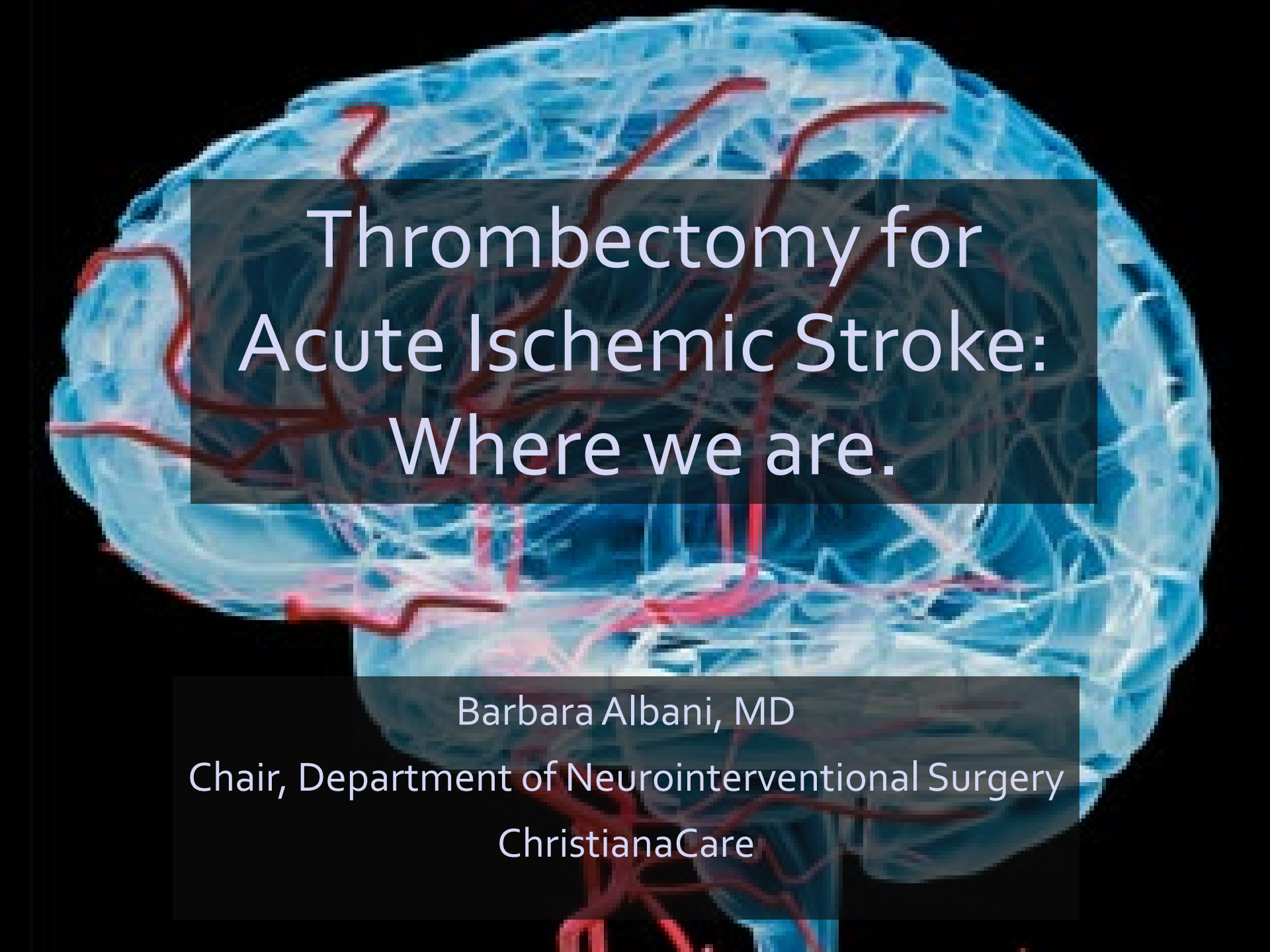


Thrombectomy for Acute Ischemic Stroke: Where we are.

Barbara Albani, MD

Chair, Department of Neurointerventional Surgery

ChristianaCare

Disclosures

- None

Objectives

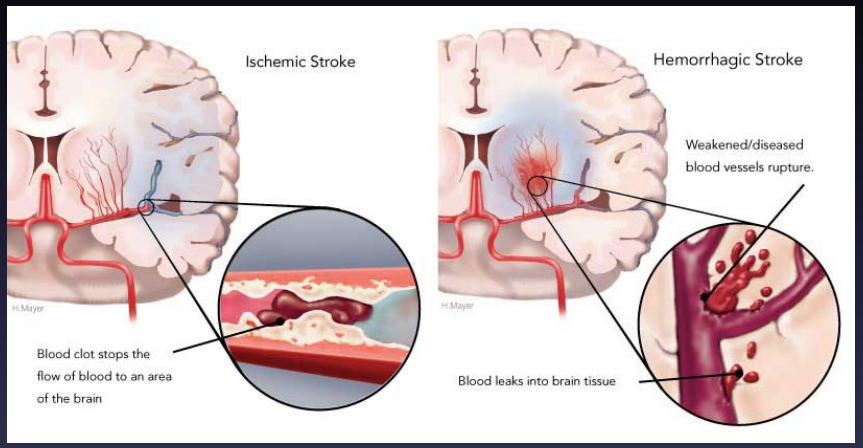
- Background and pathophysiology of acute ischemic stroke
- Discuss the decision making in acute stroke care
- Discuss the role of imaging in acute stroke
- Explore current endovascular practices in stroke treatment

What is a stroke?

- Clinical
  - When we lose function of a part of the brain that manifests as a focal neurological deficit.
    - Bleeding (hemorrhagic)
    - Lack of flow (ischemic)
- Imaging (silent)
  - Cell death, ICH, or SAH without neurological deficits are also considered strokes

Stroke Subtypes

- Ischemic stroke: 87%
  - Mechanism: Thrombotic vs. Embolic vs. Hypoperfusion
  - Large vessel vs. Small vessel
- Hemorrhagic stroke: 13%
  - Intracerebral hemorrhage
  - Intraventricular hemorrhage
  - Subarachnoid hemorrhage



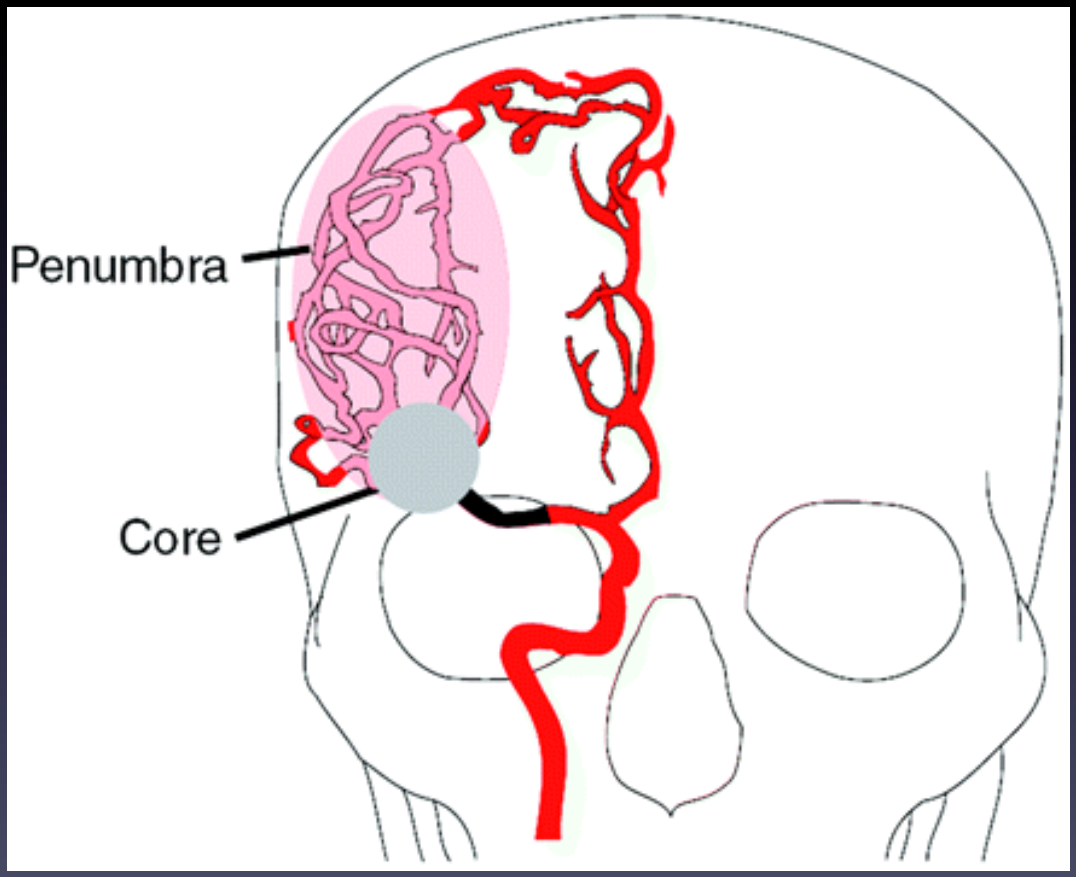
Adapted from Heart and Stroke Foundation of Canada

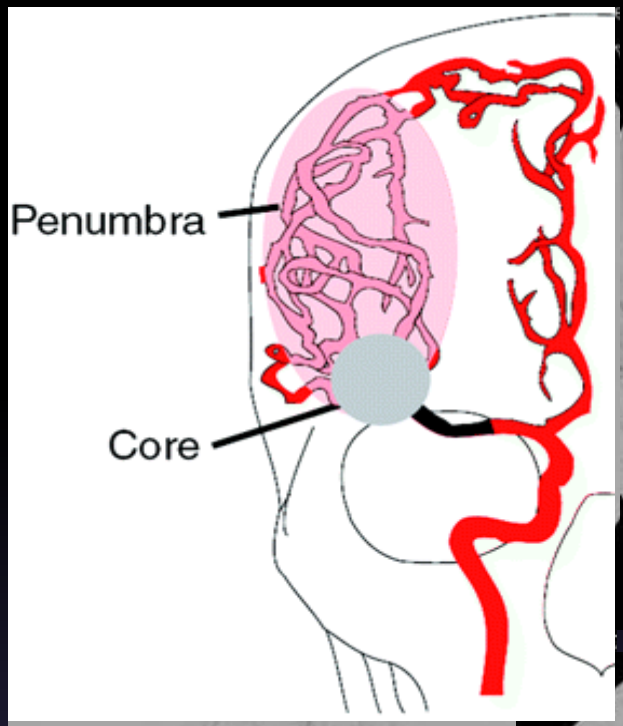
Ischemic Stroke Causes

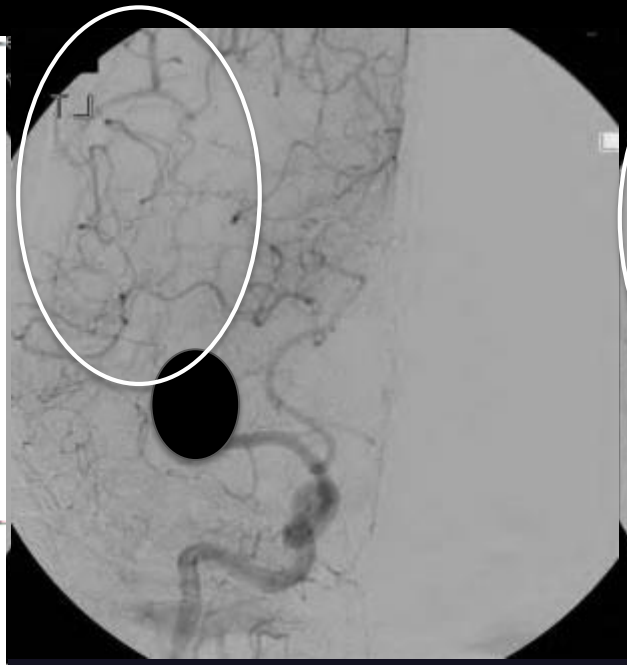
- Cardioembolic: 30-35%
- Small artery occlusion (Lacunar): 26%
- Large Vessel disease artery to artery emboli: 15-20%
- Other: 5%
  - hypoperfusion, hypercoagulable states, dissection
- Cryptogenic: 20-30%

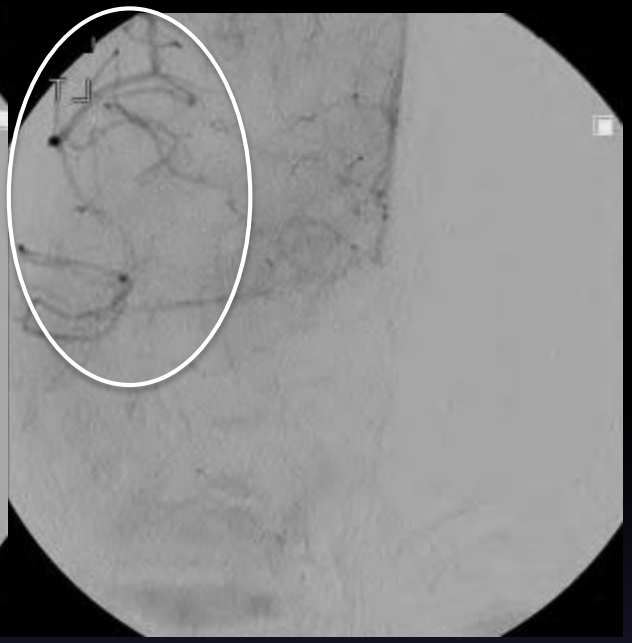
Pathophysiology of Acute Large Vessel Ischemic Stroke

