Mechanical Thrombectomy for Stroke: A Physician Guide

Neuro Endovascular Procedures for Acute Ischemic Stroke (AIS) Treatment

- Patients must meet certain criteria to be eligible for the thrombolytic or neuro endovascular procedure.
- A clot (for example, Large Vessel Occlusion (LVO) or Medium Vessel Occlusion) should be present before being considered for mechanical thrombectomy treatment.
- Consult with Neuro Endovascular team as soon as possible.
- Do not delay transfer – time is brain.

Guideline recommendations:

- Patients eligible for IV thrombolytic should receive IV thrombolytic even if mechanical thrombectomy is being considered (level IA). If patient receives thrombolytic therapy, it is not recommended to wait for clinical response to medication before proceeding with work up for mechanical thrombectomy (level III harm/BR).
    - In patients with suspected intracranial LVO and no history of renal impairment, who otherwise meet criteria for mechanical thrombectomy, it is reasonable to proceed with head and neck CT Angiogram if indicated before obtaining a serum creatinine concentration (level IIa B-NR).
- For patients who otherwise meet criteria for mechanical thrombectomy, noninvasive vessel imaging of the intracranial arteries is recommended during the initial imaging evaluation (level IA).
    - For patients with suspected LVO who have not had noninvasive vessel imaging as part of their initial imaging assessment for stroke, noninvasive vessel imaging should then be obtained as quickly as possible (level IA).
- In the case of a potential candidate, it may be necessary to transfer to a hospital that can perform this intervention (for example, a comprehensive stroke center or a hospital that has thrombectomy capabilities).

AHA guideline recommendations for AIS

Efficacy of treatment:

- Neuro endovascular treatment for anterior circulation proximal LVO within 12 hours, led to significant reduced disability: 1:2.49
- Number to Treat: 2.6
- mRS 0-2 @ 90 days: 46%
- Without neuro endovascular treatment, an increase in:
    - Symptomatic intracranial hemorrhage: 4.4%
    - Parenchymal hemorrhage: 5.5%
    - Mortality: 15.1%
- No heterogeneity of reaction effect across different subgroups[1]

Risks/Benefit points for discussion:

Site specific

- Bleeding or hematoma– most common complication and typically can be managed with conservative measures but major bleeding is a risk; possible need for transfusion
- Infection (very rare)

Contrast related

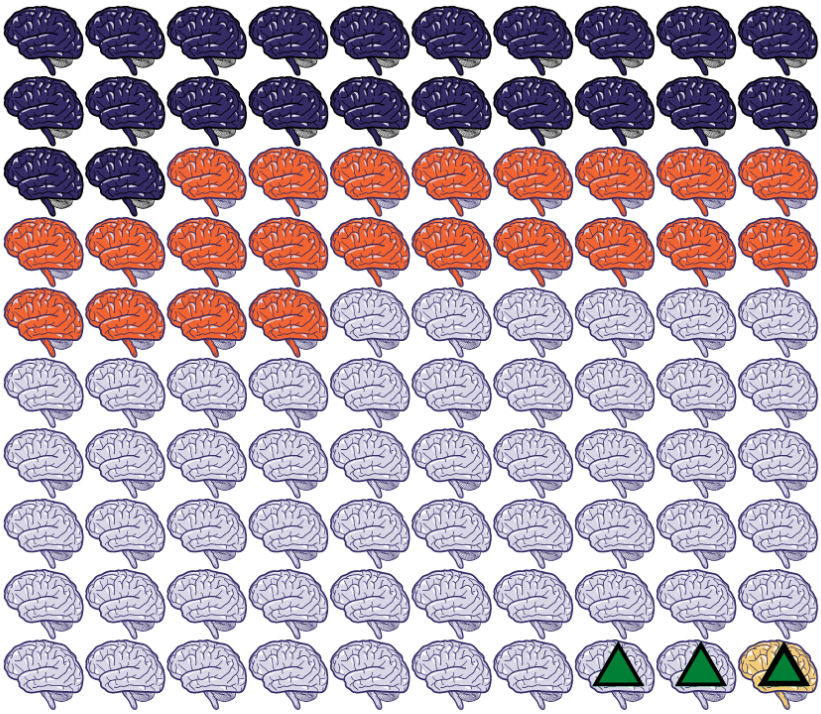
- Allergy– pre-medicate if necessary
- Nephropathy– try to give fluids as able pre-op

Procedure related

- Stroke– worsening of current stroke, embolization of clot to other territory, or failure to improve or fix stroke that is occurring
- Dissection– due to wire or device causing tear in wall of artery
- Hemorrhage– due to either vessel perforation or hemorrhagic transformation of stroke
- Death– due to any of the above previously mentioned complication

Follow your organizational protocols

Thrombectomy vs. No Reperfusion Therapy
(tPA-Ineligible Patients)



Changes in final outcome as a result of treatment:

- Able to live independently (*n=22*)
- Other improvement (*n=22*)
- No major change (*n=55*)
- Other worsening (*n=1*)
- Severely disabled or dead (*n=0*)

Early course:

- New territory infarct (*n=3*)
- Early worsening with brain bleeding (SICH)* (*n=0*)

(**No differences observed in the rate of SICH due to thrombectomy*)

Approximate number to treat
Thrombectomy 2.6
Thrombolytics 11

Adapted from Tokunboh et al. 2018.

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2. Martinez-Gutierrez, J. C., Leslie-Mazwi, T., Chandra, R. V., Ong, K. L., Nogueira, R. G., Goyal, M., Albuquerque, F. C., & Hirsch, J. A. (2019). Number needed to treat: A primer for neurointerventionalists. Interventional Neuroradiology, 25(6), 613–618. https://doi.org/10.1177/1591019919858733
3. Tokunboh, I., Vales Montero, M., Zopelaro Almeida, M. F., Sharma, L., Starkman, S., Szeder, V., Jahan, R., Liebeskind, D., Gonzalez, N., Demchuk, A., Froehler, M. T., Goyal, M., Lansberg, M. G., Lutsep, H., Schwamm, L., & Saver, J. L. (2018). Visual aids for patient, family, and physician decision making about endovascular thrombectomy for acute ischemic stroke. Stroke, 49(1), 90–97. https://doi.org/10.1161/strokeaha.117.018715

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