



**KANSAS INITIATIVE FOR
STROKE SURVIVAL**
A PROJECT BY AND FOR KANSANS

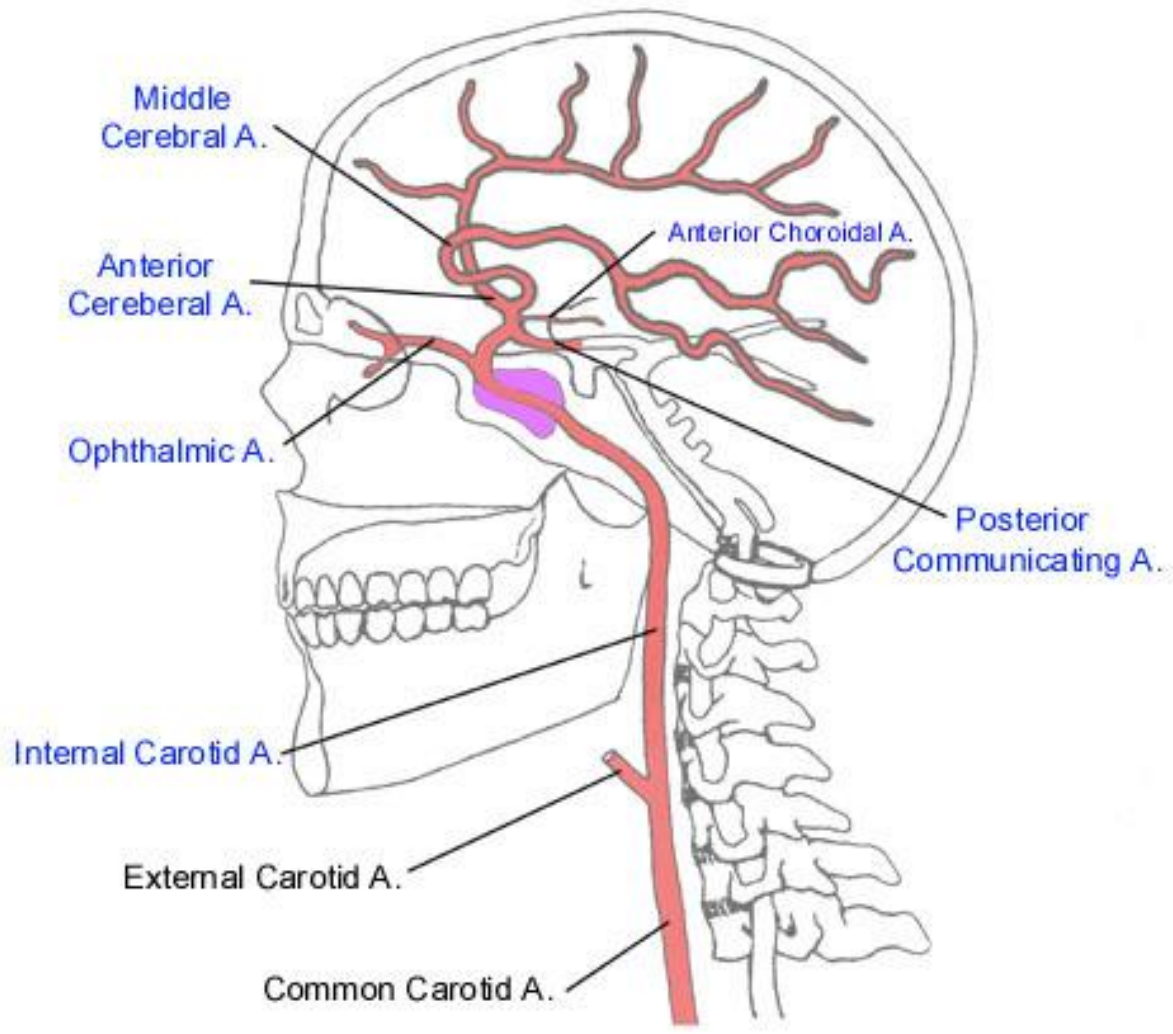
