

2019 MID-ATLANTIC CONFERENCE

9th ANNUAL CURRENT CONCEPTS IN VASCULAR THERAPIES

2019

Hilton Virginia Beach Oceanfront
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CONFERENCE

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Huiting Chen
MD, RPVI
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Vertebral Artery Revascularization: When and How?

No financial disclosures

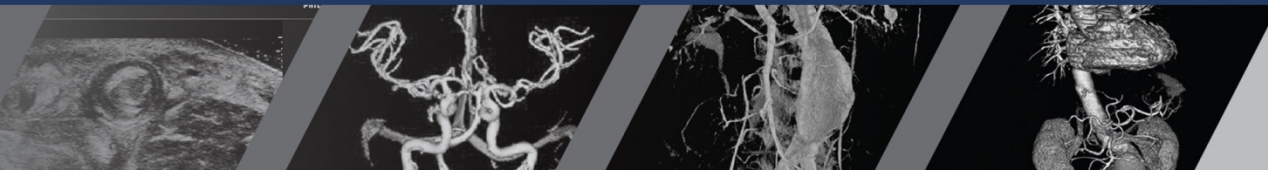
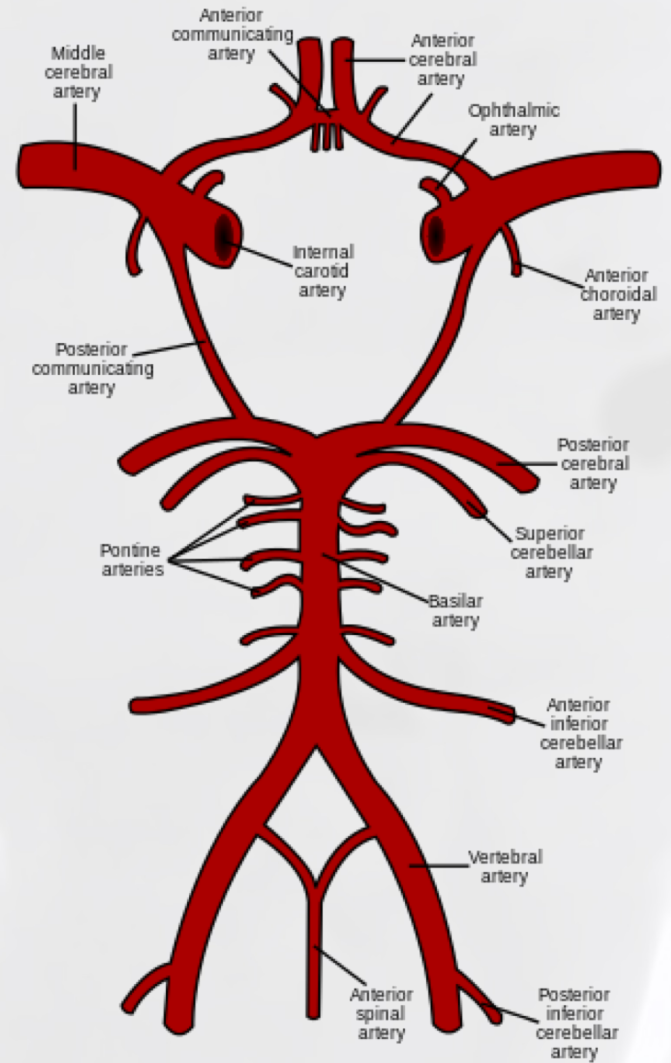
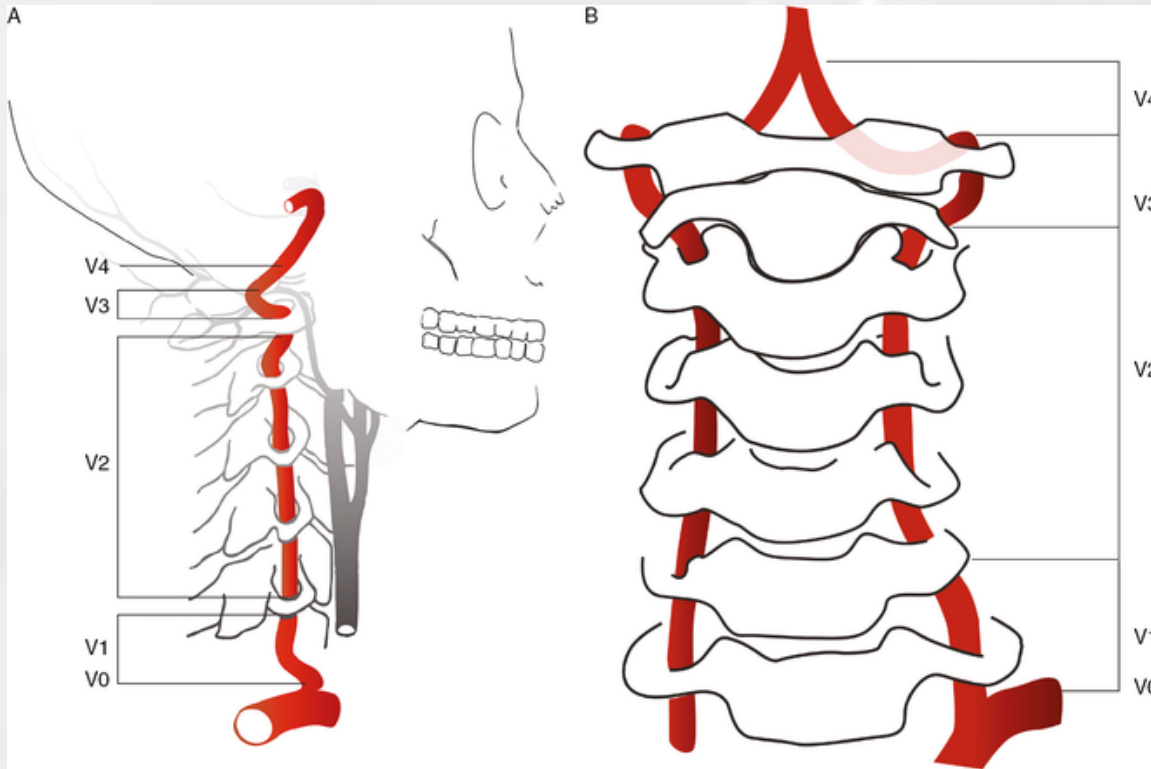


