

Neuroradiology Protocols

[Head](#)

[Head + IAC](#)

[IAC](#)

[Multiple Sclerosis \(MS\)](#)

[Orbits](#)

[Pituitary](#)

[Temporal Lobe](#)

[Face](#)

[Neck](#)

[Trigeminal](#)

[TMJ](#)

[MRA Head](#)

[MRV Head](#)

[Soft Tissue Neck](#)

[Brachial Plexus](#)

[MRA Neck](#)

MRI HEAD

Indications: headache, tumor, lesion, mets, stroke, vertigo, infection, avm, seizure, trauma, dementia

| Series | Time | Sequence | FOV | Slice | Gap | Resolution | NEX |
|-----------------------|-------|----------------|-----|-------|-----|------------|-----|
| Sag T1 FLAIR | 3 min | T1 | 24 | 5.0 | 1.5 | 320 x 224 | |
| Ax DWI | 3 min | DWI | 24 | 5.0 | 1.5 | 128 x 128 | |
| Ax T2 | 3 min | | 24 | 5.0 | 1.5 | 320 | 2 |
| Ax T2 Flair | 4 min | T2 Flair | 24 | 5.0 | 1.5 | 320 x 224 | 1.5 |
| Ax T1 SE | 2 min | T1 | 24 | 5.0 | 1.5 | 320 x 224 | 1 |
| Cor T1 | 4 min | MPRAGE | | 2 | 1 | | 1 |
| Ax Swan/SWI | 4 min | SWI, Swan, GRE | 24 | | | 320 x 224 | |
| CONTRAST | | | | | | | |
| Ax T1 SE GD FS | 4 min | T1 FS | 24 | 5.0 | 1.5 | 288 x 192 | 1 |
| Cor T1 SE GD | 2 min | T1 | 24 | 5.0 | 2.0 | 288 x 192 | 1 |
| OPTIONAL | | | | | | | |
| Sag T1 GD | | T1 | 24 | 5.0 | 1.5 | 256 x 256 | 1 |
| Cor T1 SE GD FS | | T1 | 20 | 3.0 | 0 | 288 x 192 | 1 |
| OLFACTORY BULB | | | | | | | |
| Cor T2 FS Thin | | T2 FS | | | | | |
| Ax T1 FS Thin GD | | T1 FS | | | | | |
| Sag T1 FS Thin GD | | T1 FS | | | | | |
| Stealth/Preop | | | | | | | |
| Sag T1 | 3 min | T1 | | | | | |
| Ax T1 MPRAGE | 4 min | MPRAGE | | | | | |
| Ax T1 FS Post | 3 min | | | | | | |
| Ax T2 Flair | 5 min | | | | | | |
| ? Ax T2 Space | 8 min | | | | | | |

Sagittal: craniocervical junction to vertex, temporal lobes on each side, occipital to front lobes



Axial: craniocervical junction to vertex, temporal lobes on each side, occipital to front lobes



Coronal: craniocervical junction to vertex, temporal lobes on each side, occipital to front lobes



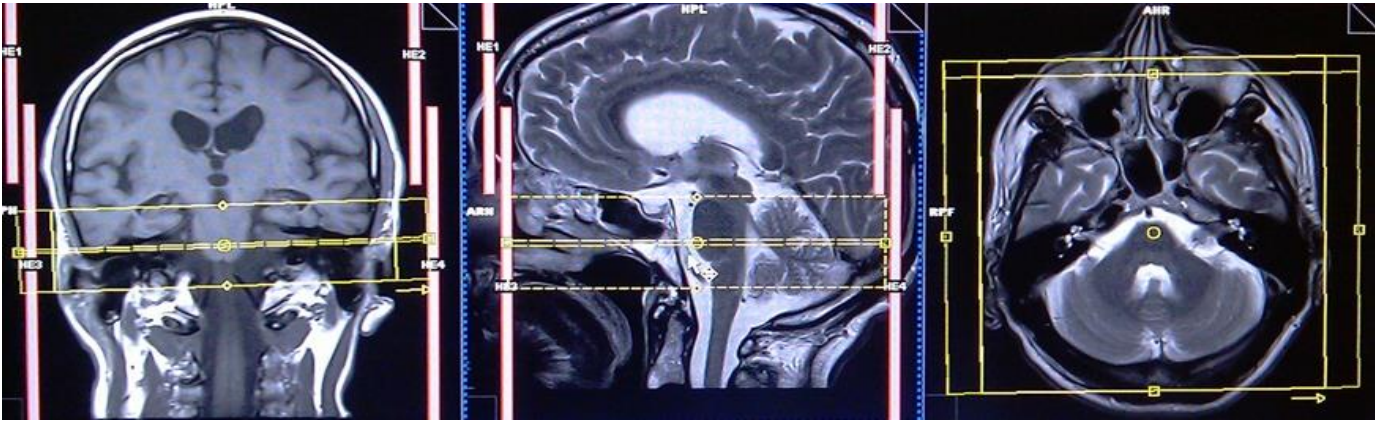
MRI HEAD and IAC

Indications: vertigo, dizziness, tumor, neuroma/schwannoma, sensorineural hearing loss, facial nerve palsy, labyrinthitis, tinnitus

| Series | Time | Sequence | FOV | Slice | Gap | Resolution | NEX |
|---------------------------------|-------|-------------------------|-----|-------|-----|------------|-----|
| Sag T1 FLAIR | 3 min | T1 | 24 | 5.0 | 1.5 | 320 x 224 | |
| Ax DWI | 3 min | DWI | 24 | 5.0 | 1.5 | 128 x 128 | |
| Ax T2 | 3 min | | 24 | 5.0 | 1.5 | 320 | 2 |
| Ax T2 Flair | 4 min | Flair | 24 | 5.0 | 1.5 | 320 x 224 | 1.5 |
| Ax T1 SE | 2 min | T1 | 24 | 5.0 | 1.5 | 320 x 224 | 1 |
| Ax T1 FSE thin | 4 min | T1 | 18 | 3.0 | 0.3 | 320 x 224 | 4 |
| Ax 3D Fiesta thin | 3 min | FIESTA CISS 3d T2 Drive | 18 | 0.8 | | 288 x 288 | 1 |
| CONTRAST | | | | | | | |
| Ax T1 SE GD FS (whole head) | | T1 FS | 24 | 5.0 | 1.5 | 288 x 192 | 1 |
| Ax T1 FSE GD thin | 5 min | T1 | 18 | 3.0 | 0.3 | 320 x 224 | 4 |
| Cor T1 SE GD thin | 5 min | T1 | 18 | 3.0 | 0.3 | 320 x 224 | 4 |
| Post OP or TUMOR | | | | | | | |
| Ax T1 FSE GD THIN | | T1 | 18 | 3.0 | 0.3 | 320 x 224 | 4 |
| Cor T1 FSE GD FS THIN | | T1 | 20 | 3.0 | 0.3 | 320 x 224 | 4 |

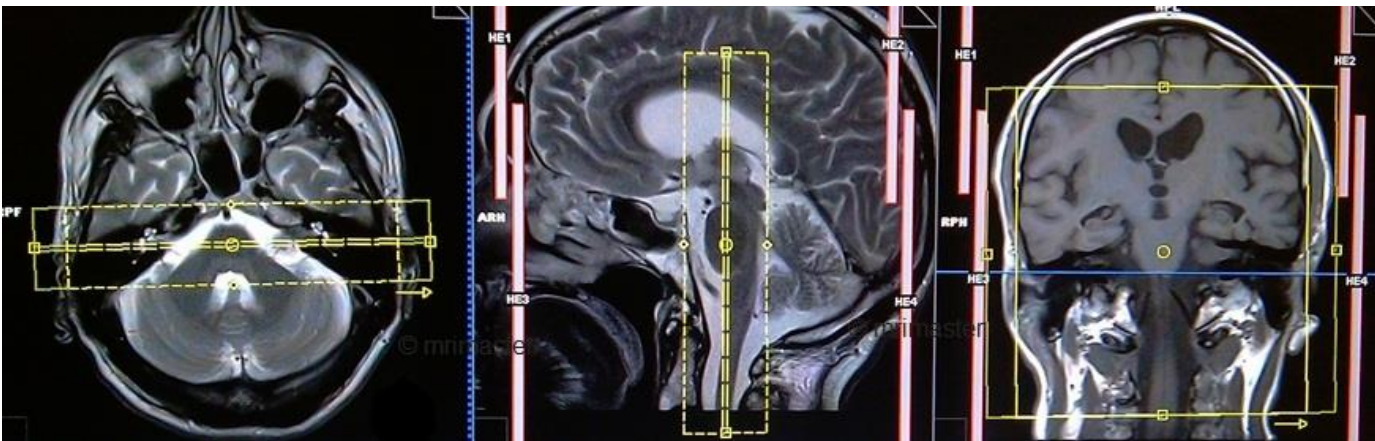
Axial Thin: parallel to IACs, perpendicular to brain stem

Coverage: IAC from posterior sphenoid sinus to fourth ventricle



Coronal Thin: parallel to IACs, perpendicular to brain stem

Coverage: IAC from hippocampus to C1 vertebral body



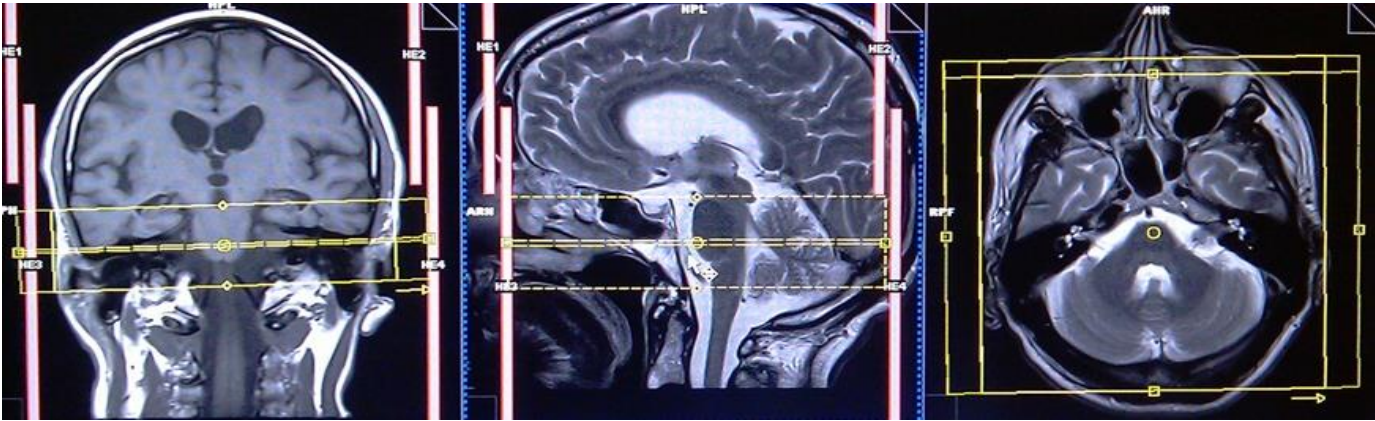
MRI IAC

Indications: only do if patient has been previously diagnosed with tumor, otherwise do MRI Head & IACs

| Series | Time | Sequence | FOV | Slice | Gap | Resolution | NEX |
|------------------------------|--------------------------------|---------------------------|-----|-------|-----|------------|-----|
| Ax T2 FSE | | T2 | 24 | 5.0 | 1.0 | 416 x 256 | 3 |
| Cor T1 FSE thin | 5 min | T1 | 18 | 3.0 | 0.3 | 320 x 224 | 4 |
| Ax T1 FSE thin | 4 min | T1 | 18 | 3.0 | 0.3 | 320 x 224 | 4 |
| Ax T2 FSE thin | | T2 | 18 | 3.0 | 0.3 | 320 x 224 | 4 |
| Ax 3D Fiesta thin | 3 min | FIESTA, CISS, 3D T2 Drive | 18 | 0.8 | | 320 x 288 | 1 |
| Cor DWI Haste | If indication is cholesteatoma | | | | | | |
| CONTRAST | | | | | | | |
| Ax T1 FSE GD thin | | T1 | 18 | 3.0 | 0.3 | 320 x 224 | 4 |
| Cor T1 SE GD thin | | T1 | 18 | 3.0 | 0.3 | 320 x 224 | 4 |
| Post OP or TUMOR | | | | | | | |
| Ax T1 FSE GD THIN | | T1 | 18 | 3.0 | 0.3 | 320 x 224 | 4 |
| Cor T1 FSE GD FS THIN | | T1 | 20 | 3.0 | 0.3 | 320 x 224 | 4 |

