

Indications for soft tissue neck MRI scan

- > Abnormalities noted on other imaging or endoscopic studies
- > Staging of known malignancy of head and neck
- > Congenital anomalies (e.g., branchial cleft cyst)
- > Treatment planning for radiation therapy
- > Evaluation for response to treatment
- > Pre-operative evaluation of tumours
- > Presence of a foreign body
- > Upper airway obstruction
- > Obstructive thyroid disease
- > Head/neck abscess
- > Retropharyngeal abscess
- > Tracheal stenosis
- > Vocal cord paralysis
- > Lymphadenopathy
- > Nasopharynx tumours
- > Parotid tumor
- > Orbital tumours
- > Trauma

Contraindications

- > Any electrically, magnetically or mechanically activated implant (e.g. cardiac pacemaker, insulin pump biostimulator, neurostimulator, cochlear implant, and hearing aids)
- > Intracranial aneurysm clips (unless made of titanium)
- > Pregnancy (risk vs benefit ratio to be assessed)
- > Ferromagnetic surgical clips or staples
- > Metallic foreign body in the eye
 - Metal shrapnel or bullet

Positioning

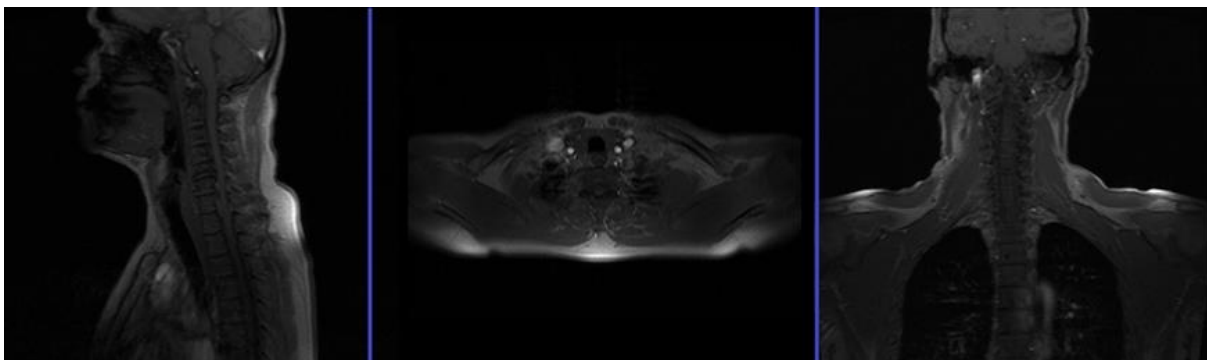
- > Head first supine
- > Position the head in the head and neck coil and immobilise with cushions
- > Give cushions under the legs for extra comfort
- > Centre the laser beam localiser over the mid neck (1 inch below the chin in chin down position)



Suggested protocols, parameters and planning

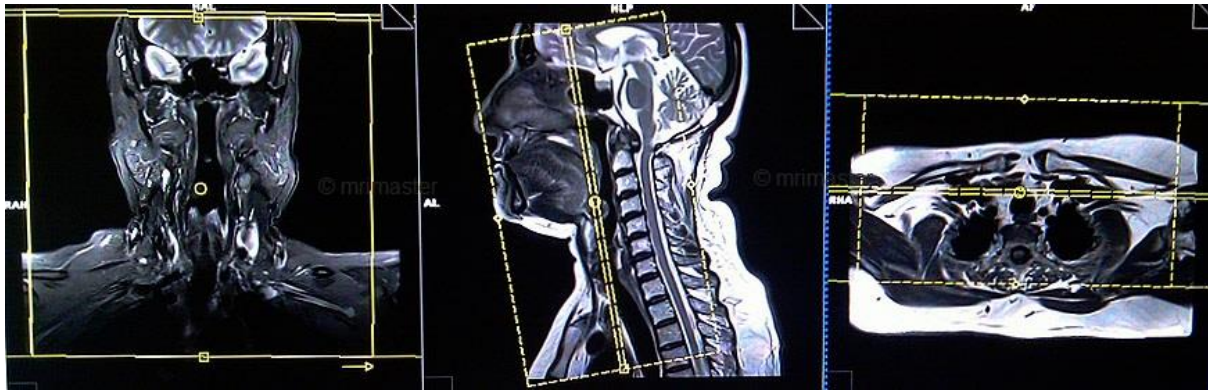
localiser

A three plane localiser must be taken in the beginning to localise and plan the sequences. Localisers are normally less than 25sec. T1 weighted low resolution scans.