Definition

- Vertebrobasilar system supplies blood to brainstem, cerebellum, and occipital lobes
- Brainstem ischemia with symptoms from ischemia of the posterior circulation

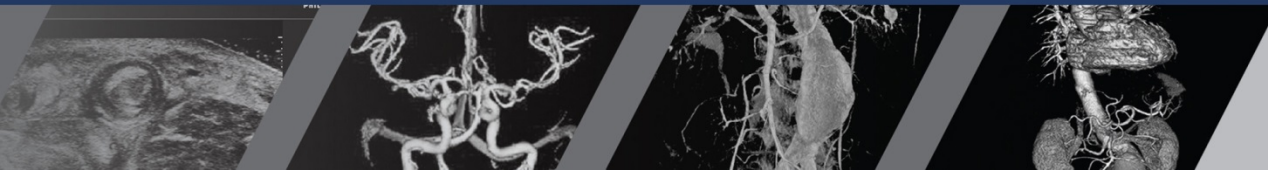


Anatomy



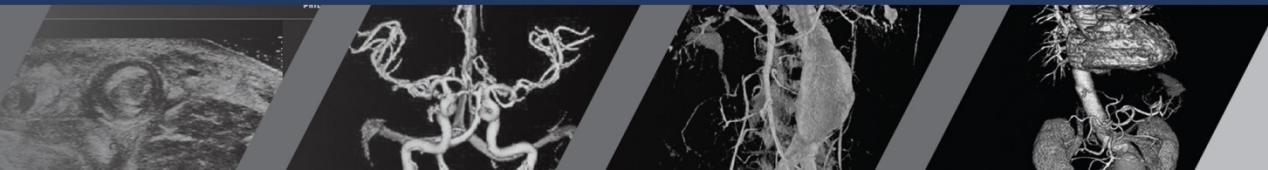
Symptoms

- Dizziness
- Vertigo
- Diplopia
- Blurring of vision
- Tinnitus
- Perioral numbness
- Alternating paresthesias
- Drop attacks



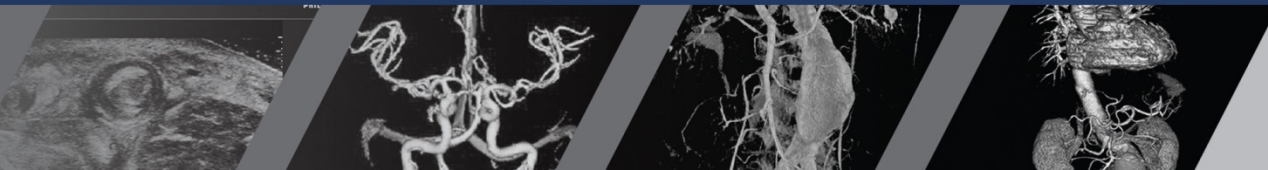
What is happening?

- Ischemia from:
 - Low flow
 - Must involve both VA or basilar artery with incomplete compensation from carotid circulation
 - Emboli
 - May be from various vessels
 - Result in multiple/multifocal infarcts



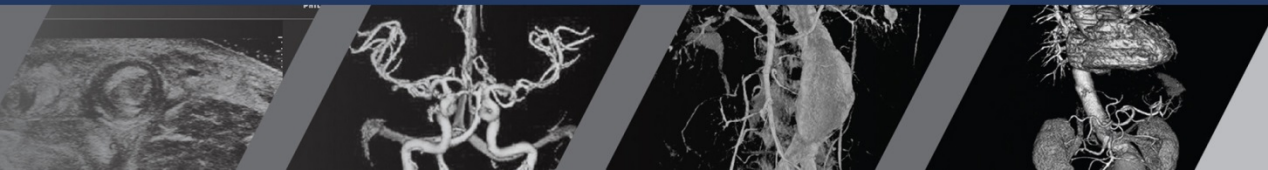
Patient Selection

- Anatomic considerations:
 - Must have $>60\%$ stenosis in both VA or $>60\%$ stenosis in dominant VA + symptoms
 - Incidentally-found VA stenosis without sx does NOT require surgery