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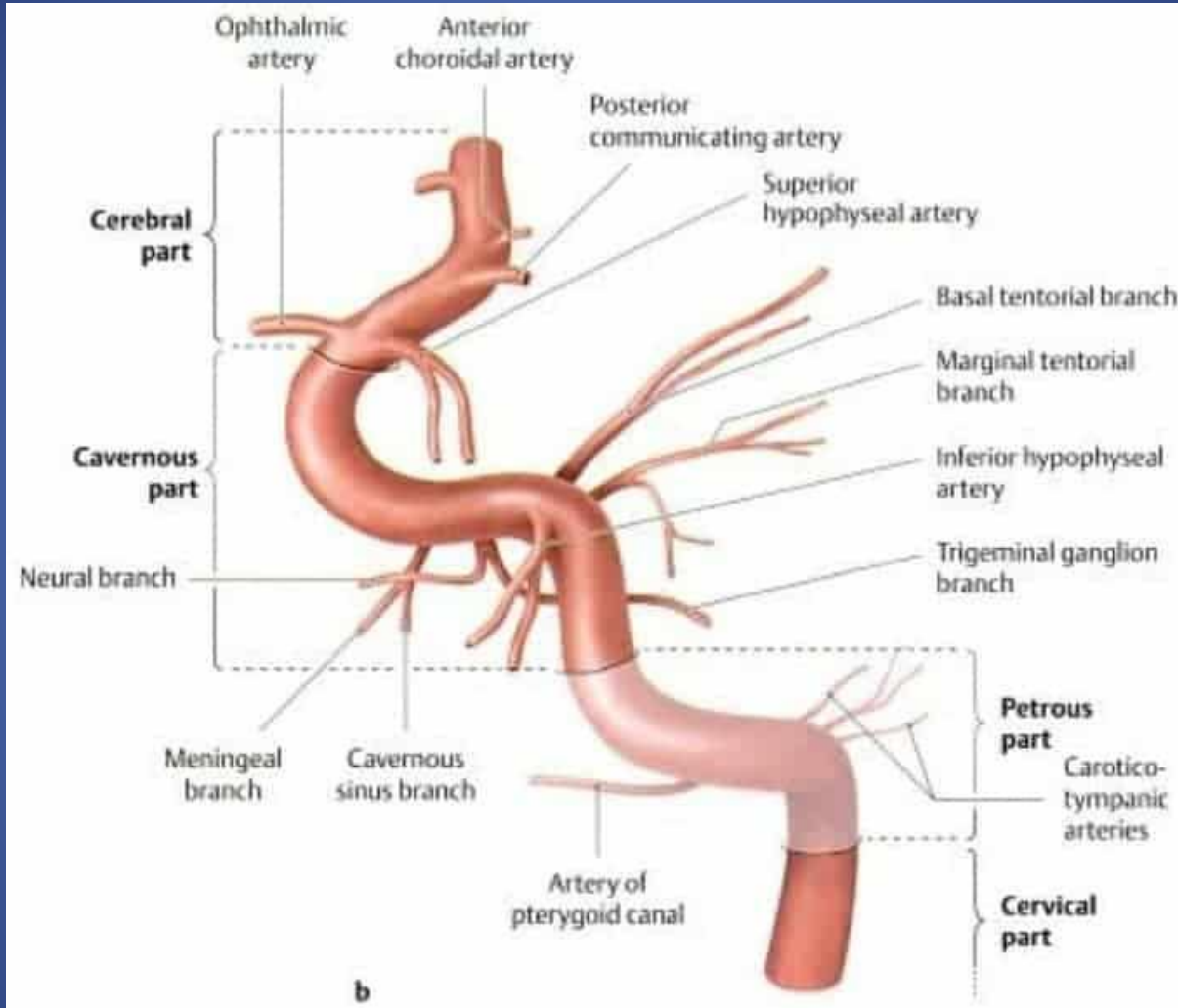
Internal carotid artery occlusion

