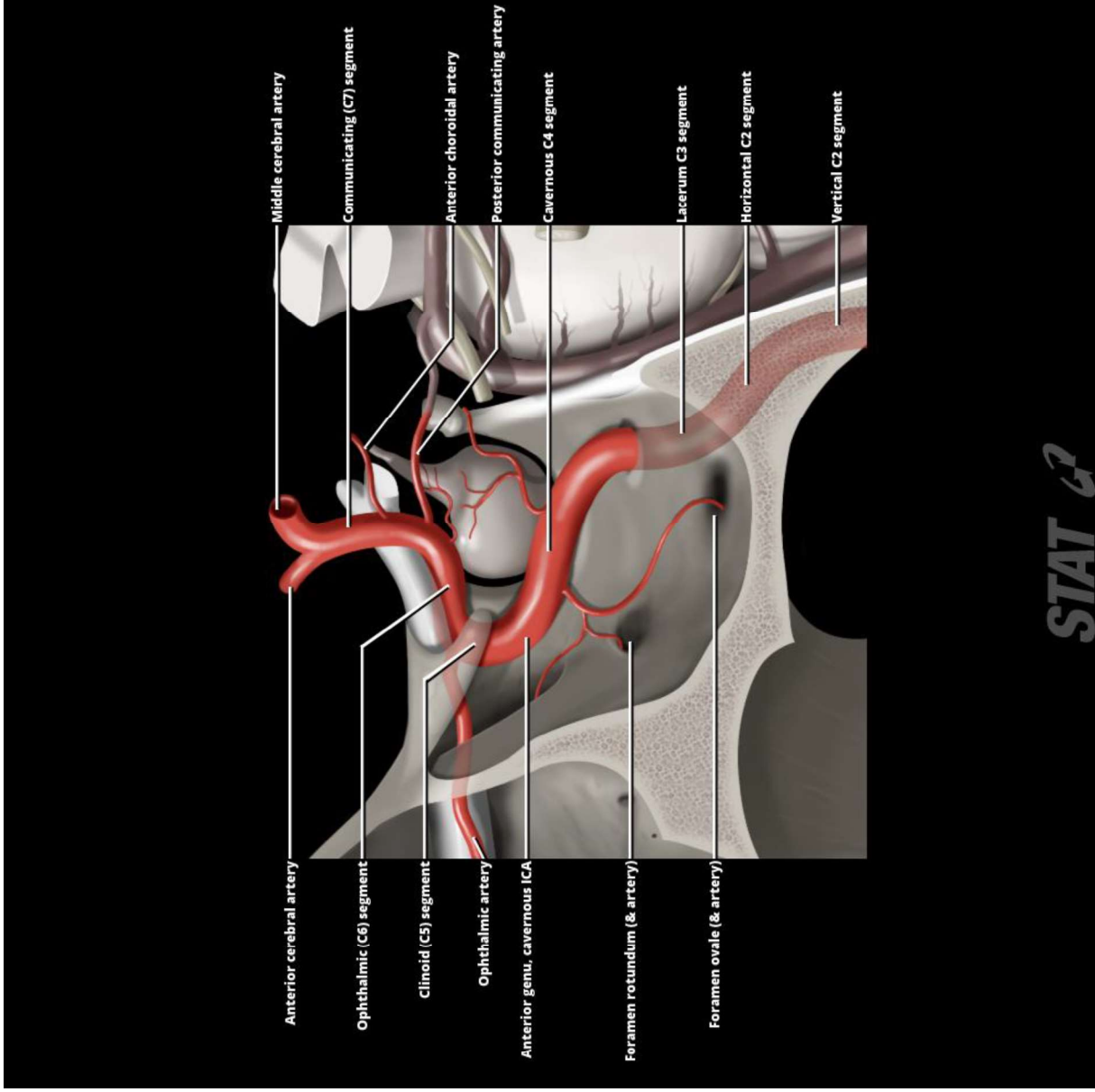


Neuroangio quick guide

(slides from StatDx)