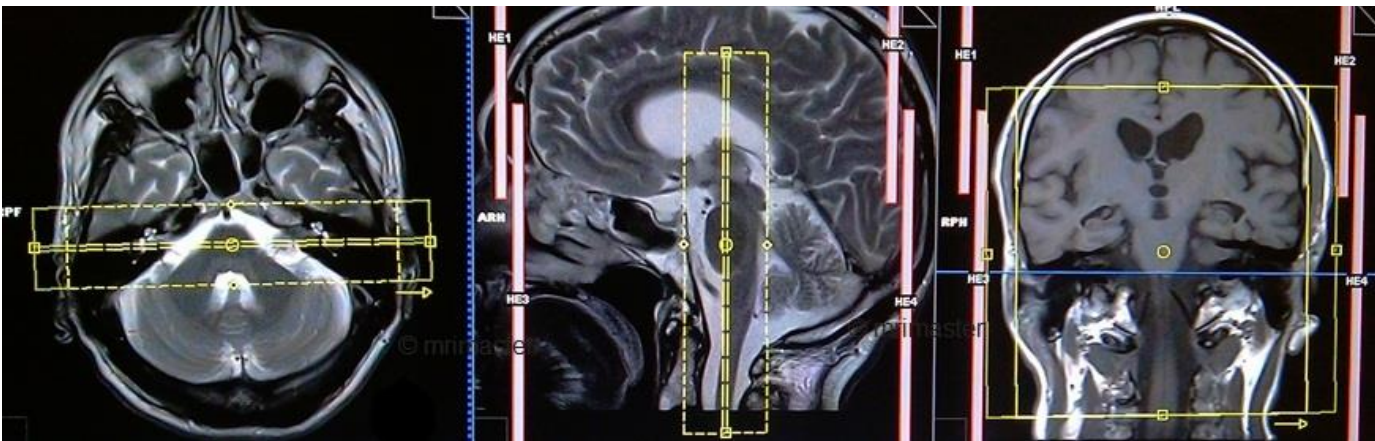
Axial Thin: parallel to IACs, perpendicular to brain stem

Coverage: IAC from posterior sphenoid sinus to fourth ventricle



Coronal Thin: parallel to IACs, perpendicular to brain stem

Coverage: IAC from hippocampus to C1 vertebral body



MRI HEAD MS (Multiple Sclerosis)

Indications: diagnosis of multiple sclerosis, demyelinating disease

| Series | Time | FOV | Slice | Gap | Resolution | NEX |
|-------------------------|-------|-----|-------|-----|------------|-----|
| Without Only | | | | | | |
| Sag T1 3D | | 24 | 1 | 0 | 320 x 224 | 2 |
| Sag T2 FLAIR 3DIR | 7 min | 24 | 3.0 | 0 | 288 x 192 | 1 |
| Reformat FLAIR Ax | | | | | | |
| Ax T2 | 5 min | 24 | 4 | 1 | 320 | 1 |
| Ax DWI | 3 min | 24 | 5.0 | 1.5 | 128 x 128 | |
| Ax SWI | | 24 | | 0 | | 1 |
| | | | | | | |
| | | | | | | |
| Without and With | | | | | | |
| Sag T1 3D | | 24 | 1 | 0 | 320 x 224 | 2 |
| Ax T2 | 5 min | 24 | 4 | 1 | 320 | 1 |
| Ax DWI | 3 min | 24 | 5.0 | 1.5 | 128 x 128 | |
| Ax SWI | | 24 | | 0 | | 1 |
| CONTRAST | | | | | | |
| Sag T2 FLAIR 3DIR | 7 min | 24 | 3.0 | 0 | 288 x 192 | 1 |
| Ax T1 3D | | 24 | 1 | 0 | 320 x 224 | 2 |
| Reformat T1 Sag | | | | | | |

Sagittal: craniocervical junction to vertex, temporal lobes on each side, occipital to front lobes



Axial: craniocervical junction to vertex, temporal lobes on each side, occipital to front lobes



Coronal: craniocervical junction to vertex, temporal lobes on each side, occipital to front lobes



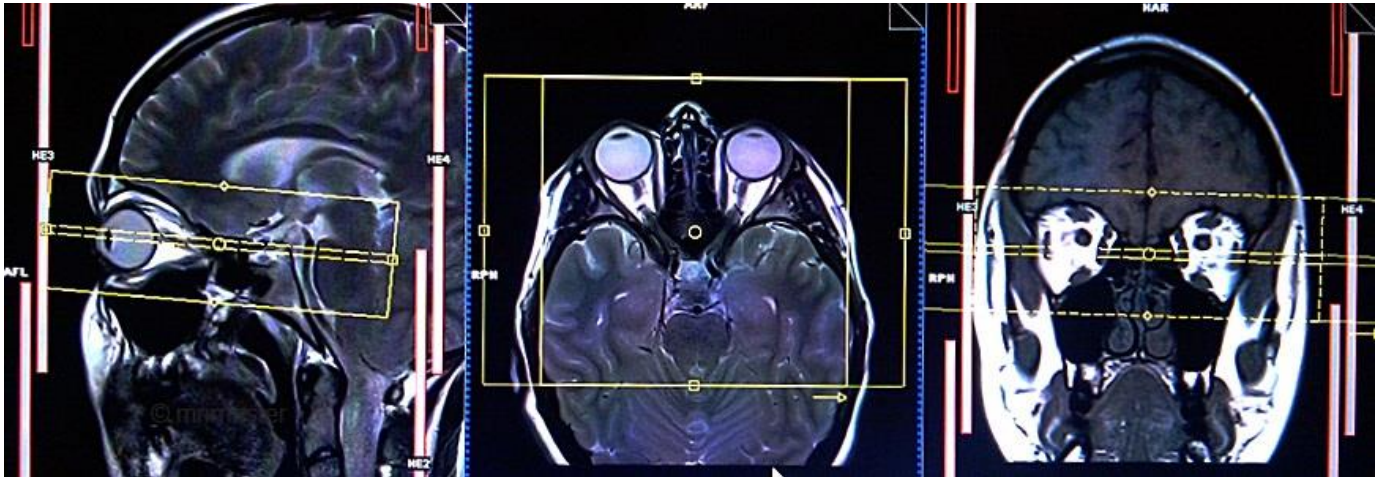
MRI Orbits

Indications: orbital lesions, proptosis, optic disc distortion, infection, inflammation, intra-ocular lesions, retinoblastoma, melanoma, vision loss, optic nerve disorders

| Series | Time | Sequence | FOV | Slice | Gap | Resolution | NEX |
|---------------------------|------|----------|-----|-------|-----|------------|-----|
| Sag T1 Flair (whole head) | | T1 | 24 | 5.0 | 1.5 | 320 x 224 | 1 |
| Ax T2 FS (whole head) | | T2 | 24 | 5.0 | 1.5 | 320 x 224 | 2 |
| Ax T2 FS thin | | T2 FS | 18 | 3.0 | 1.0 | 288 x 224 | 2 |
| Ax T1 thin | | T1 | 18 | 3.0 | 1.0 | 512 x 224 | 3 |
| Cor STIR | | STIR | 18 | 3.0 | 1.0 | 288 x 192 | 3 |
| CONTRAST | | | | | | | |
| Ax T1 FS GD thin | | T1 FS | 18 | 3.0 | 1.0 | 512 x 224 | 3 |
| Cor T1 FS GD thin | | T1 FS | 18 | 3.0 | 1.0 | 384 x 224 | 2 |

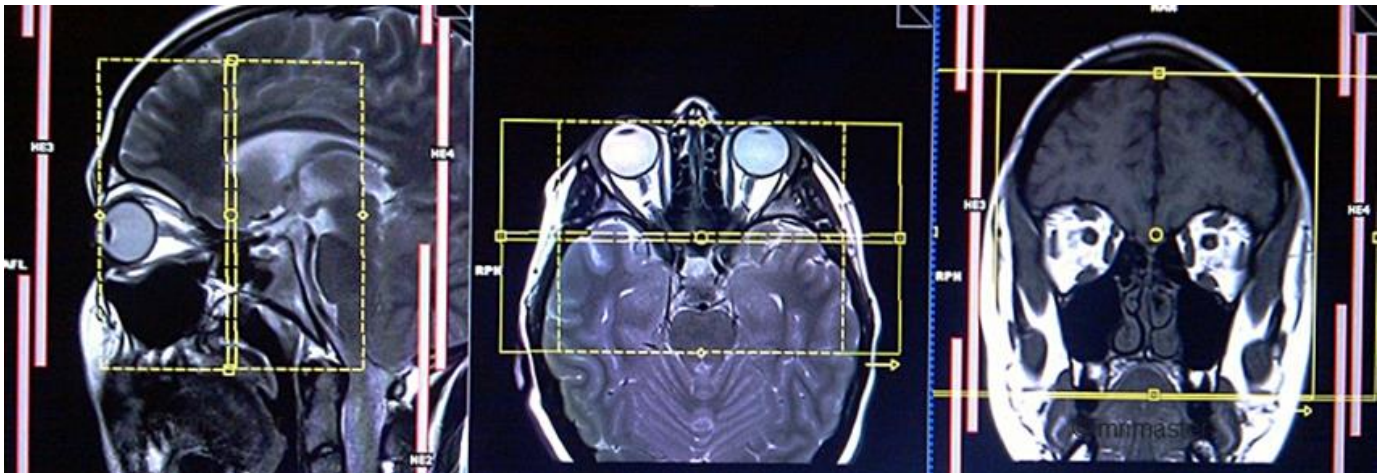
Axial Thin: parallel to line along optic nerve in sagittal and coronal views

Coverage: cover the whole orbits from eye lenses to mid pons



Coronal Thin: parallel to lenses, perpendicular to optic nerve

Coverage: cover the whole orbits from eye lenses to mid pons

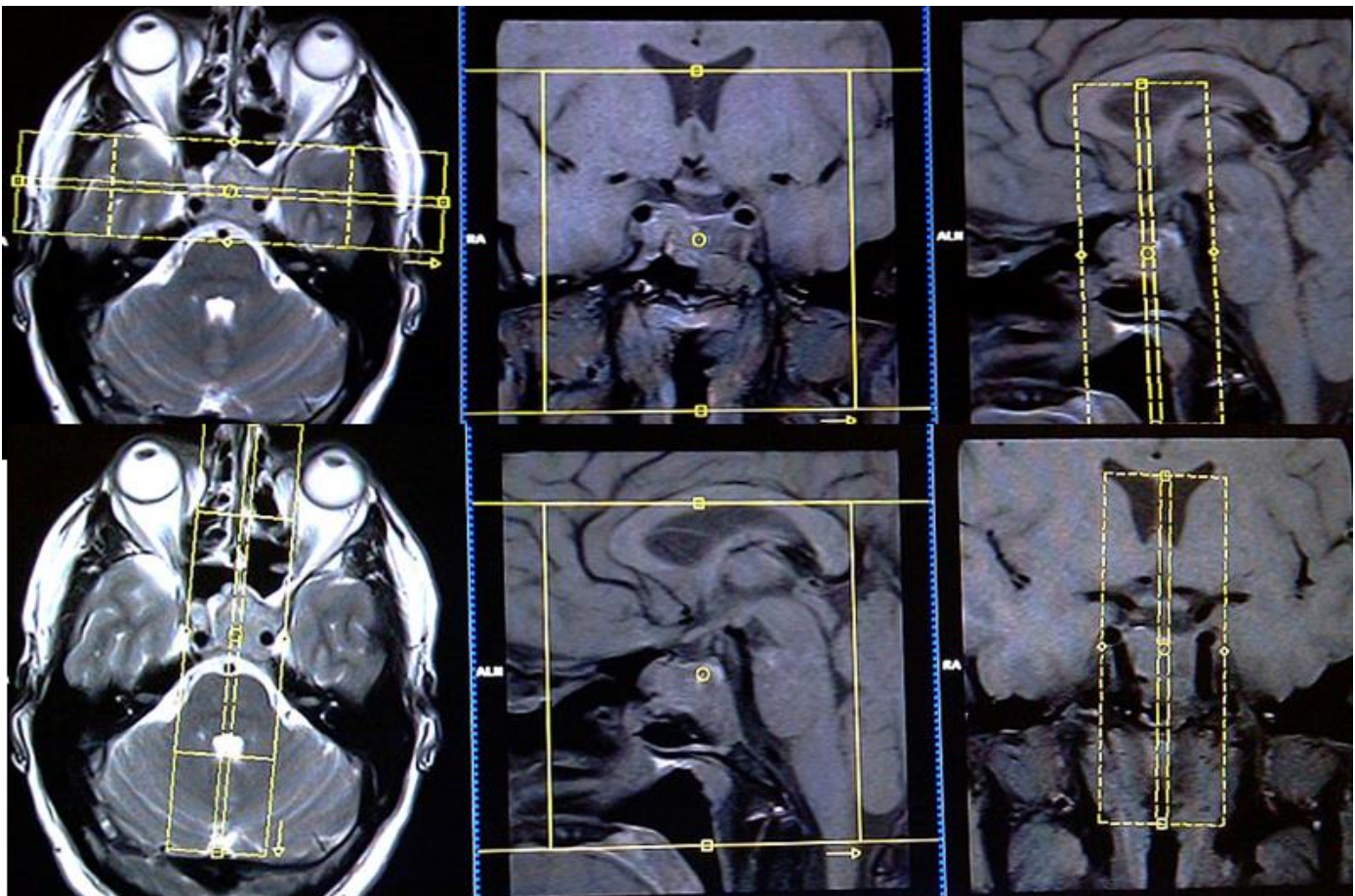


MRI Pituitary

Indications: orbital lesions, proptosis, optic disc distortion, infection, inflammation, intra-ocular lesions, retinoblastoma, melanoma, vision loss, optic nerve disorders