T2 stir coronal 4mm 280FOV

Plan the coronal slices on the sagittal plane; angle the position block parallel to the cervical spine. Check the positioning block in the other two planes. An appropriate angle must be given in the axial plane on a tilted neck (parallel to the sternoclavicular joints). Slices must be sufficient to cover the soft tissue neck from the nose tip up to the line of the spinous process of cervical spine. FOV must be big enough to cover the whole neck from the frontal sinus down to the clavicle. **Phase direction in the coronal scans must be right to left, this is to avoid the artefacts from the chest and heart motion. It is very important to instruct the patient to avoid swallowing during the sequence acquisition (in our imaging department we give 30s after each scan for the patient to swallow saliva). This will avoid the motion artefacts in the neck during image acquisition. Using Saturation bands under the coronal block can reduce the arterial pulsation artefacts.**

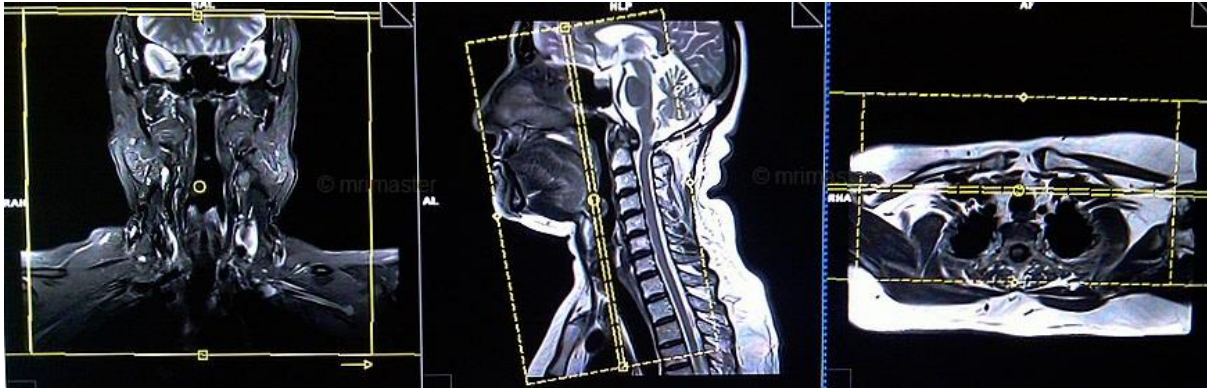


Parameters

| TR | TE | FLIP | NEX | SLICE | MATRIX | FOV | PHASE | GAP | TI |
|-----------|-----|------|-----|-------|---------|---------|-------|-----|-----|
| 4000-5000 | 110 | 130 | 2 | 4 MM | 320X320 | 280-300 | R>L | 10% | 130 |

T1 tse coronal 4mm 280FOV

Plan the coronal slices on the sagittal plane; angle the position block parallel to the cervical spine. Check the positioning block in the other two planes. An appropriate angle must be given in the axial plane on a tilted neck (parallel to the sternoclavicular joints). Slices must be sufficient to cover the soft tissue neck from the nose tip up to the line of the spinous process of cervical spine. FOV must be big enough to cover the whole neck from the frontal sinus down to the clavicle. **Phase direction in the coronal scans must be right to left, this is to avoid the artefacts from the chest and heart motion. It is very important to instruct the patient to avoid swallowing during the sequence acquisition (in our imaging department we give 30s after each scan for the patient to swallow saliva). This will avoid the motion artefacts in the neck during image acquisition. Using Saturation bands under the coronal block can reduce the arterial pulsation artefacts.**