Distal Internal Carotid Arteries

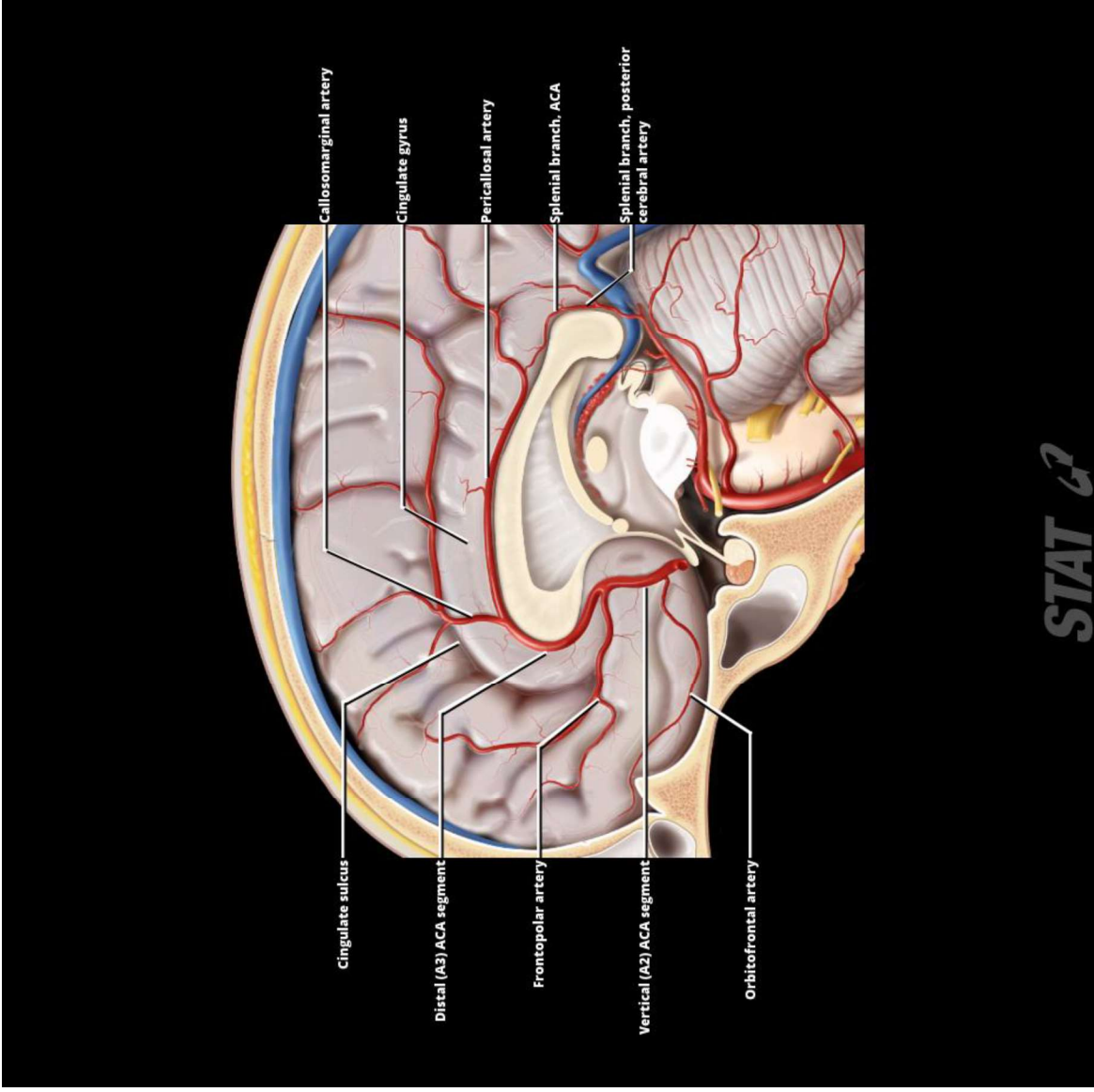


Graphic shows intracranial ICA segments. The C2 segment runs in the carotid canal and continues as the C3 segment after leaving the canal. The C4 segment as an extension of C3 is depicted with its branches anastomosing extensively with ECA branches. The C5 segment ends near anterior clinoid process and the C6 segment extends to just below PCoA. The C7 segment after giving rise to PCoA branches into ACA and MCA.

Overview

- Internal carotid artery (ICA) is one of the terminal branches of the common carotid artery (CCA)
- ICA has 7 segments, 6 of which are intracranial
- Precavernous: Petrous (C2), lacerum (C3)
- Cavernous: Cavernous (C4), clinoid (C5)
- Supraclinoid: Ophthalmic (C6)
- Terminal: Communicating (C7)