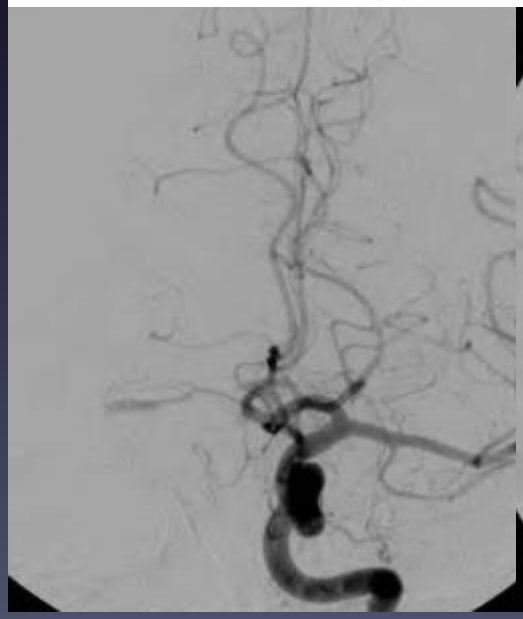
- Infarct core
- Ischemic penumbra

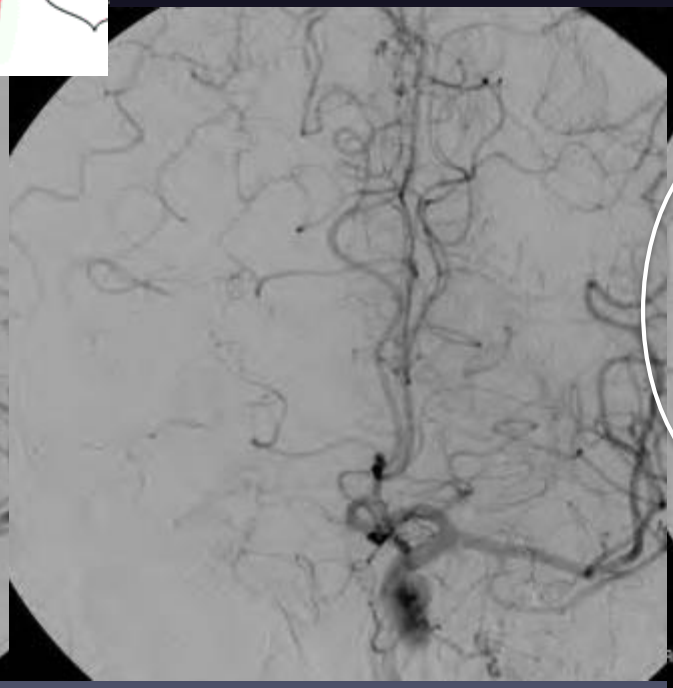



Penumbra
Core









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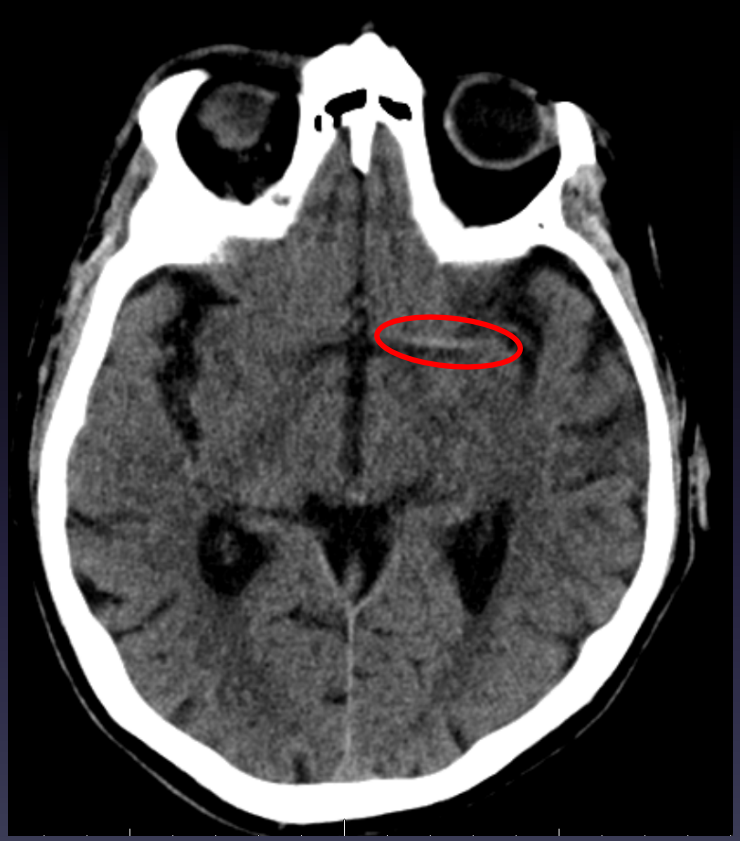
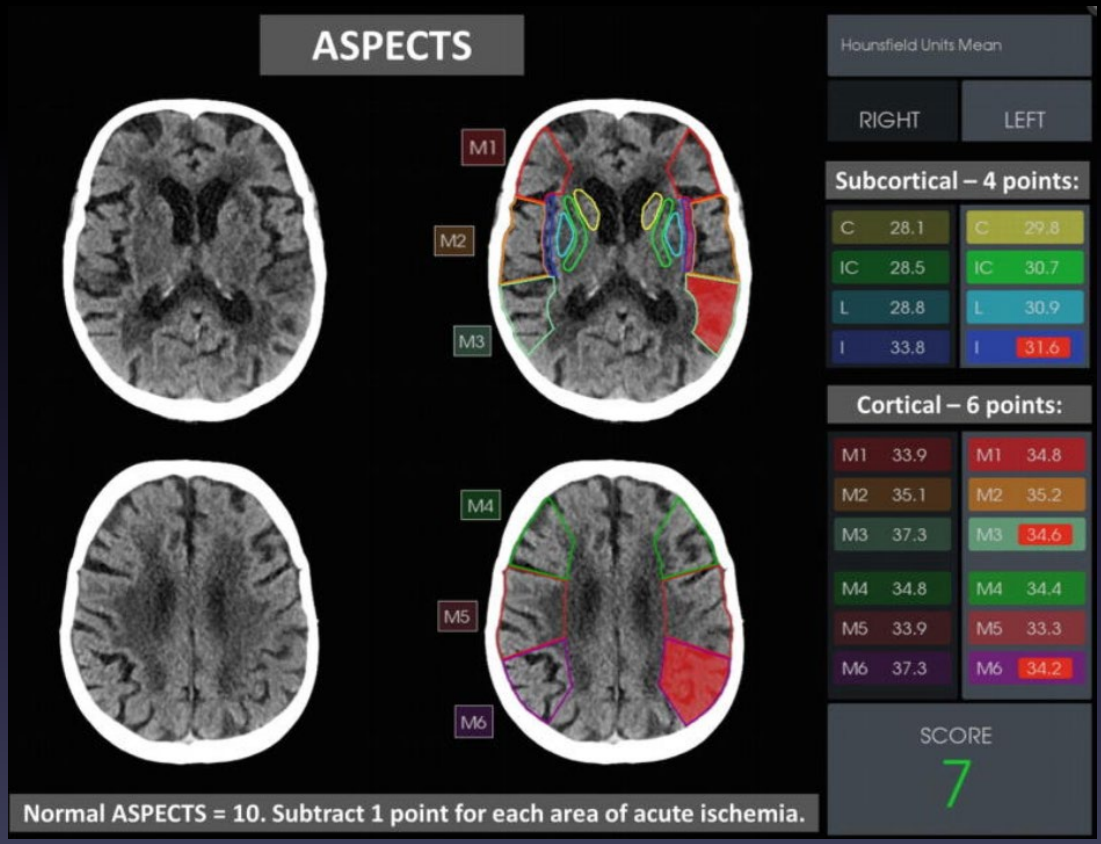
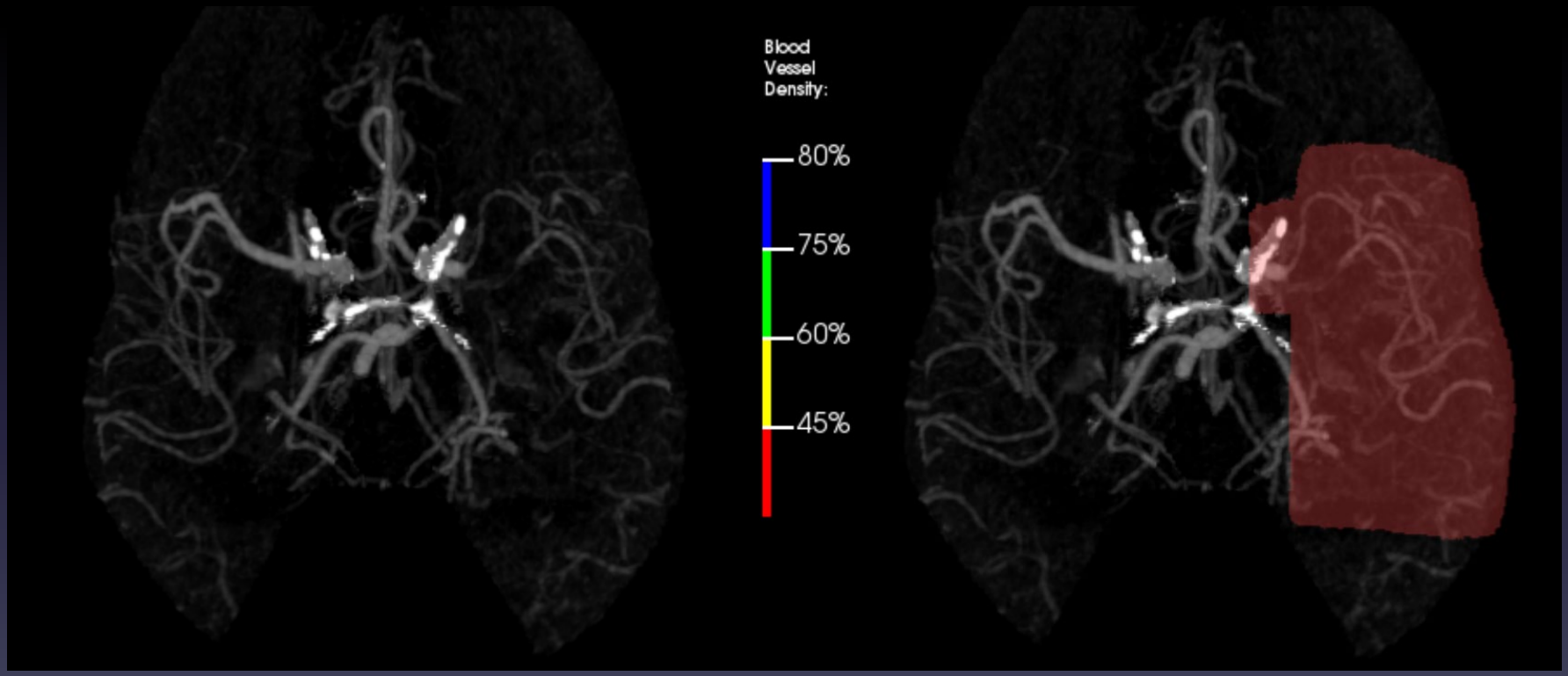
STROKE IMAGING

Noncontrast CT Head



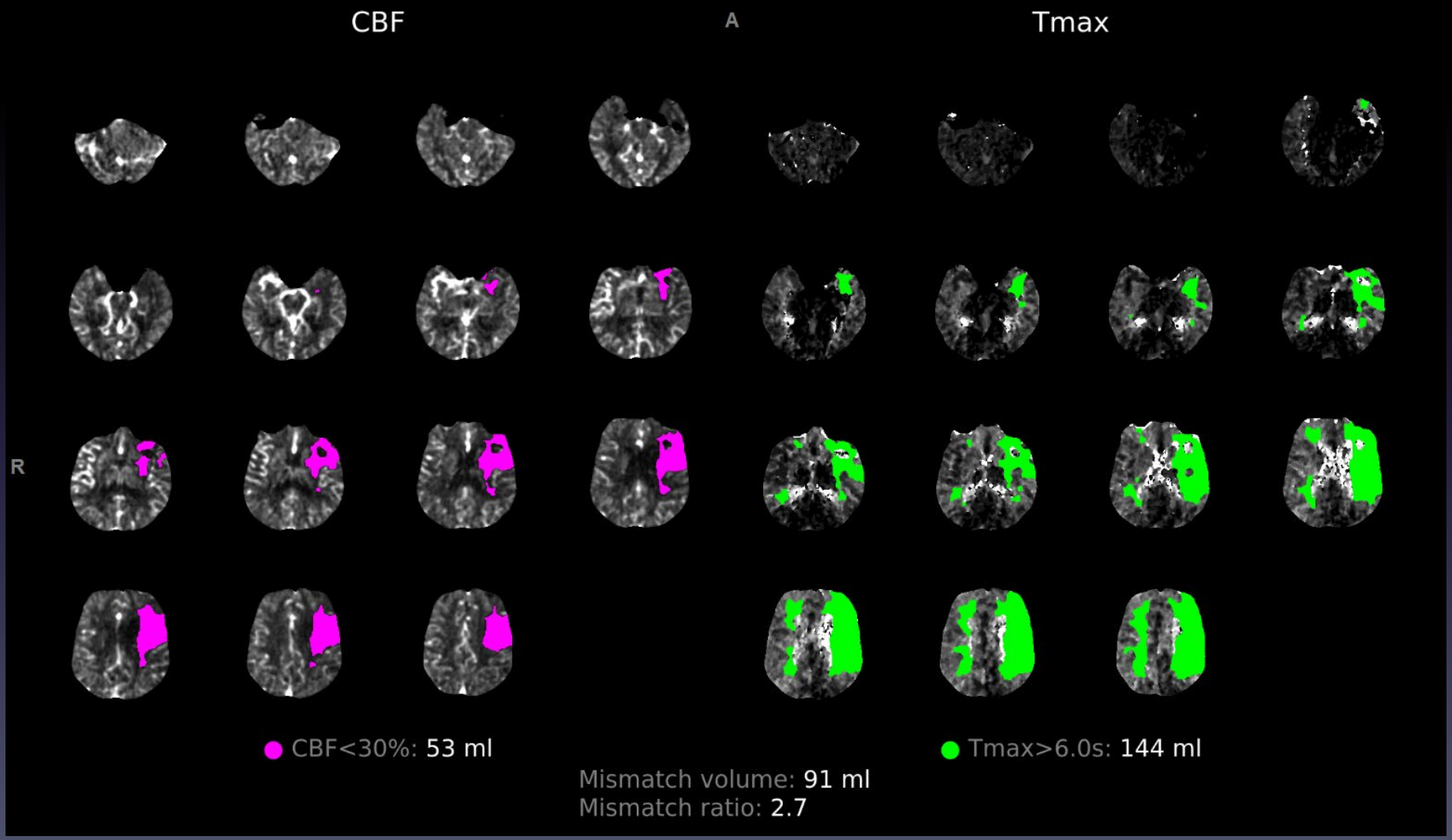


CT Angiogram



LEFT M1 OCCLUSION

CT Perfusion- late strokes



Treatment options

IV tPA / TNK

Gold-standard in ischemic stroke care. Drug is designed to break apart the clot.

