Endovascular Thrombectomy

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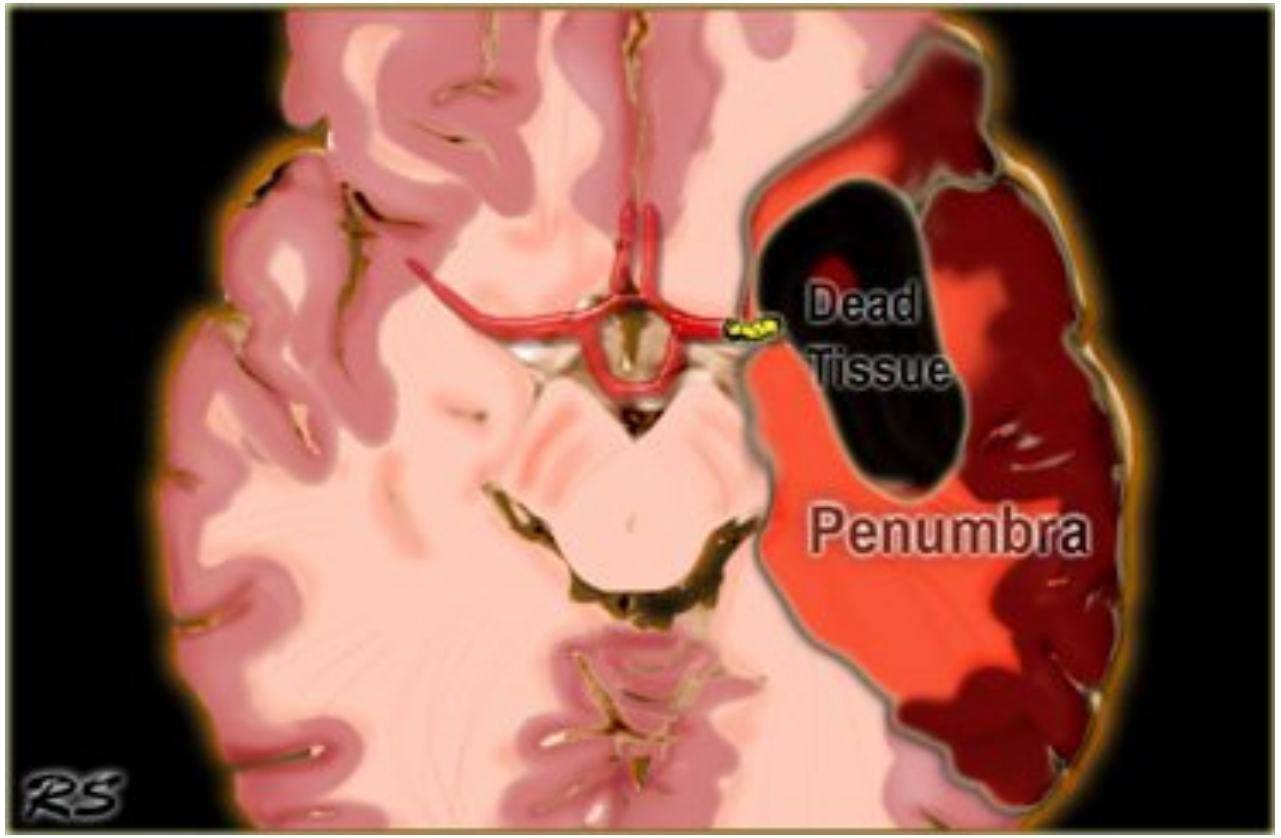
Typical Case

