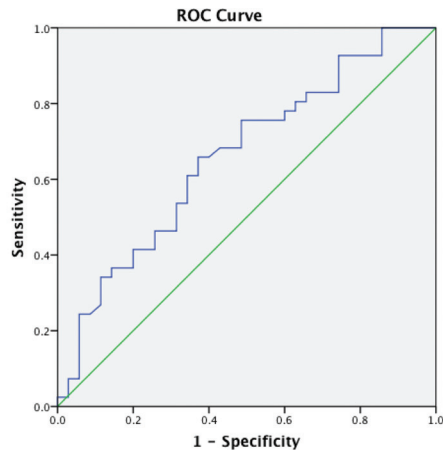
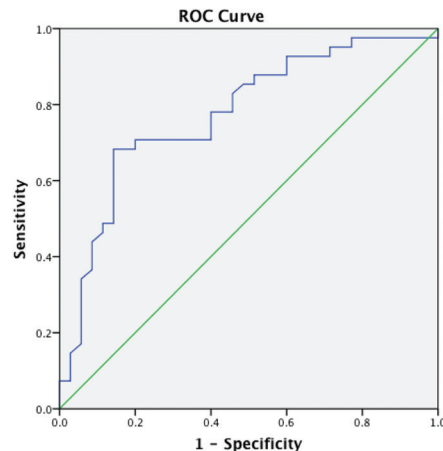




Diagonal segments are produced by ties.

Criteria	3-Month Favorable Outcome		Sensitivity	Specificity	PPV	NPV	P Value
240 min	13/22	22/54	37.1%	78.1%	59.1%	59.3%	0.145
300 min*	23/39	12/37	65.7%	61.0%	59.0%	67.6%	0.020
360 min	28/52	7/24	80.0%	41.5%	53.9%	70.8%	0.045

A



Diagonal segments are produced by ties.

Criteria	3-Month Favorable Outcome		Sensitivity	Specificity	PPV	NPV	P Value
30 min	3/4	32/72	8.6%	96.6%	75.0%	55.6%	0.233
60 min*	19/26	16/50	54.3%	82.9%	73.1%	68.0%	<0.001
90 min	30/48	5/28	85.7%	56.1%	62.5%	82.1%	<0.001

B

ON-LINE FIGURE. Receiver operating characteristic curves, which relate favorable clinical outcome and onset-to-reperfusion time (A)/puncture-to-reperfusion time (B) in patients with poor collaterals. Tables display test characteristics for prespecified time points, including optimal time points (*asterisk*) and positive and negative predictive values. A, Onset-to-reperfusion time (AUC = 0.659, $P = .017$). B, Puncture-to-reperfusion time (AUC = 0.776, $P < .001$). AUC indicates area under curve; PPV, positive predictive value; NPV, negative predictive value.

On-line Table 1: Detailed descriptions of baseline characteristics, imaging, and clinical outcomes (N = 207)^a

Characteristics	Collateral-Flow Grade		P Value
	0–1 (n = 76)	2–4 (n = 131)	
Age (yr)	69 (62–76)	67 (58–73)	.105
Male	50 (65.8%)	75 (57.3%)	.226
Baseline NIHSS	17 (13–21)	16 (12–19)	.041
Baseline ASPECTS _{DWI} ^b	7 (5–8)	8 (6–9)	.004 ^c
SBP (mm Hg)	148 (131–176)	146 (126–168)	.520
DBP (mm Hg)	82 (72–90)	82 (71–97)	.470
Blood glucose level (mg/dL)	126 (117–156)	126 (111–159)	.861
Risk factors			
Atrial fibrillation	36 (47.4%)	62 (47.3%)	.996
Hypertension	55 (72.4%)	83 (63.4%)	.185
Diabetes	13 (17.1%)	36 (27.5%)	.090
Dyslipidemia	27 (35.5%)	54 (41.2%)	.418
CAD	13 (17.1%)	21 (16.0%)	.841
Previous TIA/stroke	15 (19.7%)	26 (19.8%)	.985
Current smoker	29 (38.2%)	52 (39.7%)	.827
Etiologies			.784
CE	39 (51.3%)	68 (51.9%)	
LAA	26 (34.2%)	40 (30.5%)	
UE or OE	11 (14.5%)	23 (11.1%)	
Occlusion site			.000
ICA-T or ICA-L	38 (50.0%)	22 (16.8%)	
MCA M1	26 (34.2%)	103 (78.6%)	
ICA/M1 tandem	12 (15.8%)	6 (4.6%)	
IV rtPA	41 (53.9%)	62 (47.3%)	.359
Onset-to-puncture (min)	220 (160–290)	245 (175–325)	.055
Puncture-to-reperfusion (min)	77 (54–104)	66 (44–90)	.053
Onset-to-reperfusion (min)	297 (224–383)	307 (244–395)	.342
IA treatment types			
IA thrombolytics	4 (5.3%)	5 (3.8%)	.727 ^c
Mechanical clot disruption	9 (11.8%)	21 (16.0%)	.409
Mechanical thrombectomy	71 (93.4%)	111 (84.7%)	.064
Rescue stent	6 (7.9%)	3 (2.3%)	.077 ^c
Posttreatment reperfusion			.380
TICI 2a	25 (32.9%)	42 (32.1%)	
TICI 2b	29 (38.2%)	61 (46.6%)	
TICI 3	22 (28.9%)	28 (21.4%)	
3-Month favorable outcome	35 (46.1%)	82 (62.6%)	.021
Procedure-related complications	4 (5.3%)	8 (6.1%)	1.000 ^c
Hemorrhagic infarction	22 (28.9%)	32 (24.4%)	.475
Any ICH excluding HI	14 (18.4%)	22 (16.8%)	.766
PH	10 (13.2%)	14 (10.7%)	.592
SAH	4 (5.3%)	7 (5.3%)	1.000 ^c
IVH	2 (2.6%)	3 (2.3%)	1.000 ^c
Mixed	2 (2.6%)	3 (2.3%)	1.000 ^c
Symptomatic ICH	4 (5.3%)	6 (4.6%)	1.000 ^c
Ischemic brain edema	7 (9.2%)	8 (6.1%)	.406
Mortality	11 (14.5%)	13 (9.9%)	.324