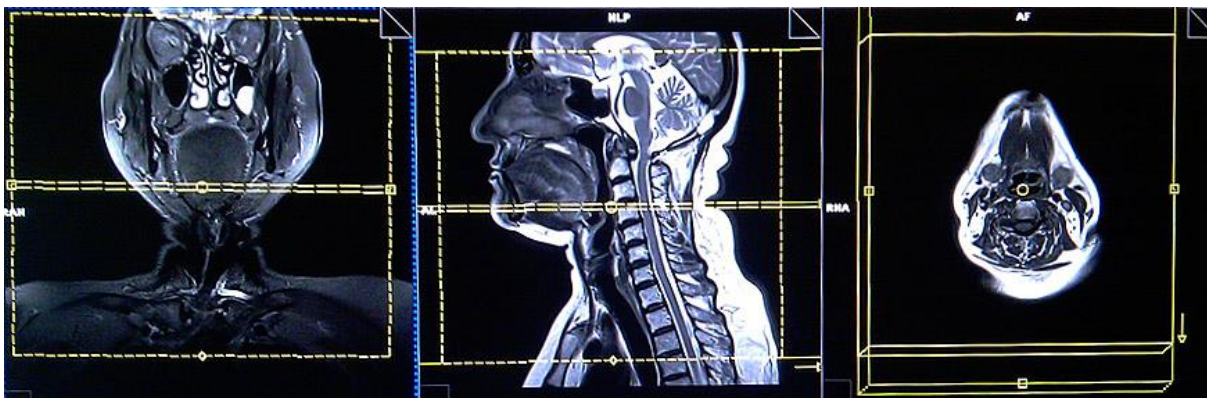


Parameters

| TR | TE | SLICE | FLIP | PHASE | MATRIX | FOV | GAP | NEX(AVRAGE) |
|---------|-------|-------|------|-------|---------|---------|-----|-------------|
| 400-600 | 15-25 | 4 MM | 130 | R>L | 384X320 | 280-300 | 10% | 2 |

T1 tse axial 4mm 270 FOV

Plan the axial slices on the sagittal plane: angle the position block perpendicular to the cervical spine. Check the positioning block in the other two planes. An appropriate angle must be given in the coronal plane on a tilted neck (perpendicular to the cervical spine). Slices must be sufficient to cover the soft tissue neck from frontal sinus down to the line of the clavicle. **Phase direction in the axial scans must be anterior to posterior with 100% over sample. This will reduce the arterial pulsation and swallowing artefacts. It is important to instruct the patient to avoid swallowing during the sequence acquisition (in our imaging department we give 30s after each scan for the patient to swallow saliva). This will avoid the motion artefacts in the neck during image acquisition. Using saturation bands under the axial block can reduce the arterial pulsation artefacts.**