Anterior Cerebral Arteries

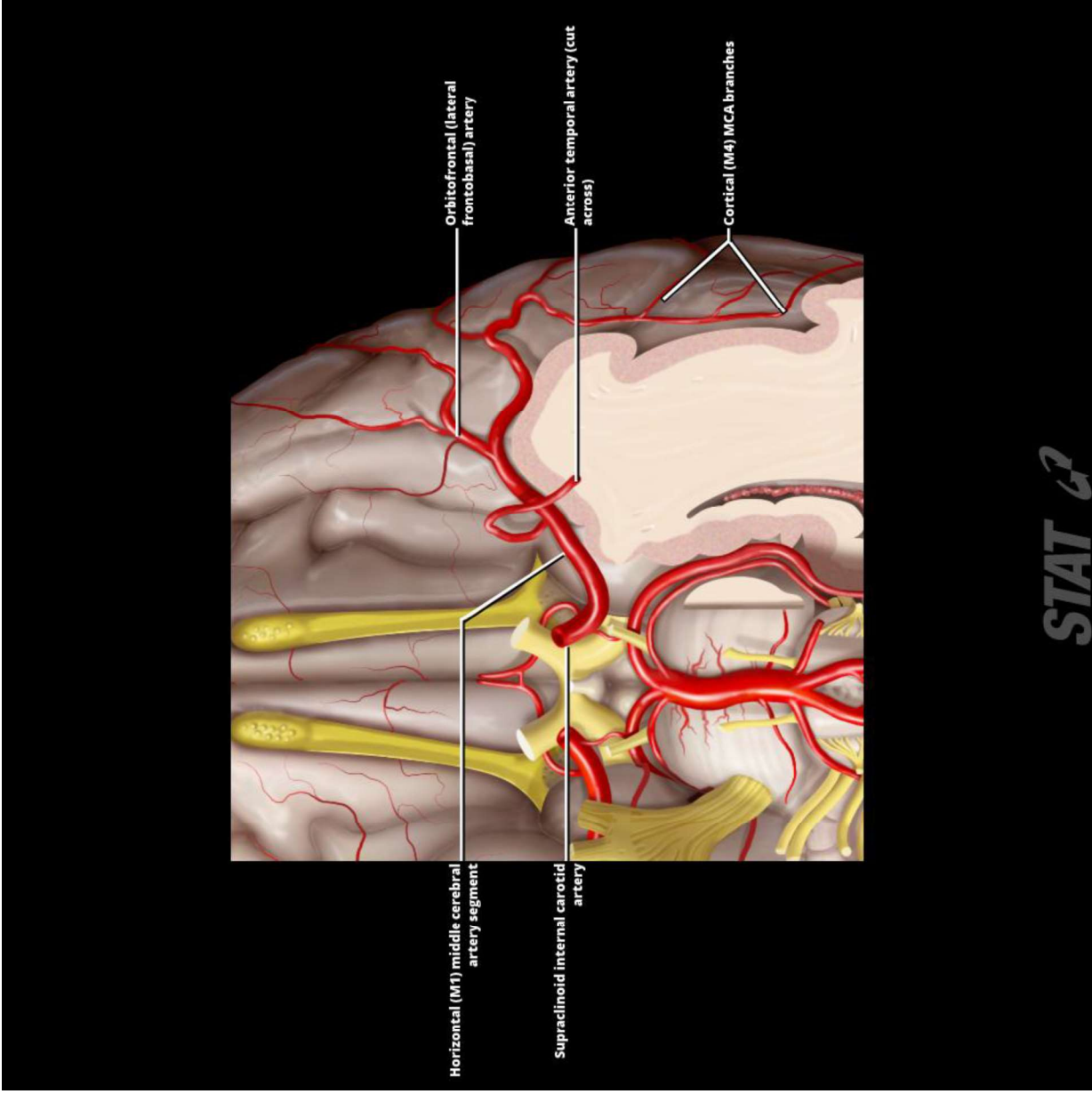


Sagittal (midline) graphic through the interhemispheric fissure shows the relationship of the ACA and its branches to the underlying brain parenchyma. The A2 segment ascends in front of the third ventricle within the cistern of the lamina terminalis. The A3 segment curves around the corpus callosum genu. The branch point of the distal ACA into the pericallosal and callosomarginal arteries varies. Almost the entire anterior 2/3 of the medial hemisphere surface is supplied by the ACA and its branches. Branches of the posterior and anterior cerebral arteries anastomose around the corpus callosum genu.

