



Al-Mustaqbal University
College of Health and Medical Technologies
Radiological Techniques Department

Magnetic Resonance Imaging

First Semester

Lecture 17 : MRI of the neck

By

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Introduction :

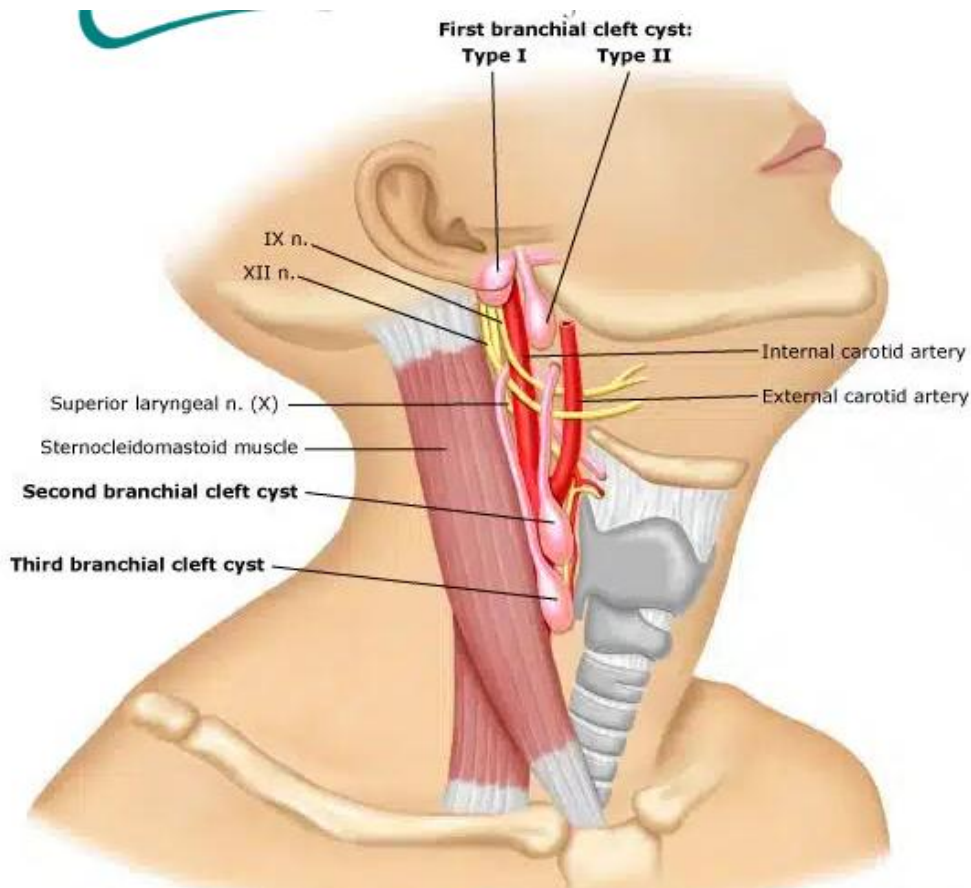
Computed tomography is the preferred modality for imaging of this region, but MRI is useful in determining disease spread to the tongue and the cartilages of the throat.

Anatomical overview:

the anatomy within the neck is generally symmetrical and is described as **the region between the base of skull and the bony thoracic cage. It contains multiple bony structures, cartilages, blood vessels, and muscles.**

•Indications of neck MRI (soft tissue):

- 1-Carcinoma of the larynx and hypopharynx.
- 2-Benign lesions of the larynx.
- 3-Second or third branchial cleft cyst.



- MRI procedure (Neck- soft tissue):**

- Patient position:**

- 1- Patient should be in **supine-position (head first)**.
- 2- Set up **the coil (multi-channel neurovascular)**. The RF coil of choice must provide good signal from the base of skull to below the thoracic inlet.
- 3- Ask the patient to **minimize swallowing during the scanning acquisition to avoid artifacts across the image**. Make sure to scan inferiorly to below the aortic arch when **vocal cord paralysis is suspected**. The vagus nerve that controls the vocal cords extends below the aortic arch.