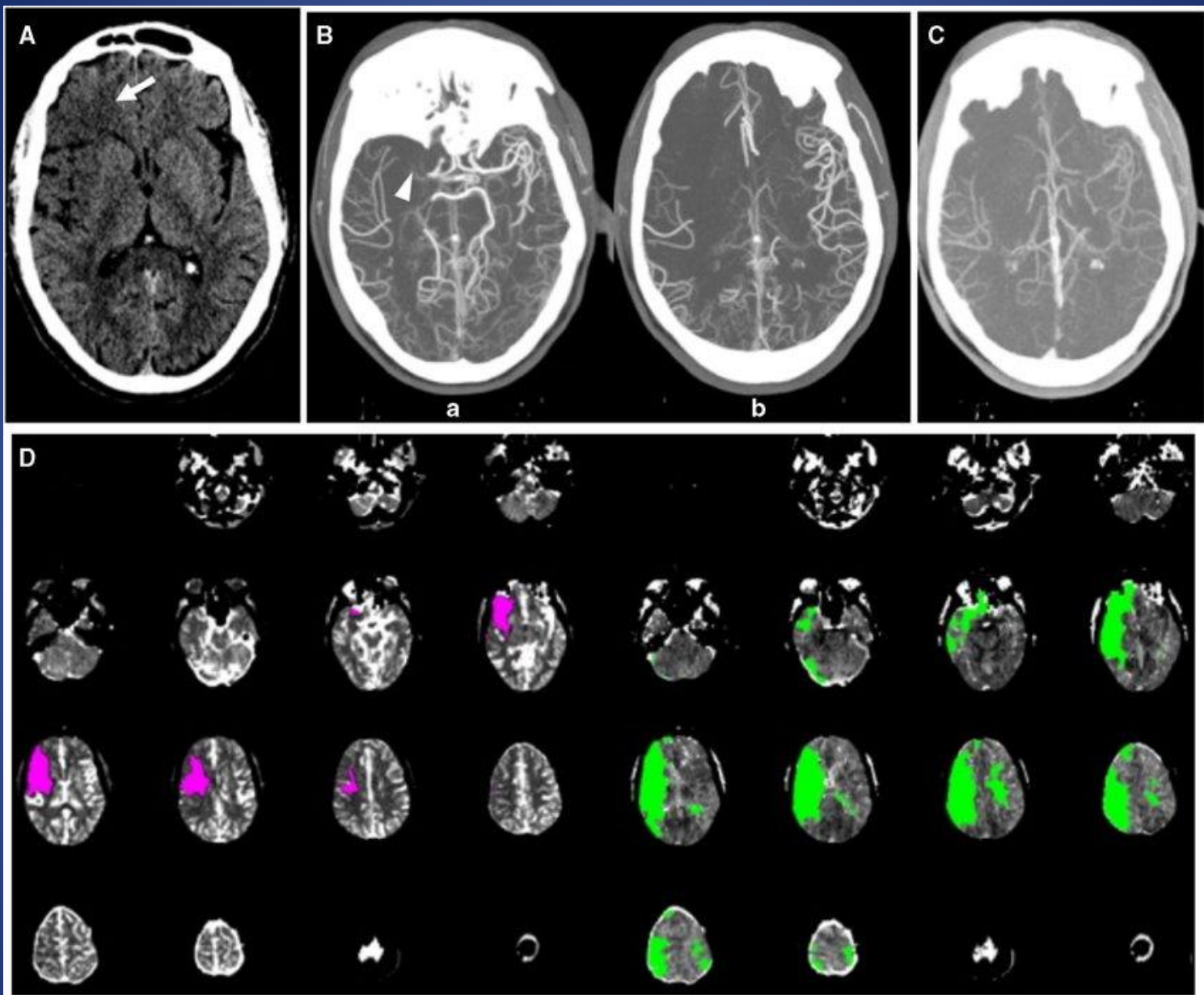
“First Tuesdays” Lecture Series
Sabreena Slavin, MD