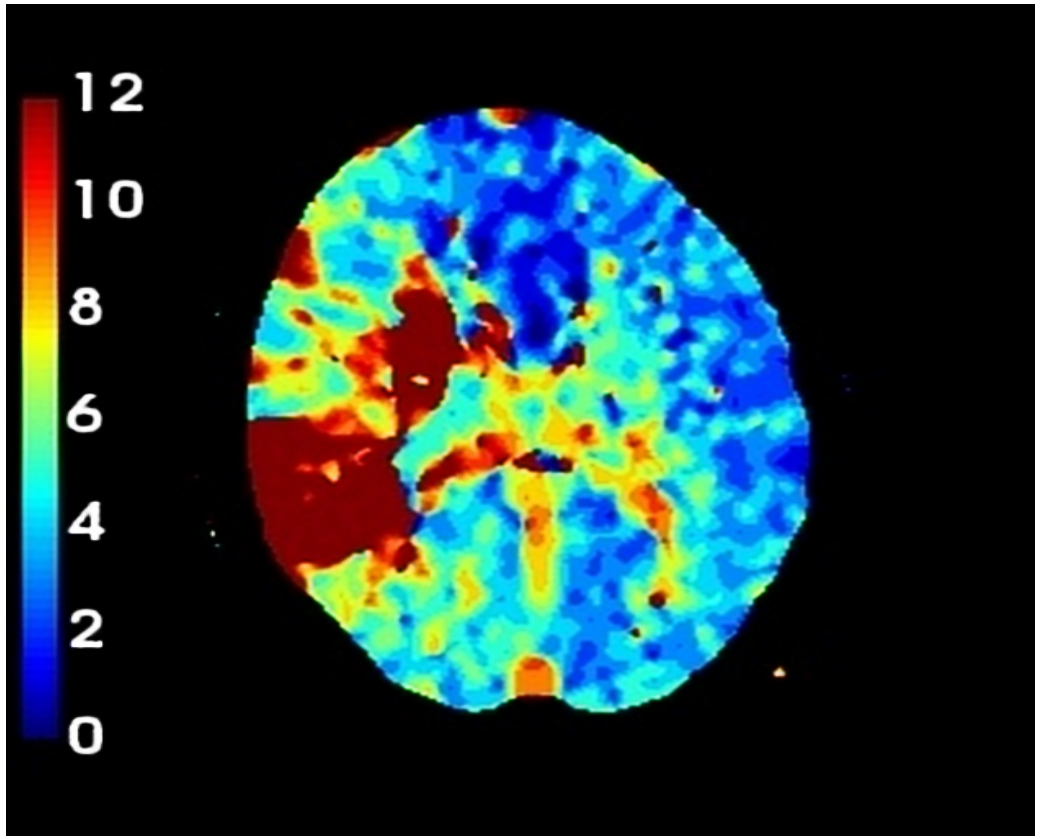
"We have a 93 year-old woman being flown in from Carmel who has suffered a stroke. ETA 2 hours. We will let you know if anything changes."

Basic Information

- Primary Goal: prompt restoration of perfusion
- Thrombolytic (tPA) agent preferably within 3 - 4.5 hours
- Perfusion MRI (6-45 minutes)
- Life Flight Transfer Sheet
- Endovascular thrombectomy up to 24 hours after last known well
- BP goal: sBP 140-180 mmHg, dBP less than 105 mmHg