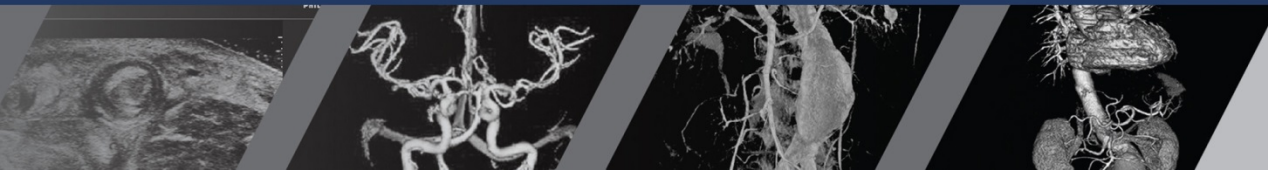
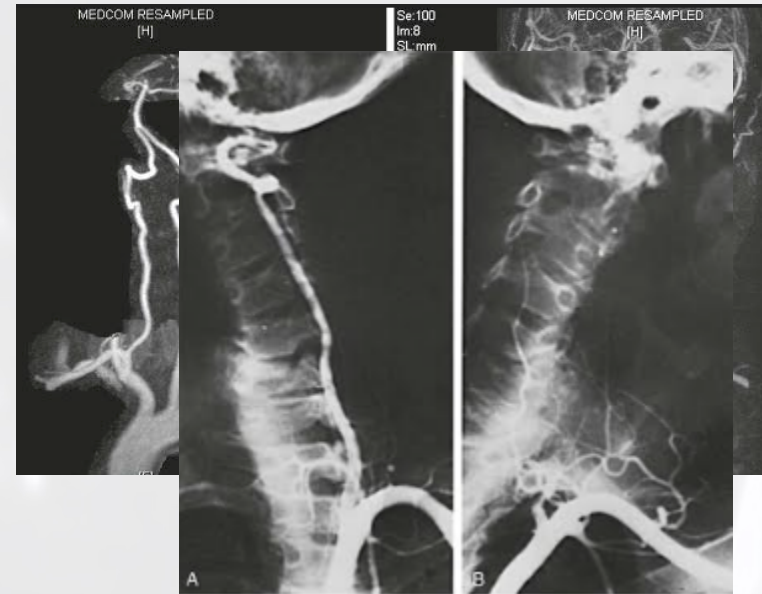
Differential diagnosis

- Cardiac arrhythmias
- Inner ear pathology
- ICA or great vessel stenosis/occlusion
- Medication effects (antihypertensives)
- Electrolyte imbalance
- Hypoglycemia



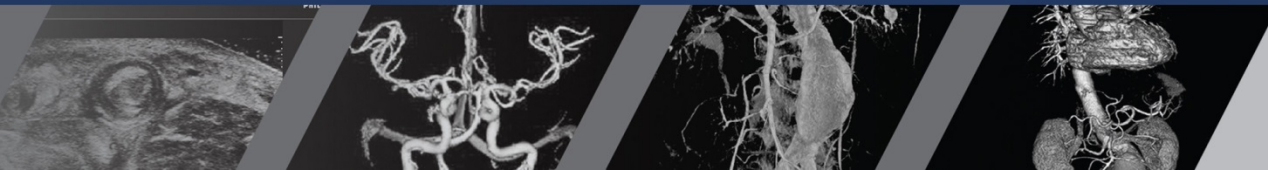
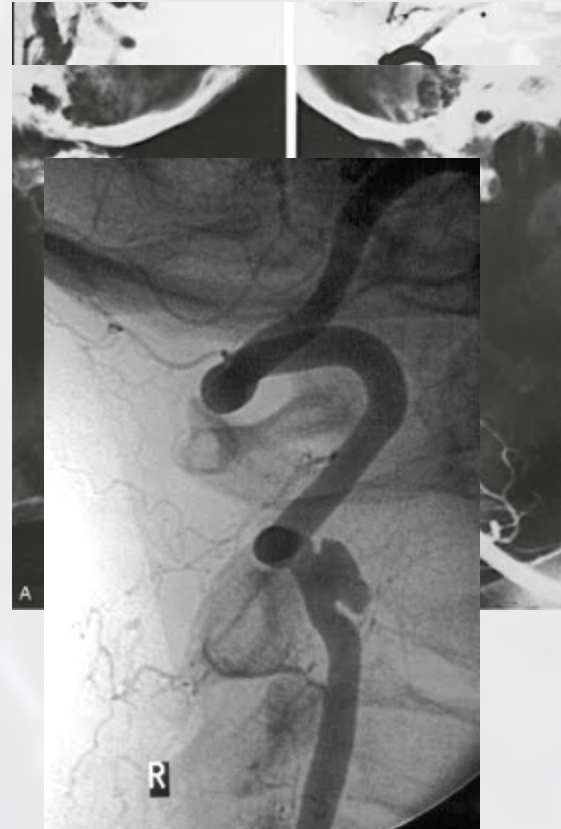
Diagnostic Testing

- Physical Exam:
 - Symptoms may appear with standing
 - Reproduce dynamic symptoms with head turn
- CTA/MRA
- Dynamic angiogram: gold standard