Introduction and Goal of “First Tuesdays”

- Didactic lecture series as part of the Kansas Initiative for Stroke Survival (KISS)
- Updates in Practice and FAQ's on Acute Stroke Care
- 30 minutes for didactic and questions/discussion







Comparison of multimodal CT scan protocols used for decision-making on mechanical thrombectomy in acute ischemic stroke - Scientific Figure on ResearchGate.

ICA occlusions

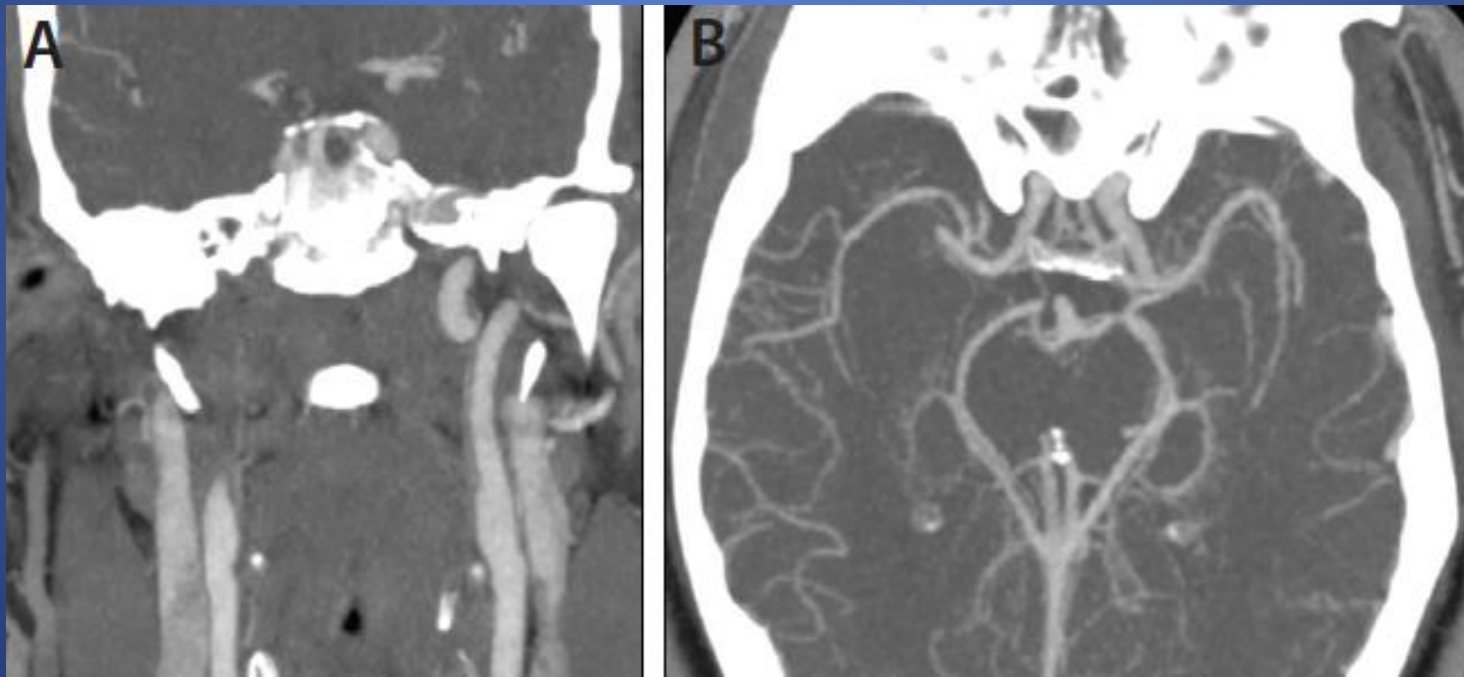
- Acute ICA occlusions are associated with greater severity, functional disability, and mortality.
 - 40-69% have severe residual neurological deficits
 - Only 8-20% have a modified Rankin scale (mRS) score ≤ 2 in follow-up
 - Mortality is 16-55%

Does this patient need thrombectomy?

- Chronic
 - Old CTA/MRA or carotid ultrasound available showing occlusion
 - Milder symptoms (weaker than usual, symptoms that may not localize to ICA)
 - CTP findings showing none or minimal tissue at risk
 - History of carotid artery disease, coronary artery disease, or peripheral artery disease*
- Acute
 - Sudden-onset hemispheric symptoms such as full plegia + sensory loss + aphasia OR neglect + gaze deviation
 - CTP findings showing large amount of tissue at risk

Does this patient need thrombectomy?

- Tandem ICA occlusion = combination of both extracranial ICA occlusion + intracranial ICA/MCA/ACA occlusion



Tandem occlusions

- 15-25% of strokes with large vessel occlusions have tandem occlusions.
- Worse outcomes overall, worse outcomes with just IV thrombolysis. Best treatment = thrombolysis + EVT together.
- Most common cause is from ruptured atherosclerosis plaque of cervical ICA → distal embolization of plaque to cause intracranial occlusion. Can also occur with carotid dissections and carotid webs.

