outcome defined as mRS ≤ 2 was achieved by 53.6% of the MT+BMT group and 57% of the BMT group (OR, 0.87; 95%CI, 0.3–2.4; $P=1.00$). The mortality rate was comparable in both groups (7% vs 10.7% in MT+BMT and BMT patients, respectively; OR=0.64; 95% CI, 0.1–4; $P=1.00$). Symptomatic intracranial haemorrhage (ICH) was seen in only one patient treated by MT+BMT (3.6%).

Conclusion Mechanical thrombectomy seems to be comparable with the best medical treatment regarding the effectiveness and safety in the management of patients with distal vessel occlusions.

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Disclosure Pr F. Clarençon reports conflict of interest with Medtronic, Guerbet, Balt Extrusion, Penumbra (payment for readings), Codman Neurovascular and Microvention (core lab). Dr N. Sourour is consultant for Medtronic, Balt Extrusion, Microvention, Stock/Stock Options: Medina. The other authors report no conflict of interest concerning the materials or methods used in this study or the findings specified in this paper.

EP49* HEMORRHAGIC TRANSFORMATION AND FIRST PASS EFFECT

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Achieving substantial reperfusion in the first pass is a strong predictor of clinical outcomes. Its role in preventing symptomatic ICH (sICH) is incompletely characterized.

We assess the association of increasing number of passes with sICH using a large multicenter, prospectively collected international registry with core-lab adjudicated blinded imaging endpoints.

We analyzed all patients receiving EVT for LVO in the COMPLETE (Penumbra, Inc) registry. sICH at 24 hours was defined as greater than four-point increase in NIHSS associated with ICH after review by two independent physicians. Multivariable analysis adjusted for age, NIHSS, occlusion location, and ASPECTS were used to assess the likelihood of developing sICH.

Among 650 patients included in the analysis, median age was 70 [IQR 60–79] and 54% were female. Average number of passes was 1.5. First pass mTICI 2b-3 was achieved in 55.5% (358/645) while 32.2% (208/645) required two or greater attempts. sICH occurred in 25 (3.8%) and PH-2 in 20 (3.1%). We identified an increased likelihood of sICH with increasing number of attempts to achieve TICI 2b or greater (3 vs 1 pass, OR = 3.98 [95% CI, 1.05–15.0], and 4 vs 1 pass, OR = 5.04 [95% CI, 1.35–18.8]). Failure to achieve mTICI 2b or greater (79/645) was associated with increased incidence of sICH compared to first pass reperfusion (OR = 4.66, [CI 95%, 1.43–15.1]).

Achieving substantial reperfusion with the fewest number of thrombectomy attempts was associated with decreasing likelihood of sICH.

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EP50* CATHETER TIP DISTENSIBILITY SUBSTANTIALLY INFLUENCES THE ASPIRATION FORCE OF THROMBECTOMY DEVICES

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Introduction A direct aspiration first pass thrombectomy is a fast-growing technique for which a broad catalog of catheters that provide a wide range of aspiration forces can be used.

Objectives To characterize different catheters' aspiration performance on stiff clots in an in vitro vascular model.

Aims To demonstrate that labeled catheter inner diameter (labeled-ID) is not the only parameter that affects the aspiration force (asp-F) and that thrombus-catheter tip interaction and distensibility also play a major role.

Methods We designed an experimental setup consisting of a 3D-printed carotid artery immersed in water. We measured asp-F and distensibility of catheter tips when performing ADAPT on a stiff clot analog larger than catheter labeled-ID. Correlations between asp-F, catheter ID, and tip distensibility were statistically assessed.

Results Experimental asp-F and catheter labeled-ID were correlated ($r=0.9601$; $P<0.01$). The relative difference between