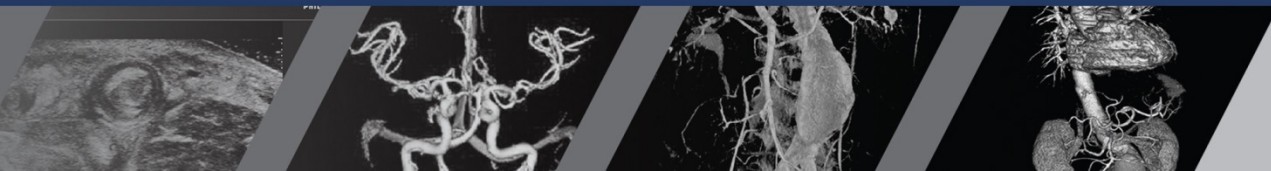
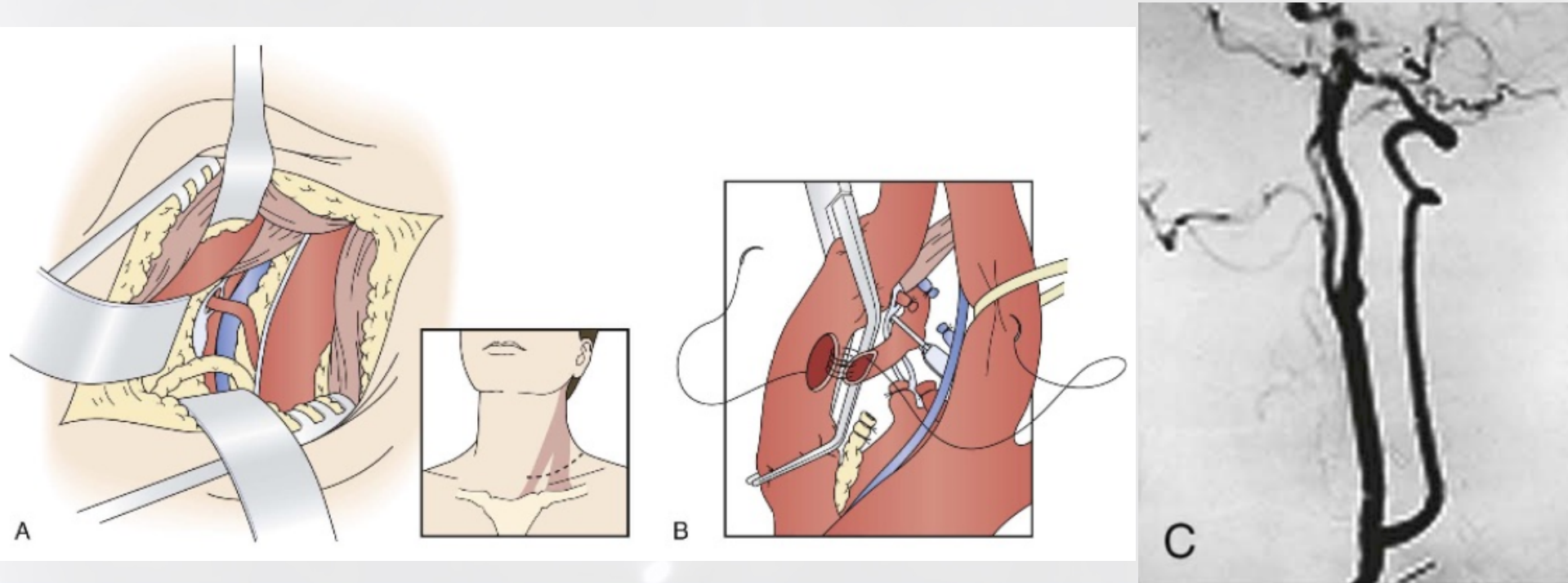
Disease Distribution

- V1: most common (at origin)
- V2: extrinsic compression by osteophytes
- V3: most mobile segment; dissections and trauma are causes of lesions
- V4: less likely 2/2 atherosclerosis



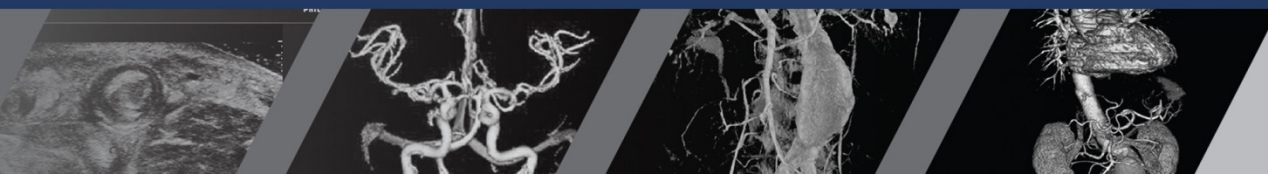
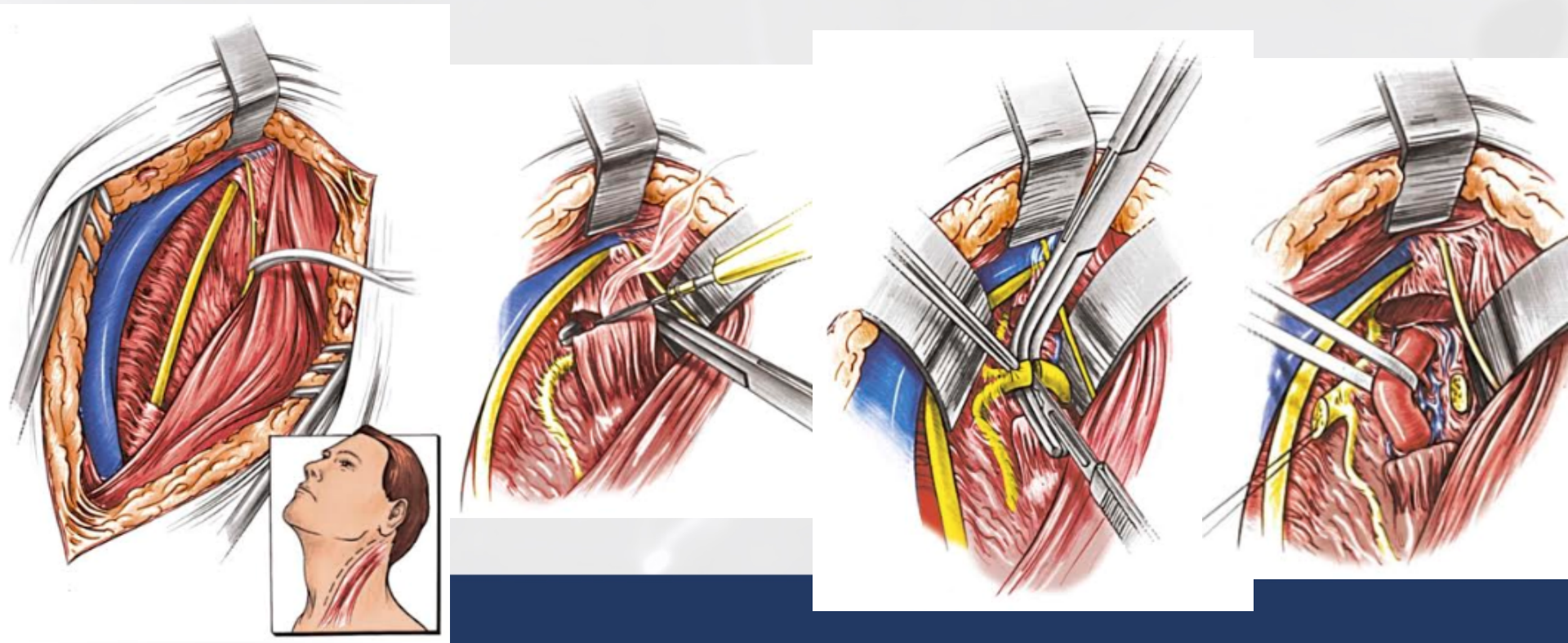
Revascularization: Transposition of proximal VA into CCA