Treatment of tandem occlusions: angioplasty +/- stent

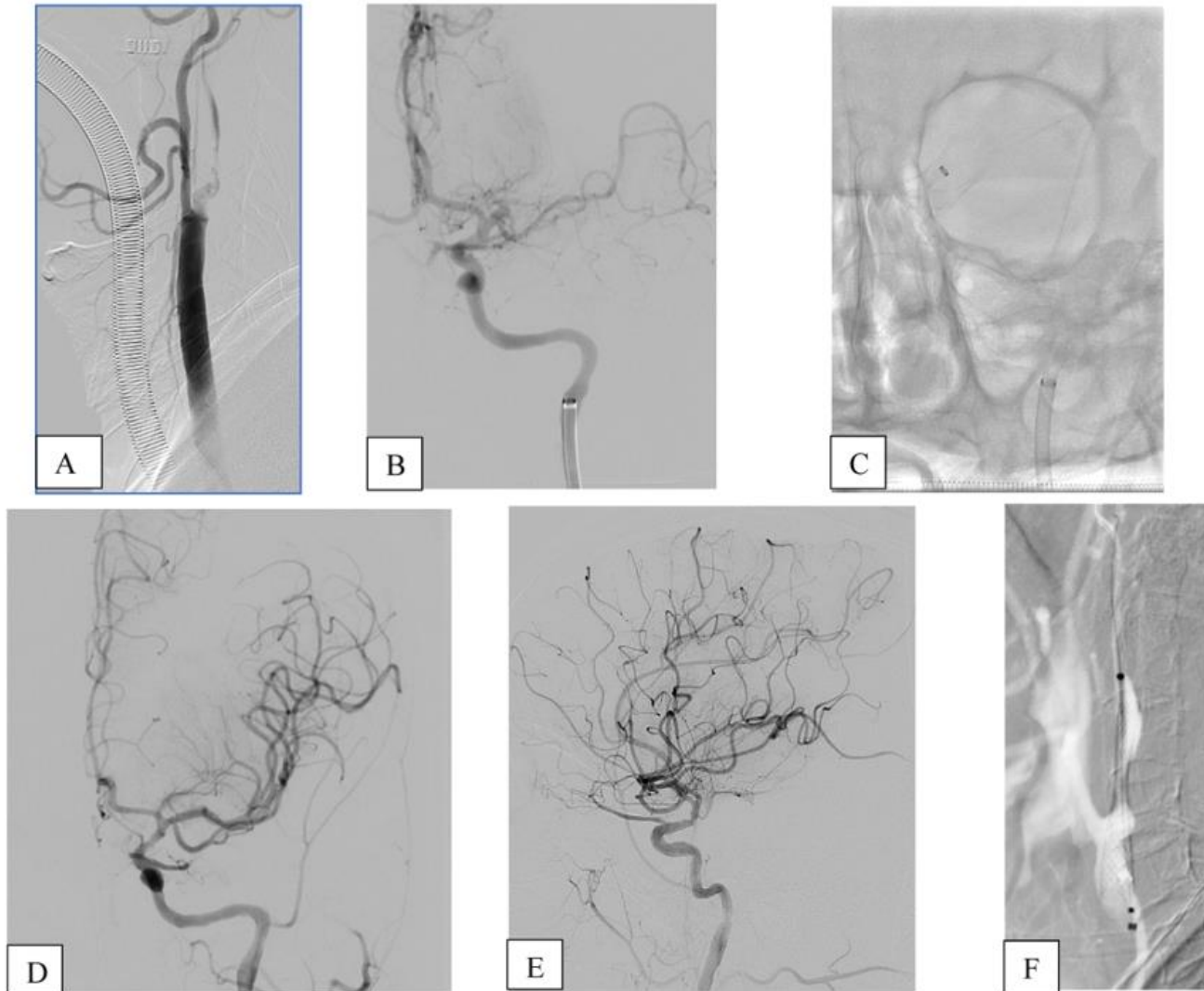
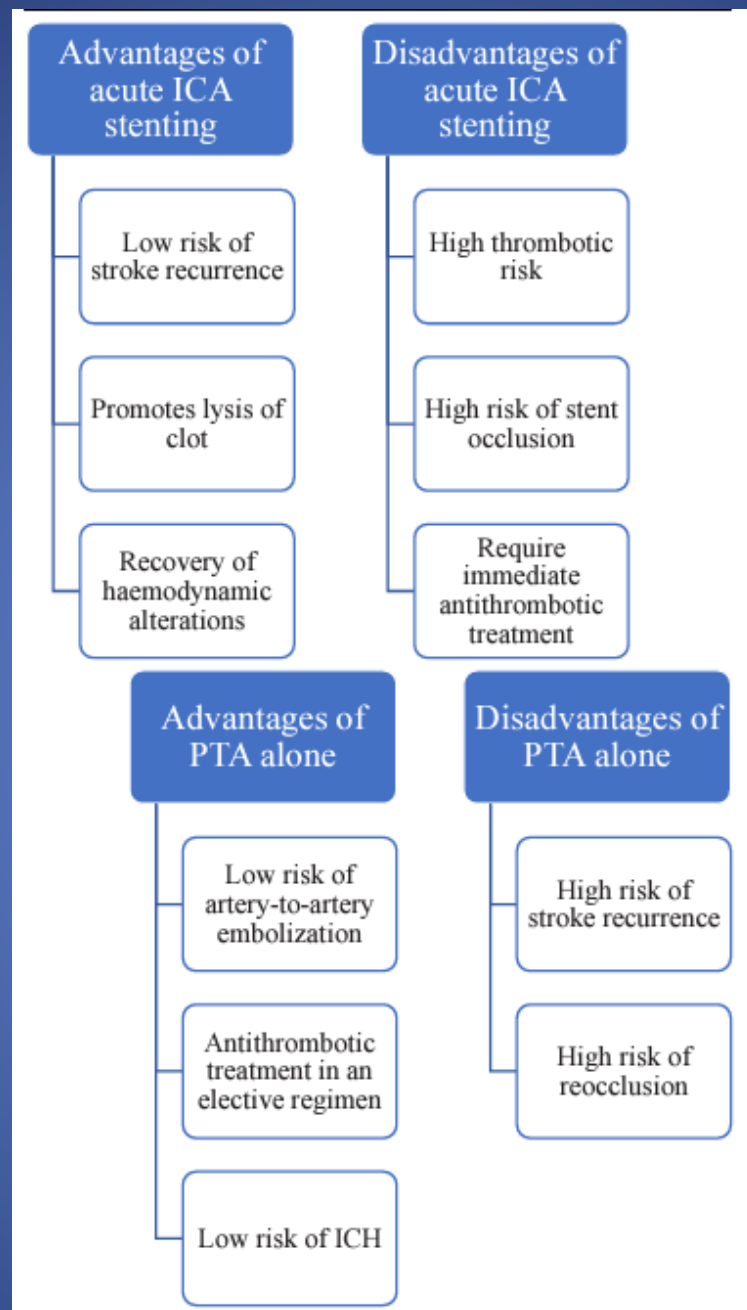