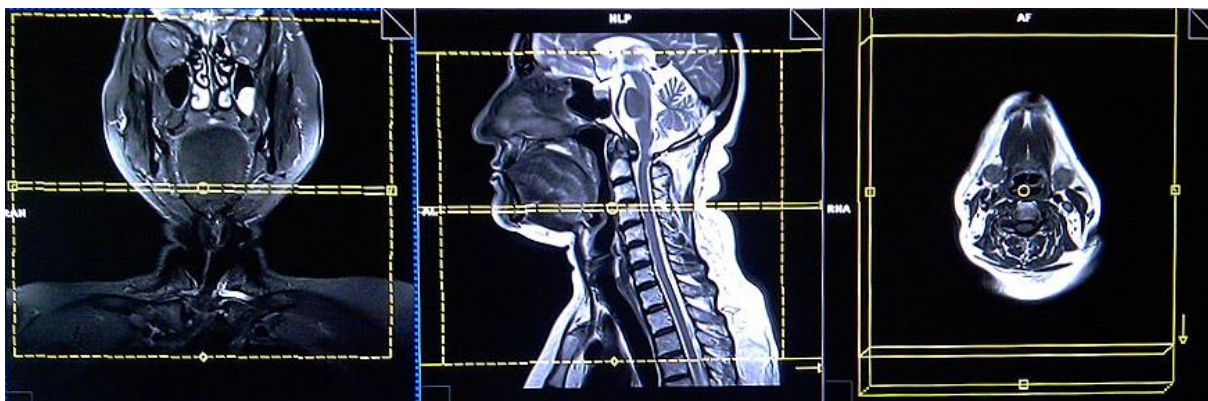


Parameters

| TR | TE | SLICE | FLIP | PHASE | MATRIX | FOV | GAP | NEX(AVRAGE) |
|---------|-------|-------|------|-------|---------|---------|-----|-------------|
| 400-600 | 15-25 | 4 MM | 130 | A>P | 320X320 | 270-290 | 10% | 2 |

T2 STIR axial 4mm 270 FOV

Plan the axial slices on the sagittal plane: angle the position block perpendicular to the cervical spine. Check the positioning block in the other two planes. An appropriate angle must be given in the coronal plane on a tilted neck (perpendicular to the cervical spine). Slices must be sufficient to cover the soft tissue neck from frontal sinus down to the line of the clavicle. **Phase direction in the axial scans must be anterior to posterior with 100% over sample. This will reduce the arterial pulsation and swallowing artefacts. It is important to instruct the patient to avoid swallowing during the sequence acquisition (in our imaging department we give 30s after each scan for the patient to swallow saliva). This will avoid the motion artefacts in the neck during image acquisition. Using saturation bands under the axial block can reduce the arterial pulsation artefacts.**

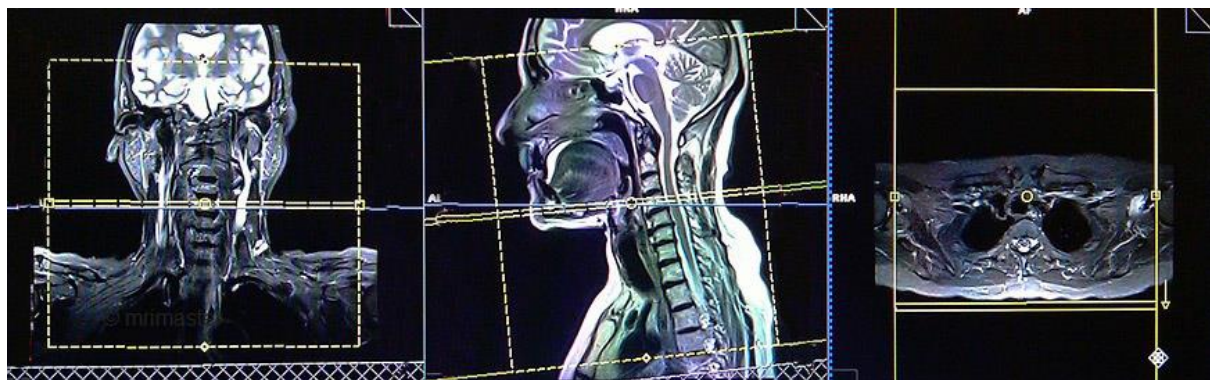


Parameters

| TR | TE | FLIP | NEX | SLICE | MATRIX | FOV | PHASE | GAP | TI |
|-----------|-----|------|-----|-------|---------|---------|-------|-----|-----|
| 4000-5000 | 110 | 130 | 2 | 4 MM | 320X320 | 270-290 | A>P | 10% | 130 |

DWI epi2scan trace axial 5mm(with 7 average(NXA))

Plan the axial slices on the sagittal plane; angle the position block perpendicular to the cervical spine. Check the positioning block in the other two planes. An appropriate angle must be given in the coronal plane on a tilted neck (perpendicular to the cervical spine). Slices must be sufficient to cover the soft tissue neck from frontal sinus down to the line of the clavicle. **Phase direction in the axial scans must be anterior to posterior with the smallest possible phase FOV (i.e. the upper border touching the nose and lower border touching the spinous process).** This is to reduce air-skin interface artefacts in the neck area. It's very important to instruct the patient to avoid swallowing during the sequence acquisition (in our imaging department we give 30s after each scan for the patient to swallow saliva). This will avoid the motion artefacts in the neck during image acquisition.