Combo Therapy

Endovascular Clot Removal

Mechanical disruption or removal of the clot using standard endovascular approaches

Medical Management

Monitor vitals and provide secondary stroke prevention.

Endovascular Treatment

- In
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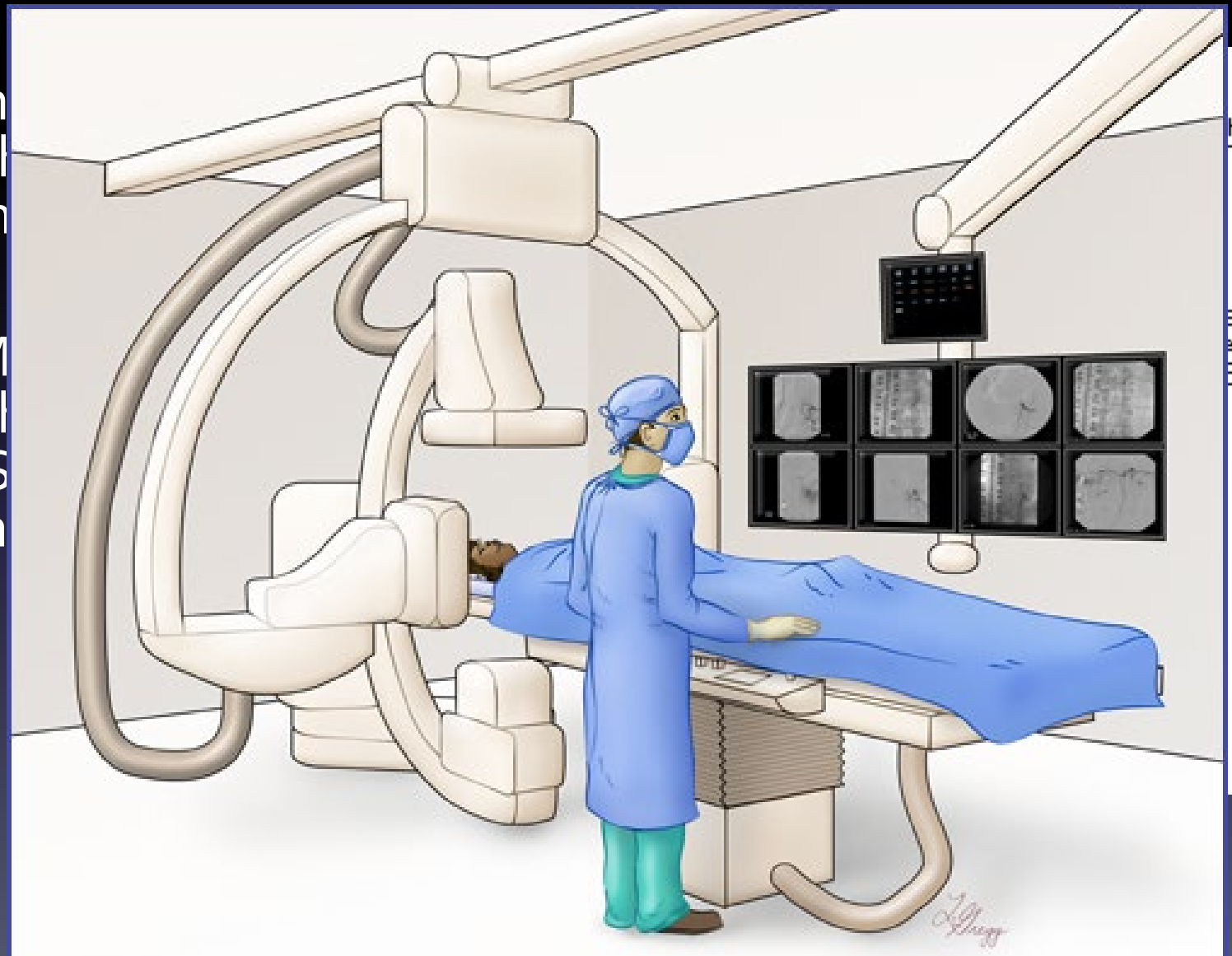

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Site of
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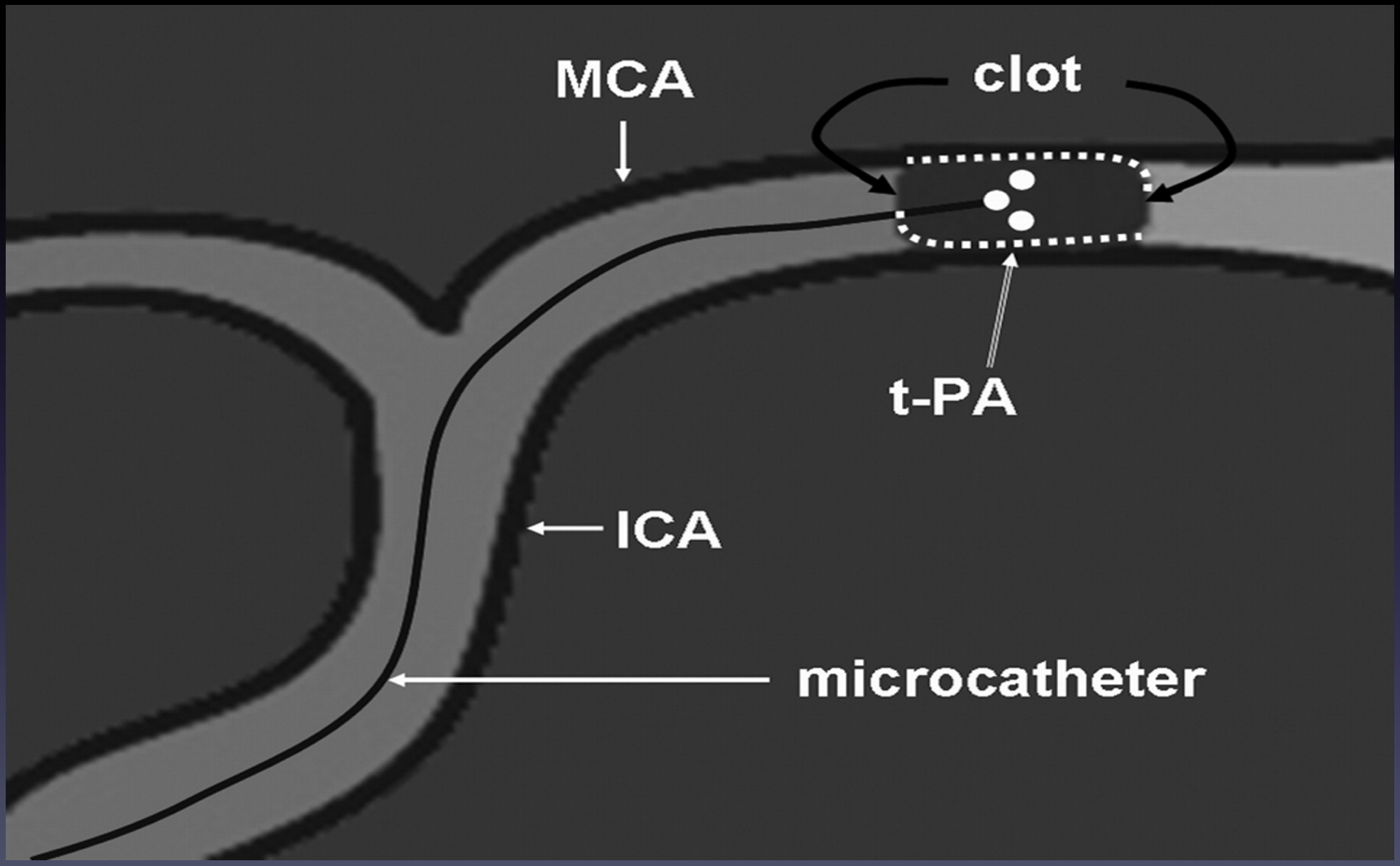
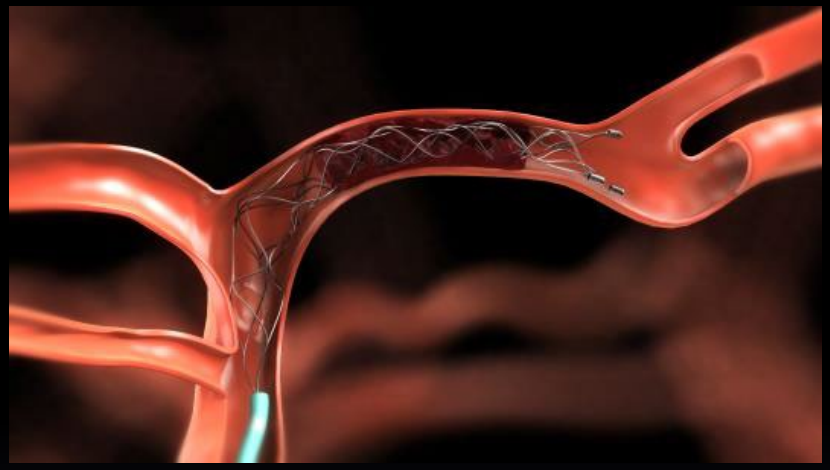
catheter

Intra-Arterial Thrombolysis



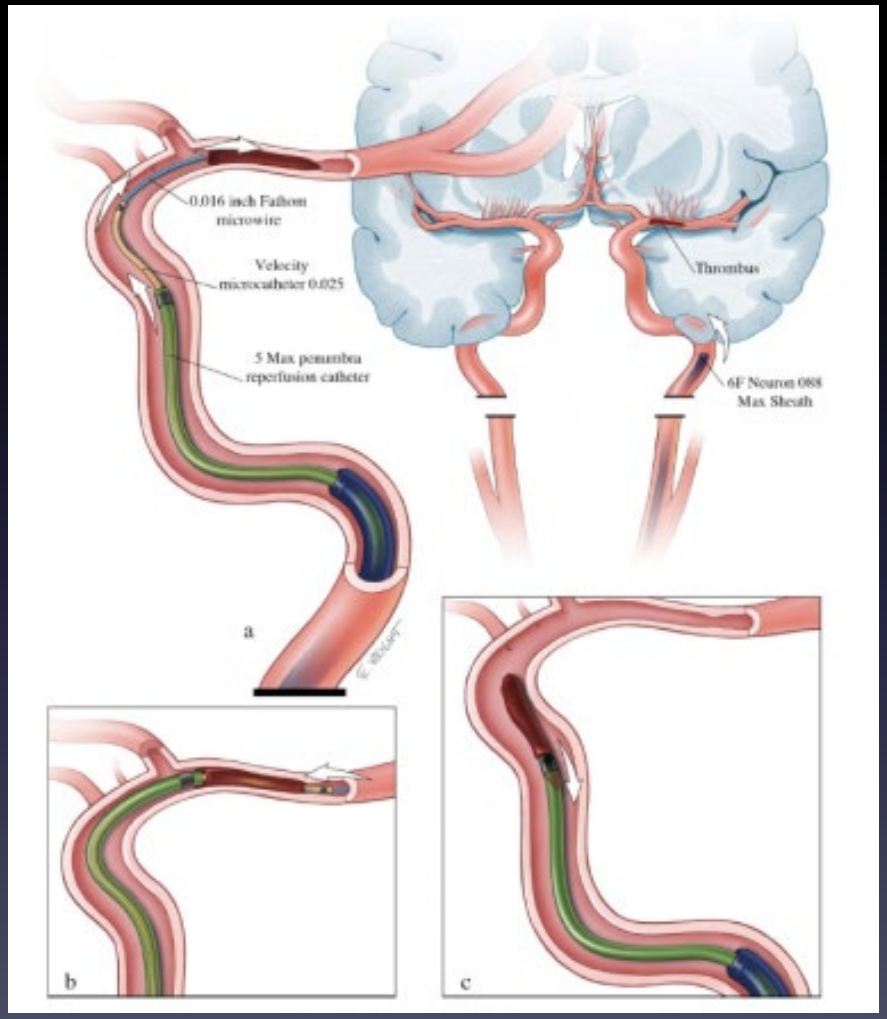


ELVO, MEVO, DEVO (large, medium and distal vessels)

MECHANICAL THROMBECTOMY

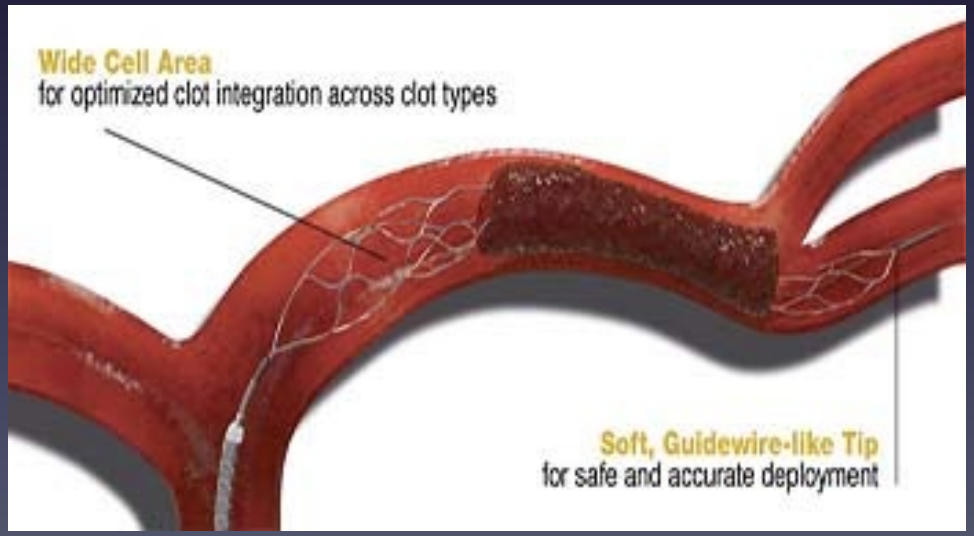
Lesional aspiration

- 'Bain vacuum'
- First approved 2009, continues to improve
- ADAPT technique
  - Track the catheter to the clot face and aspirate
  - Then pull out / engulf clot



