

Evaluation and Treatment of Pseudoaneurysm from Remote Trauma as a Suspected Cause of Recurrent Basilar Artery Occlusion after Thrombectomy

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Introduction: Basilar Artery Occlusion



- Basilar artery occlusions are believed to account for approximately 1% of all strokes.
- Basilar artery occlusions are typically devastating – mortality rate of greater than 85%.
- The cause can occur from thromboembolism, atherosclerotic disease, or vascular dissection.
- Arterial dissections are more common in the extracranial vertebral artery and are associated with neck injuries.

Introduction: Presentation



- Abnormal level of consciousness and focal motor weakness are the hallmark symptoms manifested in the majority of patients.
- Pupillary abnormalities, oculomotor signs, and pseudobulbar manifestations (facial palsy, dysphonia, dysarthria, dysphagia) are seen in more than 40% of patients.
- Variable degrees of hemiparesis or quadriparesis are part of the clinical picture.
- As basilar artery thrombosis presents in various ways it is very important to have high clinical suspicion to detect basilar artery thrombosis.

Introduction: Standard of Treatment



- Current standard treatment of extradural vertebral dissections and associated pseudoaneurysms is medical therapy with anticoagulation – successful clot resolution in the majority of cases.
- Stent reserved for only recurrent cases that fail medical therapy.
- Stent placement is also thought to be appropriate in cases complicated by mass effect and cranial nerve palsies.