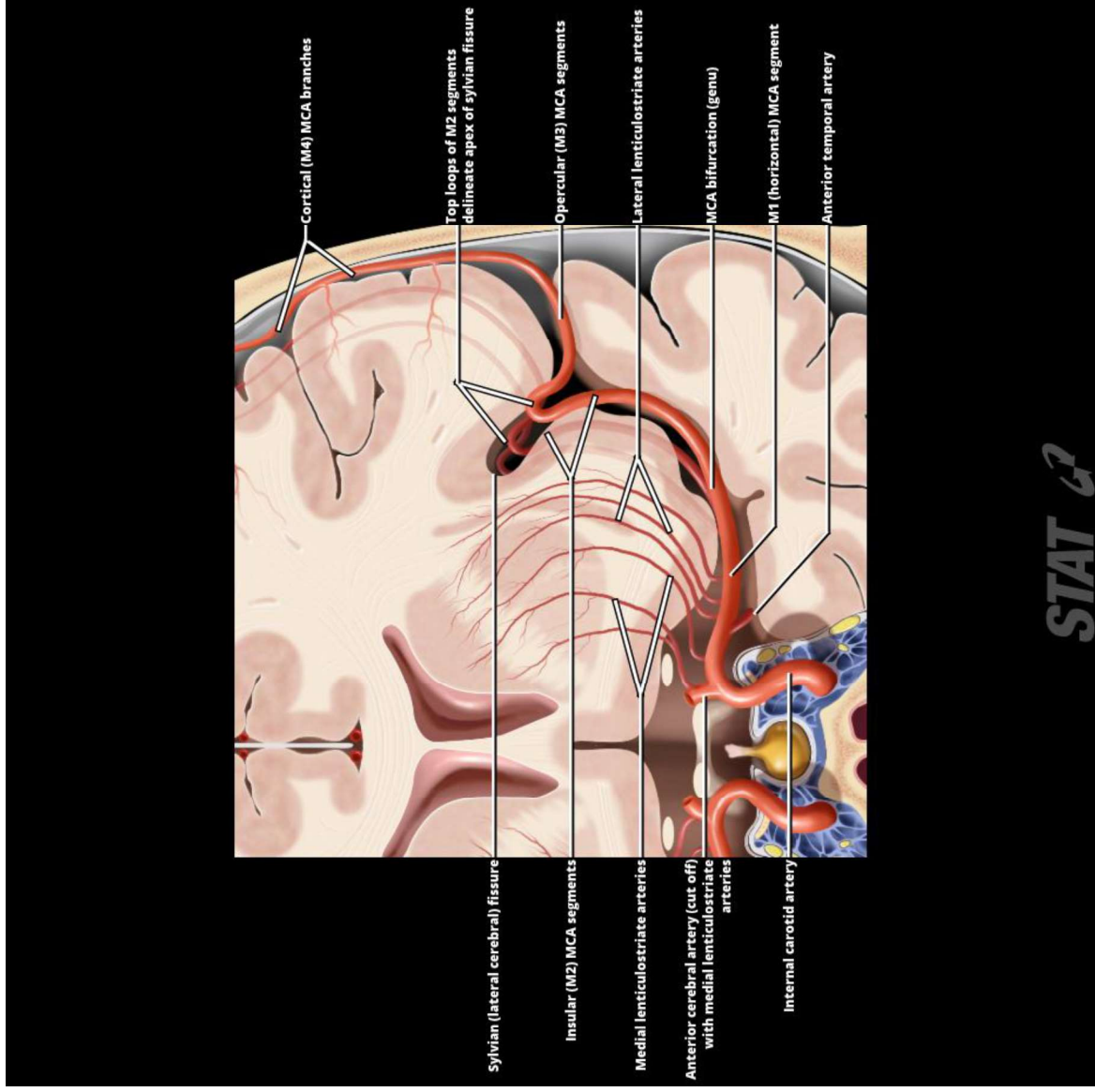
Overview

- Smaller, more medial terminal branch of supraclinoid ICA
- Three segments
 - Horizontal or precommunicating (A1) segment
 - Vertical or postcommunicating (A2) segment
 - Distal (A3) segment and cortical branches
- ACoA connects right, left A1 segments

Middle Cerebral Arteries



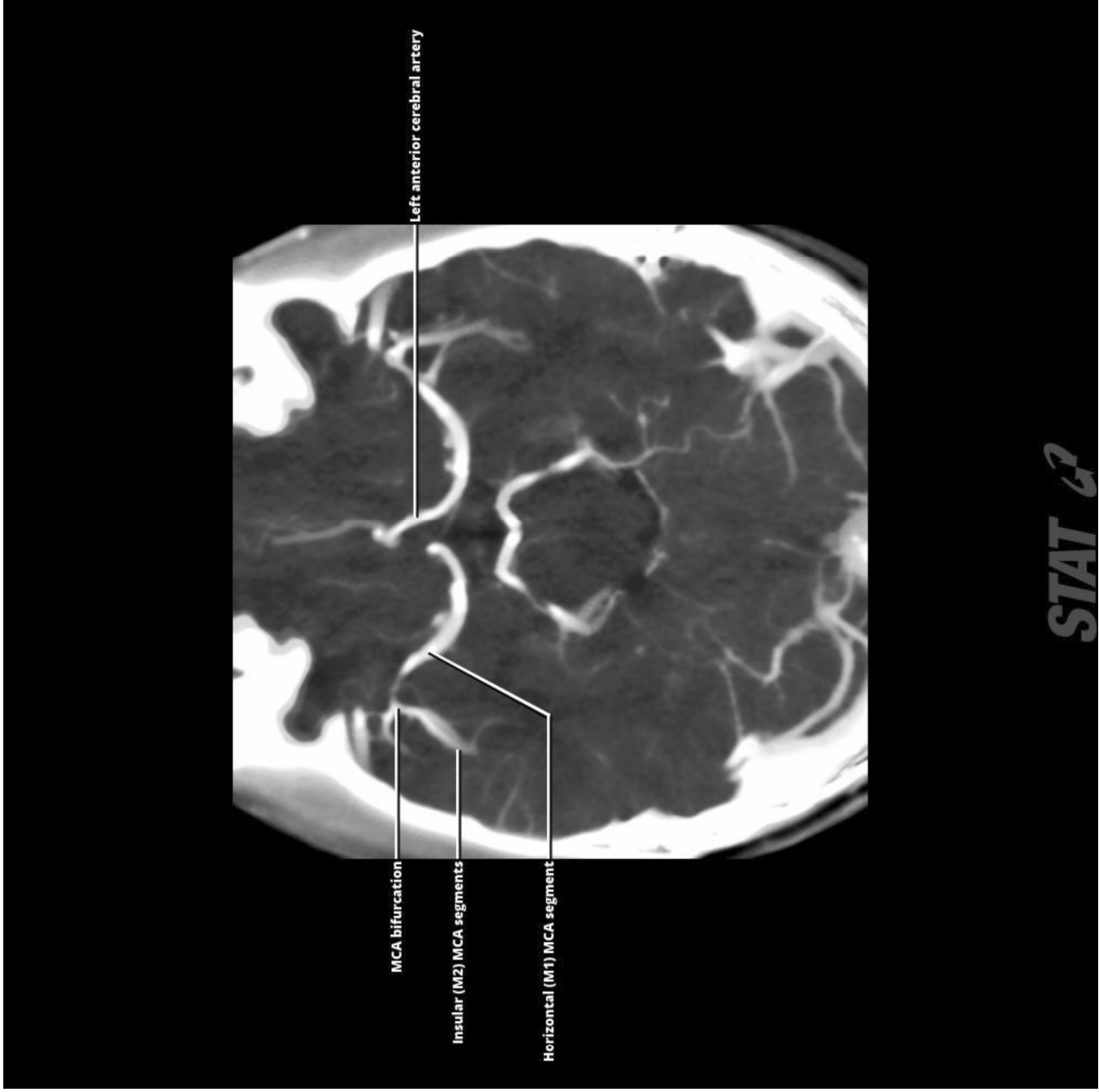
The middle cerebral artery (MCA) and its relationship to adjacent structures is depicted on these graphics. Submentovertebral view with the left temporal lobe sectioned through the temporal horn of the lateral ventricle is illustrated. The MCA supplies much of the lateral surface of the brain and is the larger of the two terminal branches of the internal carotid artery.