Stentriever

- First FDA clearance in March 2012
- Good vessel opening >88%
- Now used in combo with aspiration

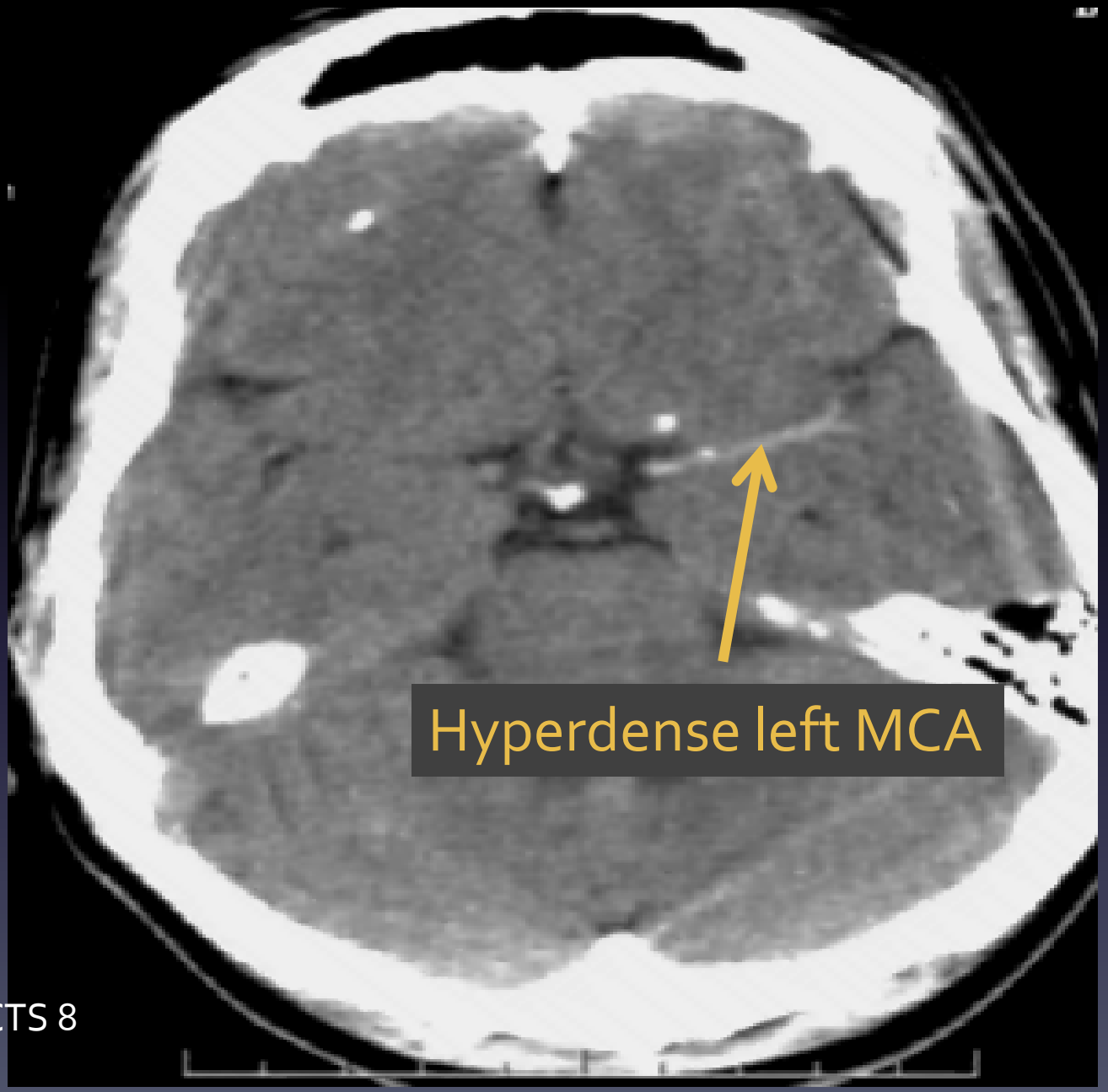


CASES.....

Case 1

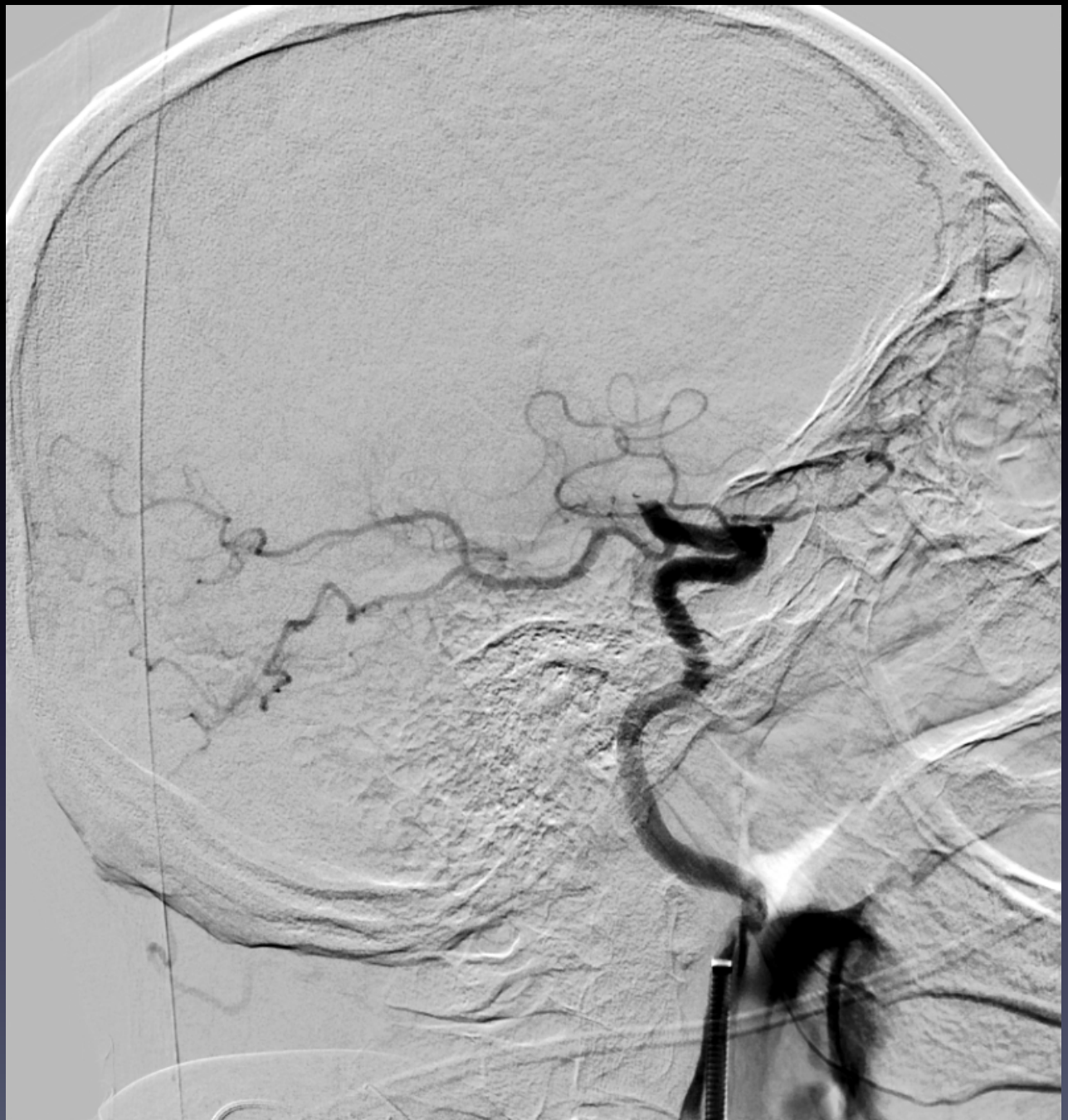
- Clinical presentation…
  - 37 y/o female
  - Acute onset (3 hours)
  - Symptoms
    - complete right hemiparesis
    - global aphasia
    - left gaze preference
    - NIHSS 21

- THOUGHTS……
- Based on time, she is eligible for meds
- Based on deficit we are concerned for a large vessel occlusion



ASPECTS 8

PRE



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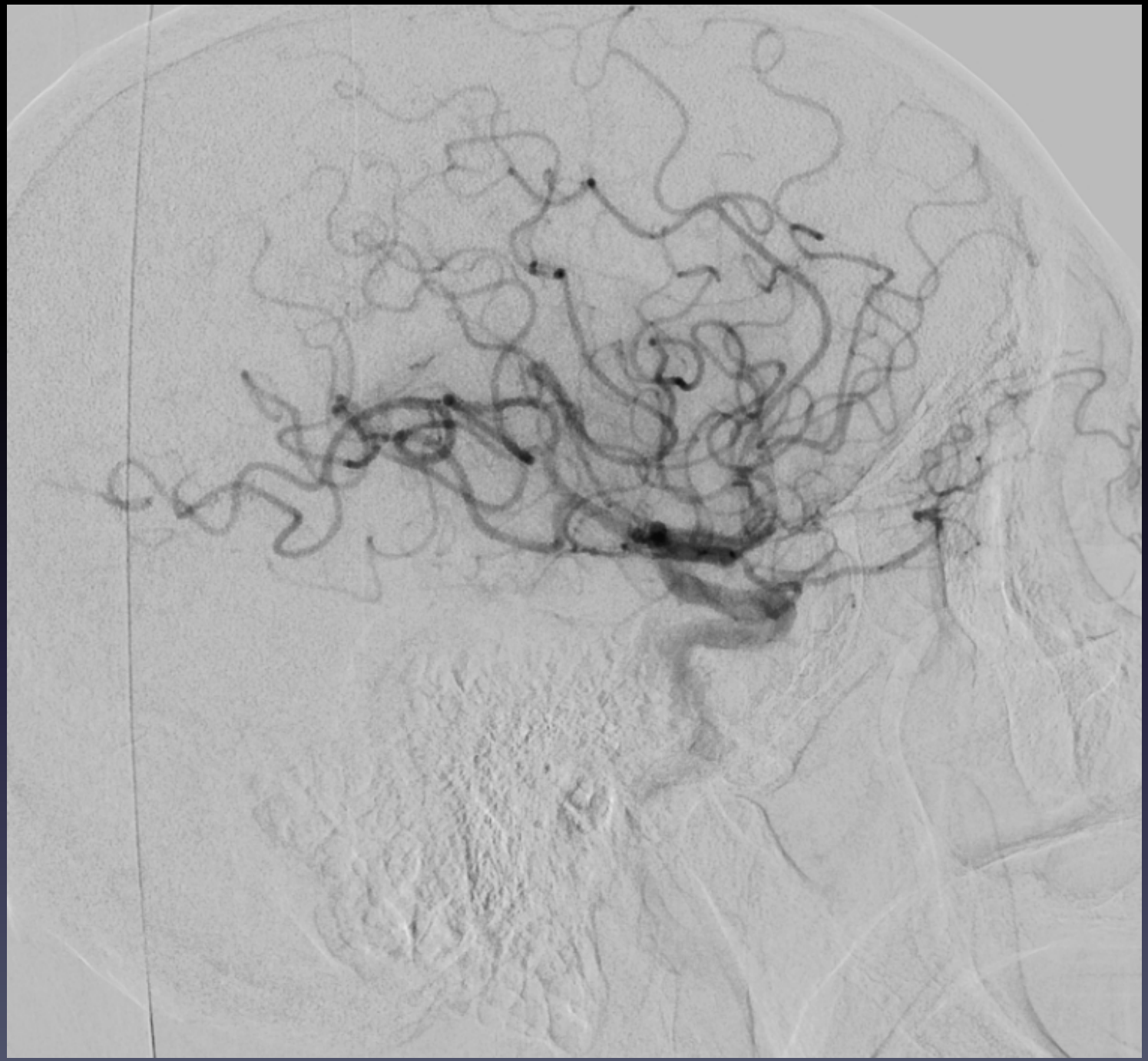
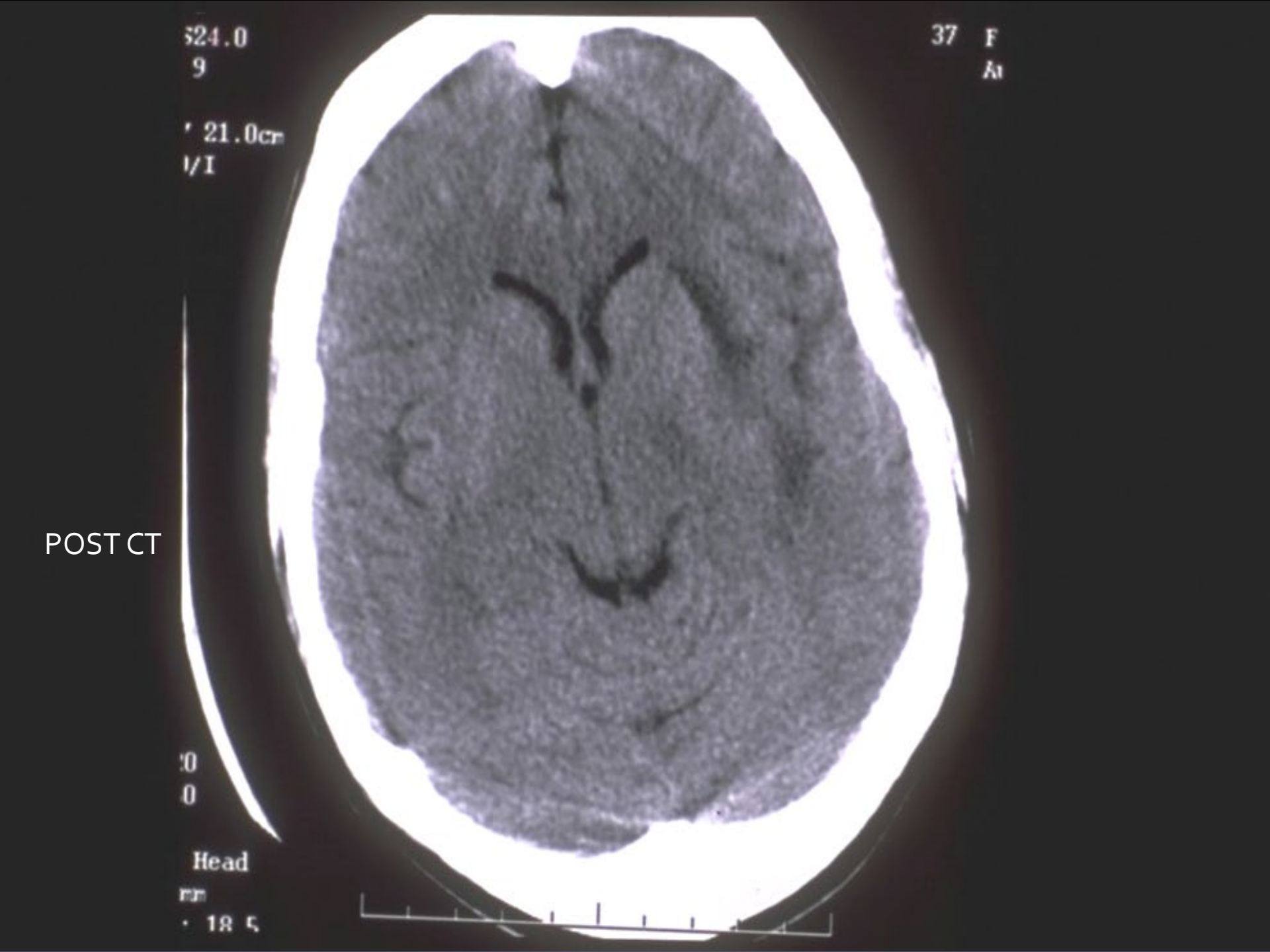