- Transposition of proximal VA into CCA



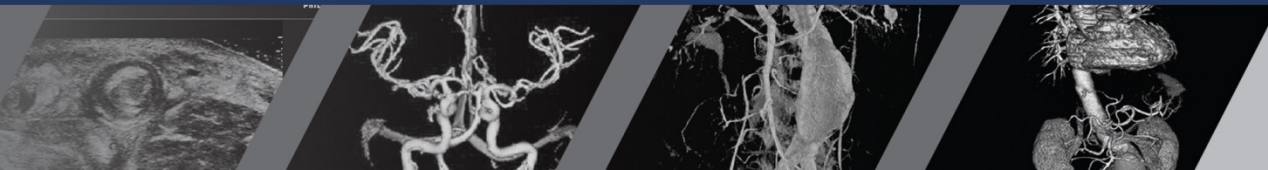
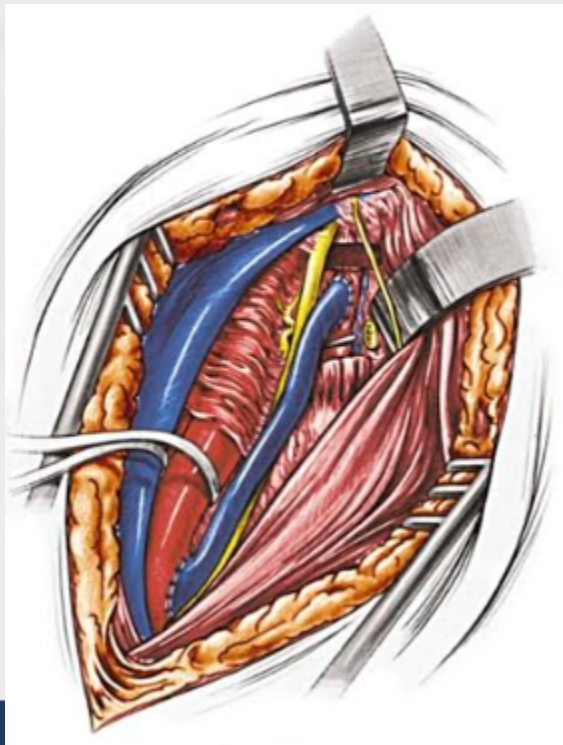
Revascularization: CCA-VA bypass

- CCA-VA bypass: V3 segment

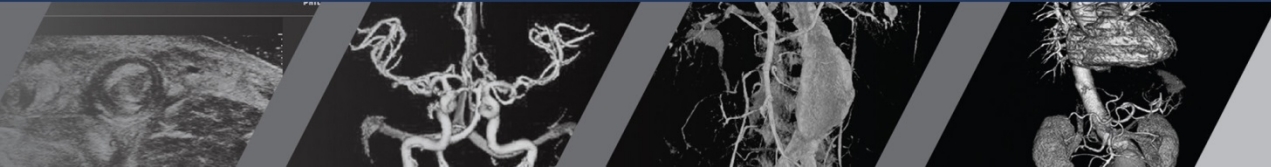
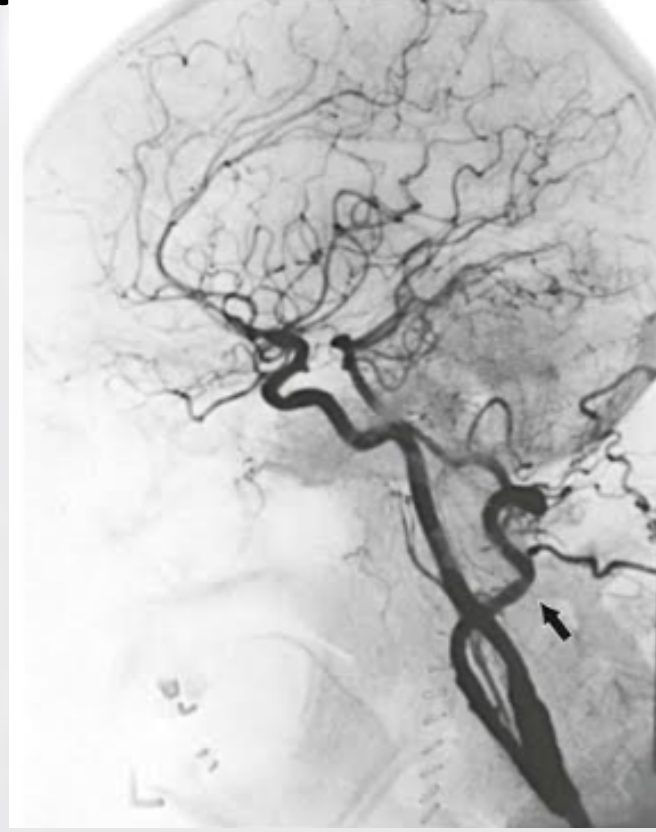