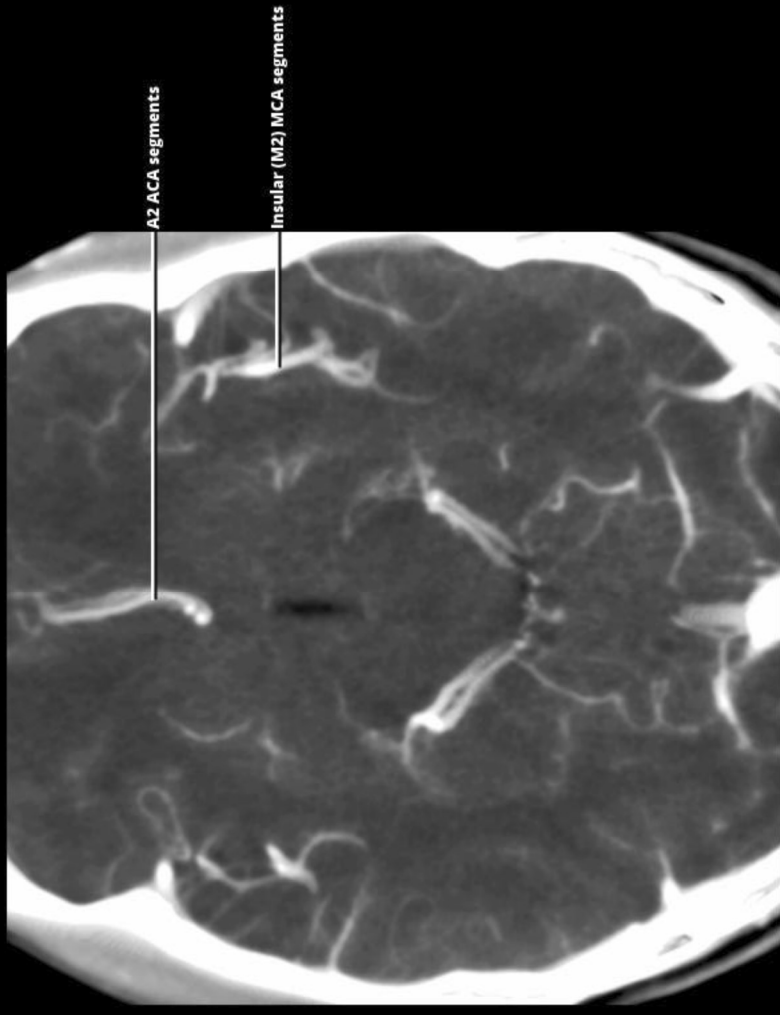
AP view shows the MCA and its relationship to the adjacent brain. The MCA course through the Sylvian fissure and the M1-M4 segments are well-delineated. A few medial and numerous lateral lenticulostriate arteries arise from the top of the horizontal (M1) MCA segment, course superiorly through the anterior perforated substance, and supply the lateral basal ganglia + external capsule.

Overview

- Larger, lateral terminal branch of supraclinoid ICA
- Four segments
 - Horizontal (M1) segment
 - Insular (M2) segments
 - Opercular (M3) segments
 - Cortical branches (M4) segments