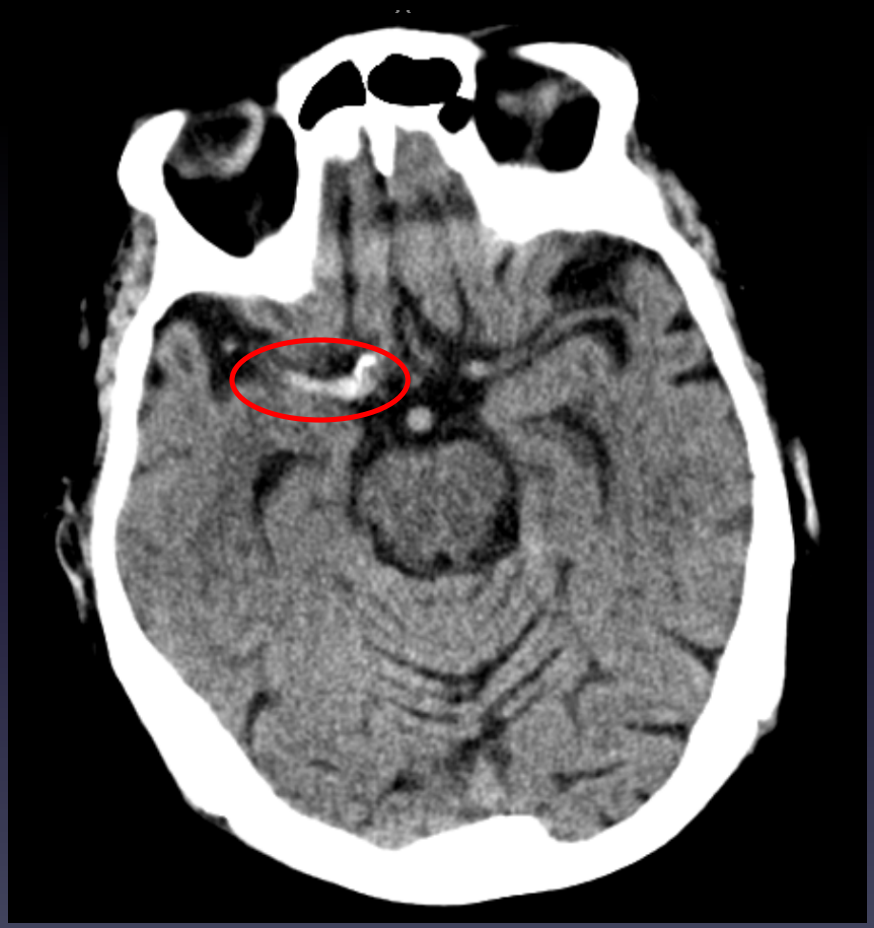


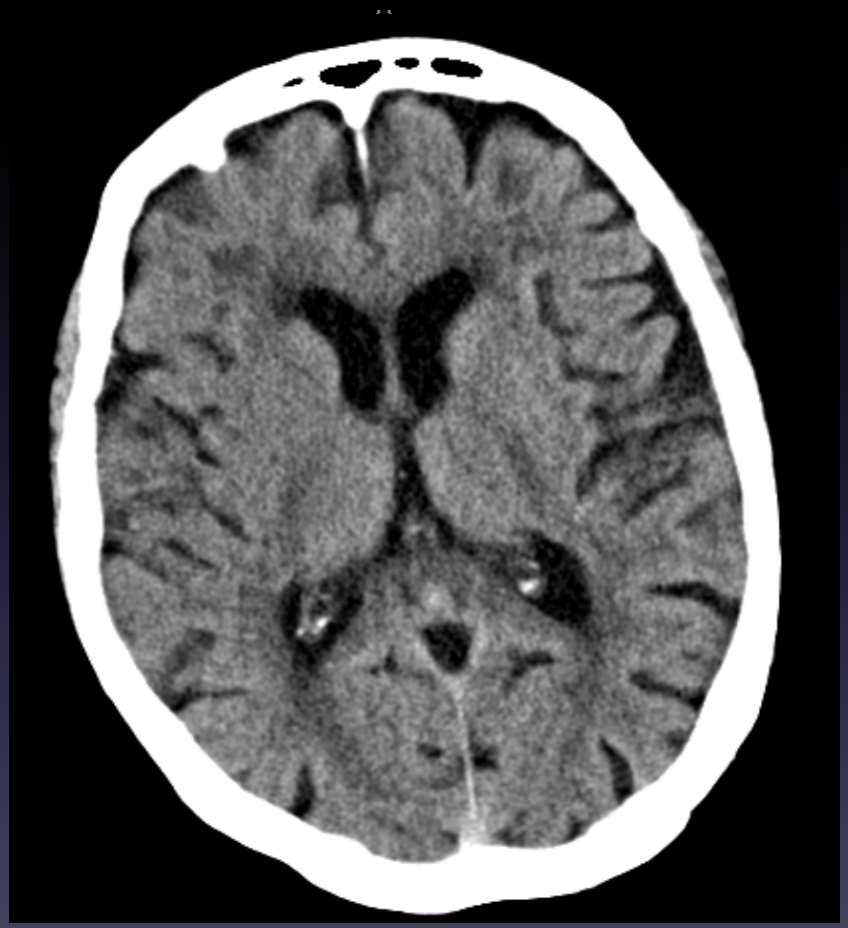
POST CT

Case 2

- 87-year-old female with known atrial fibrillation, off Coumadin for minor surgical procedure (cause?)
- Wakes up with acute stroke symptoms including dysarthria, diplopia, ataxia, and right upper extremity weakness. NIHSS 25
- Woke up with symptoms