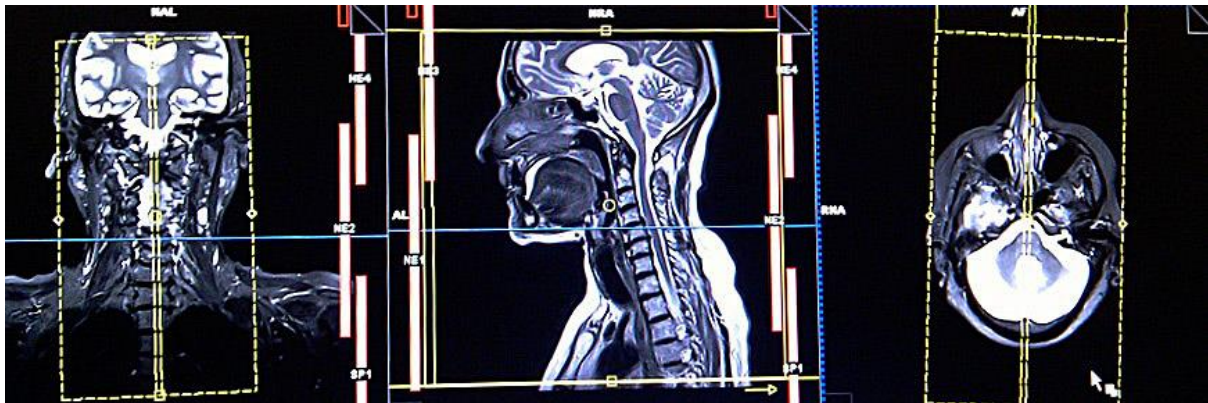
Parameters

| TR | TE | FLIP | NEX | SLICE | MATRIX | FOV | PHASE | GAP | B VALUE |
|-----------|-----|------|-----|-------|---------|---------|-------|-----|----------|
| 5000-6000 | 110 | 130 | 7 | 5 MM | 192X192 | 210-230 | R>L | 10% | 0 800 |

T2 tse sagittal 4mm 280 -300 FOV

Plan the sagittal slices on the coronal plane: angle the position block parallel to the cervical spine. Check the positioning block in the other two planes. An appropriate angle must be given in the axial plane on a tilted neck (parallel to the midline of the brain). Slices must be sufficient to cover the soft tissue neck from RT pinna to the LT pinna. FOV must be big enough to cover the whole neck from the frontal sinus down to clavicle. **Phase direction in the sagittal scans must be anterior to posterior with 100% over sample. Giving 100% oversample will reduce the arterial pulsation and swallowing artefacts. It's very**

important to instruct the patient to avoid swallowing during the sequence acquisition (in our imaging department we give 30s after each scan for the patient to swallow saliva). This will avoid the motion artefacts in the neck during image acquisition. Using Saturation bands under the sagittal block can reduce the arterial pulsation artefacts.



Parameters

| TR | TE | FLIP | NEX | SLICE | MATRIX | FOV | PHASE | GAP | NO.SLICE |
|-----------|-----|------|-----|-------|---------|---------|-------|-----|----------|
| 4000-5000 | 110 | 130 | 2 | 4 MM | 320X320 | 290-300 | A>P | 10% | 25 |

Use T1 TSE Fat saturated axial and coronal after the administration of IV gadolinium DTPA (planning outlined above). The recommended dose of gadolinium DTPA injection is 0.1 mmol/kg for adults, children and infants.