

MRI 1st course

MRI OF THE INTERNAL AUDITORY MEASTUS



Sawa University

جامعة ساوة الاهلية

College of health and medical techniques

كلية التقنيات الصحية والطبية

Department of Radiology Tech.

قسم تقنيات الاشعة والسونار

Fourth Stage

المرحلة الرابعة

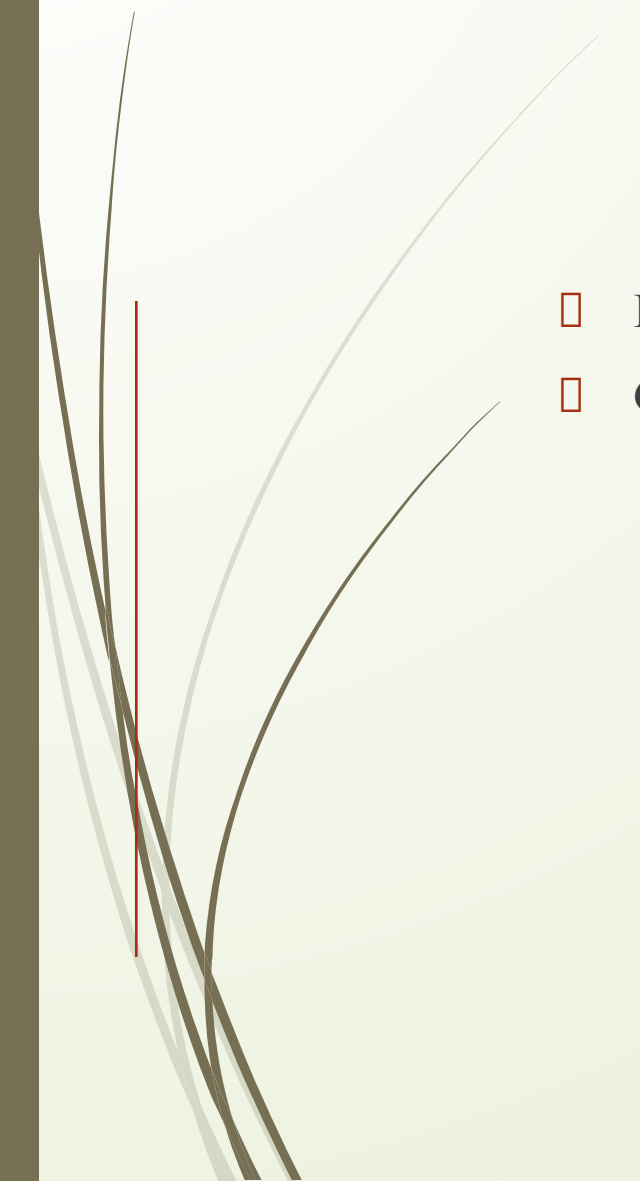
الجانب النظري محاضرة رقم 8

Lecture No eight Theoretical

. تدريسي المادة : م.م.فاضل عوفي عواد



MRI of Internal Auditory Meatus (IAM)