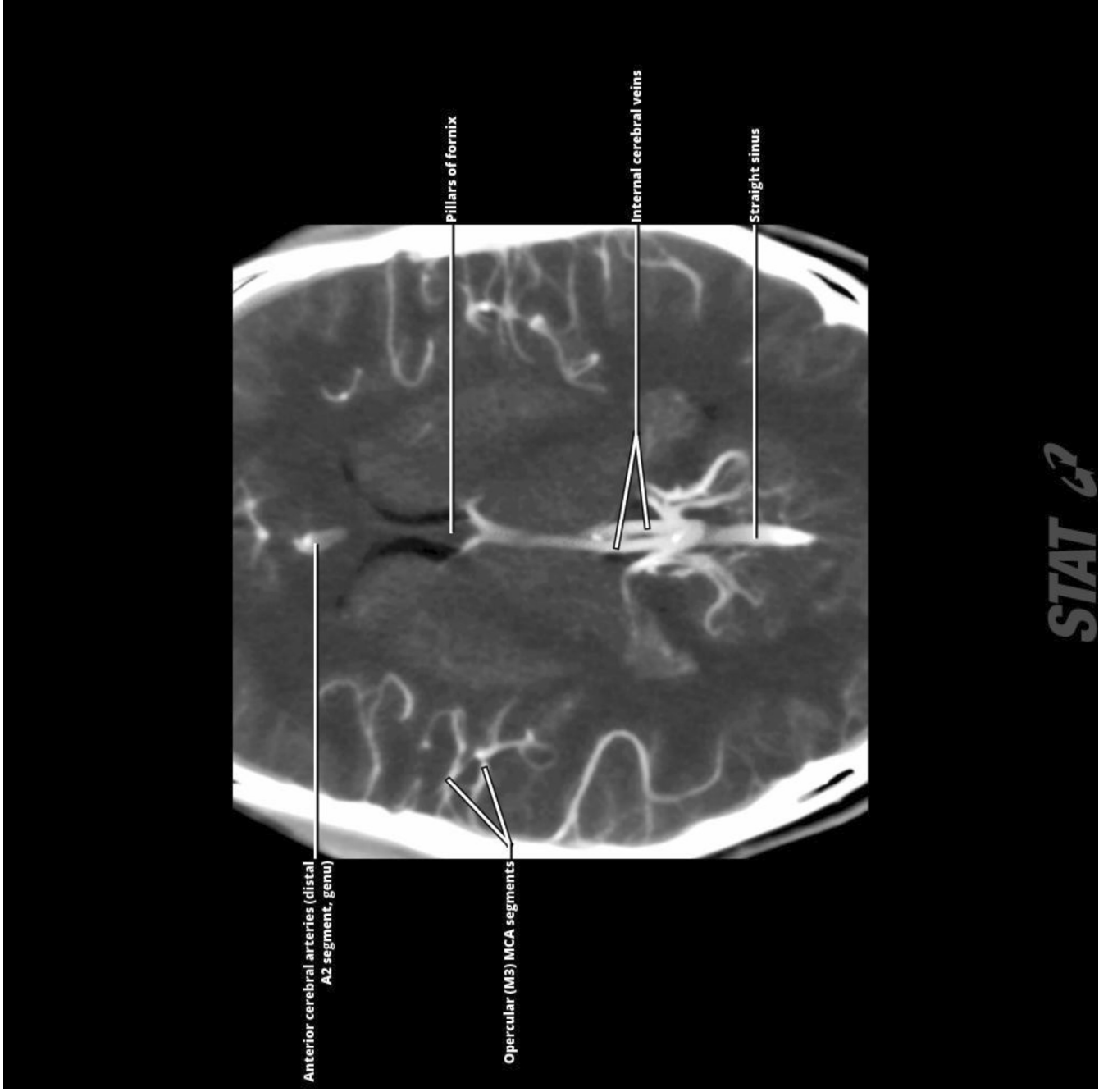


Three axial MIP views from a high-resolution CTA delineate the MCA & its branches. The lowest image, seen here, locates the MCA bifurcation precisely & shows the M1 segment especially well.



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Section slightly above the top image shows the insular (M2) MCA segments, especially well seen on the left.



Section through the foramen of Monro shows the opercular (M3) MCA segments bilaterally.



Three coronal (AP) MIP images from CT angiogram demonstrate the lenticulostriate arteries especially well. CT angiogram through the bifurcation of the internal carotid arteries.