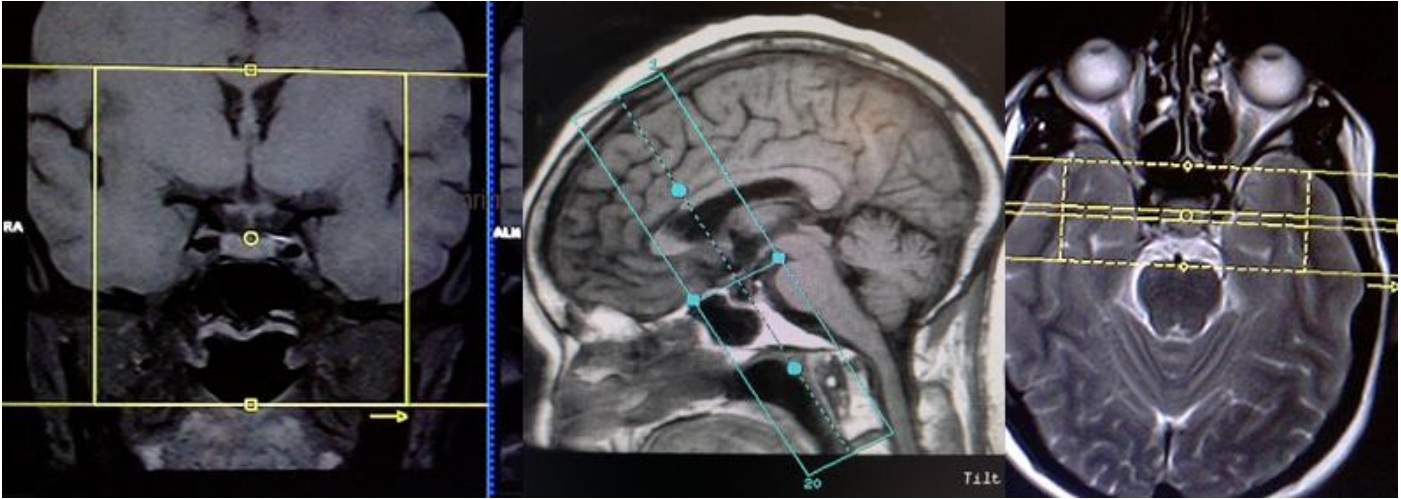
| Series | Time | Sequence | FOV | Slice | Gap | TR | NEX |
|---------------------------|-------|----------|-----|-------|-----|-----------|-----|
| Sag T1 Flair (whole head) | 3 min | T1 | 24 | 5.0 | 1.5 | 2500 | 1 |
| Sag T1 thin | 4 min | T1 | 18 | 2.0 | 0 | 300-750 | 4 |
| Cor T2 thin | 3 min | T2 | 18 | 2.0 | 0 | 2300-4500 | 4 |
| Cor T1 thin | 4 min | T1 | 18 | 2.0 | 0 | 300-750 | 4 |
| Optional | | | | | | | |
| Ax T2 thin | 4 min | T2 | 18 | 2.0 | 0 | 2300-4500 | 4 |
| CONTRAST | | | | | | | |
| Dynamic T1 Post | 2 min | Dynamic | | | | | |
| Cor T1 GD thin | 4 min | T1 | 18 | 3.0 | 0 | 300-750 | 4 |
| Sag T1 GD thin | 4 min | T1 | 18 | 3.0 | 0 | 300-750 | 4 |

Expand coverage if there is a mass:



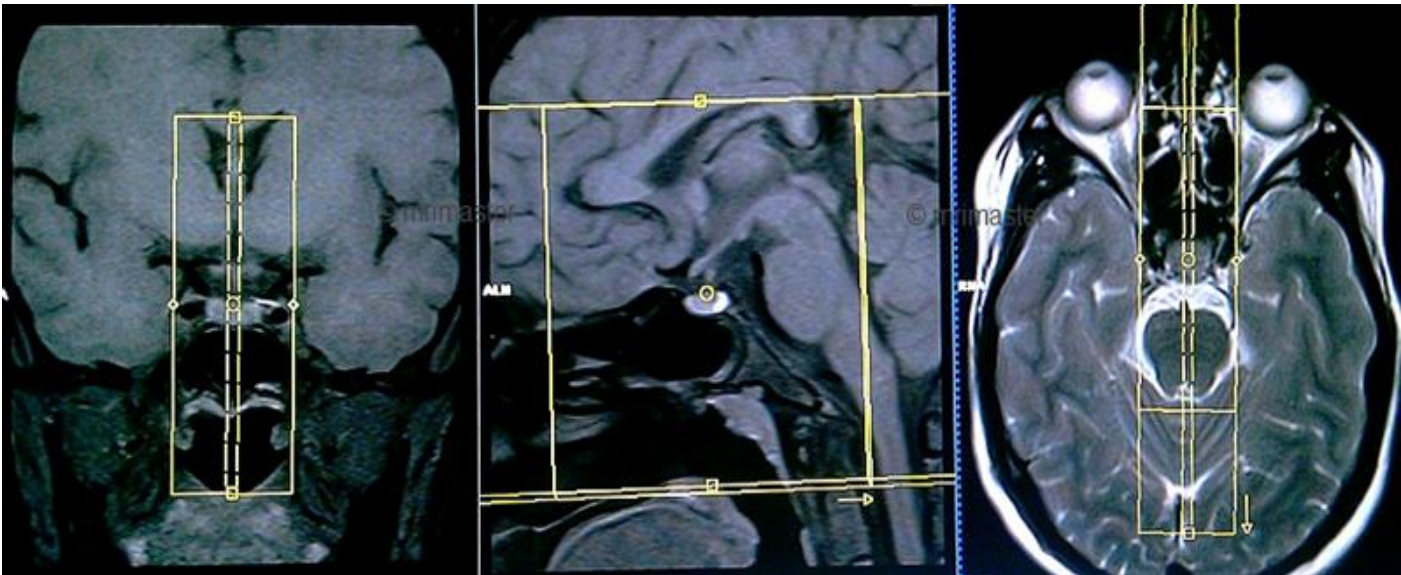
Coronal Thin: perpendicular to sella turcica

Coverage: cover whole pituitary from anterior border of sphenoid sinus to anterior pons



Sagittal Thin: parallel to falx in both coronal and sagittal planes

Coverage: cover the whole pituitary from the RT to LT internal carotid arteries



MRI Temporal Lobe

Indications: epilepsy, partial seizures, loss of seizure control, change in pattern, req by neurologist

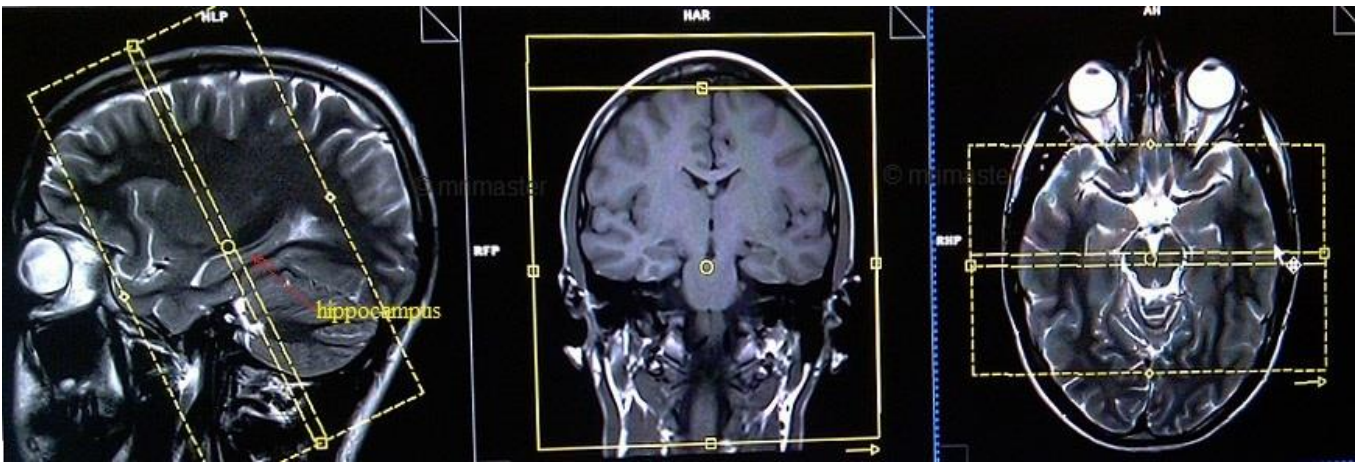
Note: NOT for new onset seizure unless specifically requested

| Series | Time | Sequence | FOV | Slice | Gap | Resolution | NEX |
|---------------------------|-------|----------------|-----|-------|-----|------------|-----|
| Sag T1 Flair | 3 min | T1 | 24 | 5.0 | 1.5 | 320 x 224 | 1 |
| Axial DWI | 3 min | DWI | 24 | 5.0 | 1.5 | 128 x 128 | |
| Ax T2 Flair | 4 min | T2 Flair | 24 | 5.0 | 1.5 | 320 x 224 | 1 |
| Ax T2 | 3 min | T2 | 24 | 5.0 | 1.5 | 384 | 2 |
| Ax T1 SE | 2 min | T1 | 24 | 5.0 | 1.5 | 320 x 224 | 1 |
| Ax Swan/SWI | 4 min | SWI, Swan, GRE | 24 | | | 320 x 224 | |
| Cor Obl T2 SE thin | | T2 | 20 | 3.0 | 0 | 512 x 224 | 2 |
| Cor Obl FSPGR Bravo | | FSPGR | 18 | 1.5 | | 256 x 256 | 1 |
| Cor Obl T2 Flair | | T2 Flair | 20 | 5.0 | 2.5 | 320 x 192 | 1 |
| CONTRAST | | | | | | | |
| Ax T1 SE FS GD | | T1 FS | 24 | 5.0 | 1.5 | 320 x 192 | 1 |
| Cor T1 SE GD | | T1 | 24 | 5.0 | 2.0 | 288 x 192 | 1 |

Coronal Oblique: Slices are perpendicular to the long axis of the hippocampus.

Appropriate angle in axial plane

Coverage: entire temporal lobe



MRI TMJ

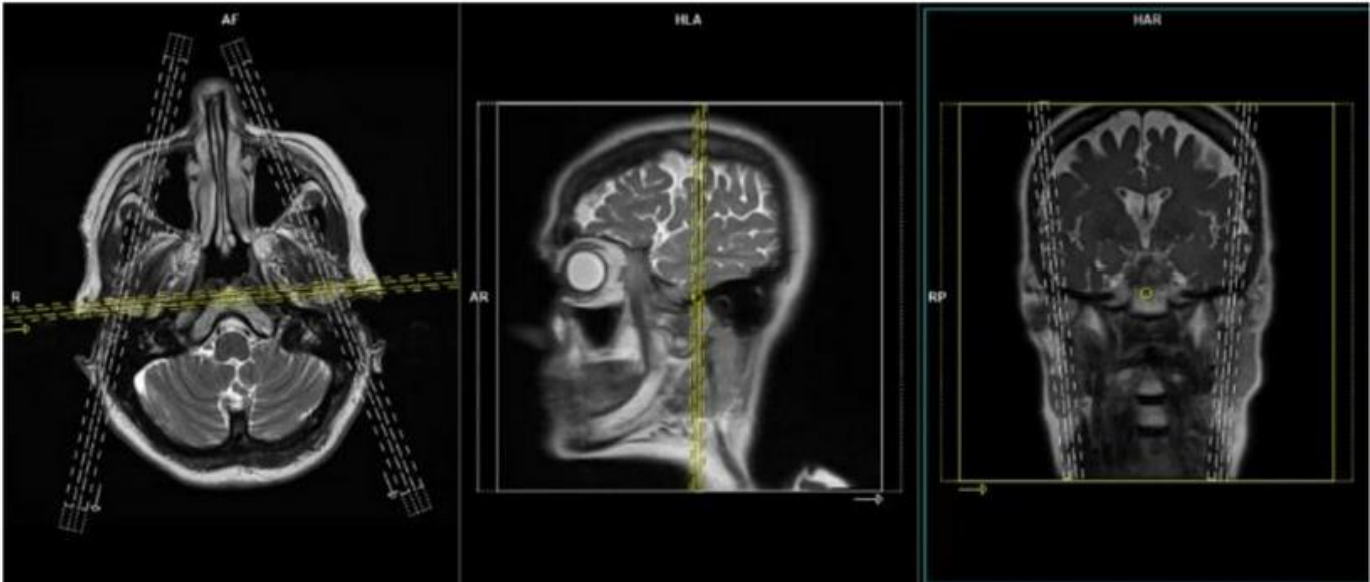
Indications: Irregular jaw movement with difficulty in opening and closing the mouth, Pain in the ear area when speaking,

chewing or opening the mouth wide. Clicking sounds in the jaw joint when opening or closing the mouth, Difficulty in chewing, Ear pain in front of or below the ear without any signs of infection

| Series | Time | Sequence | FOV | Slice | Gap | Resolution | NEX |
|---------------------|------|----------|-----|-------|-----|------------|-----|
| Closed Mouth | | | | | | | |
| Sag T1 | | T1 | 14 | 3 | 0.3 | 256 x 256 | 2 |
| Sag PD T2 | | PD | 14 | 3 | 0.3 | 256 x 256 | 2 |
| Sag GRE | | Gradient | 14 | 3 | 0.3 | 256 x 256 | 2 |
| Cor GRE | | Gradient | 14 | 3 | 0.3 | 256 x 256 | 2 |
| OPEN MOUTH | | | | | | | |
| Sag T1 | | T1 | 14 | 3 | 0.3 | 256 x 256 | 2 |
| Sag PD T2 | | PD | 14 | 3 | 0.3 | 256 x 256 | 2 |
| Sag GRE | | Gradient | 14 | 3 | 0.3 | 256 x 256 | 2 |
| Cor GRE | | Gradient | 14 | 3 | 0.3 | 256 x 256 | 2 |