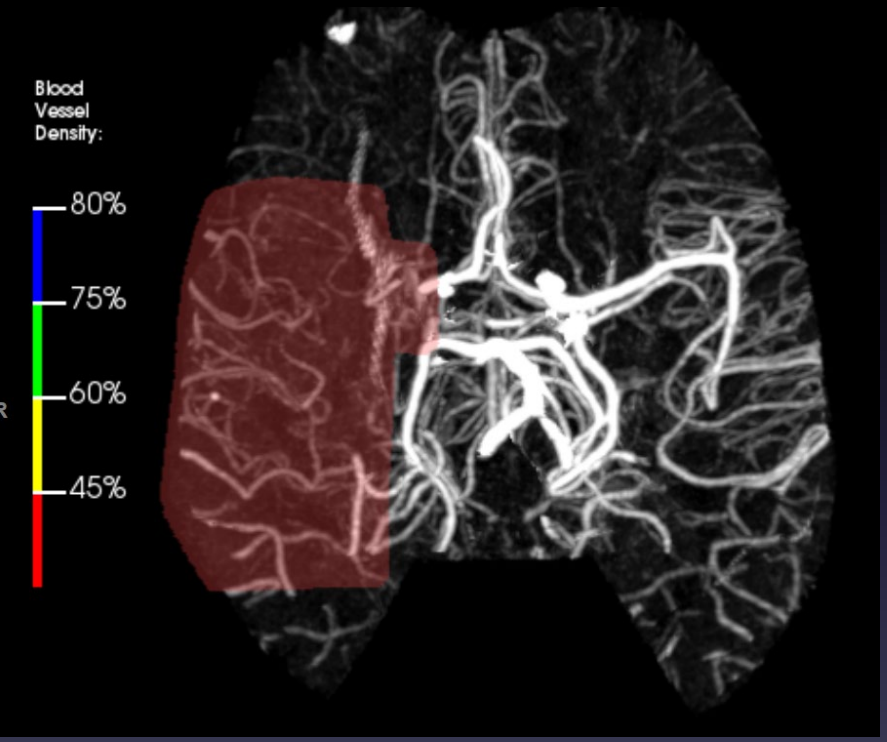
NCCT

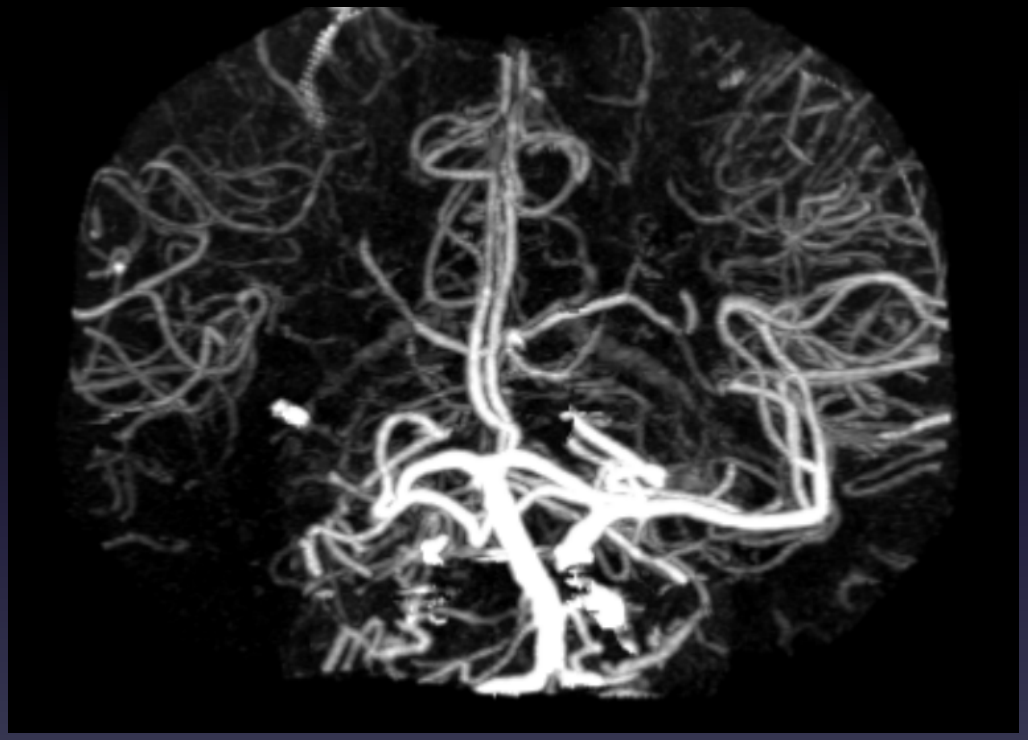




ASPECTS 10

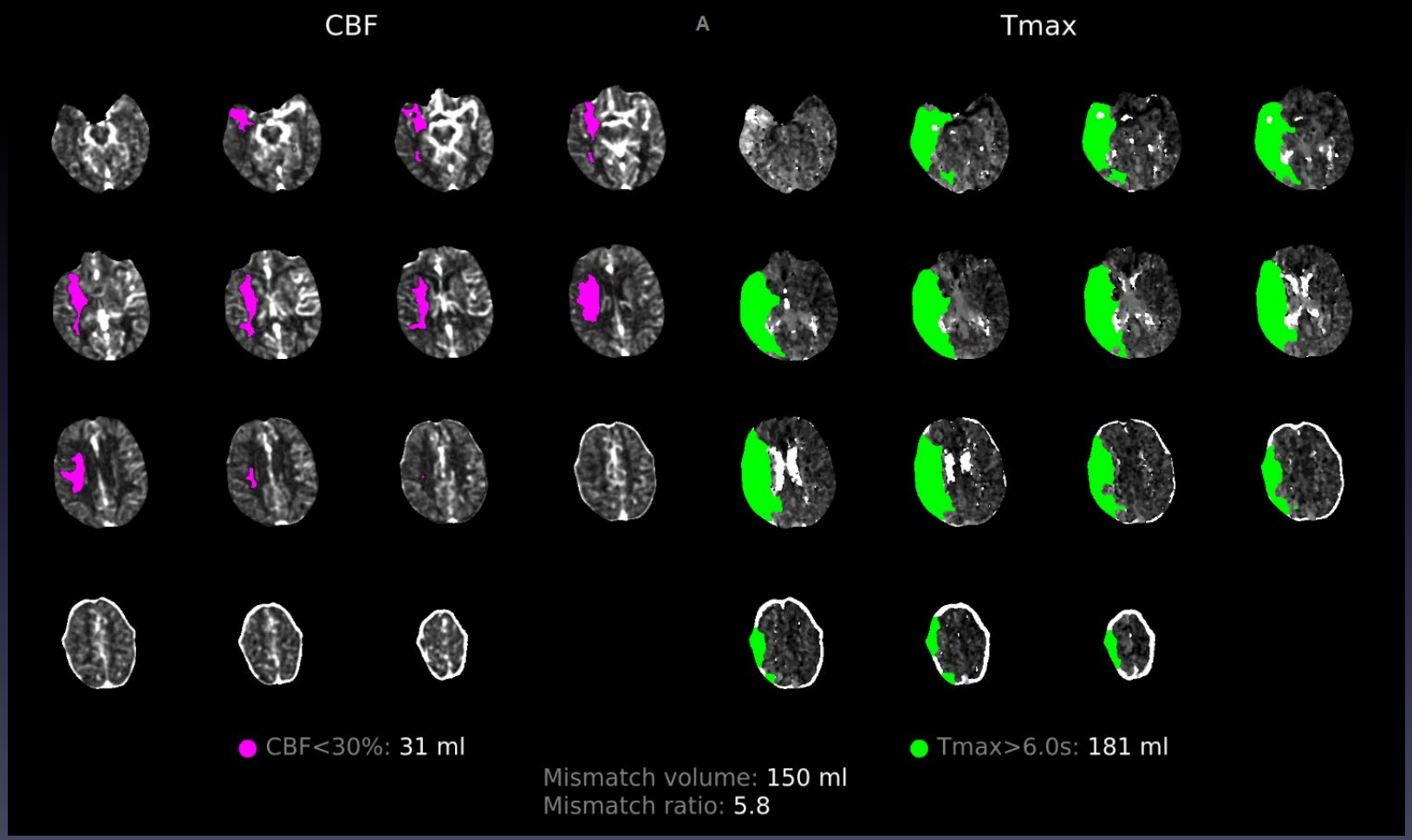
CTA





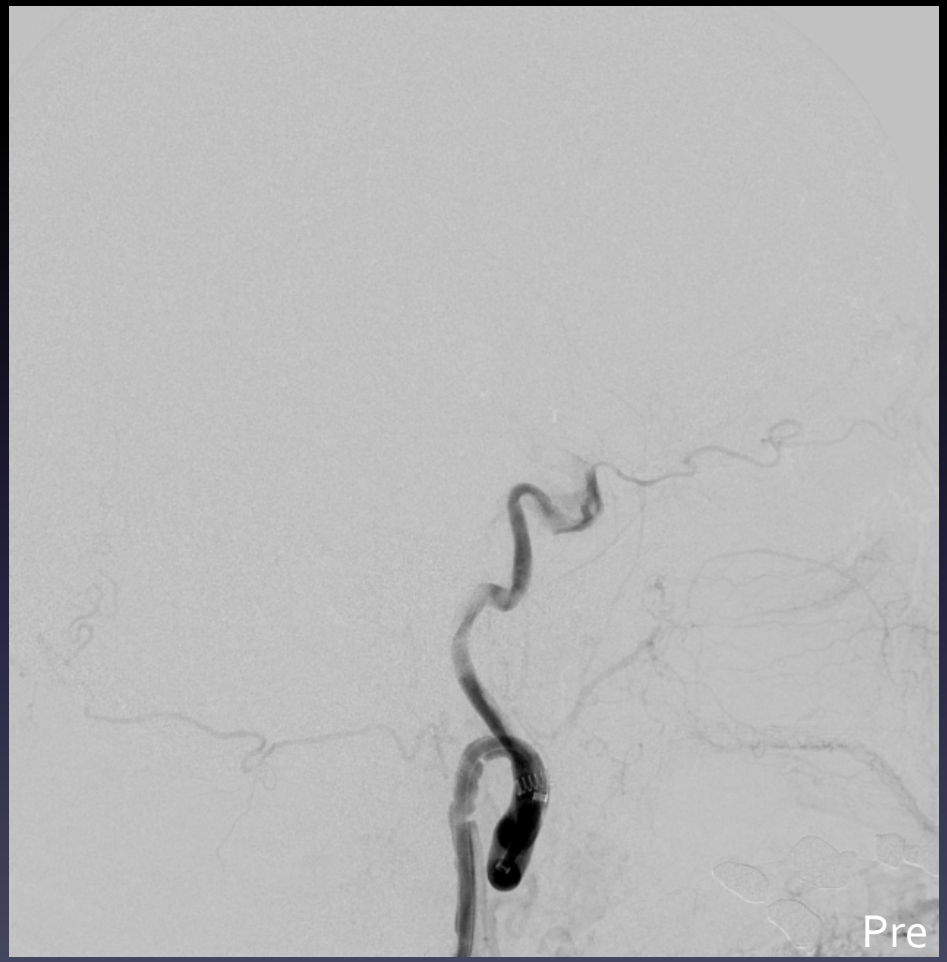
RIGHT ICA OCCLUSIONS

CT Perfusion



LARGE PERFUSION MISMATCH

Lesional aspiration



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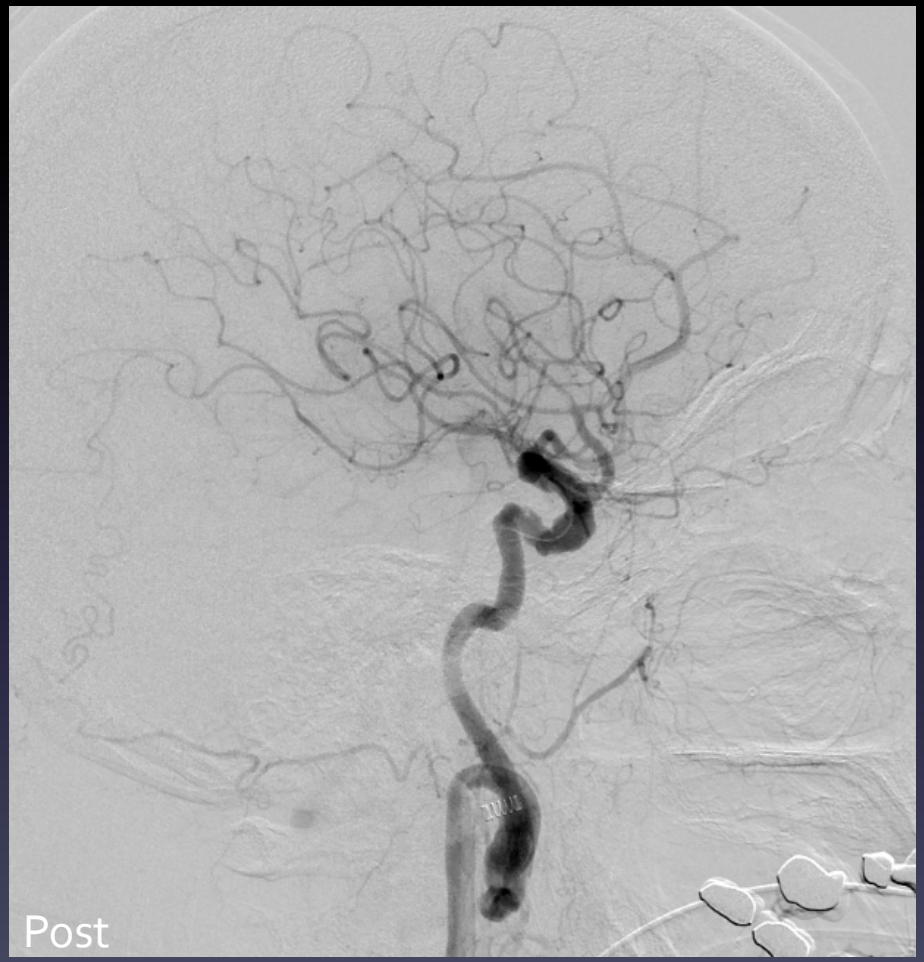


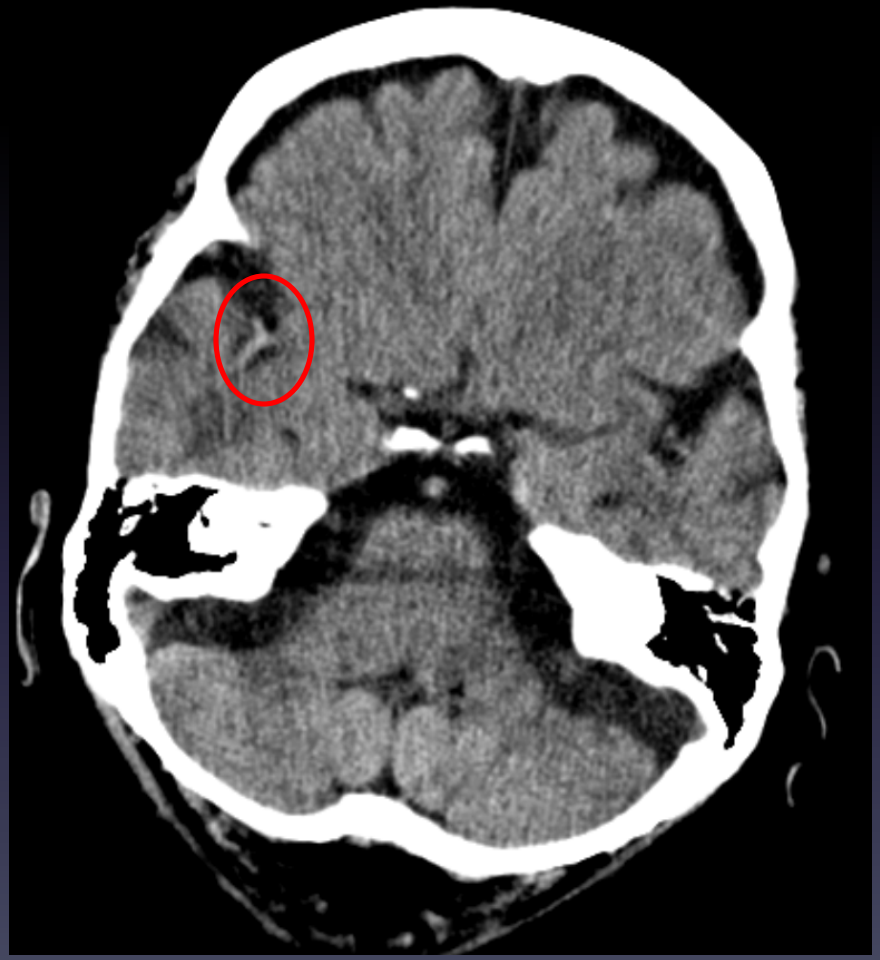
POST

Lesional aspiration

Case 3

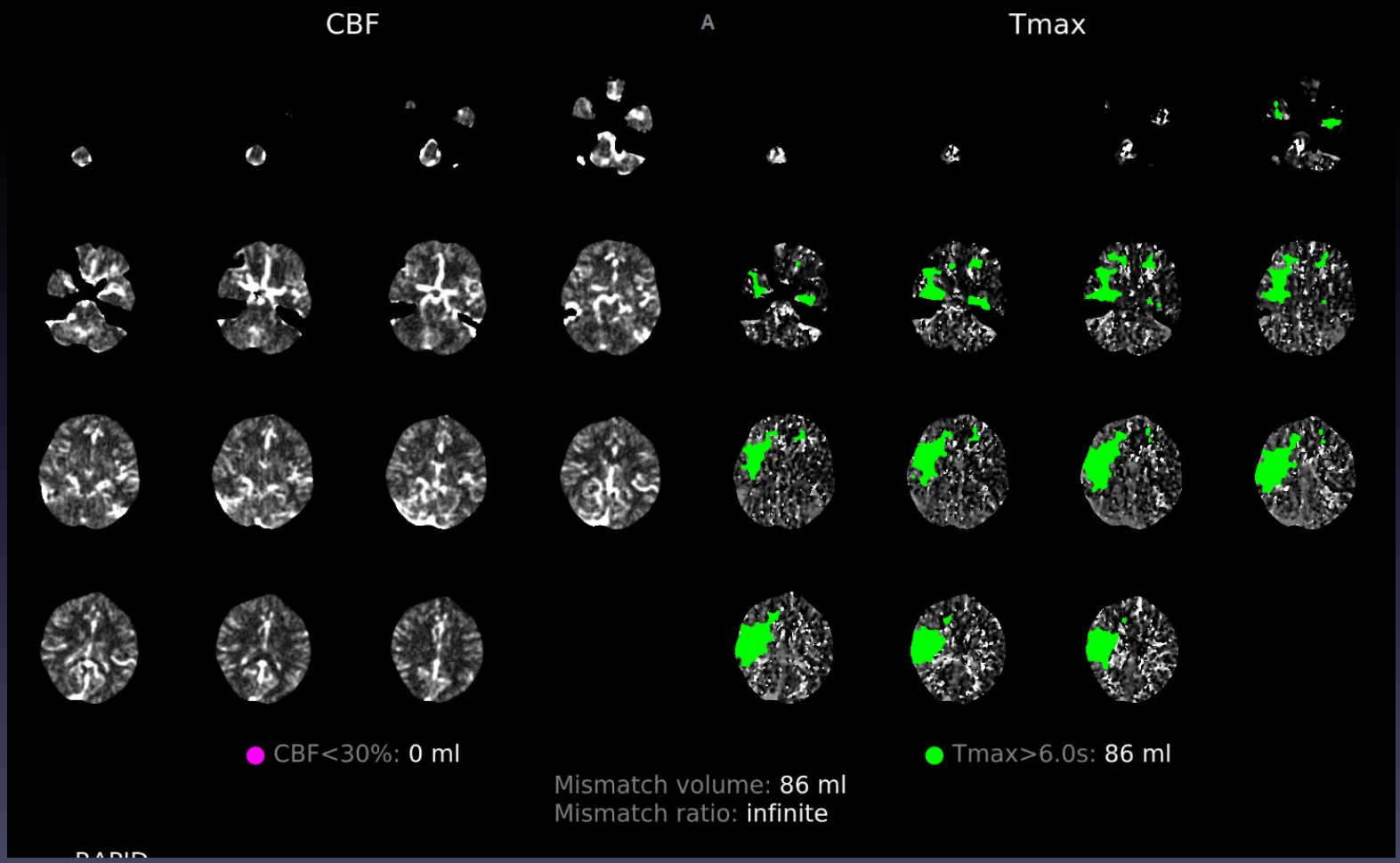
- 60-year-old female with HTN, DM and heavy smoker
- Heartbeat was irregular on examination
- Sudden onset left sided weakness, hemispatial neglect forced and gaze to the right
- NIHSS 18
- 2 hours since symptoms began