Revascularization: CCA-VA bypass

- CCA-VA bypass: V3 segment

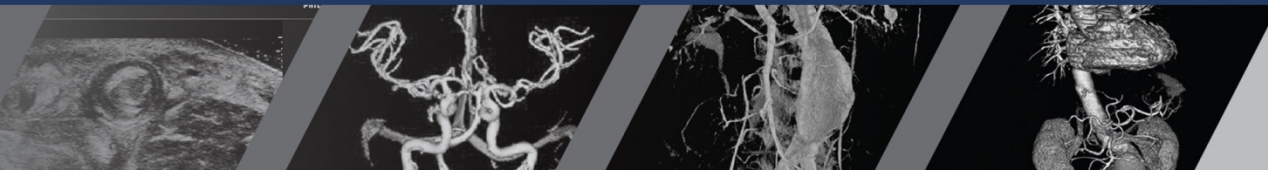
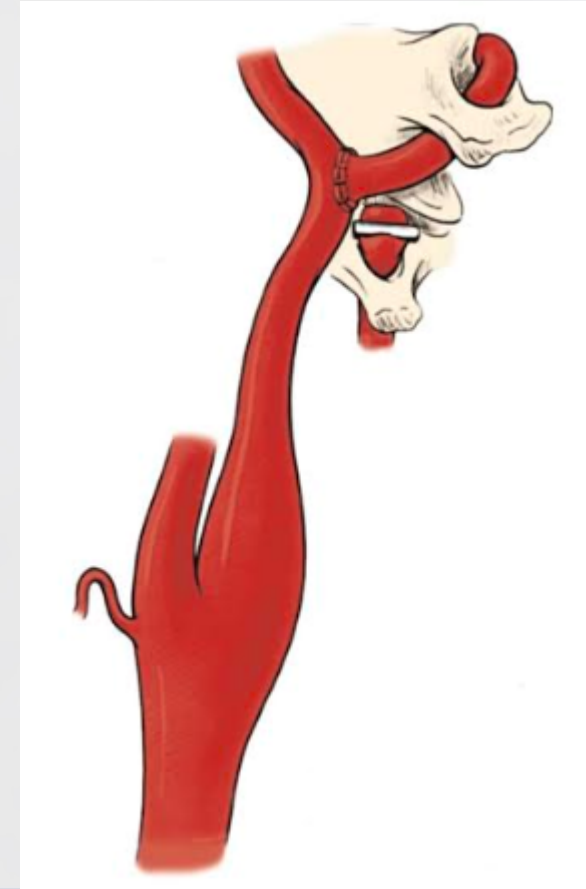