Case Report: History & Physical

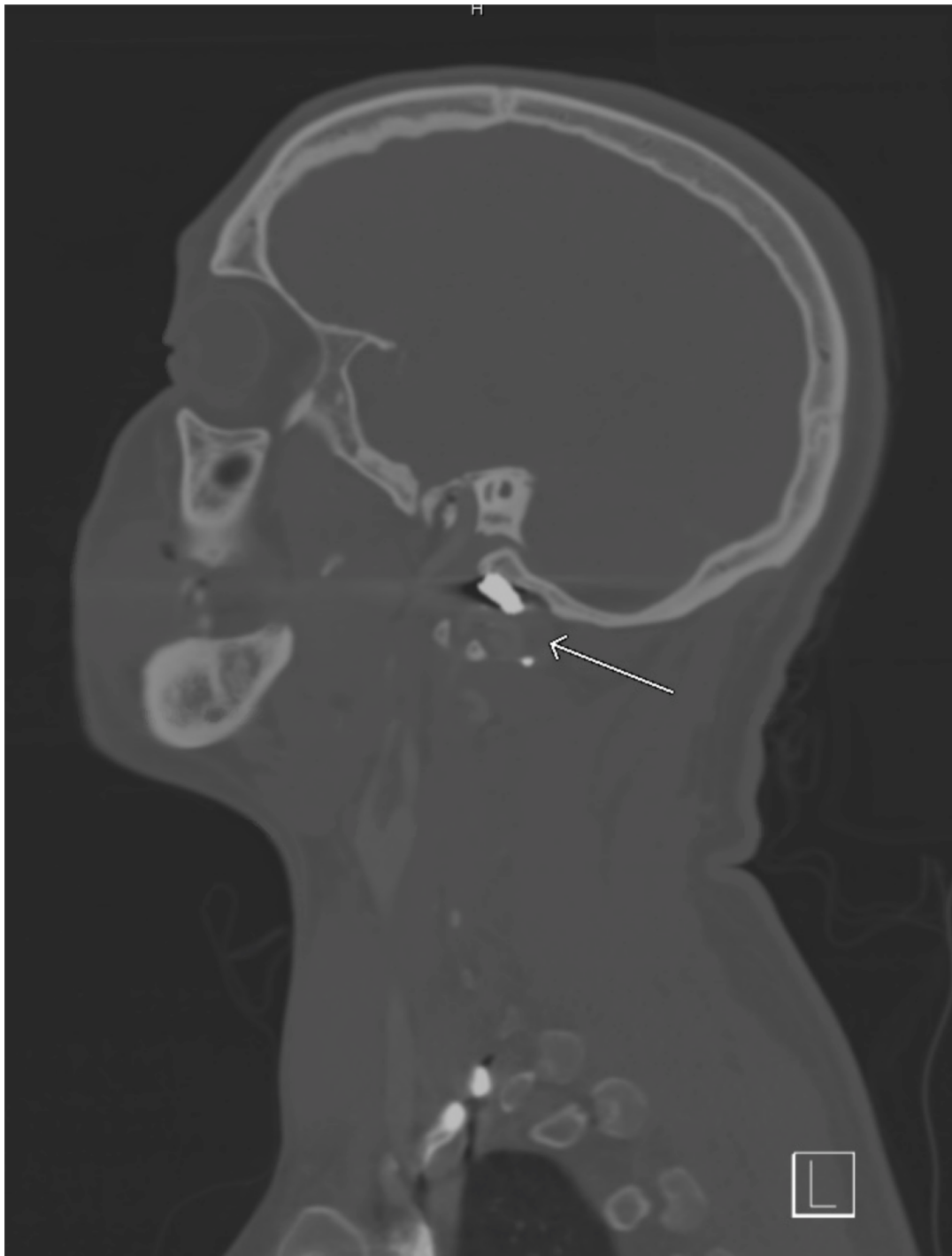


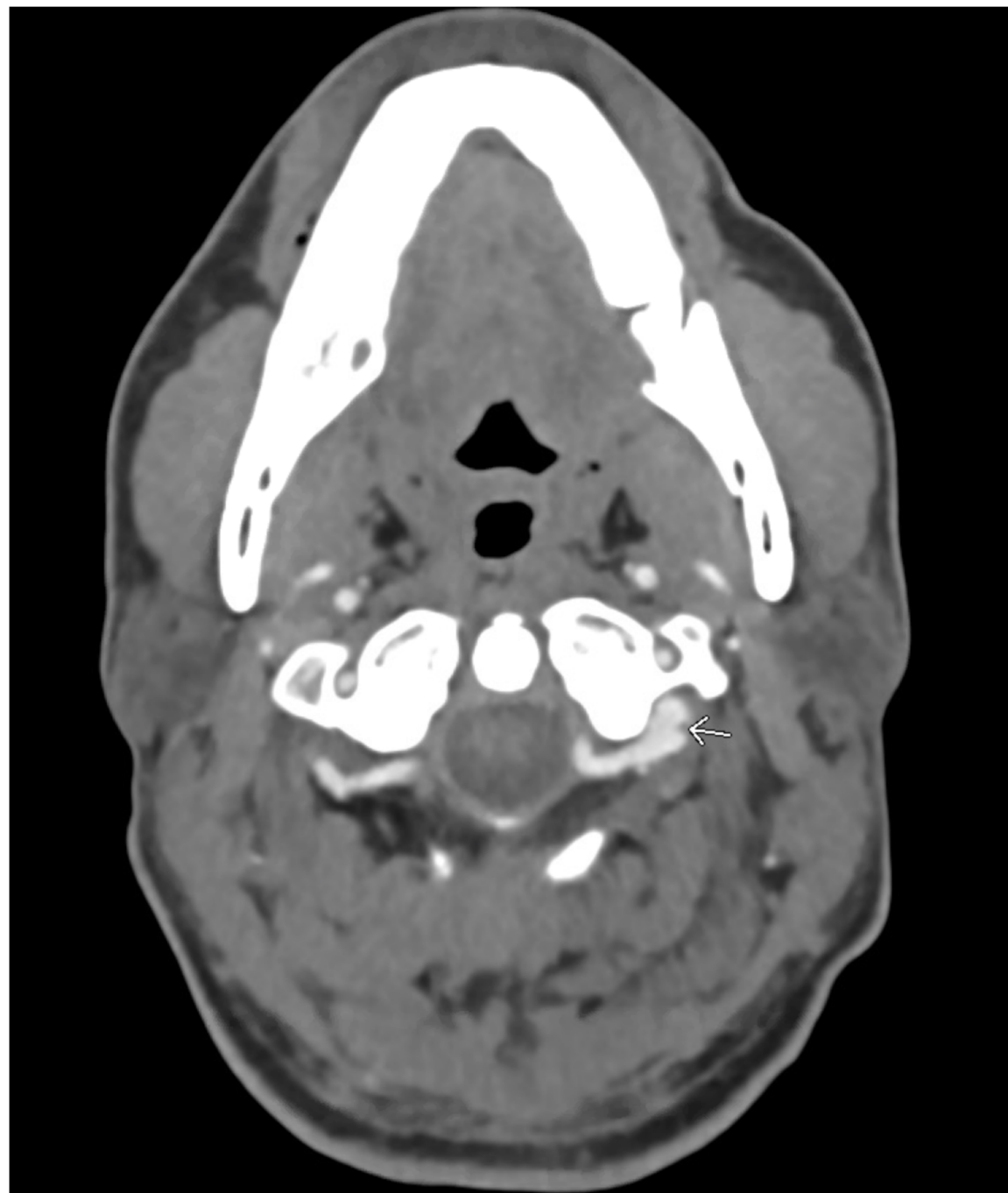
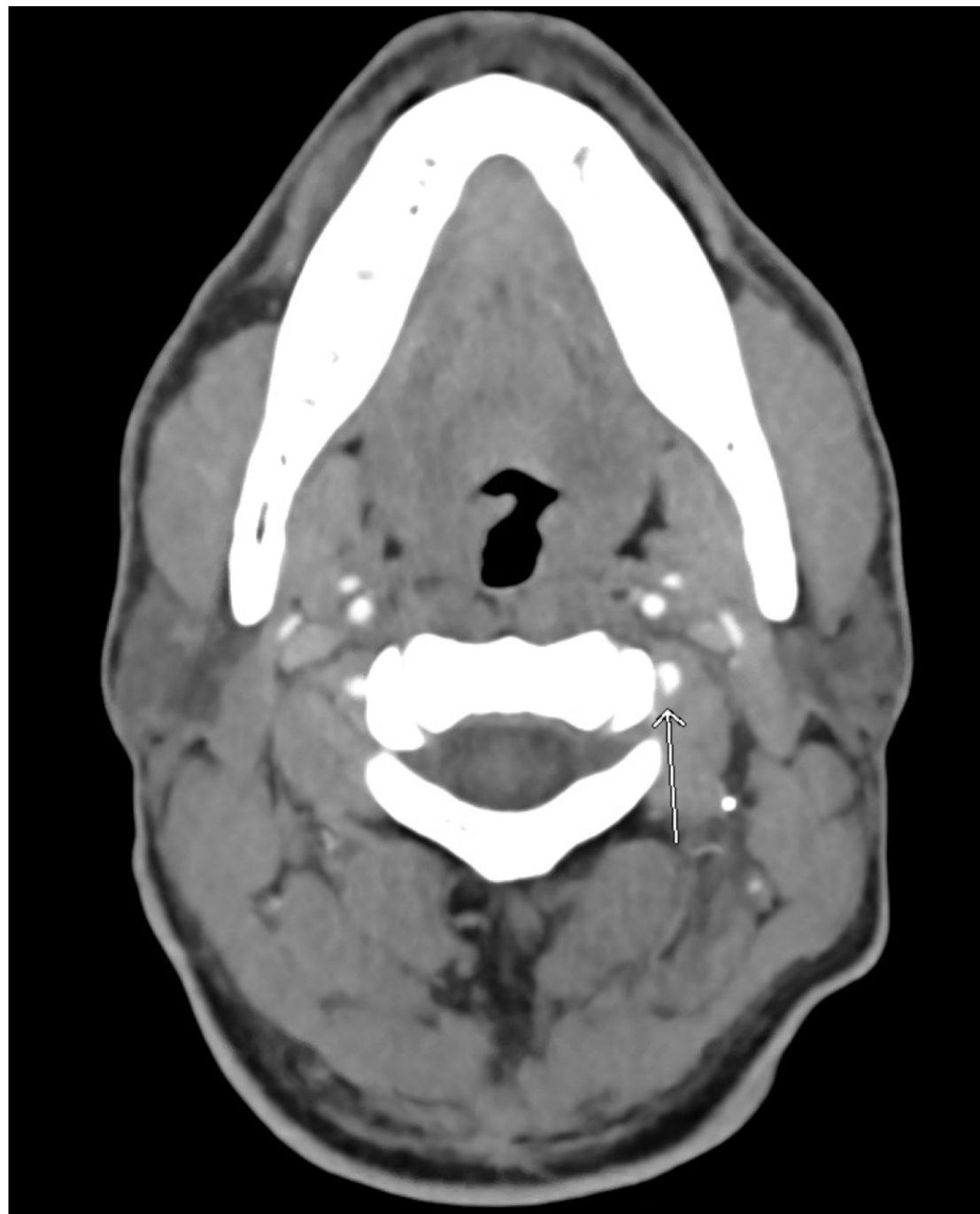
- 46yo previously healthy M presented with symptoms of dysarthria, facial droop, and right-sided weakness six hours prior to admission.
- He was in his usual state of health the night prior, but had woken up with dizziness and weakness in the morning causing him to fall getting out of bed.
- Patient had been reporting on-and-off headaches and presyncope for month prior to presentation.