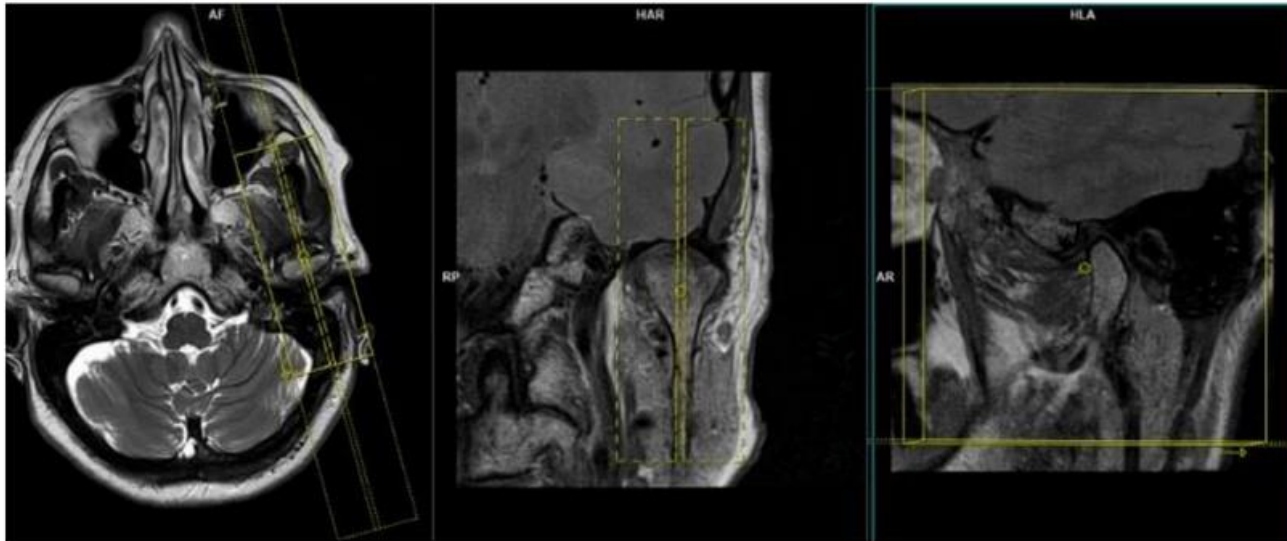
To perform open mouth scans, a bite block must be placed in the patient's mouth. The bite block should be big enough to keep the mouth wide open. If a bite block is not available, a large 50 mL syringe can be used.

Localizer Setup



Sagittal Left

Plan the left side sagittal slices on the axial plane; angle the planning block perpendicular to the left condyle of the mandible. Check the planning block in the other two planes. An appropriate angle must be given in the coronal plane (parallel to the line along the left temporal bone and ramus of the mandible). The slices should adequately cover the left temporomandibular joint (TMJ) from one side to the other.



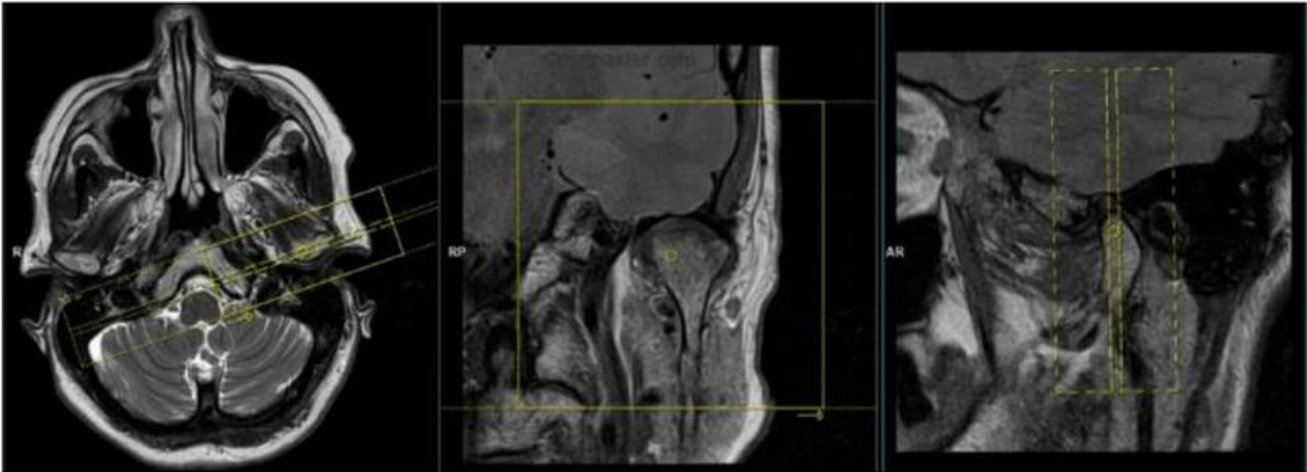
Sagittal Right

Plan the right side sagittal slices on the axial plane; angle the planning block perpendicular to the right condyle of the mandible. Check the planning block in the other two planes. An appropriate angle must be given in the coronal plane (parallel to the line along the right temporal bone and ramus of the mandible). The slices should adequately cover the right temporomandibular joint (TMJ) from one side to the other.



Coronal Left

Plan the left side coronal slices on the axial plane; angle the planning block parallel to the left condyle of the mandible. Check the planning block in the other two planes. Ensure an appropriate angle is given in the sagittal plane, parallel to the line along the ramus and left mandibular condyle. The slices must be sufficient to cover the left temporomandibular joint (TMJ) from the articular eminence up to the line of the internal auditory meatus.



Coronal Right

Plan the right side coronal slices on the axial plane, and angle the planning block parallel to the right condyle of the mandible. Check the planning block in the other two planes. An appropriate angle must be given in the sagittal plane (parallel to the line along the ramus and right mandibular condyle). Ensure that the slices are sufficient to cover the right temporomandibular joint (RT TMJ) from the articular eminence up to the line of the internal auditory meatus.



MRI FACE

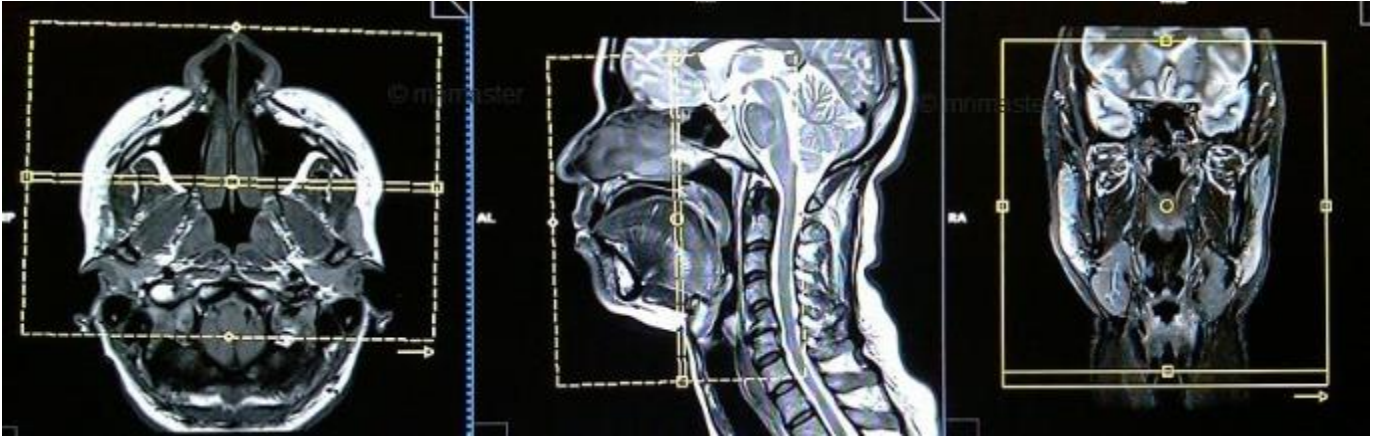
PROTOCOL FORM MUST BE COMPLETED BY RAD PRIOR TO EXAM

Indications: tumor, abscess, infection

| Series | Time | Sequence | FOV | Slice | Gap | Resolution | NEX |
|-----------------|------|----------|-------|-------|-----|------------|-----|
| Cor STIR | | STIR | 18-20 | 3 | 0 | | |
| Cor T1 | | T1 | 18-20 | 3 | 0 | | |
| Ax T2 FS | | T2 FS | 18-20 | 3 | 0 | | |
| Ax T1 | | T1 | 18-20 | 3 | 0 | | |
| Sag T1 | | T1 | 18-20 | 3 | 0 | | |
| CONTRAST | | | | | | | |
| Ax T1 FS GD | | T1 FS | 18-20 | 3 | 0 | | |
| Cor T1 FS GD | | T1 FS | 18-20 | 3 | 0 | | |
| Sag T1 FS GD | | T1 FS | 18-20 | 3 | 0 | | |

Coronal: perpendicular to hard palate on sagittal, perpendicular to septum on axial.

Coverage: Tip of nose to fourth ventricle



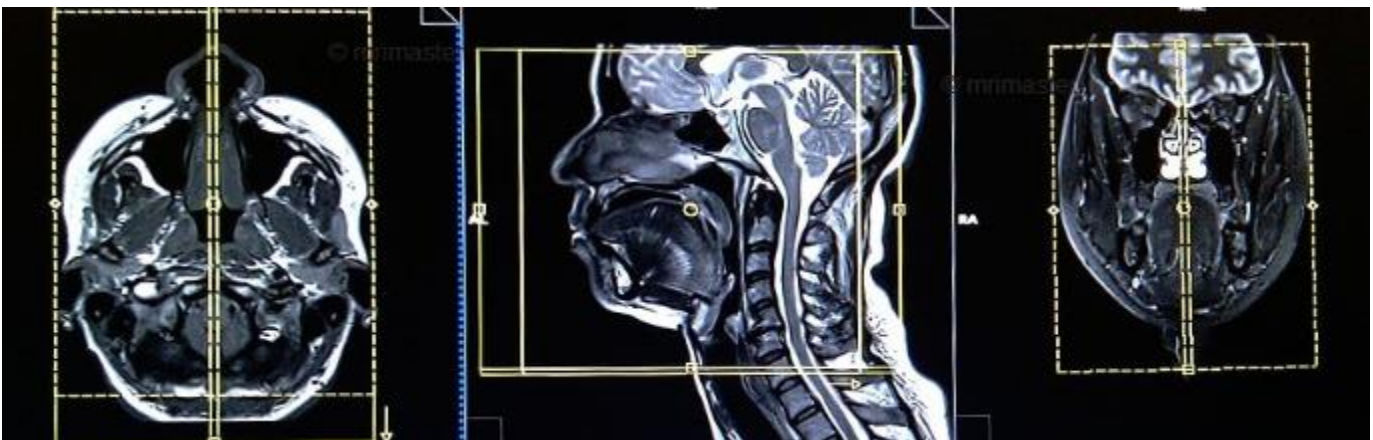
Axial: parallel to hard palate on sagittal, perpendicular to septum on coronal

Coverage: glabella down through larynx



Sagittal: parallel to hard palate on axial, perpendicular to septum on coronal.

Coverage: pinna to pinna

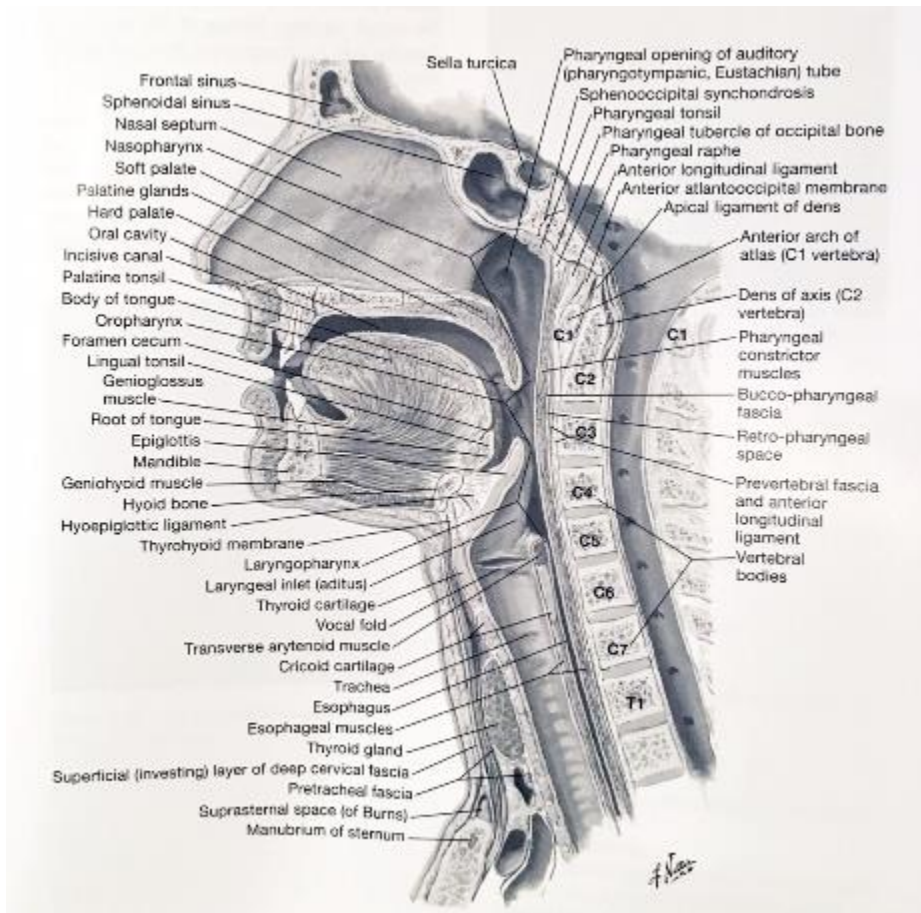


MRI NECK

PROTOCOL FORM MUST BE COMPLETED BY RAD PRIOR TO EXAM

Indications: tumor, abscess, infection, thyroid

| Series | Time | Sequence | FOV | Slice | Gap | Resolution | NEX |
|-------------------------|------|----------|-----|-------|-----|------------|-----|
| Cor STIR | | STIR | 24 | 4 | 0 | | |
| Cor T1 | | T1 | 24 | 4 | 0 | | |
| Ax T2 FS | | T2 FS | 20 | 4 | 0 | | |
| Ax T1 | | T1 | 20 | 4 | 0 | | |
| Sag T1 (optional) | | T1 | 20 | 4 | 0 | | |
| CONTRAST | | | | | | | |
| Ax T1 FS GD | | T1 FS | 20 | 4 | 0 | | |
| Cor T1 FS GD | | T1 FS | 24 | 4 | 0 | | |
| Sag T1 FS GD (optional) | | T1 FS | 20 | 4 | 0 | | |



