

**Supplementary Table 1.** The MRI protocol used in the study

| Details of protocols |  |
|----------------------|--|
| MRI protocol         | MRI scans were performed using a 3-T Magnetom Verio (Siemens, AG, Erlangen, Germany) at pre-EVT, post-EVT, and 5 days after EVT, except for 17 patients, for whom the 5-day post-EVT MRI was conducted using a 1.5-T Philips scanner. The protocol included the acquisition of diffusion-weighted imaging, time-of-flight MRA, susceptibility-weighted imaging, perfusion-weighted imaging (PWI and dMRA after bolus injection of 0.1 mg/kg of gadolinium [TE 1.17 ms, TR 3.15 ms, flip angle 25° with 30 dynamic acquisitions and a temporal resolution of 2.28 seconds/volume for a voxel size of 1.0x0.9x2.5 mm]). dMRA and PWI sequences were not acquired on day 5. |
| MR contrast          | In this study, we used gadoterate meglumine. We used a total of 0.2 mL/kg of gadolinium for each acquisition. The dosage was split into two administrations: patients received 0.1 mL/kg before dMRA and another 0.1 mL/kg before PWI. In total, the patients in this study received 0.4 mL/kg of gadolinium on the same day. The dosages were authorized by the Ethics Committee of the Germans Trias i Pujol Hospital, and informed consent was obtained from each patient.  |

EVT, endovascular treatment (pre-EVT, at hospital admission; post-EVT, <2 hours after EVT); MRI, magnetic resonance imaging; MRA, magnetic resonance angiography; PWI, perfusion weighted imaging; dMRA, dynamic MRA; TE, echo time; TR, repetition time.

**Supplementary Table 2.** Statistical analyses

| Statistical test                | Variables  | Adjusted by  |
|---------------------------------|--|--|
| Multivariable linear regression | Pre- and post-EVT venous delay and infarct volumes post-EVT and at day 5 | Successful reperfusion, number of passes, pre-EVT infarct volume, time from onset to MRI pre-EVT, site of occlusion, and HIR |
| Ordinal logistic regression     | Pre- and post-EVT venous delay and mRS at 3 months                       | Age, sex, successful reperfusion, baseline NIHSS, site of the occlusion, and HIR   |

EVT, endovascular treatment (pre-EVT, at hospital admission; post-EVT, <2 hours after EVT); MRI, magnetic resonance imaging; HIR, hypoperfusion intensity ratio; mRS, modified Rankin Scale; NIHSS, National Institutes of Health Stroke Scale.

**Supplementary Table 3.** Characteristics of the stroke patients undergoing EVT

| Characteristics                                 | Total sample (n=94) |
|---|---------------------|
| Age (yr)  | 69.9±13.2           |
| Female sex                                      | 41 (43.6)           |
| Smoking   | 24 (25.5)           |
| Hypertension                                    | 64 (68.1)           |
| Dyslipidemia                                    | 40 (42.6)           |
| Diabetes  | 16 (17.0)           |
| Atrial fibrillation                             | 30 (31.9)           |
| Stroke etiology*                                |                     |
| Atheroembolic                                   | 30 (31.9)           |
| Cardioembolic                                   | 37 (39.4)           |
| Undetermined                                    | 27 (28.7)           |
| Onset to admission (min)                        | 252 [135–429]       |
| NIHSS baseline                                  | 17 [12–21]          |
| Glycemia baseline (mg/dL)                       | 120 [101–143]       |
| Wake up stroke (yes)                            | 22 (23.4)           |
| Site of occlusion                               |                     |
| Intracranial carotid                            | 9 (9.6)             |
| Tandem  | 23 (24.5)           |
| MCA M1 segment                                  | 49 (52.1)           |
| MCA M2 segment                                  | 13 (13.8)           |
| Previous intravenous alteplase                  | 47 (50.0)           |
| Onset to groin (min)                            | 319 [235–516]       |
| Time from MRI pre-EVT to end of procedure (min) | 103 [78–140]        |
| Conscious sedation                              | 90 (95.7)           |
| Final mTICI grade                               |                     |
| mTICI 0   | 6 (6.4)             |
| mTICI 2a  | 7 (7.4)             |
| mTICI 2b  | 19 (20.2)           |
| mTICI 2c  | 27 (28.7)           |
| mTICI 3   | 35 (37.2)           |

Values are presented as mean±standard deviation, median [interquartile range], or n (%).

NIHSS, National Institutes of Health Stroke Scale; MCA, middle cerebral artery; M1, M1 segment of the MCA; M2, M2 segment of the MCA; MRI, magnetic resonance imaging; EVT, endovascular treatment; mTICI, modified Thrombolysis in Cerebral Infarction.

\*According to the Trial of ORG 10172 in Acute Stroke Treatment (TOAST) etiology.