NCCT



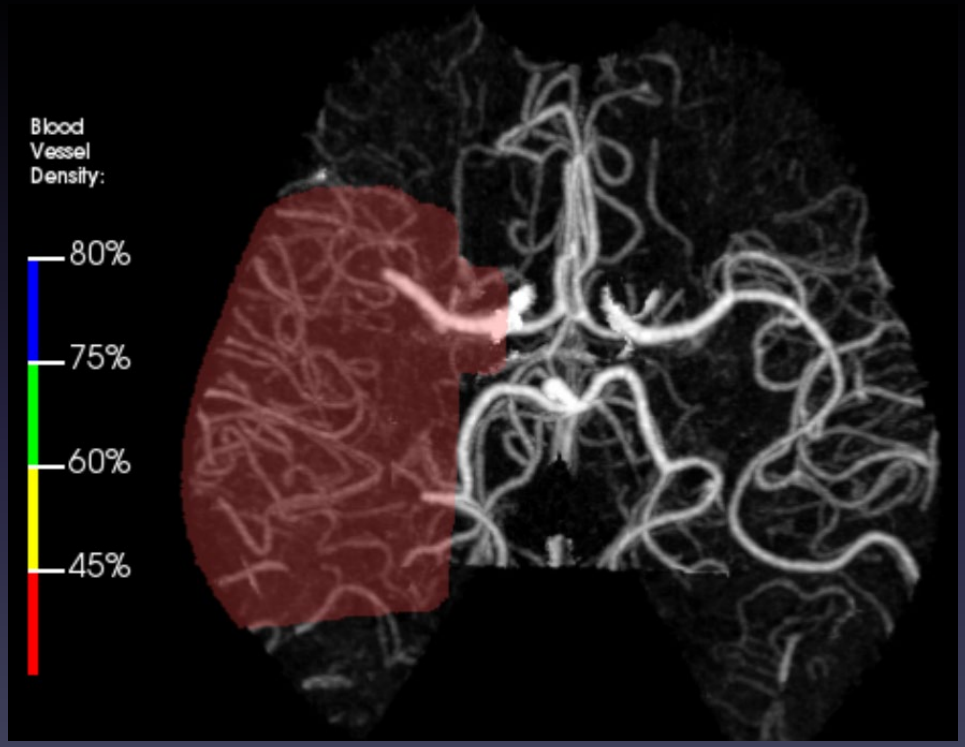
RIGHT M1 OCCLUSION

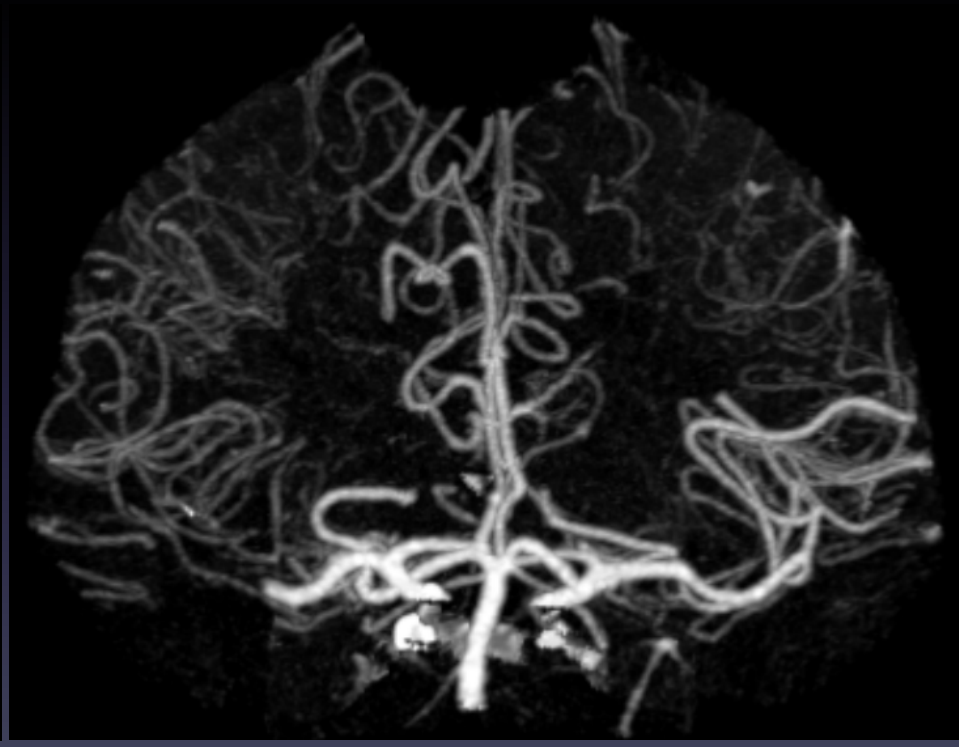
CTP



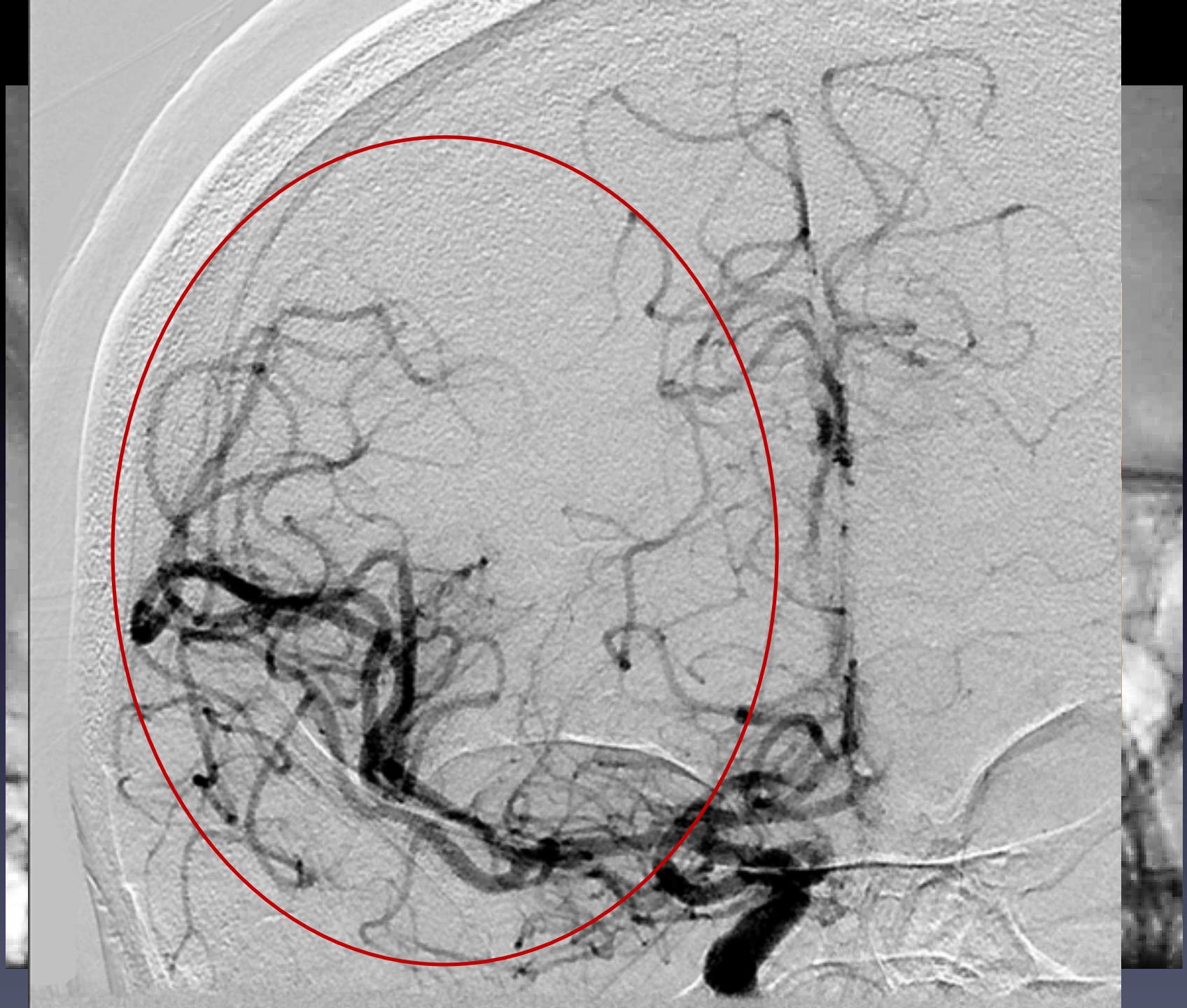
PERFUSION MISMATCH

CTA





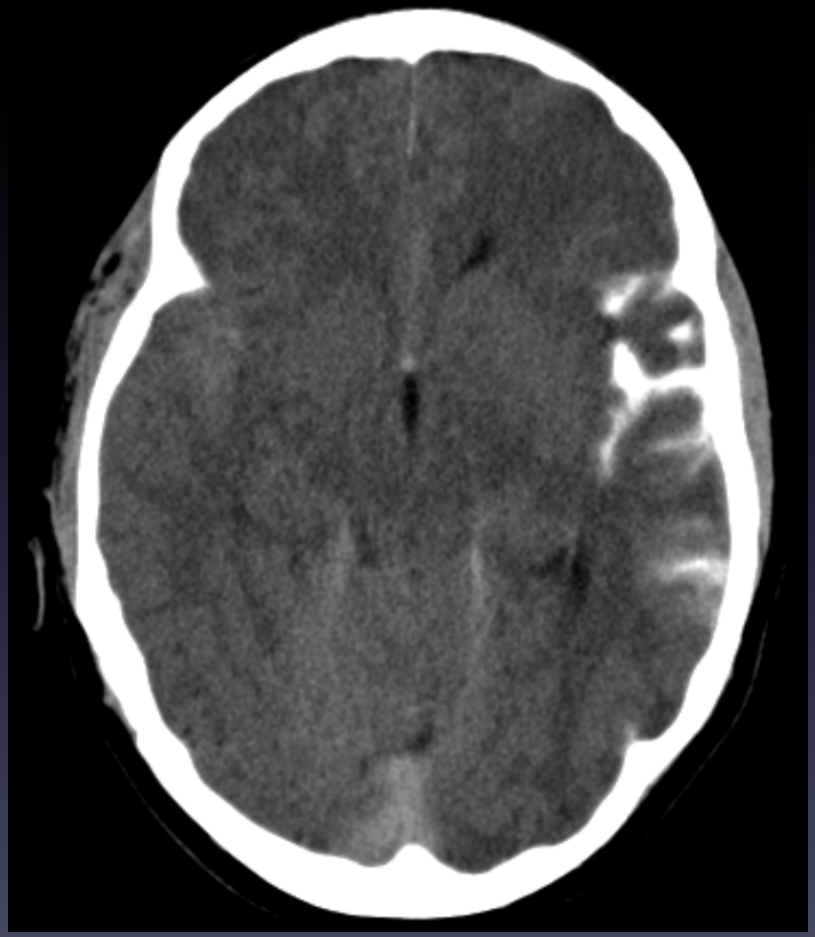
RIGHT M1 OCCLUSION



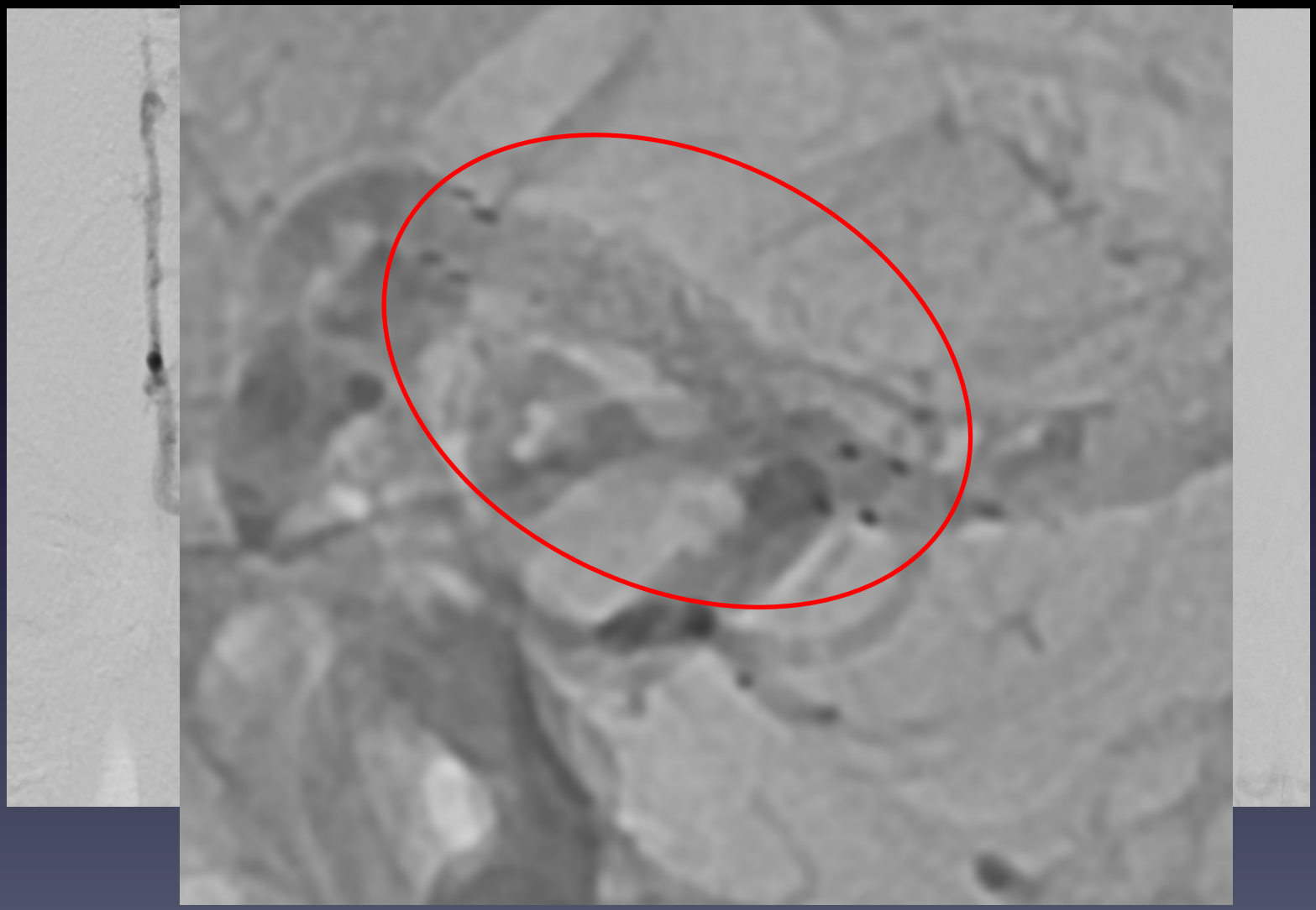
THE DARK SIDE……..