Fig. 1. Angiographic data(A-B) showed tandem occlusion of left proximal internal carotid artery+occlusion of M1 tract of MCA. After crossing extracranial lesion, a first attempt of thromboaspiration was performed(C), with a complete recanalization, TICI 3, of the intracranial circulation (D-E). Carotid stent was then deployed with dilatation of angioplastic Balloon(F).



Isolated extracranial ICA occlusion without tandem occlusion

Mechanism: Atherosclerotic plaques with superimposed thrombi vs emboli from heart/aorta

Risk of intervention: distal embolization of thrombus to cause occlusion of intracranial ICA, MCA, or ACA, which is currently open

There are no clear guidelines on taking patient to EVT vs medical management

Retrospective study at KUMC

Retrospective chart review of patients at our comprehensive stroke center presenting between 2021-2023 with **inclusion criteria**:

- 1) Acute extracranial ICA occlusion
- 2) Patent intracranial vasculature
- 3) Older than 18 years of age

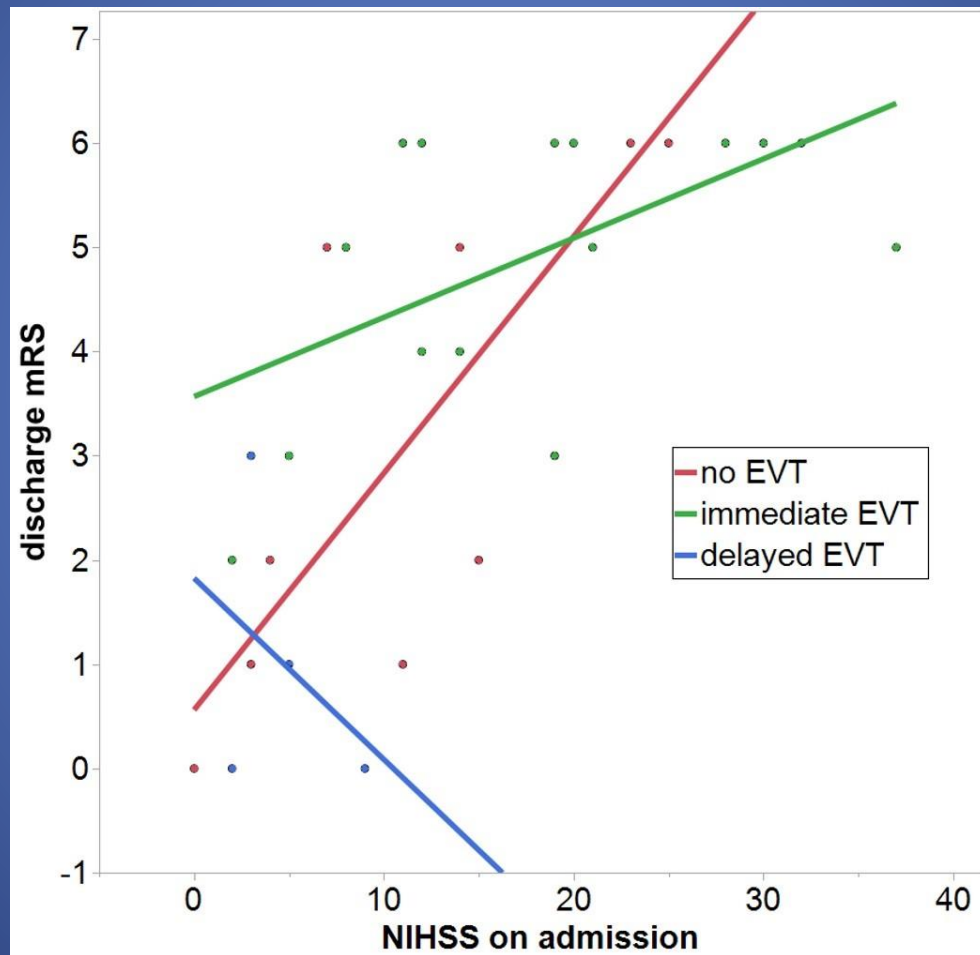
Patients were retrospectively organized into groups based on how EVT was utilized:

- 1) immediately upon arrival to KUMC
- 2) after a delay (for any reason)
- 3) not employed at all

Results of EVT usage in acute isolated extracranial ICA occlusion

	groups			p-values upon group comparison			
	1. EVT immediately n = 19	2. EVT delayed n = 4	3. EVT unused n = 17	1,2	1,3	2,3	1,2,3
Pre-admission mRS	0.4 ± 1.0	0.0 ± 0.0	0.4 ± 0.9	0.446	0.630	0.327	0.550
NIHSS on admission	18.5 ± 9.5	4.8 ± 3.1	11.6 ± 7.9	<0.0001	0.023	0.015	0.007
sICH during admission	4 (21.1%)	0 (0%)	1 (5.9%)	1.000	0.342	1.000	0.283
Discharge mRS	5.0 ± 1.3 (n = 18)	1.0 ± 1.4	3.3 ± 2.5 (n = 12)	0.003	0.047	0.123	0.005
Mortality at discharge	9 (47.4%)	0 (0%)	3 (17.7%)	0.127	0.083	1.000	0.059
90-day mRS	4.6 ± 1.9 (n = 18)	0.3 ± 0.6 (n = 3)	3.3 ± 2.5 (n = 12)	0.005	0.133	0.102	0.014

Results of EVT usage in acute isolated extracranial ICA occlusion



Results of EVT usage in acute isolated extracranial ICA occlusion

- Usage of EVT is associated with higher admission NIHSS - likely in large part due to clinician choice and resulting selection bias.
- In patients with low NIHSS on admission, **immediate EVT** use is associated with **worse discharge mRS** as compared to not using EVT. Our multiple regression model predicts that this relationship holds significant for **NIHSS <14**.
- **12.5%** of all patients experienced sICH and there was a **30.0%** rate of mortality at discharge; these were even higher in **EVT recipients (17.4% sICH, 39.1% mortality)**.

Acute ICA occlusions

- Overall leads to higher mortality/morbidity
- Ensure ICA occlusion is acute and responsible for primary stroke symptoms
- For tandem ICA occlusions, give thrombolytic and take to EVT. Choice of angioplasty +/- stenting depends on interventionalist.
- For isolated extracranial ICA occlusions, unsure whether EVT will lead to benefit. There may be risk of harm in cases with low NIHSS. Consider monitoring in ICU and performing EVT if they worsen.

Questions?

- Call for help anytime!
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- <http://www.kissnetwork.us/>
- sslavin2@kumc.edu