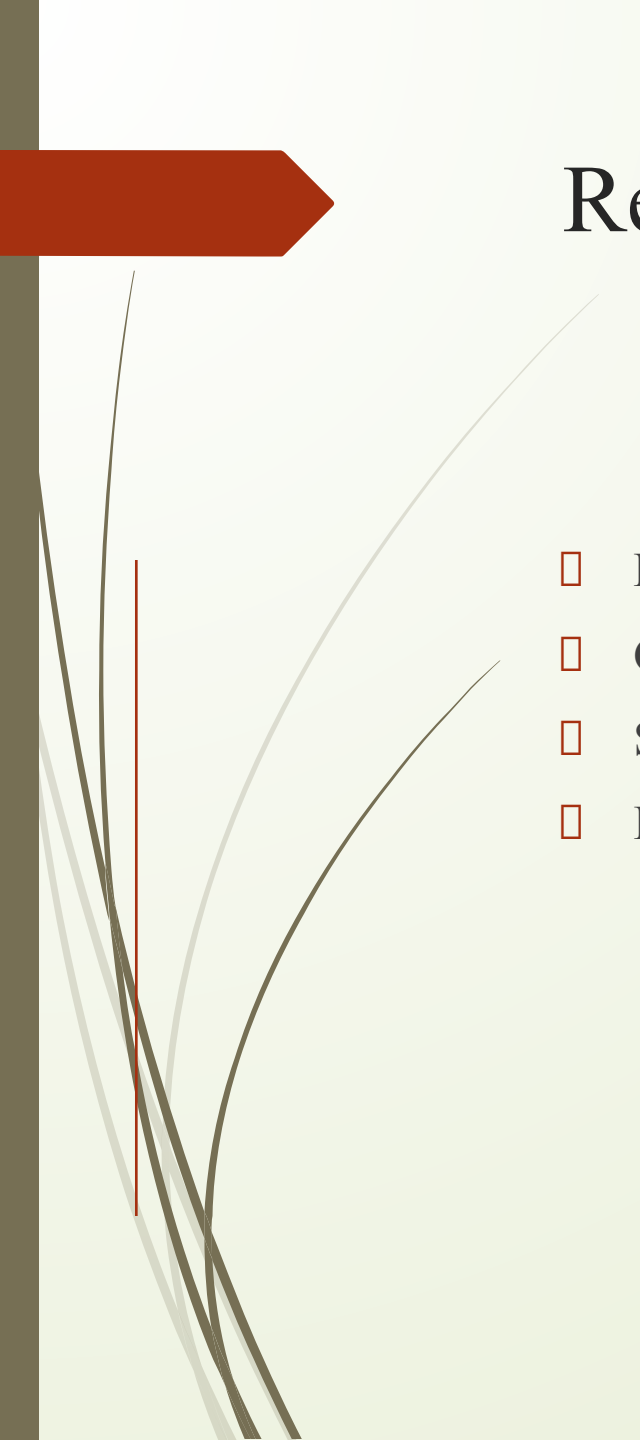
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- Imaging of CN VII, CN VIII, and CPA
 - Gold standard for IAM pathology



Introduction



- ❑ MRI provides excellent soft tissue contrast
- ❑ Evaluates IAM, CPA, and inner ear structures
- ❑ Superior to CT for neural lesions



Relevant Anatomy

- Facial nerve (CN VII)
- Cochlear nerve
- Superior & inferior vestibular nerves
- Labyrinthine artery



Patient Preparation



- ❑ Screen for MRI contraindications
- ❑ Remove metallic objects
- ❑ IV access if contrast required



Patient Positioning



- Supine position
- Head first into magnet
- Head immobilized
- Inter-orbital meatal line perpendicular



Coil Selection



- ❑ Multi-channel head coil (standard)
- ❑ Surface/neurovascular coil if available
- ❑ High SNR and spatial resolution required



Indications



- Unilateral sensorineural hearing loss
- Tinnitus
- Vertigo
- Suspected vestibular schwannoma
- Facial nerve palsy



General Protocol Principles



- Small field of view
- Thin slices (≤ 1 mm)
- High matrix
- Use contrast when indicated



Standard Non-Contrast Sequences

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- Axial T1-weighted imaging
 - Axial & coronal T2-weighted imaging
 - 3D heavily T2 (CISS/FIESTA/DRIVE)



Contrast-Enhanced Sequences

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- Post-contrast T1 with fat suppression
 - Axial and coronal planes
 - Essential for tumor detection



Protocol: Vestibular Schwannoma

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- T1WI pre-contrast
 - T2WI axial & coronal
 - 3D CISS/FIESTA
 - Post-contrast T1 FS



Protocol: SNHL & Tinnitus

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- Axial T1WI
 - 3D heavily T2 sequence
 - Post-contrast T1 FS