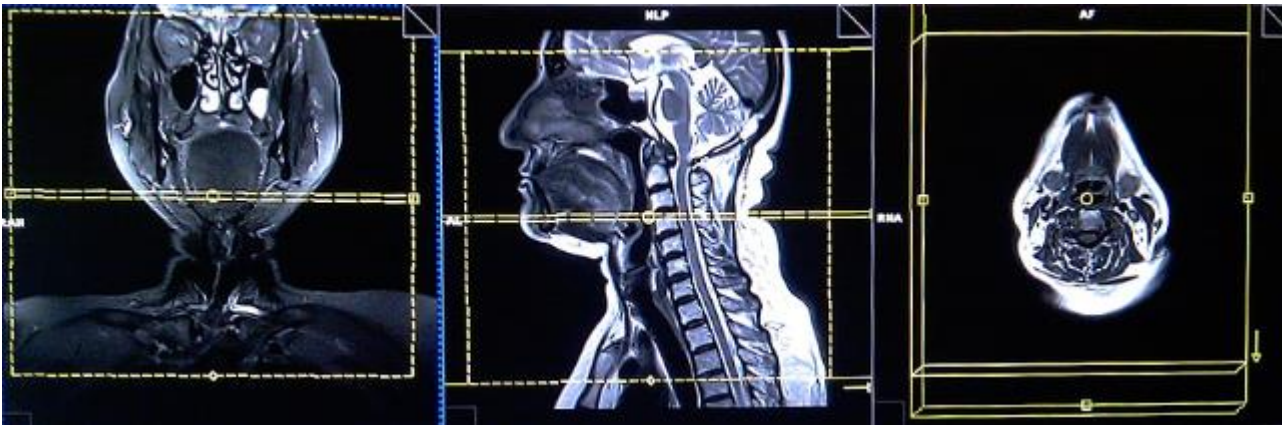
Coronal: parallel to cervical sagittal, check other planes.

Coverage: EAM to EAM, frontal sinus to clavicles/apices



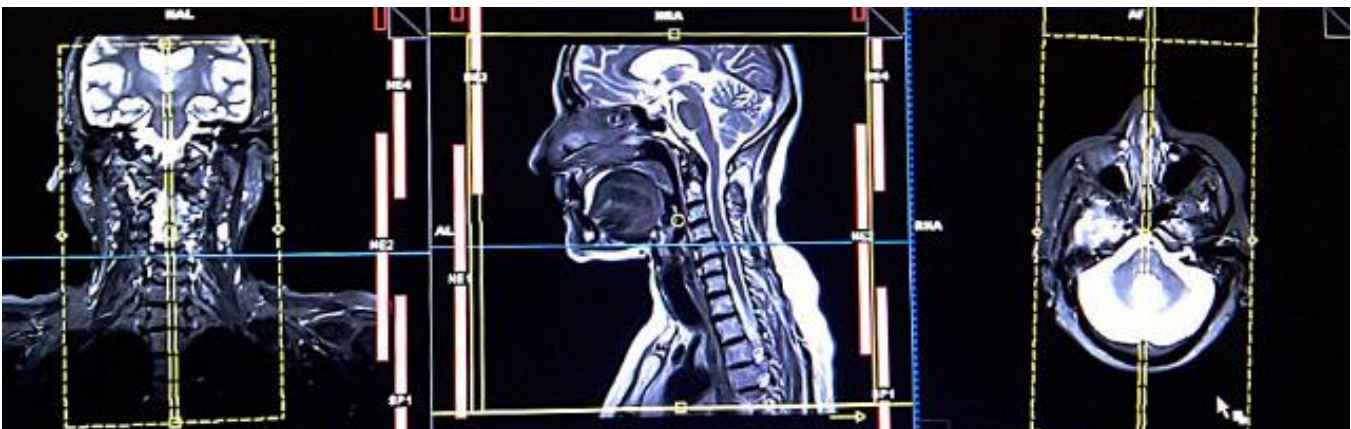
Axial: perpendicular to cervical on axial, check other planes

Coverage: frontal sinus to clavicles



Sagittal: parallel to cervical on coronal, check other planes

Coverage: pinna to pinna



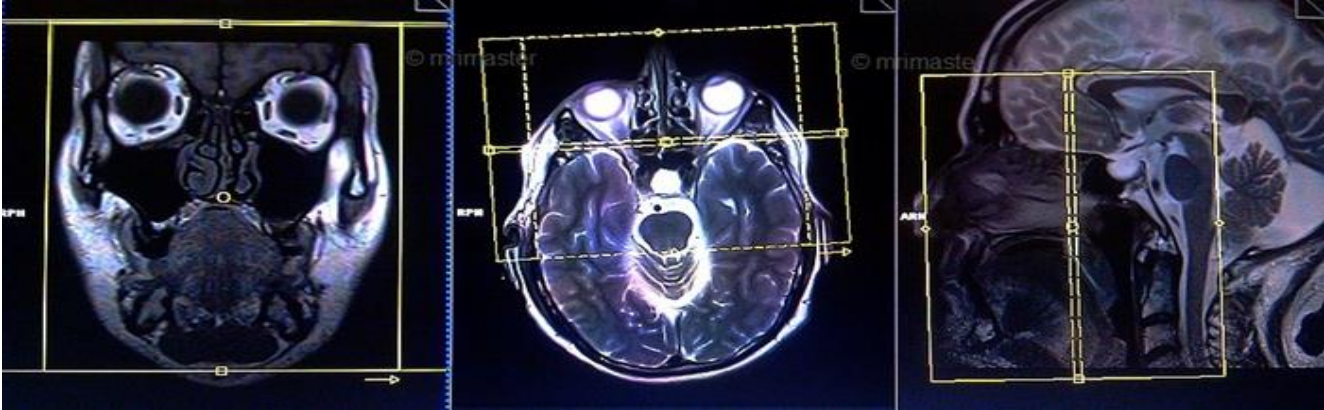
MRI HEAD - Trigeminal

Indications: trigeminal neuralgia, facial pain +/- facial spasm, mass, neuroma, infection

| Series | Time | Sequence | FOV | Slice | Gap | Resolution | TR | NEX |
|--------------------------|-------|--------------|-----|-------|-----|------------|---------|-----|
| Whole Head | | | | | | | | |
| Sag T1 FLAIR | 3 min | T1 | 24 | 5.0 | 1.5 | 320 x 224 | 2500 | |
| Ax DWI | 3 min | DWI | 24 | 5.0 | 1.5 | 128 x 128 | 8000 | |
| Ax T2 | 3 min | | 24 | 5.0 | 1.5 | 320 | 5200 | 2 |
| Ax T2 Flair | 4 min | Flair | 24 | 5.0 | 1.5 | 320 x 224 | 9000 | 1.5 |
| Ax T1 SE | 2 min | T1 | 24 | 5.0 | 1.5 | 320 x 224 | 300-700 | 1 |
| Cranial Nerves | | | | | | | | |
| Ax 3D Fiesta | 3 min | Fiesta, CISS | 18 | 0.8 | | 288 x 224 | | 1 |
| Cor 3D Fiesta | 3 min | Fiesta, CISS | 18 | 1.2 | | 288 x 224 | | 1 |
| Sag 3D Fiesta | 3 min | Fiesta, CISS | 18 | 1.2 | | 288 x 224 | | 1 |
| Ax Cube T2 | | T2 | 18 | 1.4 | | 288 x 288 | 1300 | 1 |
| CONTRAST | | | | | | | | |
| Ax T1 SE GD FS | | T1 FS | 24 | 5.0 | 1.5 | 288 x 192 | 300-700 | 1 |
| Cor T1 FS GD thin | | T1 FS | 18 | 3.0 | 0 | 288 x 192 | 300-700 | 4 |
| Ax T1 FS GD thin | | T1 FS | 18 | 3.0 | 0 | 256 x 256 | 300-700 | 1 |

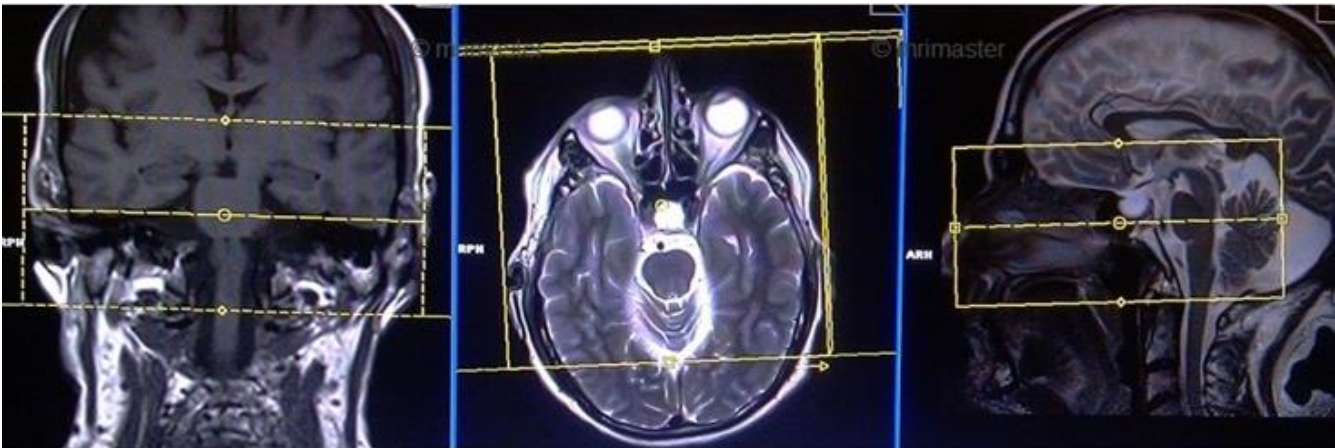
Coronal Thin: parallel to the brainstem / perpendicular to nasal septum.

Coverage: Pons to nose, including sinuses and mandible



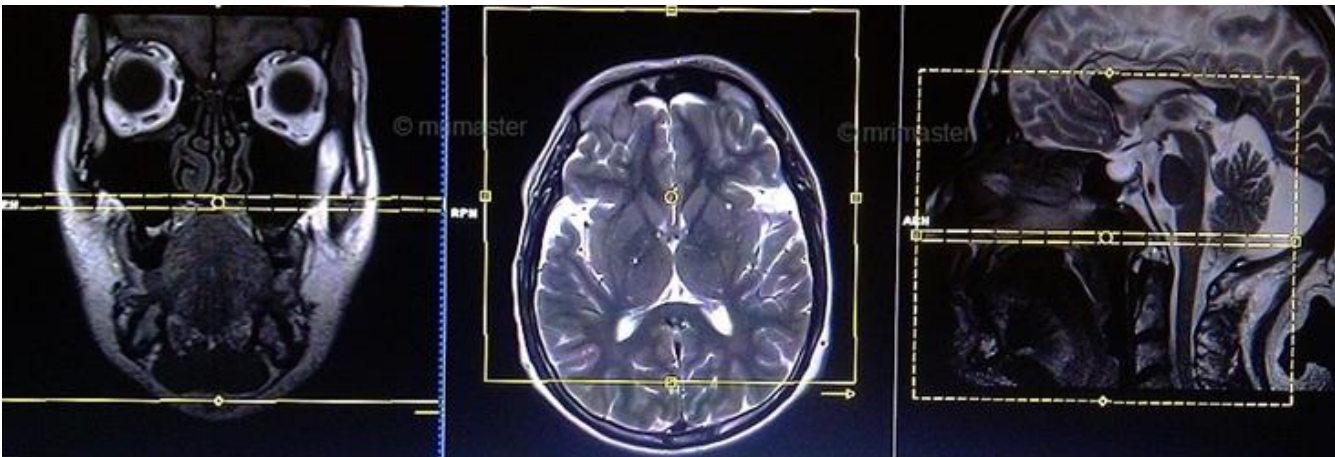
Axial Fiesta: perpendicular to brainstem, parallel to hard palate

Coverage: glabella down through hard palate



Axial Thin: perpendicular to brainstem, parallel to hard palate.