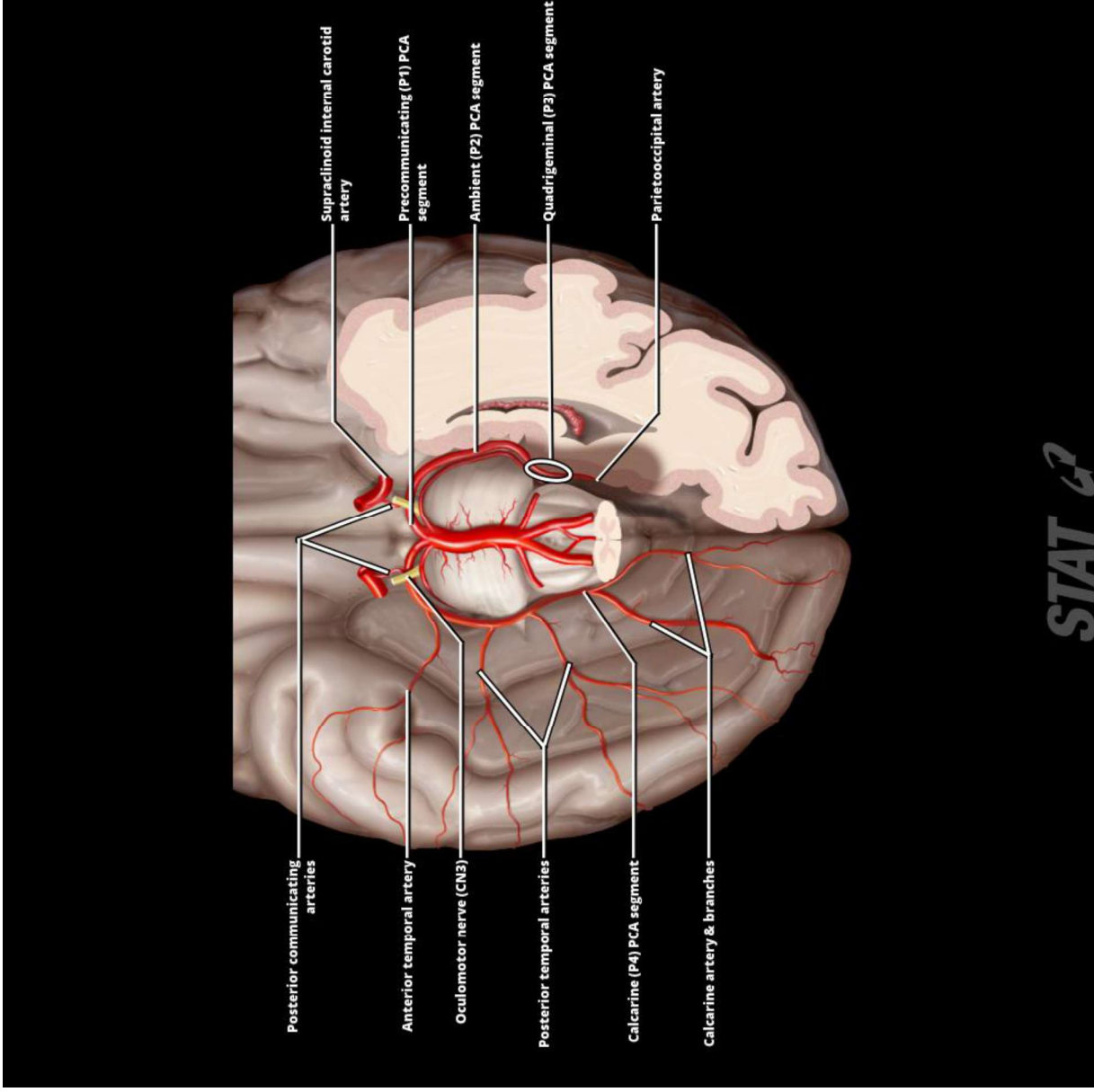


Slightly more anterior view shows origins of two prominent lenticulostriate arteries. The MCA gives rise to a few medial lenticulostriate arteries (most arise from the horizontal or A1 ACA segment). The more numerous group of perforating arteries, the lateral lenticulostriate arteries, arises from the mid- and distal M1 segments, and passes cephalad through the anterior perforated substance into the lateral basal ganglia and external capsule.



Most anterior view shows the A2 segments of both anterior cerebral arteries as well as opercular (M3) MCA branches on the right and an insular (M2) segment on the left. Apex of insular loops marks the top of the insula.