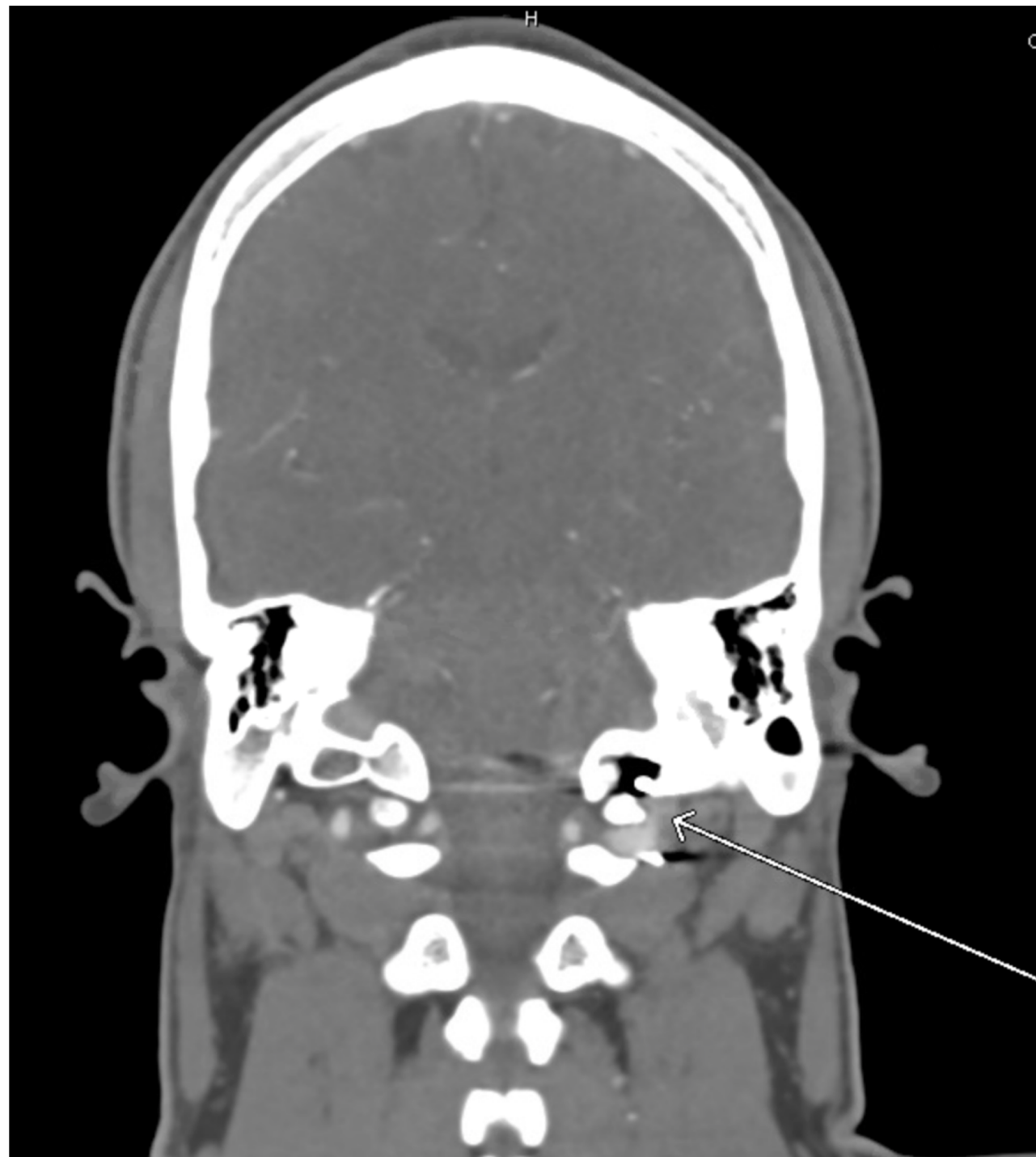
Case Report: History & Physical



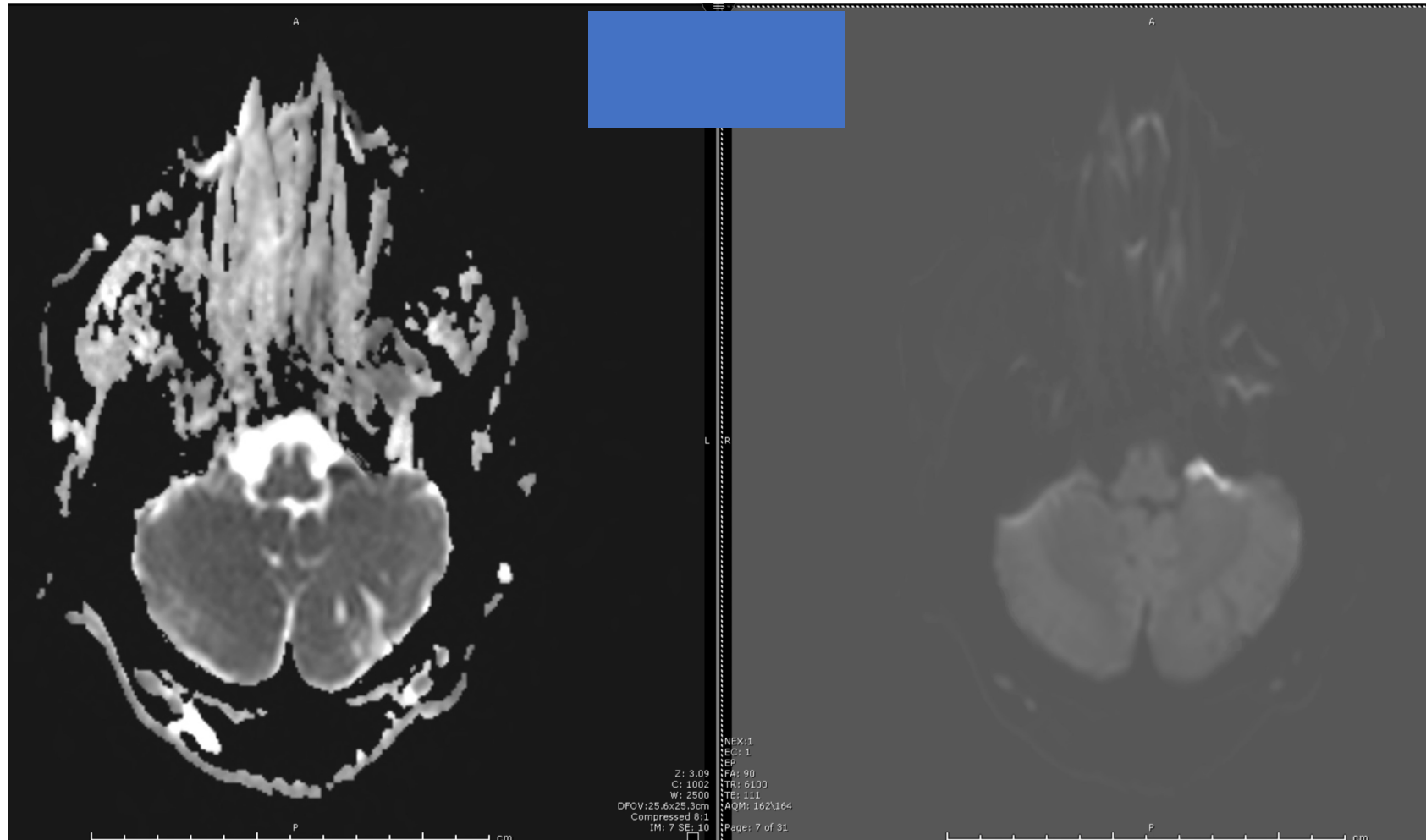
- Unknown to us at time of presentation, patient had a remote history of an assault which had left a bullet fragment dislodged in his neck.
- The bullet fragment was noted along undersurface of the left occipital condyle partially embedded around the distal segment of the left vertebral artery.
- Just distal to the fragment a pseudoaneurysm had formed the V3 segment of the vertebral artery.