- Other considerations:**

Patients with diseases of the airways may suffer from respiratory discomfort that may be exacerbated in the supine position. Allowing the patient the opportunity to clear the throat between each pulse sequence may assist in generating images with limited motion artefact induced by swallowing or coughing.

•Scout slice placement:

1-Sagittal localizer for coronal slice:



-Slice acquisition: anterior to posterior.

- slice alignment: parallel to the vertebral bodies.

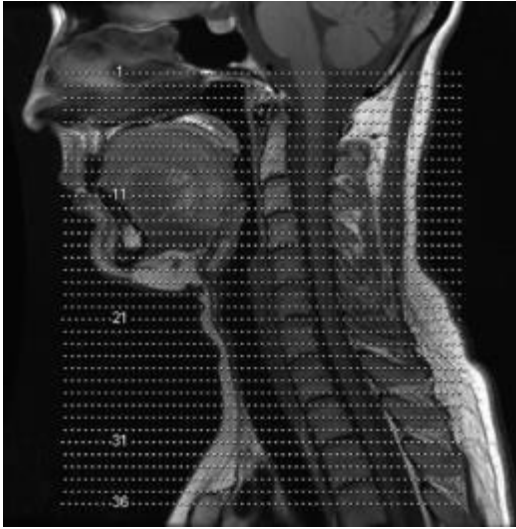
- anatomic coverage:

Anterior from hyoid bone to the spinous process, superior from the hard palate to the arch of the aorta.

-Coronal slices are used to demonstrate the following conditions:

- 1-Disease extension lateral to the larynx.
- 2-Metastatic lymph nodes.
- 3-Disease extension to the neck cartilages.

2-Sagittal localizer for axial slice

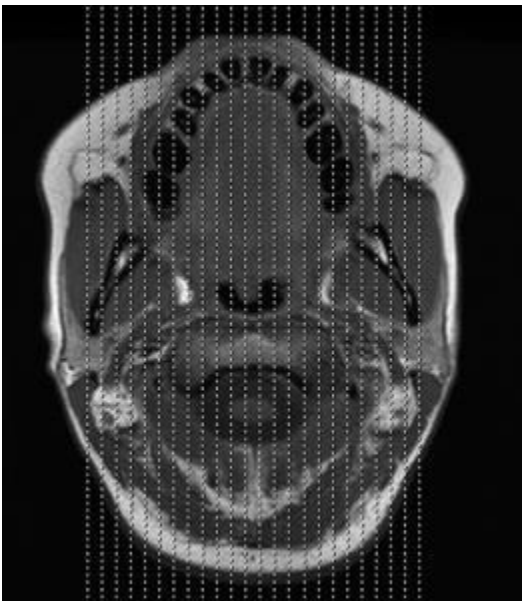


-slice acquisition: superior to inferior.

- slice alignment: parallel to hard palate.

-anatomic coverage: For vocal cord paralysis scan from hard palate to arch of the aorta. For neck mass scan from hard palate to sternal notch.

3-Axial localizer for sagittal slice



-alignment: true sagittal plane.

- coverage: as for axial plane.

- sagittal slices are used to demonstrate the following conditions:

1-lesion spread to the base of tongue.

2- Disease extension to the neck cartilages.

•MRI Sequences (Neck-soft tissue)

Sequence	TR	TE	FA	ETL	Slice thickness
Coronal (STIR) (FSE)	4000	68	-	17	5mm
Axial (T1) (FSE)	600	Min	-	4	5mm
Axial (T2) (FSE)	3300	110	-	27	5mm
3D Sagittal (FSPGR) FS	-	In-phase	40	-	4mm

3D T1-Weighted Imaging with Fat Saturation;

Use: Provides excellent anatomical detail and **helps in evaluating vascular structures and postoperative changes in the cervical spine**