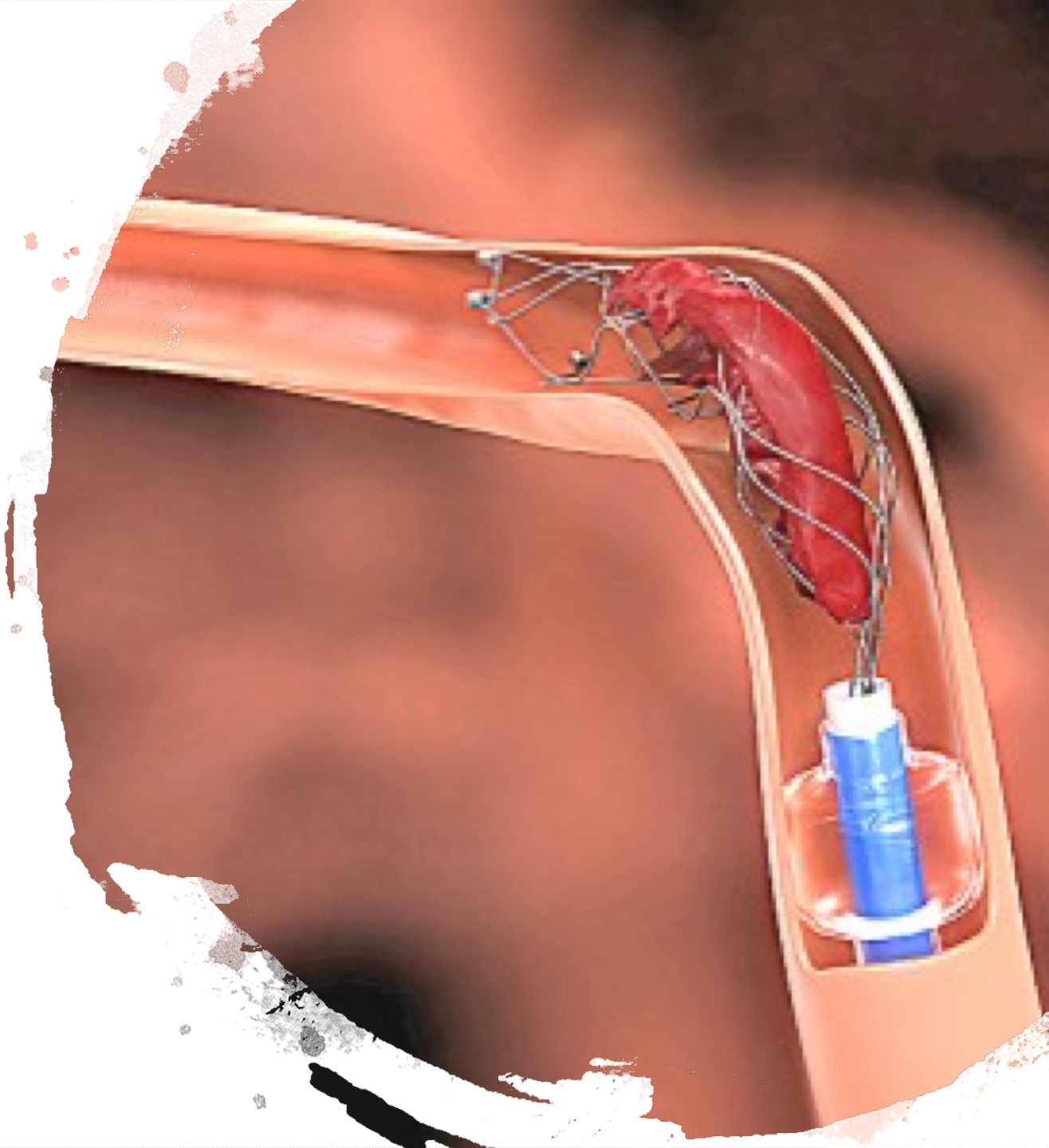
Perfusion MRI





Clot Retrieval System

- Mechanically Assisted Recanalization
- Penumbra®



Anesthetic Choices

3 randomized controlled trials of sedation vs GA

- SIESTA, GOLIATH, AnStroke

Sedation does not result in more favourable 3 month functional outcome or lesser mortality

Collectively these 3 trials do not establish better outcomes with sedation or GA

General Anesthesia

- 3 fold greater vasopresser use
- 2 fold greater number of patients who >20% decrease in MAP
- Increases mean time from evaluation to arterial puncture by up to 10 minutes
- After arterial puncture mean time to reperfusion was less
- More successful procedures in some trials
- Up to 70% of patients not extubated at end of case

Extubation Criteria

Best indicators of post-extubation success: gag reflex, ability to swallow, ability to cough

If have 2/3 of these: up to 90% extubation success REGARDLESS of level of consciousness