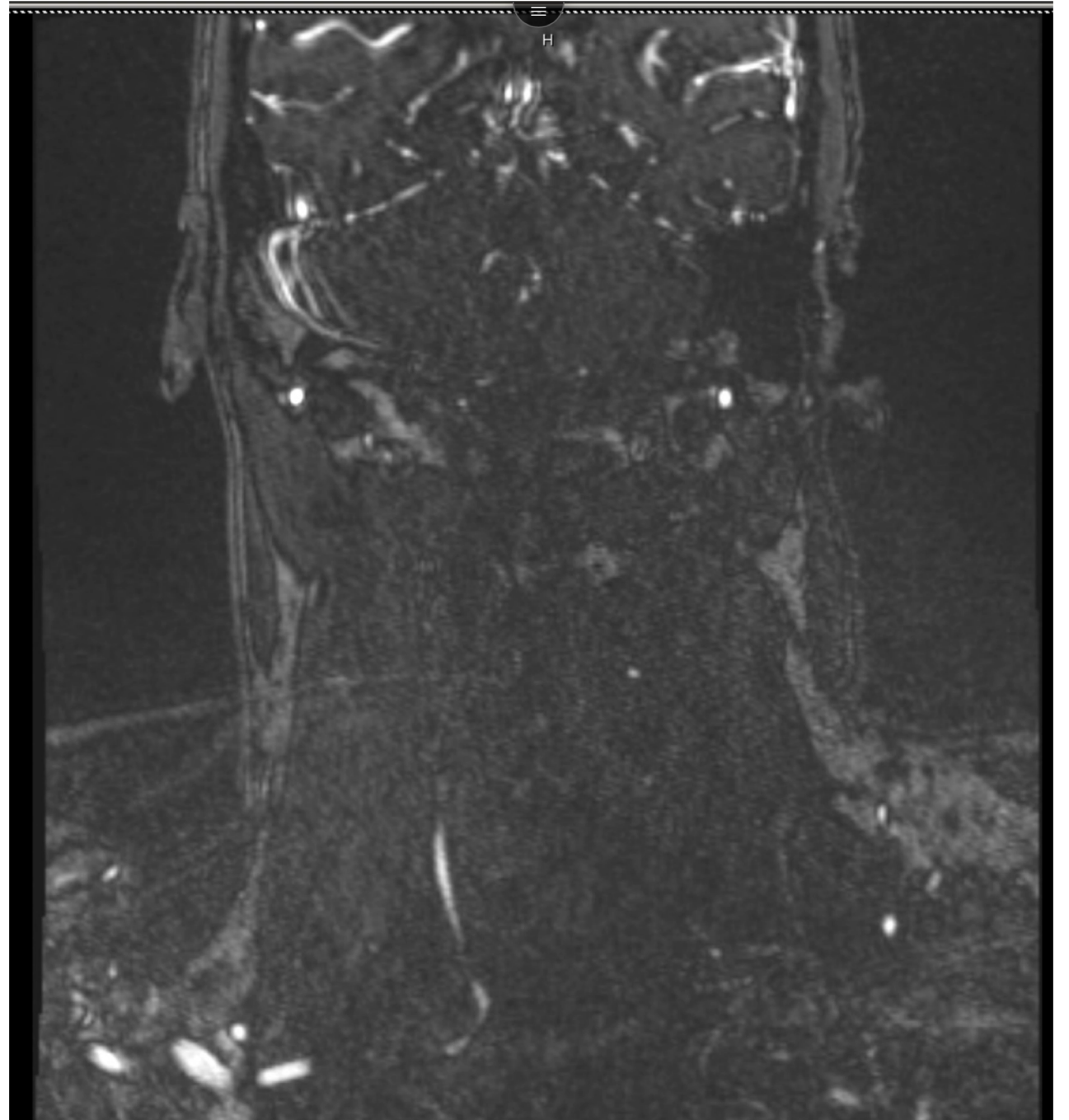




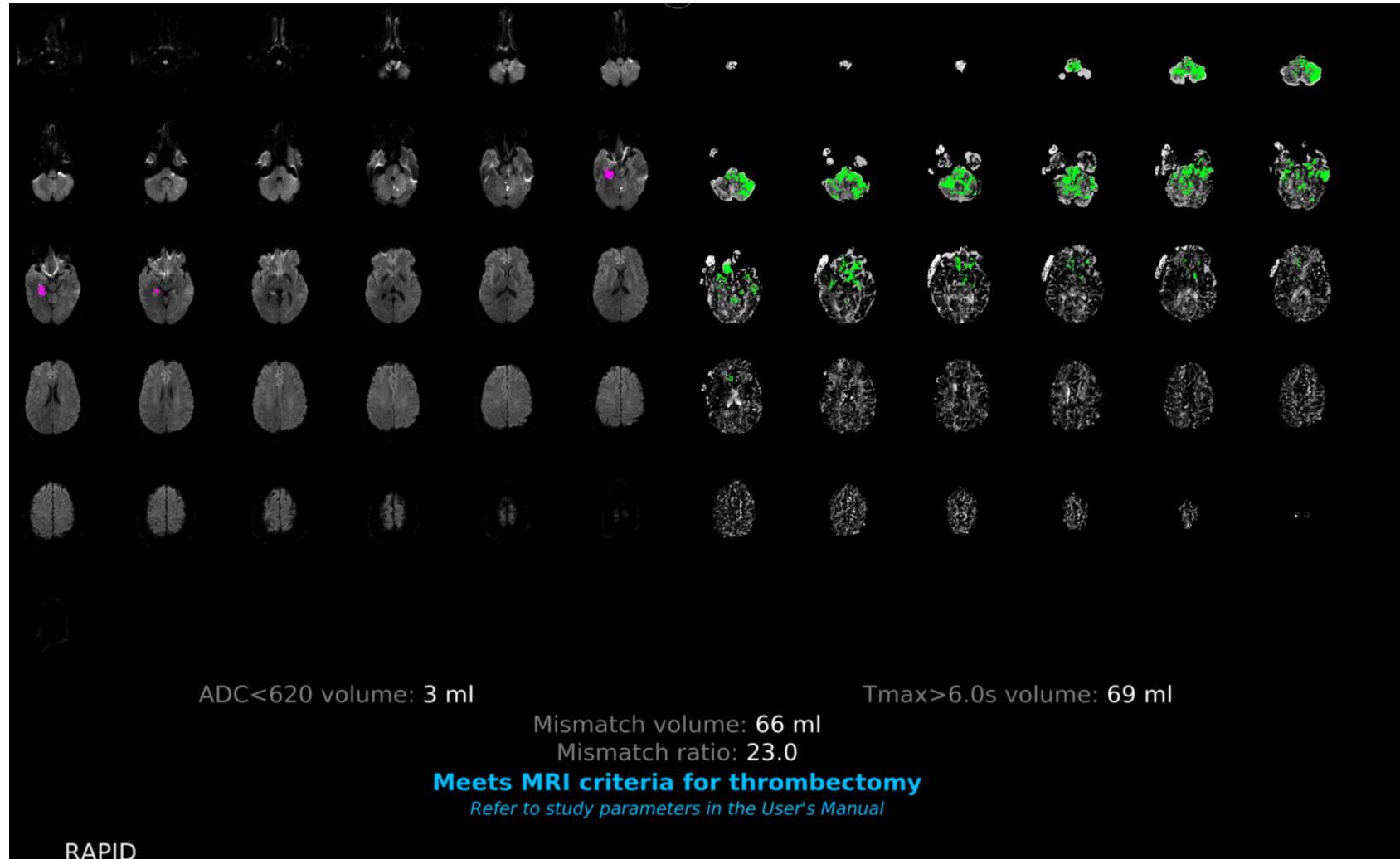
MR Stroke Protocol: Trace and ADC



MR Stroke Protocol Results: MR Angiography



MRI Stroke Protocol: RAPID

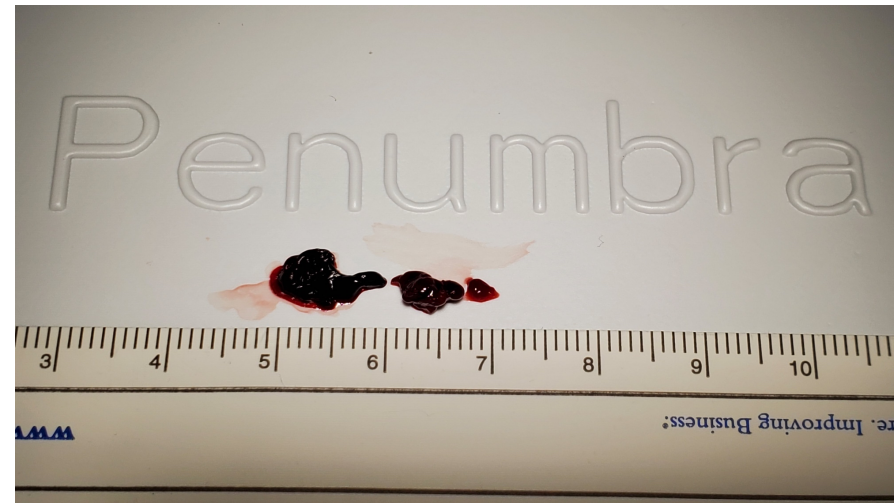
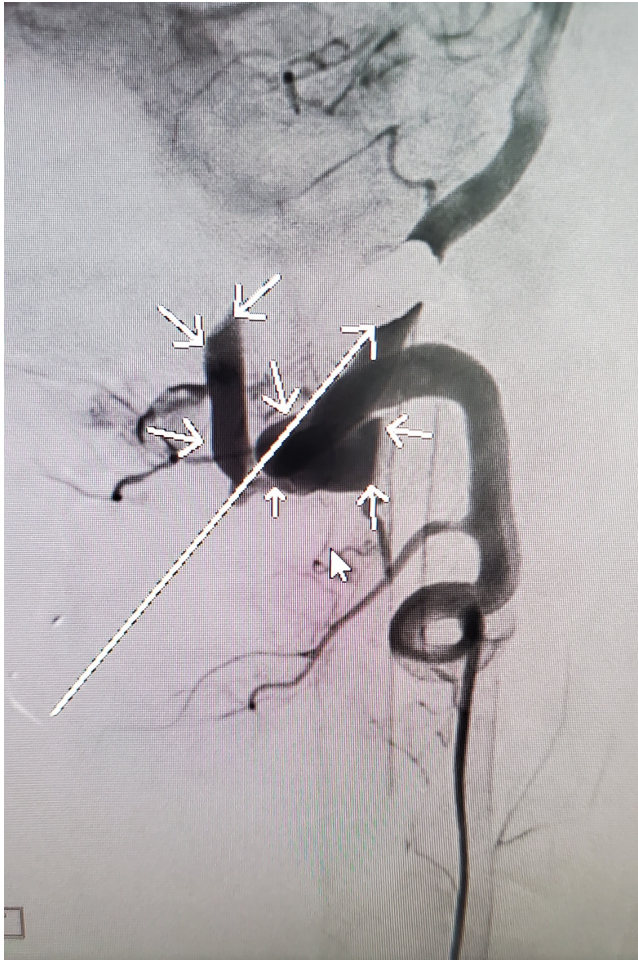


Recurrence

- Follow-up perfusion scan 24 hours after initial thrombectomy showed no occlusion of basilar artery and flow restriction.
- Five hours later, sudden onset of his initial presenting focal deficits with right-sided facial droop, and inability to move his right arm and leg.
- STAT CT perfusion was obtained showing interval thrombosis of the basilar artery.