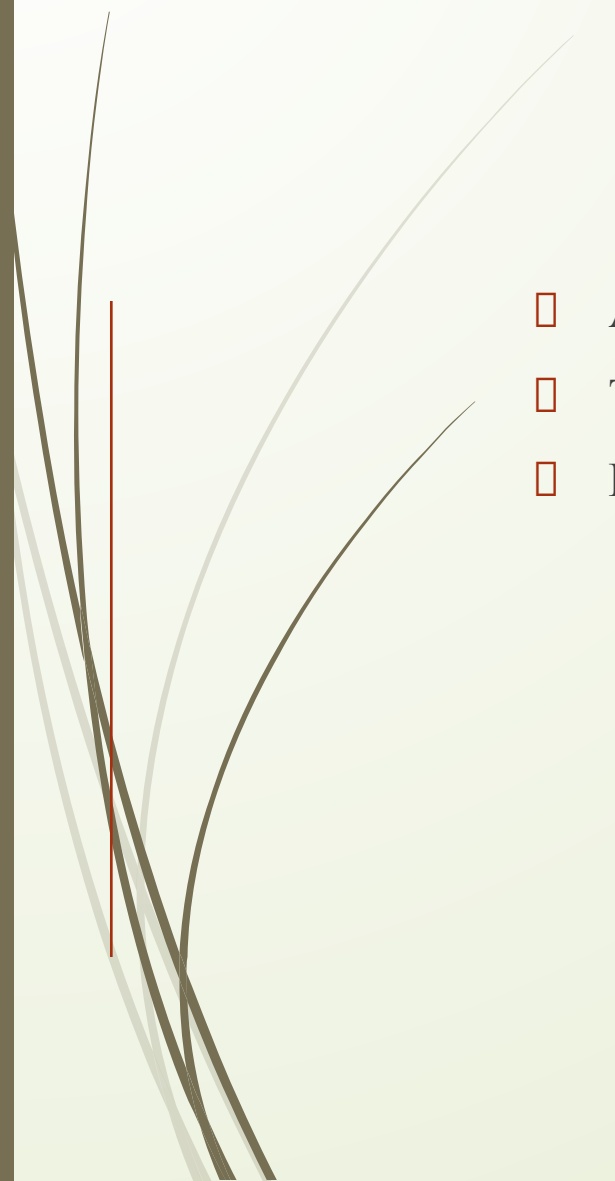


Protocol: Vertigo

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- Axial & coronal T2WI
 - 3D heavily T2 sequence
 - Optional post-contrast T1WI



Protocol: Facial Nerve Palsy

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- Axial T1WI
 - T2WI
 - Post-contrast T1 FS along facial nerve



Protocol: Congenital Hearing Loss

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- High-resolution 3D T2WI
 - Axial T1WI
 - Contrast only if indicated



Scan Planning



- Axial: parallel to long axis of IAM
- Coronal: perpendicular to axial
- 3D isotropic voxels for MPR



Common Pathologies



- Vestibular schwannoma
- Meningioma
- Facial nerve schwannoma
- Labyrinthitis
- Arachnoid cyst



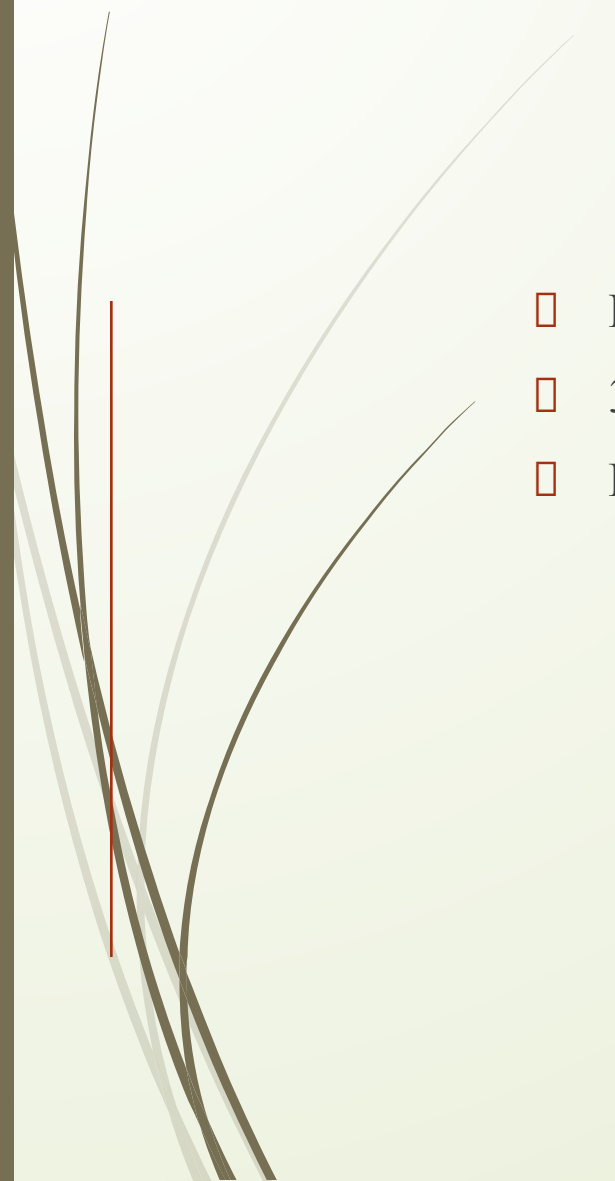
MRI vs CT



- ❑ MRI: superior soft tissue detail
- ❑ CT: superior bony detail
- ❑ MRI preferred for IAM tumors



Key Take-Home Points

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- ❑ MRI is gold standard for IAM
 - ❑ 3D heavily T2 sequences are mandatory
 - ❑ Post-contrast T1 FS is essential for tumors

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Quiz



presentation title

Any questions?

*Thank
You*