Reperfusion injury

Vessel Perforation



Cannot keep the vessel open



New frontiers

1-Idea of salvageable brain taking over for ridged time windows with advanced imaging

2- Benefit for revascularization even in large core infarcts

3- Advances in device technology and technique allows for opening smaller size vessels (MEVO, DEVO) with good outcome

FAST Criteria

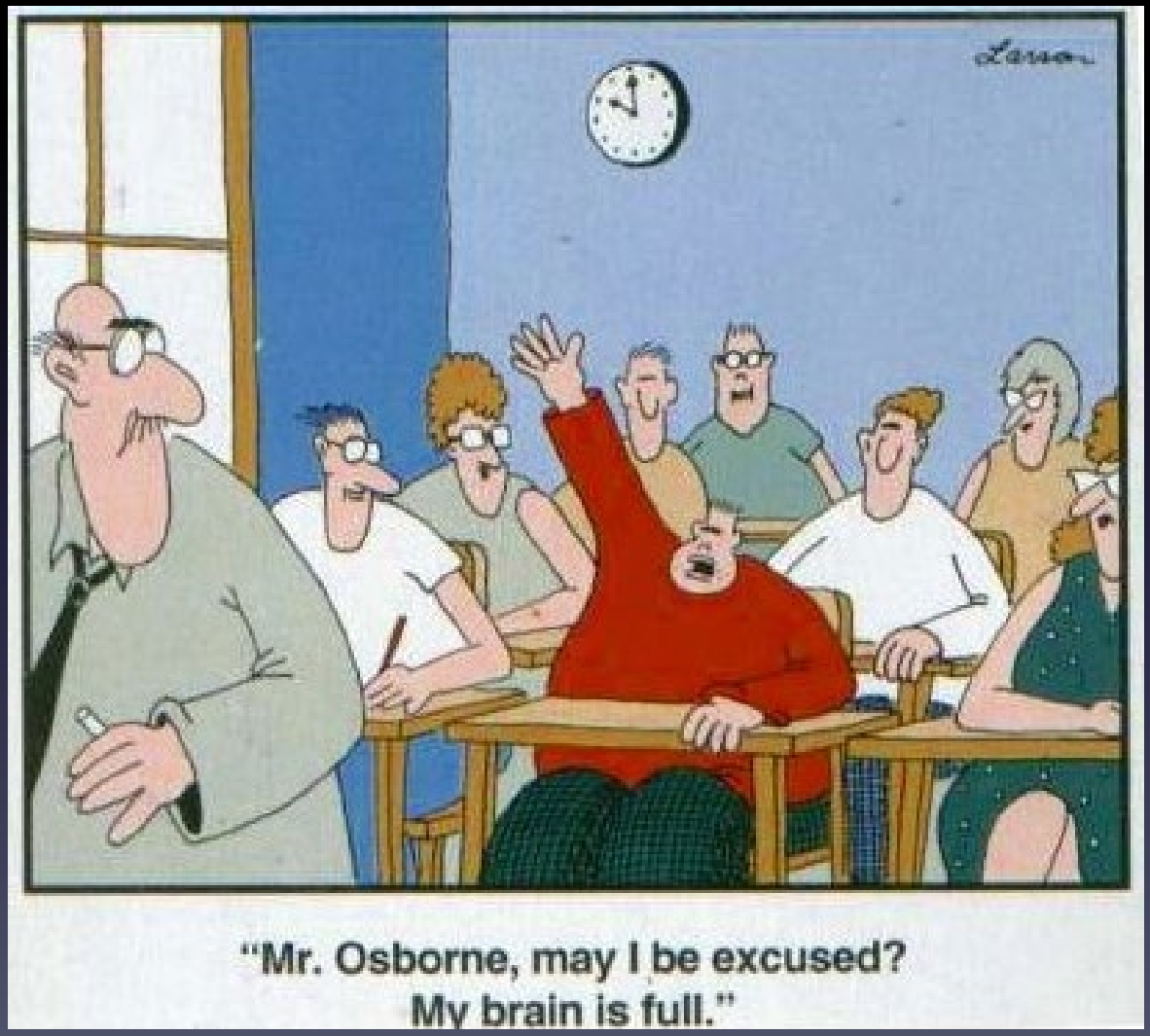
If you suspect a stroke, think F.A.S.T

F-Facebook announcement with your suspicions.
A-Ask for thoughts prayers
S-Search google for your symptoms
T-Try lavender oils.

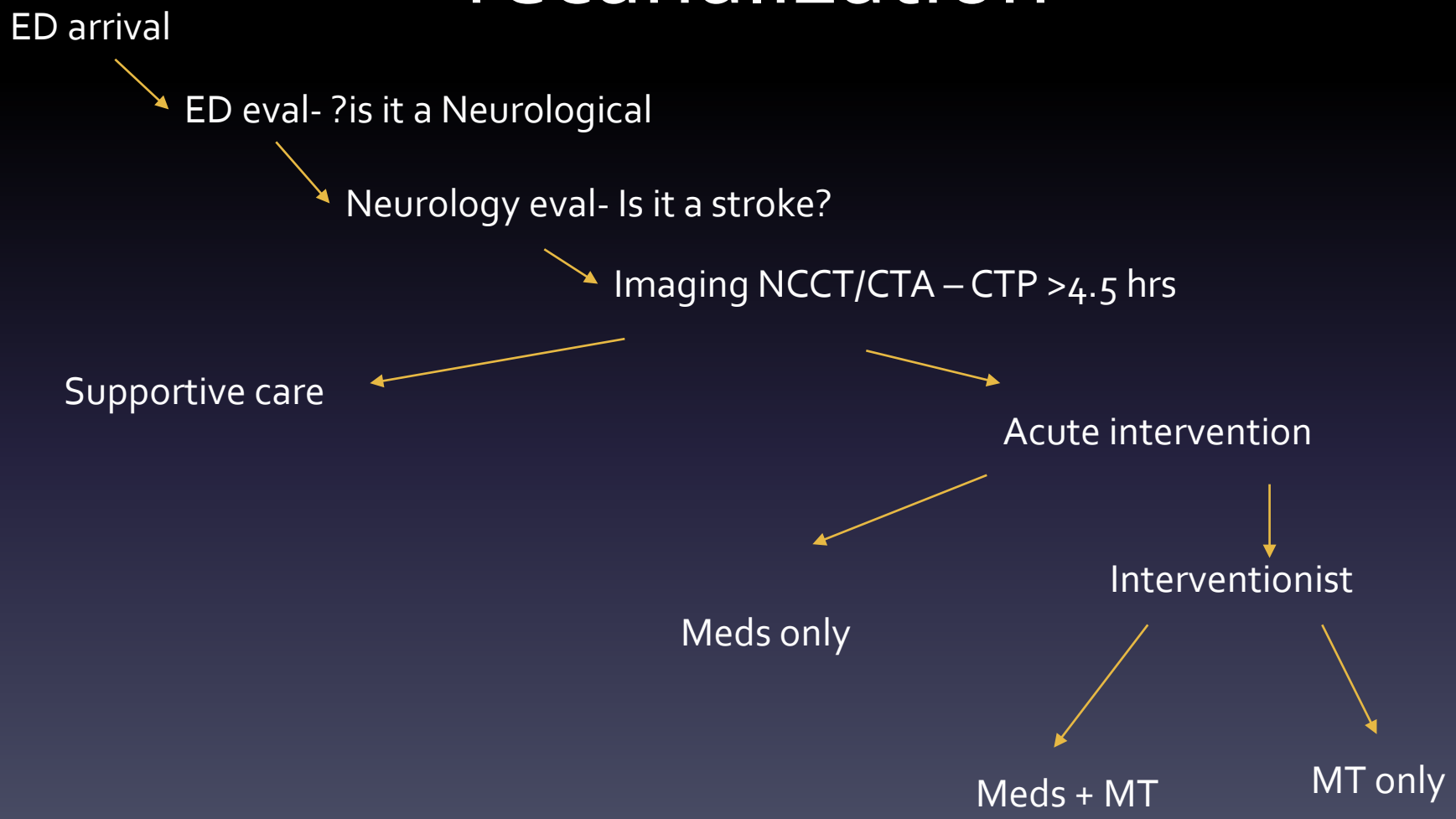
KEY points- RAP

- **R**ECOGNIZE **A**CT **P**REVENT
  - Fast criteria — Time is brain — Modify risk factors
  - Can happen to anyone!!
  - Look out for others

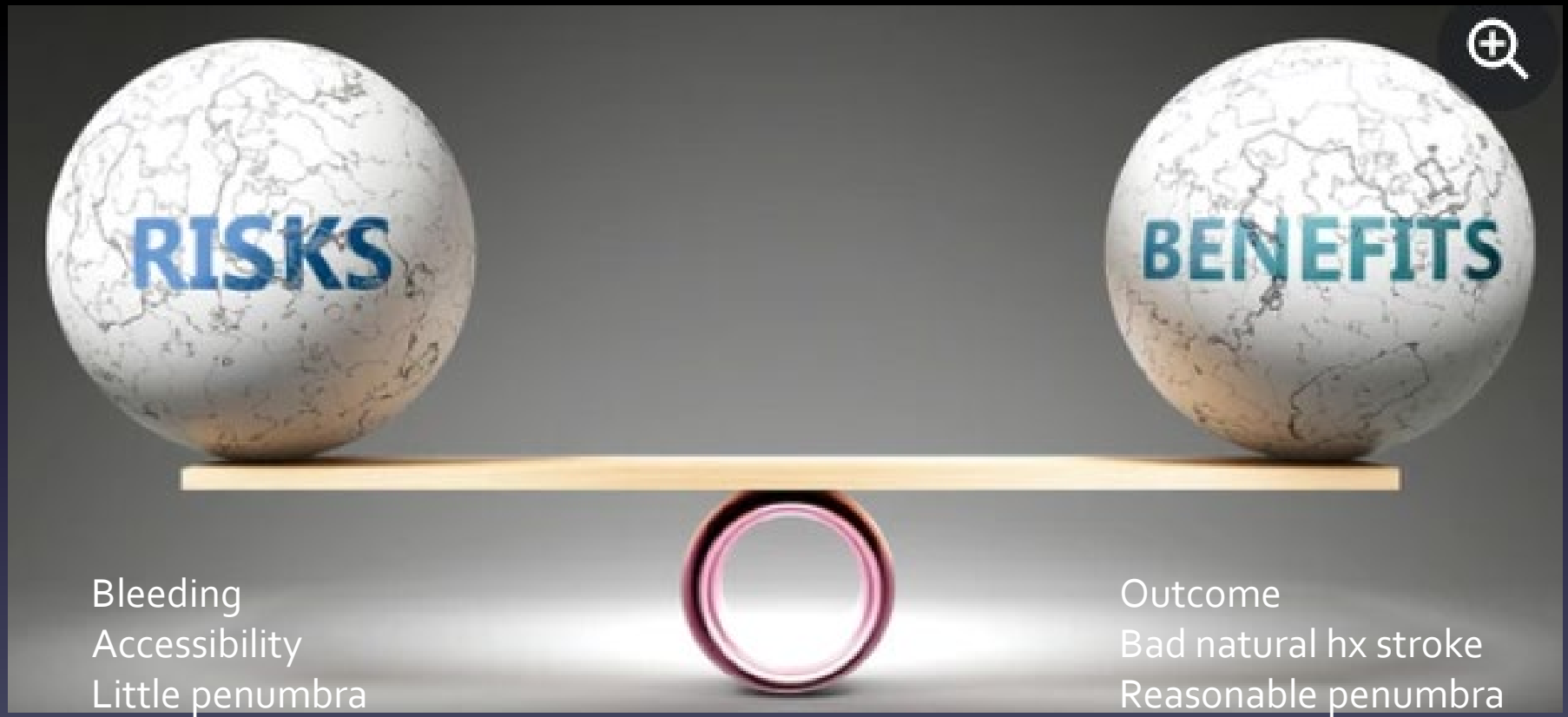
????QUESTIONS????



Journey from door to recanalization



Clinical Decision Making



Bleeding
Accessibility
Little penumbra
Pt wishes/baseline fct

Outcome
Bad natural hx stroke
Reasonable penumbra
Pt wishes/baseline fct