Posterior Cerebral Arteries

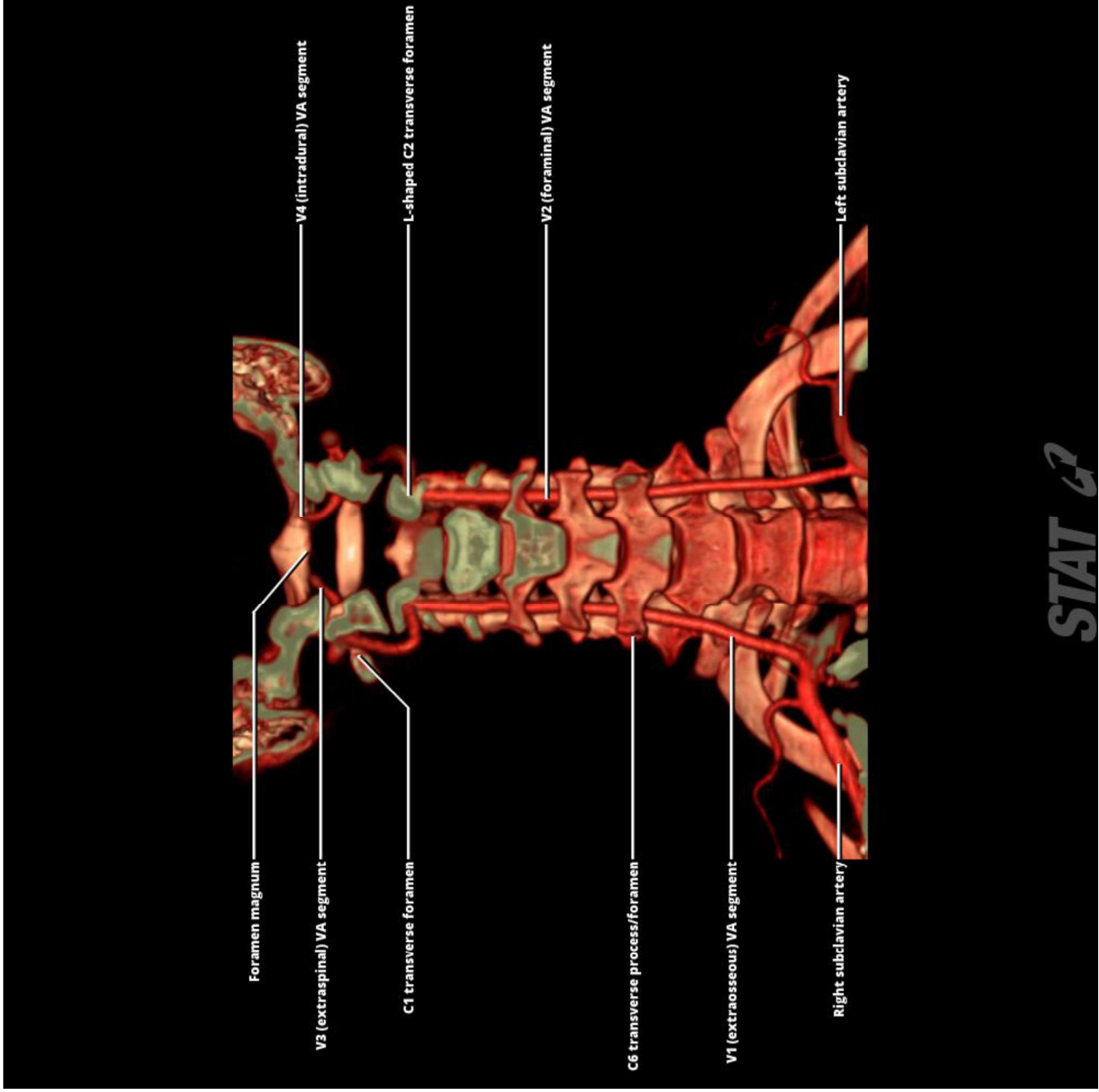


Submentovertex graphic shows the PCA and the relationship of its segments to the midbrain. The PCA supplies the occipital lobe and almost all of the inferior surface of the temporal lobe (except for its tip). The precommunicating (P1) PCA segment extends from the basilar bifurcation to the PCoA junction. The ambient (P2) segment swings posterolaterally around the midbrain. The quadrigeminal segment (P3) lies behind the midbrain. The PCA terminal segment is the calcarine (P4) segment.

Overview

- Main BA terminal branches = two PCAs
- Four segments
 - Precommunicating (P1 or mesencephalic) segment
 - Ambient (P2) segment
 - Quadrigeminal (P3) segment
 - Calcarine (P4) segment
- PCoAs connect PCA to ICA at P1/P2 junction

Vertebral Arteries



3D-VRT CTA shows the extracranial VAs, which originate from the superior aspect of the subclavian arteries. The VAs typically enter the transverse foramina of C6 and ascend almost vertically to C2, where they make a 90° turn laterally in the L-shaped C2 transverse foramina before ascending vertically again to C1.

Overview

- Vertebral artery (VA): 4 segments
 - V1 segment (extraosseous segment)
 - Arises from 1st part of subclavian artery
 - Courses posterosuperiorly to enter C6 transverse foramen
 - Branches: Segmental cervical muscular, spinal branches
 - V2 segment (foraminal segment)
 - Ascends through C6-C3 transverse foramina
 - Turns superolaterally through inverted L-shaped transverse foramen of axis (C2)
 - Courses short distance superiorly through C1 transverse foramen
 - Branches: Anterior meningeal artery, unnamed muscular/spinal branches
 - V3 segment (extraspinal segment)
 - Exits top of atlas (C1) transverse foramen
 - Lies on top of C1 ring, curving posteromedially around atlantooccipital joint
 - As it passes around back of atlantooccipital joint, turns sharply anterosuperiorly to pierce dura at foramen magnum
 - Branches: Posterior meningeal artery
 - V4 segment (Intradural/Intracranial segment)
 - After VA enters skull through foramen magnum, courses superomedially behind clivus
 - Unites with contralateral VA at or near pontomedullary junction to form basilar artery
 - Branches: Anterior, posterior spinal arteries, perforating branches to medulla, posterior inferior cerebellar artery (PICA)
 - Arises from distal VA, curves around/over tonsil, gives off perforating medullary, choroid, tonsillar, cerebellar branches
- Basilar artery (BA)
 - Courses superiorly in prepontine cistern (in front of pons, behind clivus)
 - Bifurcates into its terminal branches, posterior cerebral arteries (PCAs), in Interpeduncular or suprasellar cistern at or slightly above dorsum sellae
 - Branches: Pontine, midbrain perforating branches (numerous), anterior inferior cerebellar artery (AICA), superior cerebellar arteries (SCAs), PCAs (terminal branches)