Revascularization: ECA-VA Transposition

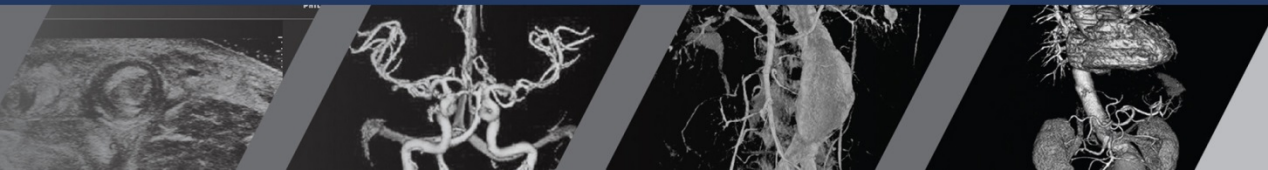
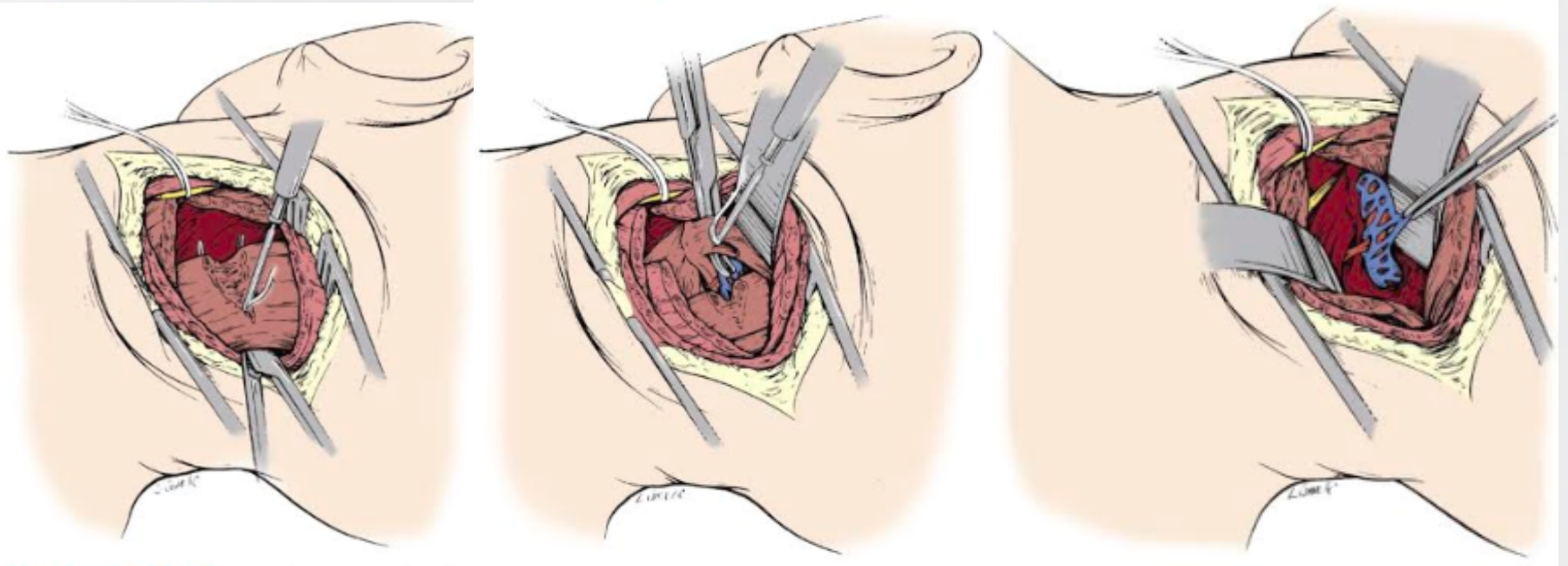


Revascularization: VA-ICA Transposition

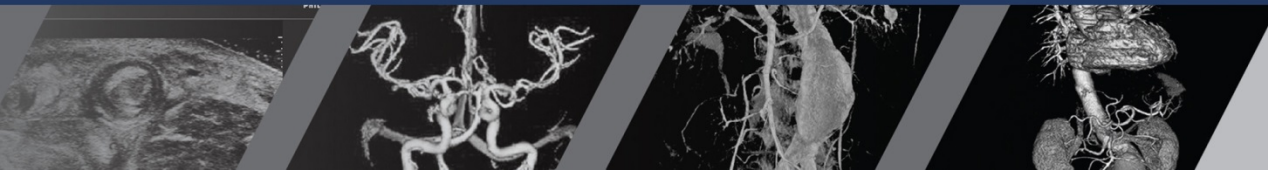
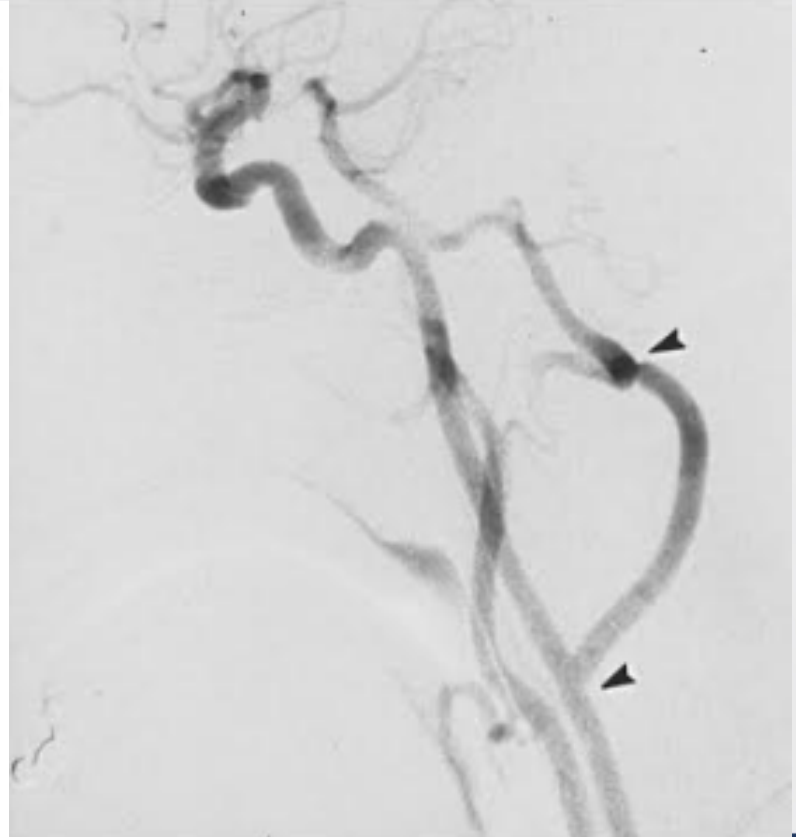
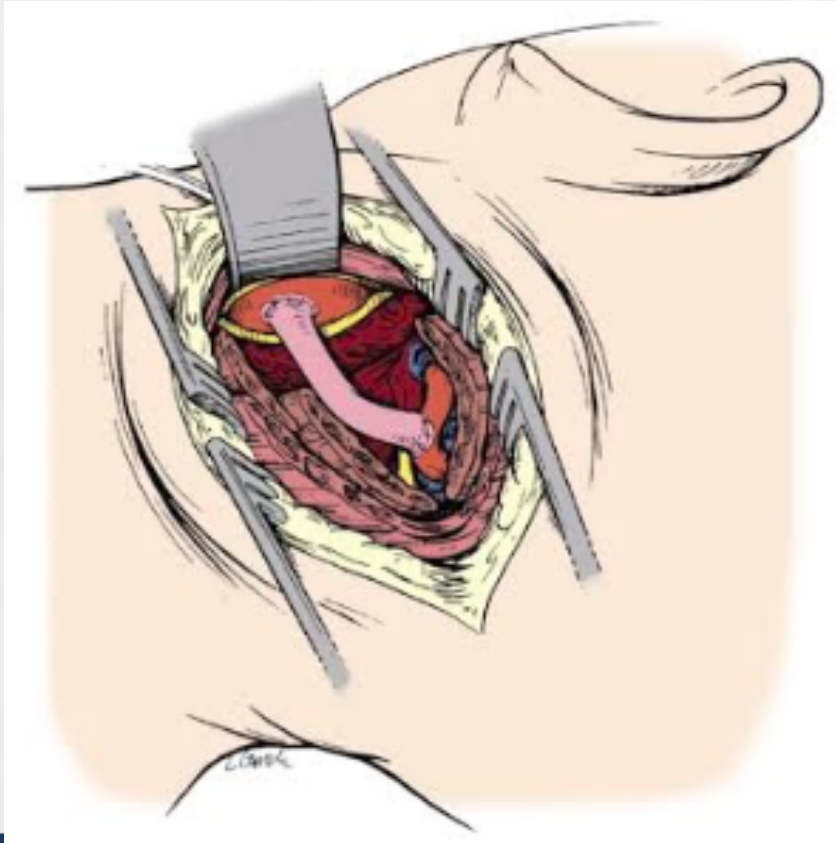
- Alternative for pts with
 - inadequate GSV
 - unsuitable ECA
 - disease at carotid bifurcation
- Contraindicated if contralateral ICA occlusion