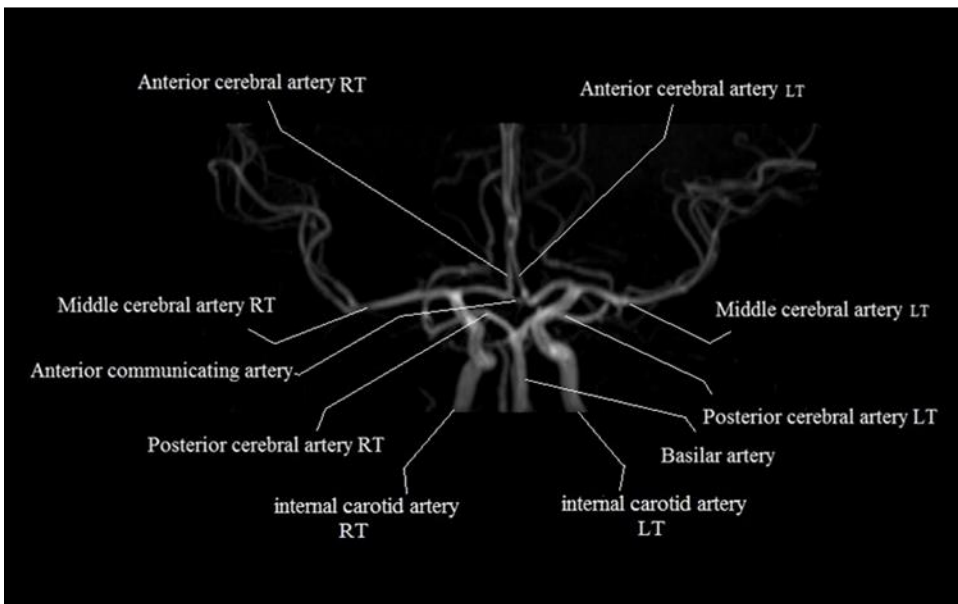
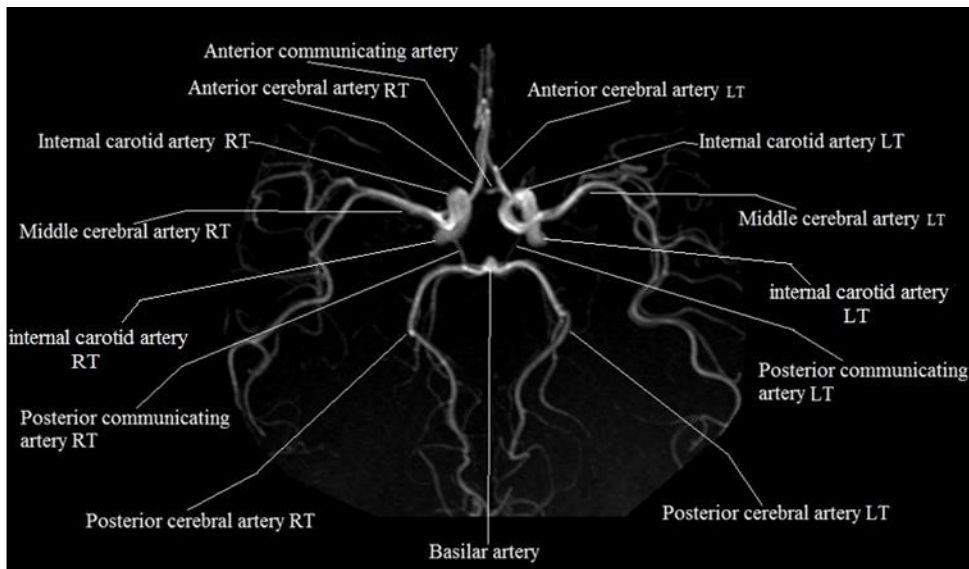
Coverage: glabella down to angle of jaw

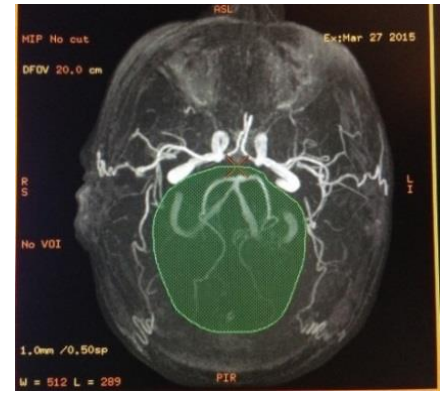
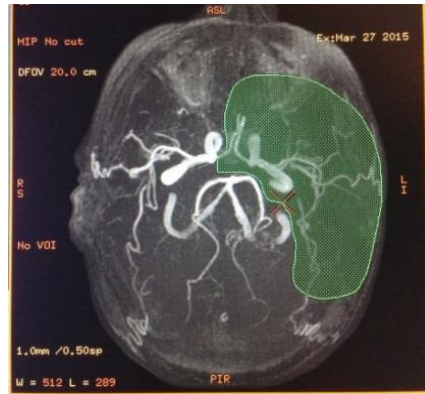
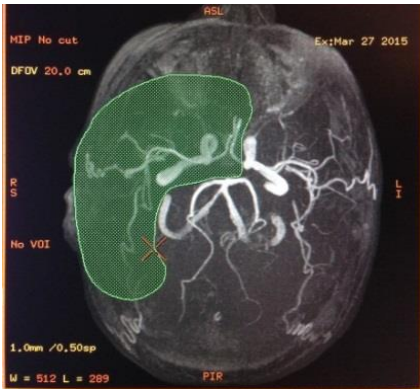
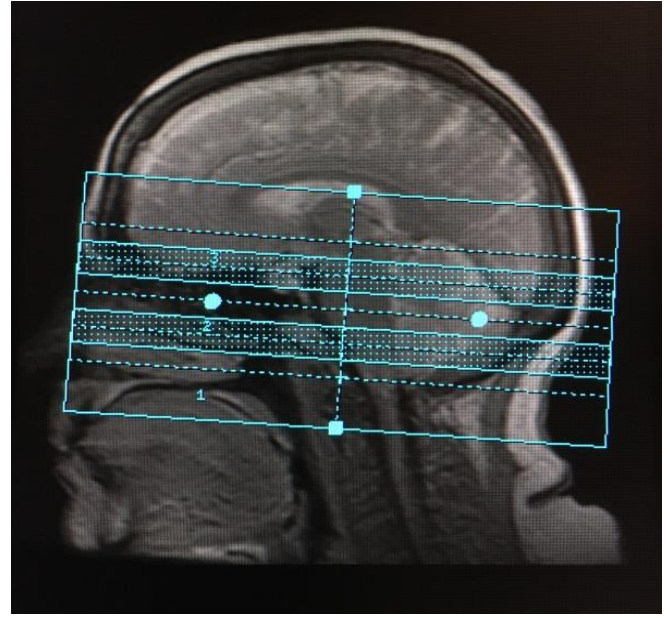
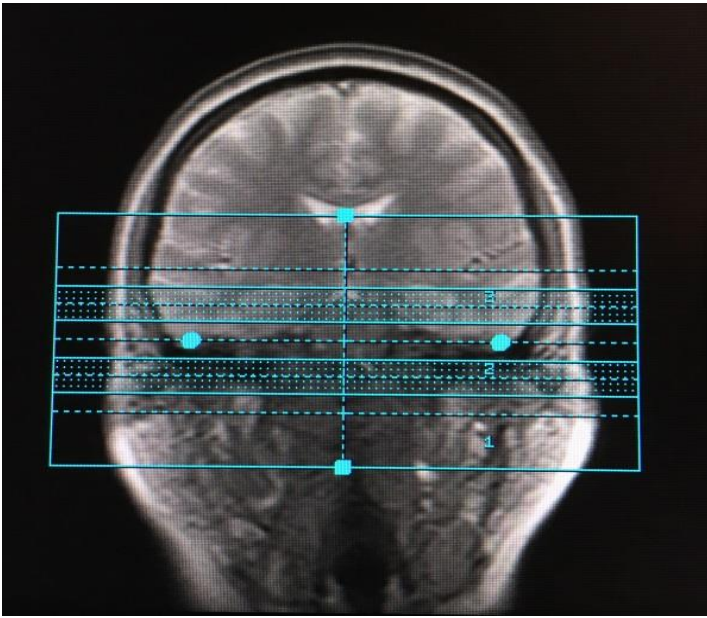


MRA HEAD

Indications: aneurysm, stroke, vasospasm, vasculitis, internal carotid artery occlusion or stenosis, AVM, cerebral or basilar artery occlusion & stenosis, atherosclerotic disease

| Series | Time | Sequence | FOV | Slice | Gap | Resolution | TR | NEX |
|---------------------|---|----------|-----|-------|-----|------------|------|-----|
| 3D TOF 3 SLAB MT FS | 8 min | 3D TOF | 24 | 10 | | 256 x 128 | 5200 | 1 |
| Post Processing | | | | | | | | |
| Entire COW | Anterior to Posterior (tumble) | | | | | | | |
| Right Anterior | Left to Right (twirl) | | | | | | | |
| Left Anterior | Left to Right (twirl) | | | | | | | |
| Posterior | Left to Right (twirl) | | | | | | | |
| CONTRAST | Dr. Agola and treated aneurysm. | | | | | | | |
| 3D TOF 3 SLAB MT FS | Repeat whole head with contrast (hand inject) | | | | | | | |





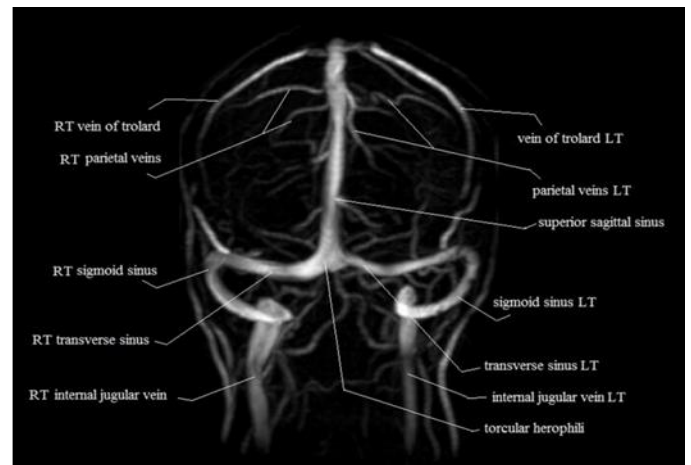
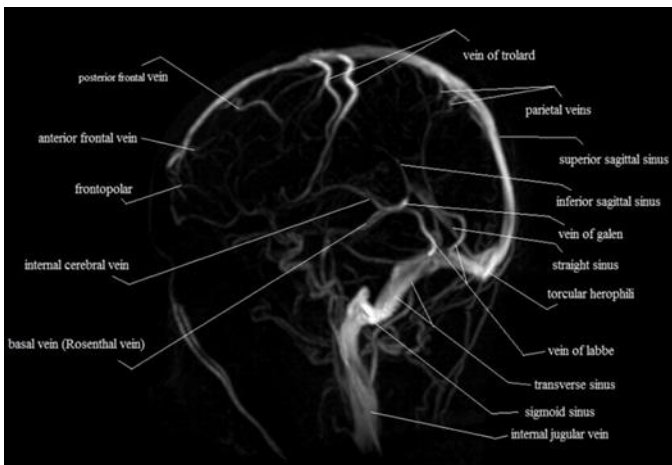
MRV Head

Indications: thrombosis, pregnancy, non contrast

| Series | Time | Sequence | FOV | Slice | Gap | Resolution | TR | NEX |
|---------------------------|-------|----------|-----|-------|-----|------------|------|-----|
| Sag T1 Flair (whole head) | 3 min | T1 | 24 | 5.0 | 1.0 | 320 x 224 | 2500 | 1 |
| Sag 2D PC (Midline) | 6 min | PC | 20 | 30 | | 256 x 256 | | 10 |
| Cor 2D TOF | 6 min | TOF | 20 | 1.5 | | 256 x 192 | | 1 |
| Sag 2D TOF | | TOF | 23 | 1.5 | | 256 x 160 | | 1 |
| Post Processing | | | | | | | | |
| Rotate TOF | | | | | | | | |
| Tumble TOF | | | | | | | | |

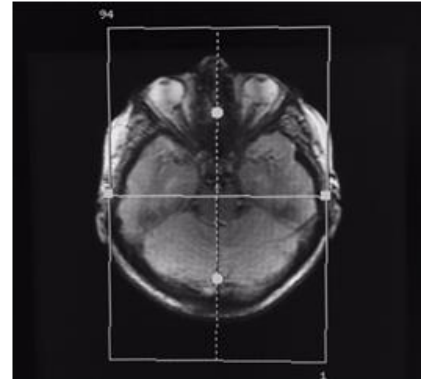
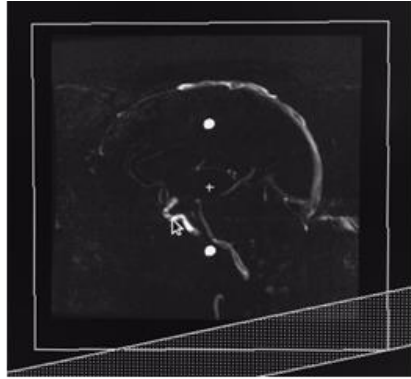
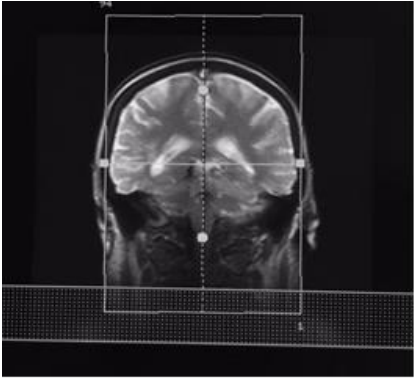
Indications: thrombosis

| Series | Time | Sequence | FOV | Slice | Gap | Resolution | TR | NEX |
|--------------------------------|------|----------|-----|-------|-----|------------|------|-----|
| Sag T1 Flair (whole head) | | T1 | 24 | 5.0 | 1.0 | 320 x 224 | 2500 | 1 |
| Cor SPGR | | SPGR | 24 | 1.2 | | 256 x 256 | | 1 |
| CONTRAST | | | | | | | | |
| Cor SPGR GD | | SPGR | 24 | 1.2 | | 256 x 256 | | 1 |
| Cor SPGR GD repeat immediately | | SPGR | 24 | 1.2 | | 256 x 256 | | 1 |
| Post Processing | | | | | | | | |
| Rotate TOF | | | | | | | | |
| Tumble TOF | | | | | | | | |