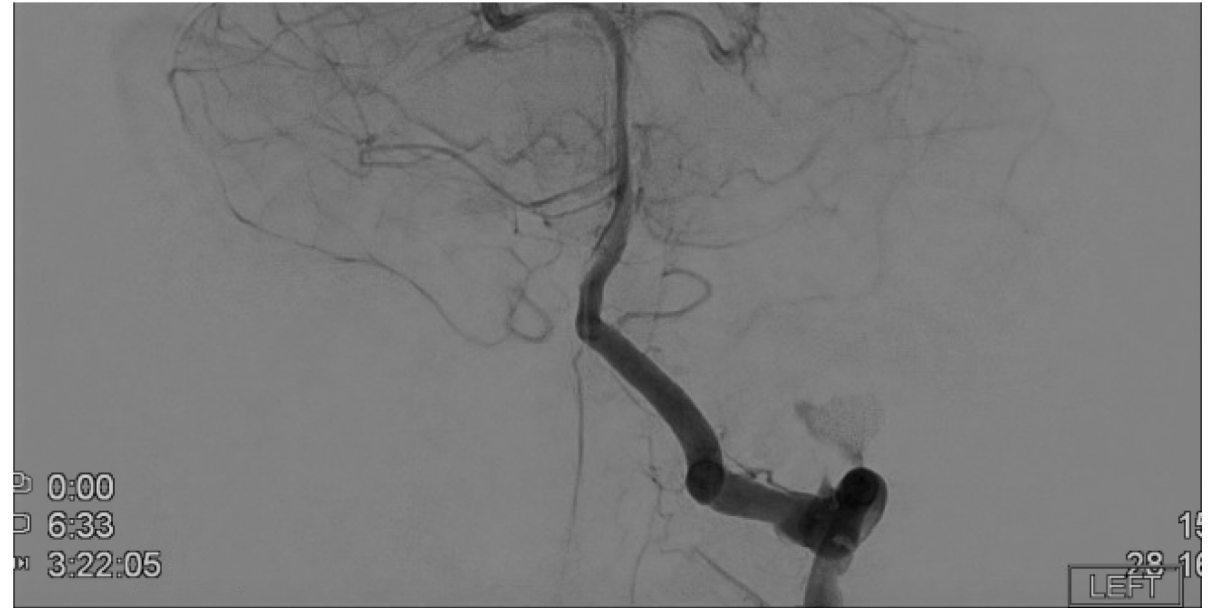
Repeat Thrombectomy



Pipeline stent placement



Pre-stent placement



Post-stent placement

Postoperative



- Patient was placed on aspirin 325mg and Plavix for 6 months.
- Patient was evaluated by PT/OT and found to have only mild balance deficient with more advanced maneuvers, appropriate for outpatient treatment with rehabilitation.

Discussion: Timing of Stent Placement



- Reserved for only recurrent cases that have otherwise shown to fail medical therapy alone.
- Does this apply to a traumatic dissection caused by a foreign body that has not been removed?

Discussion: Posterior Circulation Mismatch

- RAPID (Rapid Processing of Perfusion and Diffusion, Menlo Park, CA), is clinically validated for anterior circulation infarcts.
- Bone artifacts present in the posterior fossa interfere with quality of the analysis – proven to be barrier in particular with lower cerebellar scan cuts.
- Thrombectomy candidate? Associated bleeding risk with cerebellar infarcts versus but more difficult to manage.

Discussion: *Why Now?*



- Lack of clot formation despite the likely presence of this pseudoaneurysm for almost two decades raises the question of why now.
- Headaches in the month prior to his presentation and episodes of dizziness and found to be bradycardic on an early cardiac work-up and with labs indicative of dehydration.
- Non-specific and possibly incidental – may have been early indicators of the underlying physiological cascade that lead to the eventual basilar artery occlusion.

Conclusion



- Basilar artery occlusions are typically devastating leaving patients with minimal neurological and functional capacity.
- The unlikely odds of surviving two basilar occlusions –a unique case study offering direction for future research.

Future Research



- More specific indications for stent placements in extradural carotid dissections.
- Delineating systemic factors responsible for acute clot formation.
- New radiological indices in treatment of posterior circulation infarcts are ways we can improve treatment of these devastating cases.