Note:—CAD indicates coronary artery disease; IA, intra-arterial; CE, cardioembolism; LAA, large-artery atherosclerosis; UE, undetermined etiology; OE, other determined etiology; HI, hemorrhagic infarction; PH, parenchymal hematoma; IVH, intraventricular hemorrhage; SBP, systolic blood pressure; DBP, diastolic blood pressure; ICH, intracranial hemorrhage.

^a Numbers in parentheses are median (interquartile range) or number (%).

^b Two hundred one DWI images at baseline (72 in 0–1 and 129 in 2–4; 97.1% in total) were available for ASPECTS_{DWI} analysis.

^c Fisher exact test for categorical variables/Mann-Whitney U test for continuous variables.

On-line Table 2: Effect of time-to-reperfusion on clinical and imaging outcomes based on collateral-flow grade (N = 207)^a

Collateral-Flow Grade		0-1 (n = 76)		P Value		2-4 (n = 131)		P Value	
Onset-to-reperfusion (min)		≤300 min (n = 39)		>300 min (n = 37)		≤300 min (n = 64)		>300 min (n = 67)	
Favorable outcome		23 (59.0%)		12 (32.4%)		45 (70.3%)		37 (55.2%)	
Mortality		5 (12.8%)		6 (16.2%)		6 (9.4%)		7 (10.4%)	
HI		5 (12.8%)		17 (45.9%)		8 (12.5%)		24 (35.8%)	
PH		4 (10.3%)		6 (16.2%)		10 (15.6%)		4 (6.0%)	
Adjusted OR (95% CI) ^b		0.24 (0.08–0.72)		1.21 (0.31–4.64)		0.11		0.47 (0.21–1.08)	
P Value		.786		.002		.382		0.85 (0.25–2.94)	
Onset-to-puncture (min)		≤240 min (n = 45)		>240 min (n = 31)		≤240 min (n = 65)		>240 min (n = 66)	
Favorable outcome		22 (48.9%)		13 (41.9%)		43 (66.2%)		39 (59.1%)	
Mortality		5 (11.1%)		6 (19.4%)		6 (9.2%)		7 (10.6%)	
HI		10 (22.2%)		12 (38.7%)		11 (16.9%)		21 (31.8%)	
PH		5 (11.1%)		5 (16.1%)		8 (12.3%)		6 (9.1%)	
Adjusted OR (95% CI) ^b		0.56 (0.20–1.63)		2.01 (0.52–7.69)		0.289		0.71 (0.32–1.59)	
P Value		.289		.080		.310		0.94 (0.28–3.22)	
Puncture-to-reperfusion (min)		≤60 min (n = 26)		>60 min (n = 50)		≤60 min (n = 55)		>60 min (n = 76)	
Favorable outcome		19 (73.1%)		16 (32.0%)		38 (69.1%)		44 (57.9%)	
Mortality		4 (15.4%)		7 (14.0%)		3 (5.5%)		10 (13.2%)	
HI		2 (7.7%)		20 (40.0%)		8 (14.5%)		24 (31.6%)	
PH		2 (7.7%)		8 (16.0%)		6 (10.9%)		8 (10.5%)	
Adjusted OR (95% CI) ^c		0.21 (0.06–0.70)		0.49 (0.10–2.30)		0.011		0.80 (0.34–1.85)	
P Value		.011		.364		.024		1.82 (0.43–7.76)	
Adjusted OR (95% CI) ^c		6.60 (1.23–34.1)		2.69 (0.48–15.0)		0.260		2.28 (0.88–5.95)	
P Value		.024		.260		.752		0.81 (0.22–3.01)	

^a Numbers in parentheses are number (%).

^b Logistic regression analysis adjusted for age, baseline NIHSS score, and posttreatment TICI 2b–3 reperfusion.