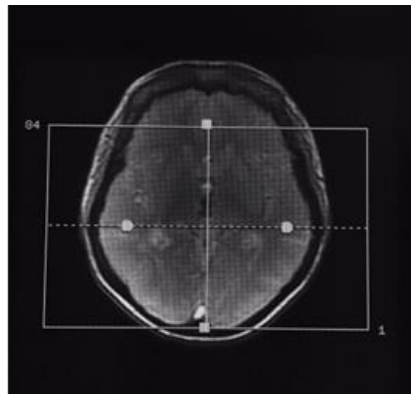
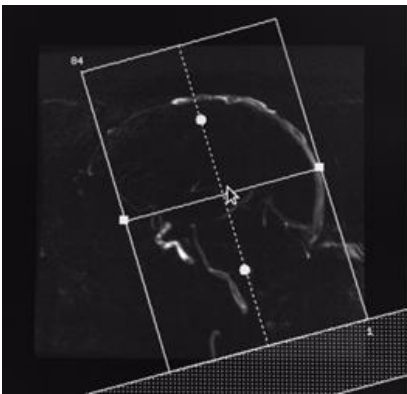
Sag T2 TOF: straight sagittal, inferior sat band below anatomy

Coverage: whole brain from temporal lobe to temporal lobe



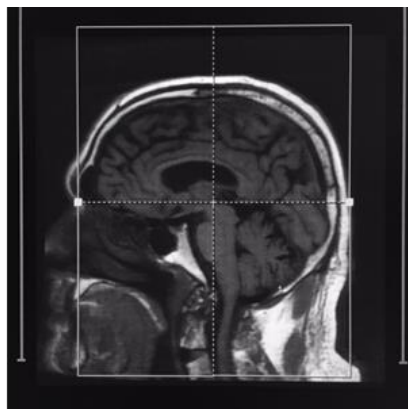
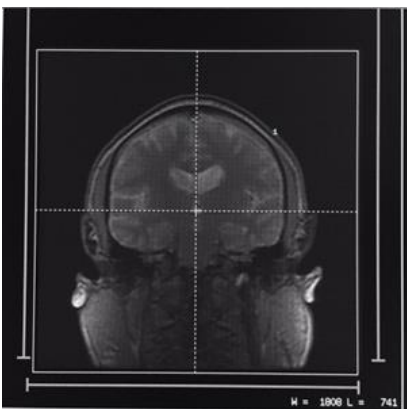
Cor T2 TOF: angle coronal on sagittal image to include all venous anatomy, check other planes

Coverage: all venous anatomy



Cor SPGR: straight coronal, check axial plane and angle if necessary for true coronal

Coverage: whole brain



MRI Brachial Plexus

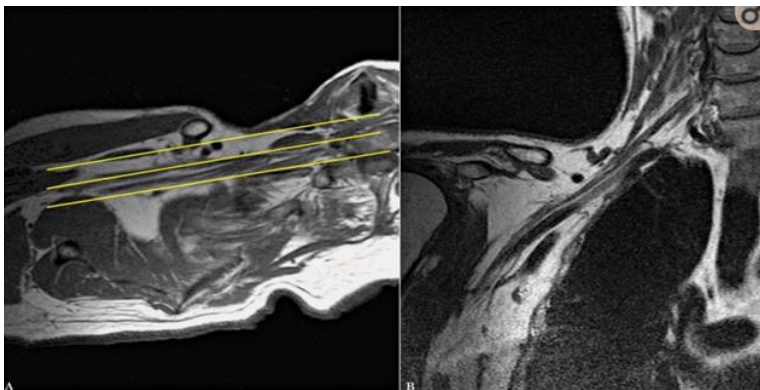
Indications: weakness/numbness of upper extremity, tumor, peripheral neuropathy, trauma

| Series | Time | Sequence | FOV | Slice | Gap | Resolution | TR | NEX |
|-----------------------------|------|----------|-----|-------|-----|------------|-----------|-----|
| Localizer | | | | | | | | |
| Cor STIR bilateral | | STIR | 40 | 3.0 | 0 | 320 x 192 | 2000-5000 | 2 |
| Cor T1 Obl unilateral | | T1 | 24 | 3.0 | 0 | 352 x 224 | 300-750 | 3 |
| Ax T1 Obl unilateral | | T1 | 24 | 3.0 | 1.5 | 320 x 192 | 300-750 | 2 |
| Ax T2 FS Obl unilateral | | T2 FS | 24 | 3.0 | 0 | 288 x 192 | 2500-3600 | 2 |
| Sag T1 Obl unilateral | | T1 | 20 | 3.0 | 0 | 320 x 192 | 320 x 192 | 2 |
| Sag STIR Obl unilateral | | STIR | 20 | 3.0 | 0 | 256 x 192 | 2000-5000 | 2 |
| CONTRAST | | | | | | | | |
| Ax T1 GD FS Obl unilateral | | T1 FS | 24 | 3.0 | 0 | 288 x 192 | 300-750 | 2 |
| Sag T1 GD FS Obl unilateral | | T1 FS | 20 | 3.0 | 0 | 288 x 192 | 300-750 | 2 |
| Cor T1 GD FS Obl unilateral | | T1 FS | 24 | 3.0 | 0 | 288 x 192 | 300-750 | 3 |

Coronal Oblique: parallel to the brachial plexus on axial view.

Coverage: include vertebrae to SC joint, include spine to affected shoulder joint

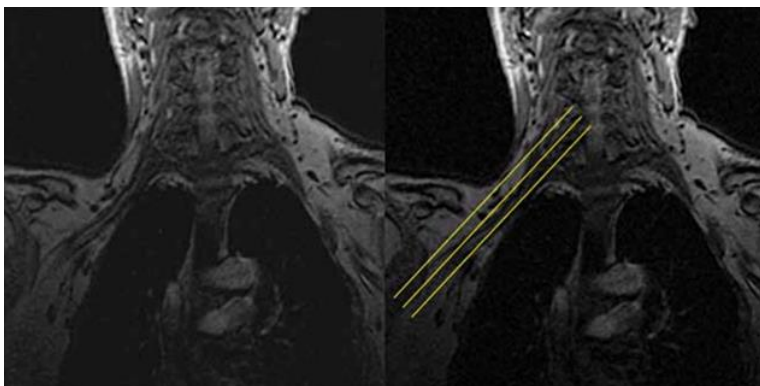
Phase: R/L to avoid chest and heart motion artifacts



Axial Oblique: parallel to the brachial plexus on coronal view.

Coverage: spine to affected shoulder joint

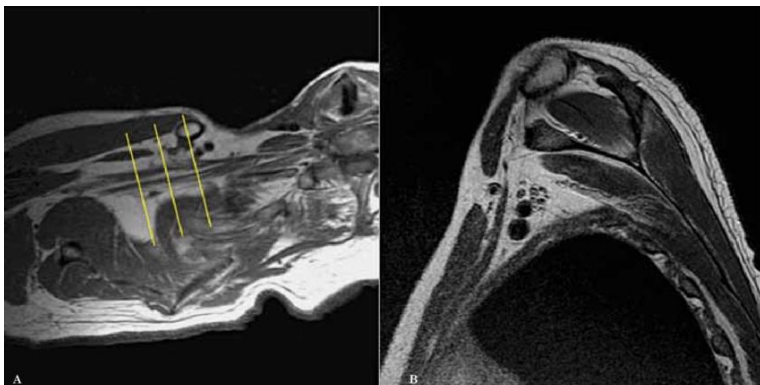
Phase: A/P with NPW to reduce pulsation and swallowing artifacts



Sagittal Oblique: perpendicular to brachial plexus on axial & coronal view.

Coverage: spine to affected shoulder joint

Phase: A/P with NPW to reduce pulsation and swallowing artifacts



MRI Soft Tissue Neck

PROTOCOL MUST BE REQUESTED PRIOR TO EXAM

Indications: tumor, abscess, thyroid disease, abnormalities

| Series | Time | Sequence | FOV | Slice | Gap | Resolution | TR | NEX |
|-------------------|------|----------|-----|-------|-----|------------|-----------|-----|
| Cor STIR | | STIR | 24 | 5.0 | 1.0 | 320 x 192 | 2000-5000 | 2 |
| Ax T2 FRFSE FS | | T2 | 20 | 5.0 | 1.0 | 320 x 192 | 2500-3600 | 4 |
| Ax T1 | | T1 | 20 | 5.0 | 1.0 | 320 x 192 | 300-750 | 3 |
| Optional | | | | | | | | |
| Sag T1 | | T1 | 20 | 3.0 | 0 | 320 x 192 | 320 x 192 | 2 |
| CONTRAST | | | | | | | | |
| Ax T1 GD FS FSPGR | | T1 FS | 20 | 5.0 | 1.0 | 288 x 192 | 300-750 | 2 |
| Cor T1 GD FS | | T1 FS | 24 | 3.0 | 0 | 288 x 192 | 300-750 | 3 |
| Optional | | | | | | | | |
| Sag T1 GD FS | | T1 FS | 20 | 3.0 | 0 | 288 x 192 | 300-750 | 2 |

Sagittal: parallel to cervical spine on coronal, check other planes.

Coverage: RT EAM to LT EAM, FOV to cover frontal sinus to clavicle/apices

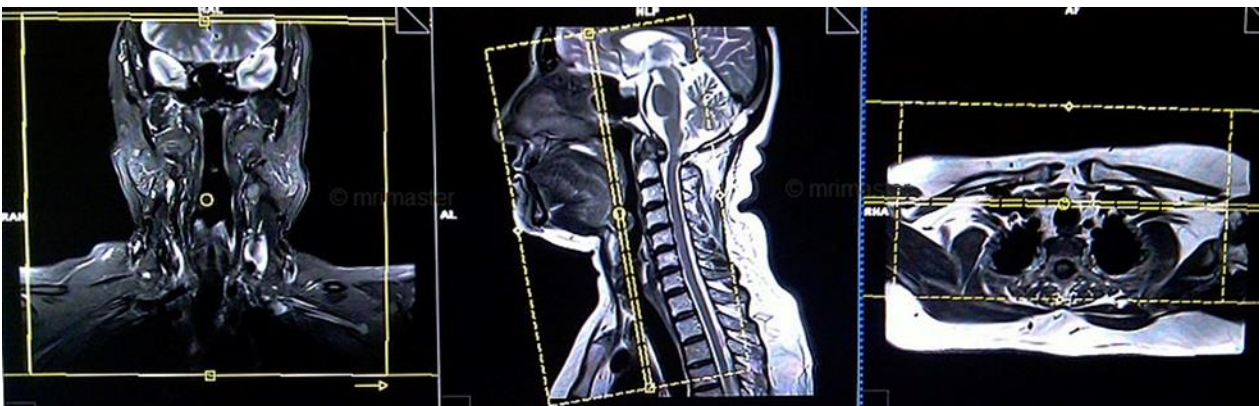
Phase: A/P with NPW to reduce pulsation and swallowing artifacts



Coronal: parallel to cervical spine on sagittal, check other planes.

Coverage: cover from nose tip to spinous process, FOV to cover frontal sinus to clavicle/apices

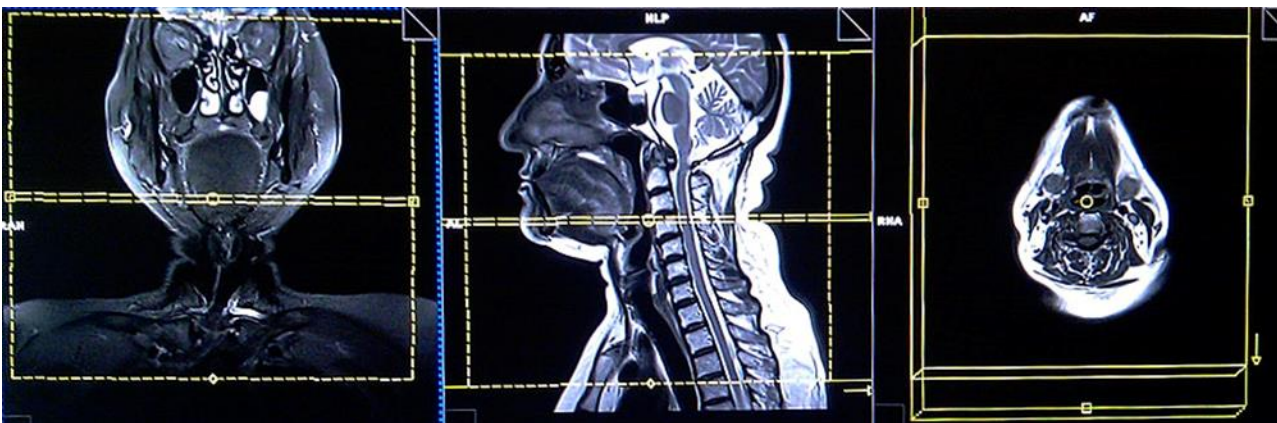
Phase: R/L to avoid chest and heart motion artifacts



Axial: perpendicular to cervical spine on sagittal, check other planes.