Revascularization: Posterior Suboccipital VA Bypass

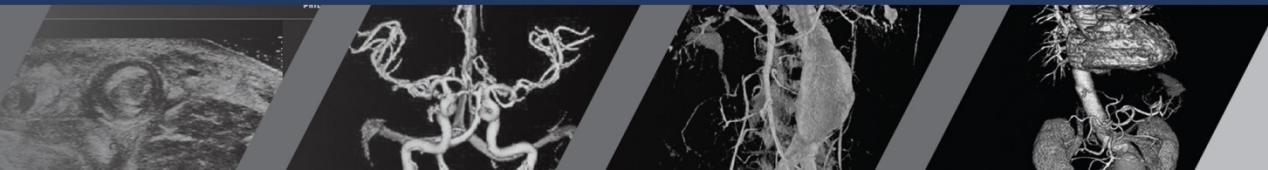


Revascularization: Posterior Suboccipital VA Bypass



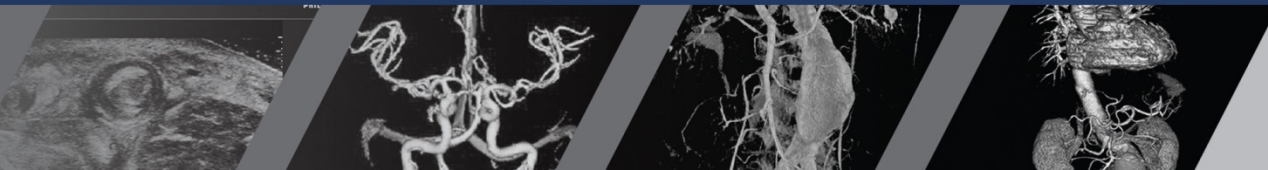
Operative Results

- Proximal reconstructions:
 - combined death & stroke ~1%
 - post op thrombosis ~1%
 - Vagus and recurrent laryngeal nerve palsy 2%
 - Horner's 8-28%
 - Chylothorax <1%
- Distal reconstructions:
 - Combined death & stroke ~3%
 - Post op thrombosis 8%



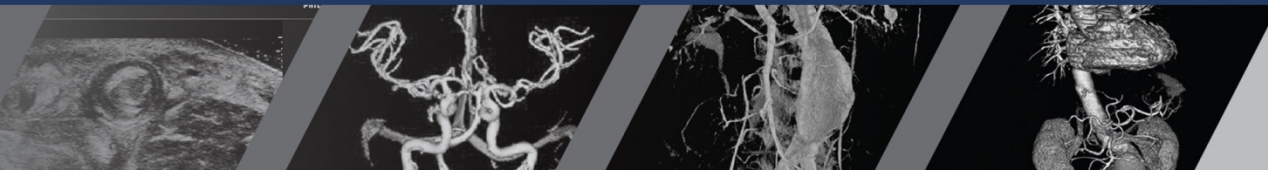
Operative Results: Long Term Outcomes

- Proximal transposition: patency at 5 and 10 years 95% and 91%
- Distal bypass: patency at 5 and 10 years 87% and 82%



Endovascular Approach

- Local anesthesia
- DAPT
- 0.014" and 0.018" system
- Technical success 95%;
30 day death-stroke ~6%
- Restenosis, stent fracture



Conclusion

- VA ischemia requires thoughtful, thorough workup
- Incidentally-found, asymptomatic vertebral artery stenosis does not require intervention
- Open and endovascular approaches dictated by anatomic location/feasibility



Thank you