^c Logistic regression analysis adjusted for age, baseline NIHSS score, posttreatment TICI 2b–3 reperfusion, and onset-to-puncture time.

On-line Table 3. Effect of time-to-reperfusion on DWI lesion volume based on collateral-flow grade (n = 160)

Collateral-Flow Grade	0–1 (n = 53)		P Value		2–4 (n = 107)		P Value	
Onset-to-reperfusion (min)	≤300 min (n = 30)	>300 min (n = 23)	β^b		≤300 min (n = 55)	>300 min (n = 52)	β^b	
Baseline DWI volume (cm ³)	17.8 (4.6–44.7)	13.2 (3.1–43.3)	2.36	.761	8.8 (3.4–34.8)	9.8 (3.9–17.7)	–5.59	.142
Final DWI volume (cm ³)	58.7 (21.1–91.8)	55.2 (8.4–118.9)	–0.28	.985	14.9 (7.7–56.5)	19.9 (11.8–36.4)	–1.74	.845
DWI volume growth (cm ³)	31.2 (5.7–54.4)	28.8 (3.5–65.2)	–2.64	.826	4.5 (1.3–21.0)	9.0 (2.0–21.9)	3.85	.586
Onset-to-puncture (min)	≤240 min (n = 33)	>240 min (n = 20)	β^b		≤240 min (n = 56)	>240 min (n = 51)	β^b	
Baseline DWI volume (cm ³)	16.5 (4.5–50.6)	13.1 (2.6–32.1)	–1.84	.818	8.8 (3.4–26.1)	9.9 (4.0–19.2)	–4.50	.237
Final DWI volume (cm ³)	66.2 (21.7–111.4)	30.1 (5.5–95.1)	–14.8	.349	16.0 (8.2–56.1)	18.7 (11.8–32.5)	–7.19	.416
DWI volume growth (cm ³)	31.8 (7.1–65.6)	17.6 (2.8–57.3)	–12.9	.293	5.1 (1.5–30.2)	7.8 (1.9–21.0)	–2.69	.703
Puncture-to-reperfusion (min)	≤60 min (n = 19)	>60 min (n = 34)	β^c		≤60 min (n = 48)	>60 min (n = 59)	β^c	
Baseline DWI volume (cm ³)	16.5 (3.8–34.9)	14.2 (5.5–44.7)	5.23	.542	9.8 (3.1–19.5)	9.5 (4.0–20.4)	0.42	.916
Final DWI volume (cm ³)	30.7 (5.3–66.2)	73.8 (25.6–127.6)	46.8	.004	14.2 (6.6–36.8)	21.1 (11.7–53.6)	14.9	.102
DWI volume growth (cm ³)	5.9 (0.0–31.3)	41.9 (15.5–79.0)	41.6	.001	4.0 (1.1–18.0)	10.6 (2.3–31.2)	14.5	.045
Onset-to-picture (min)	≤150 min (n = 30)	>150 min (n = 23)	β^b		≤150 min (n = 47)	>150 min (n = 60)	β^b	
Baseline DWI volume (cm ³)	17.8 (4.7–43.8)	13.2 (3.1–44.4)	5.84	.443	8.7 (2.8–22.3)	9.8 (5.3–19.3)	.85	.824
Final DWI volume (cm ³)	58.7 (21.4–87.6)	33.0 (8.4–118.9)	7.59	.615	15.9 (8.0–54.8)	18.6 (11.6–41.7)	–3.31	.710
DWI volume growth (cm ³)	31.4 (5.7–44.6)	18.4 (3.5–65.2)	1.75	.882	5.0 (1.5–27.4)	7.9 (1.9–20.7)	–4.16	.558
Picture-to-reperfusion (min) ^d	≤150 min (n = 33)	>150 min (n = 20)	β^e		≤150 min (n = 67)	>150 min (n = 40)	β^e	
Baseline DWI volume (cm ³)	11.5 (3.0–31.7)	15.1 (11.6–49.0)	2.78	.723	8.8 (4.2–21.2)	11.3 (3.2–19.2)	1.26	.762
Final DWI volume (cm ³)	35.2 (5.4–86.0)	76.2 (38.5–120.3)	27.9	.066	15.9 (7.8–51.5)	23.4 (11.8–64.2)	19.6	.039
DWI volume growth (cm ³)	11.6 (1.1–39.0)	50.5 (21.0–86.3)	25.1	.032	5.0 (1.5–19.1)	9.2 (2.4–30.7)	18.3	.015

^a Numbers in parentheses are median (interquartile range).

^b Linear regression analysis adjusted for age, baseline NIHSS score, and posttreatment TICI 2b–3 reperfusion.

^c Linear regression analysis adjusted for age, baseline NIHSS score, posttreatment TICI 2b–3 reperfusion, and onset-to-puncture time.

^d Picture time represents the imaging time of pretreatment diffusion-weighted imaging.

^e Linear regression analysis adjusted for age, baseline NIHSS score, posttreatment TICI 2b–3 reperfusion, and onset-to-DWI time.