Coverage: front frontal sinus to clavicle/apices

Phase: A/P with NPW to reduce pulsation and swallowing artifacts



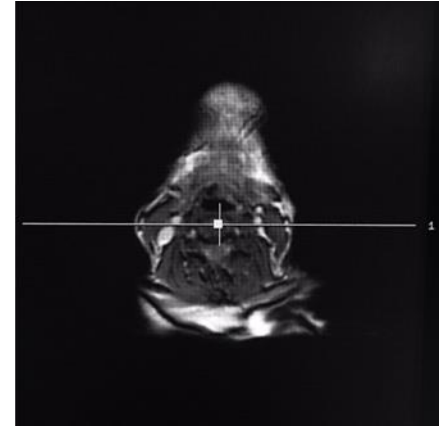
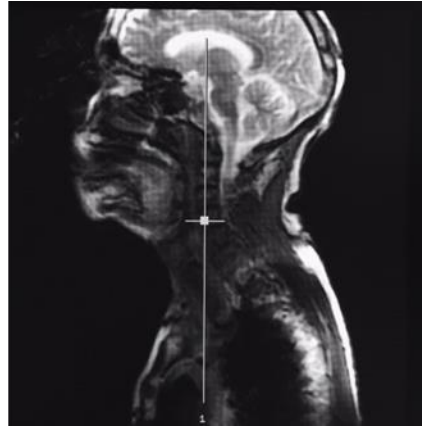
MRA Neck / Carotid

Indications: dissection, aneurysm, AVM, congenital abnormalities, injury, tumor

| Series | Time | Sequence | FOV | Slice | Gap | Resolution | TR | NEX |
|-------------------|------------------------------|----------|-----|-------|-----|------------|----|-----|
| Cor PD PC | 1 min | PC | 28 | 30 | 0 | 256 x 192 | 33 | 3 |
| ??Sag PD PC | | PC | 28 | 30 | 0 | 256 x 192 | 33 | 3 |
| 3d TOF 3 SLAB | 6 min | TOF | 18 | 1.6 | | 256 x 160 | 18 | |
| CONTRAST | | | | | | | | |
| COR ceMRA | | MRA | 30 | 1.4 | | 448 x 224 | 54 | 1 |
| Post Processing | | | | | | | | |
| Entire carotids | Left to right twirl | | | | | | | |
| Right carotid | Left to right twirl | | | | | | | |
| Left carotid | Left to right twirl | | | | | | | |
| Aortic arch roots | Anterior to posterior tumble | | | | | | | |
| Bifurcation right | Left to right twirl | | | | | | | |
| Bifurcation left | Left to right twirl | | | | | | | |

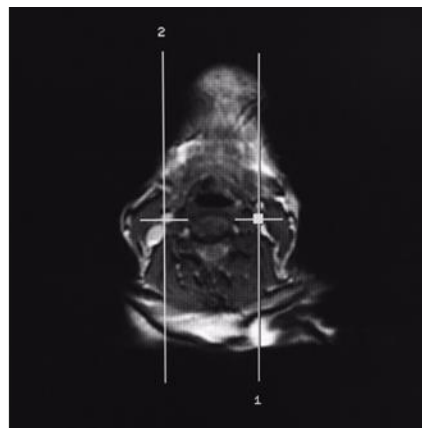
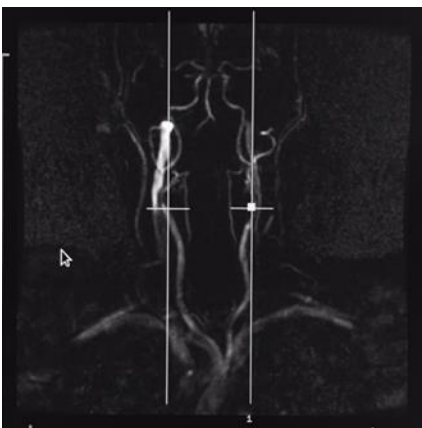
Coronal 2D PC: parallel to carotid arteries on axial view.

Coverage: center on vessels

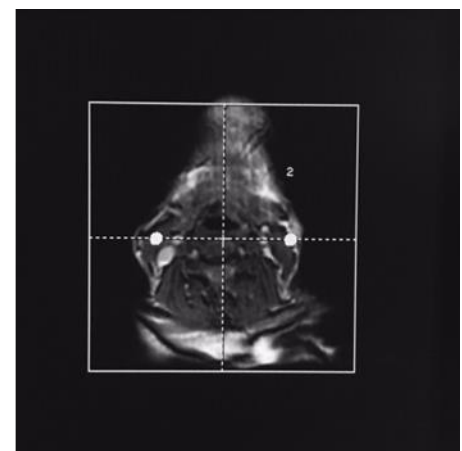
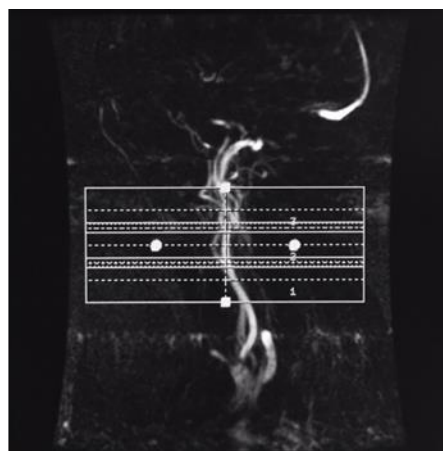
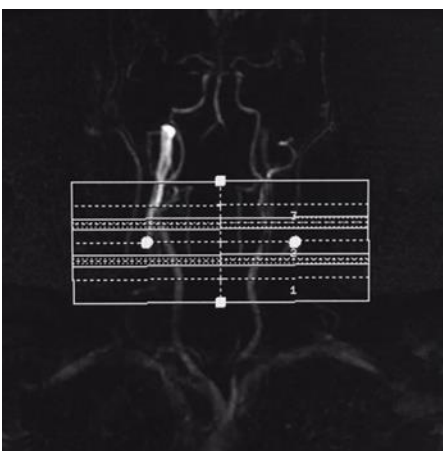


Sag 2D PC: parallel to carotid arteries on coronal view

Coverage: center on vessels, keep slabs on same level S/I and A/P

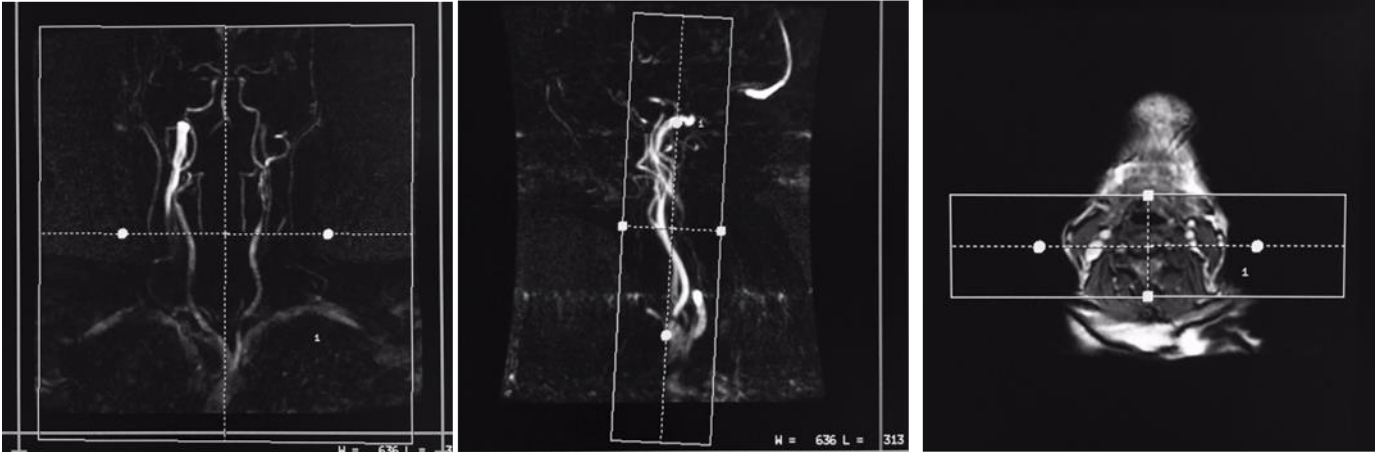


3D TOF 3 SLAB: use prior two scans to set up box centered on bifurcation of carotids.

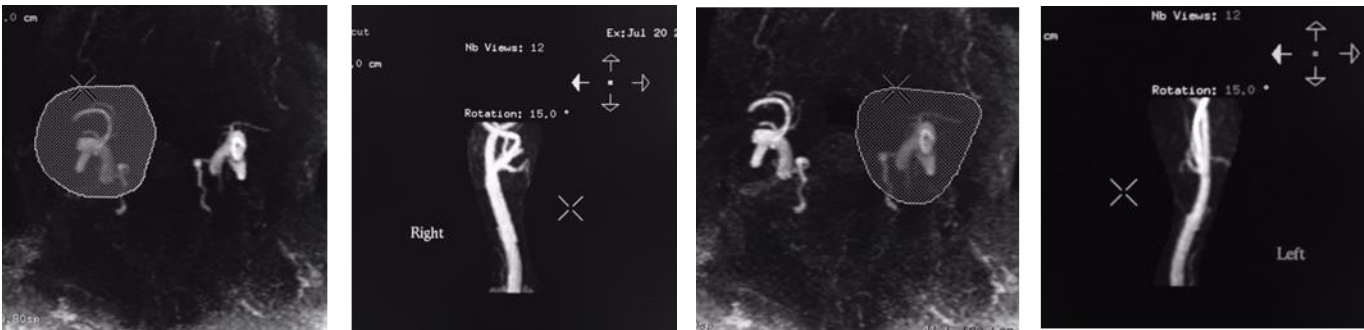


Coronal ceMRA FT elliptic: coronal to long axis of carotid vessels, may be obliques depending on curvature.

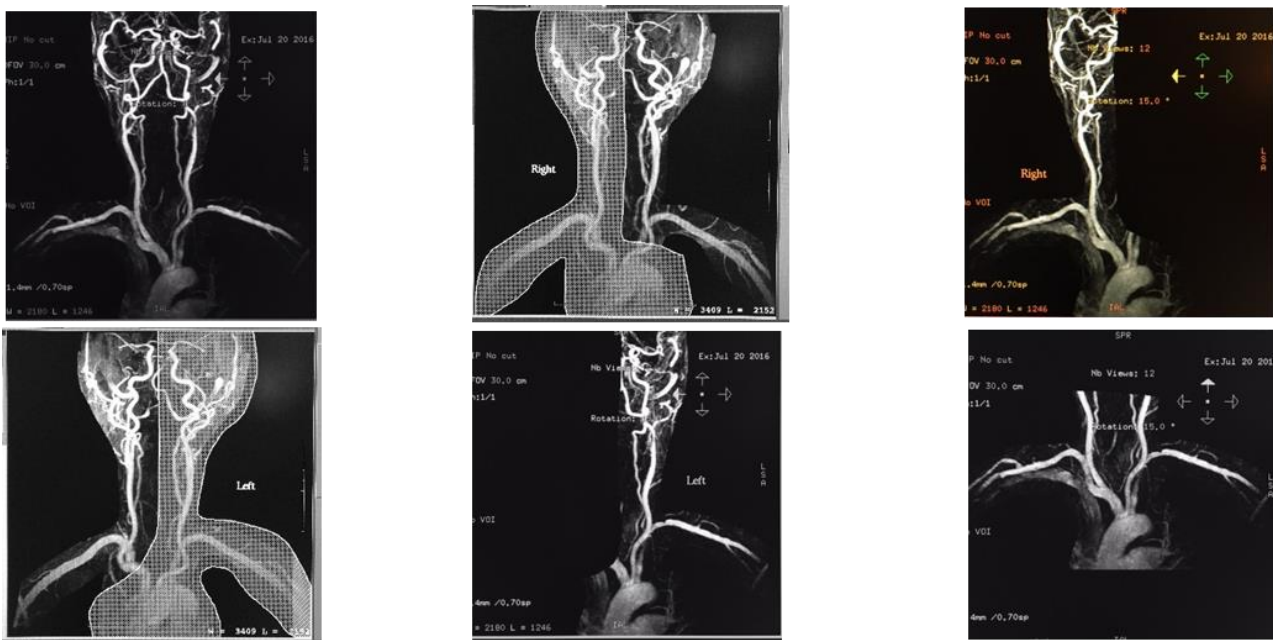
Coverage: aortic arch to COW



Bifurcation: save screenshot and sent to PACS



Carotids: choose subtracted images for IVI of carotid but do not select image 1



MRI NEURO PROTOCOL

Location: _____ Scanner: _____ FAX: _____ PHONE: _____

EXAM DATE / TIME: _____ INPATIENT: _____ OUTPATIENT: _____

PATIENT NAME: _____

DOB: _____

MRN _____

EXAM RX: _____

INDICATION: _____

H&P: _____

PRIOR IMAGING: MRI / CT / US / PET / NM / OUTSIDE IMAGING (images/report uploaded yes / no)

PRIOR MRI Neuro Protocol : Yes / No

Obtained Current Office H&P, if no prior imaging / notes in EPIC: Yes / No

- Repeat Prior Protocol: Yes / No Date _____
- Add additional Sequences: Yes / No
- SOFT TISSUE NECK (FOV - Skull Base to Lung Apices)
- FACE / SINUS / SKULL BASE (Thins 3mm, small FOV 18-20) (do not use SPGR/FLASH sequence)

Additional Sequences

1. COR STIR

PRE: _____

2. COR T1

3. AX T2 FS

4. AX T1

5. SAG T1 (optional)

CONTRAST

6. AX T1 FS POST

POST: _____

7. COR T1 FS POST

8. SAG T1 FS POST (optional)

COVERAGE

ADDITIONAL INSTRUCTIONS