MAC

No evidence for ideal agents

- Avoid those with long duration of action

6-33% of patients will have problematic movement

6-16% require conversion to GA

- Agitation, movement, respiratory, airway issues

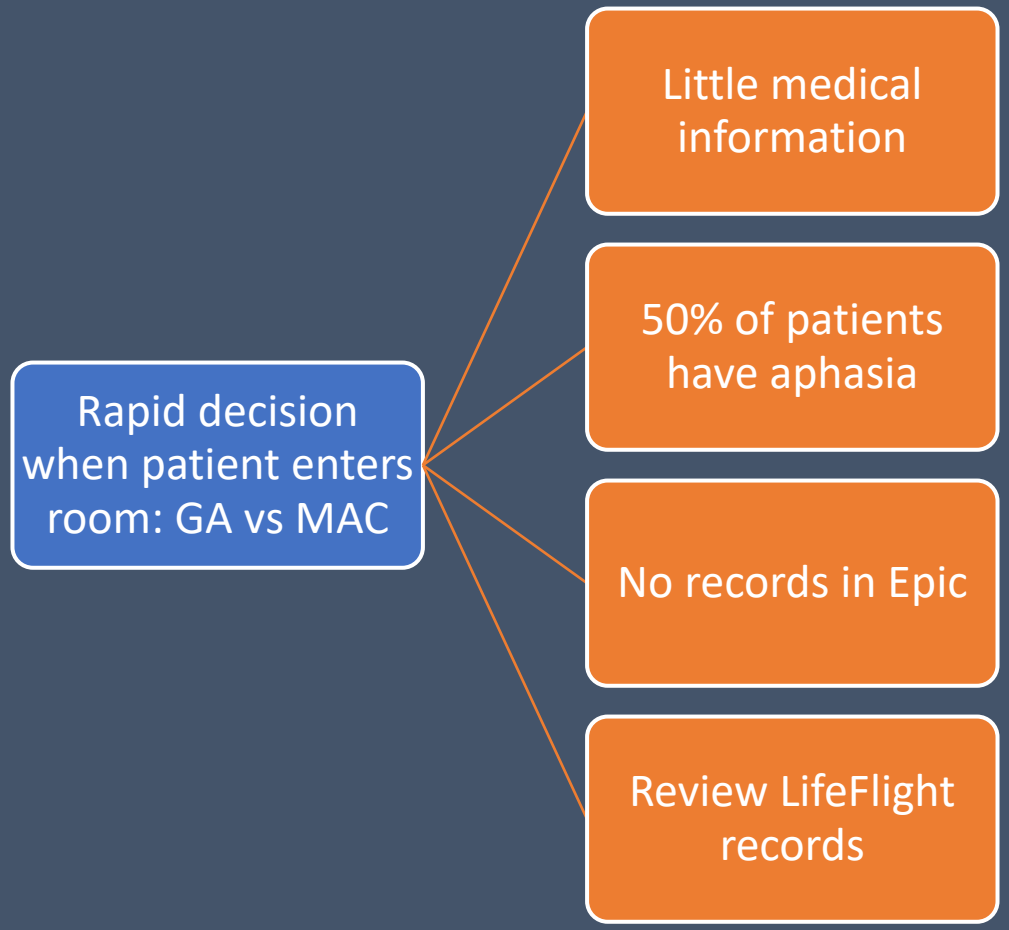
Must be prepared to convert to GA

GA vs MAC

MAC should be considered the default anesthetic method

GA does not have less favorable outcomes if preparation for GA is integrated into workflow and BP goals are adhered to

Patient Evaluation



Decision Algorithm

MAC?

80% of anterior circulation cases suitable for MAC

Does surgeon anticipate difficult case?

Posterior circulation strokes most likely will need GA

- Impaired consciousness, dysphagia, cranial nerve dysfunction

Arterial Line

Arterial line recommended

- Radial catheter if no delay in procedure
  - Devote one person to establish line
  - Ultrasound helpful

If cannot establish easily

- Cycle NIBP q 1-3 min until femoral access obtained and connect to arterial line
- If invasive BP is needed after procedure finished can insert arterial line

What are we doing?

200 cases audited

33% done as GA

- 2/3 intubated by first responders
- 1/3 intubated by anesthesiologist

67% done as MAC

- 1/3 done with no sedation
- 1/3 done with fentanyl +/-midazolam
- 1/3 done with fentanyl +/- midazolam plus infusion (propofol and/or dexmedetomidine)

Monitoring

- 88% of cases done with arterial line
  - Those not were done as MAC where it was felt that delay was unacceptable and patient with minimal CV depressant effect

Complications

3 cases of aspiration in MAC

14 number of MAC cases had to convert to GA

- 6 patient movement
- 3 vomited
- 5 respiratory issues

Stroke Process Improvement Committee

Many areas identified for improvement in workflow with stroke codes

Areas of improvement for anesthesia

NONE!	Overall very happy with responses, anesthetic choices, intraoperative care of patients	We are doing a great job.

Summary

- No outcome difference with GA vs MAC
- Adequate preparation important
- Adhere to BP goals
- Do not delay case to start radial arterial line
- If choose GA think seriously about extubation at end of case