Scanning Techniques & Normal Head/Neck Ultrasound Anatomy

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OBJECTIVES

- Describe positioning of patient, examiner, and ultrasound equipment for performance of head/neck ultrasound
- Describe proper ultrasound scanning technique for optimum image acquisition
- Understand applications and goals for head/neck ultrasound
- Recognize normal head & neck sonographic anatomy

Selecting Transducer

Optimal frequency for head and neck scanning
- 7.5-10 megahertz

Patient & Examiner Positioning

- Extend neck
- Neck roll
- Surgeon position
- Hand position
Image Planes

- Transverse
- Longitudinal

Transducer Position And Orientation

- Embedded indicator on transducer points to
  - patient’s right in transverse plane
  - cephalad in sagittal plane

Doppler – Arteries & Veins

Doppler – Lesions

- Thyroid nodules
- Lymph nodes

- Parathyroid 4
**Doppler - Lesions**

**Parathyroid**

- Freeze Frame
- Video

**Image Recording**

- Must be a permanent record
  - Normal and abnormal images
  - Freeze frame and/or video recording
Image Documentation

Essential Info
- Patient ID
- Name
- DOB, MRN
- Date of study
- Orientation

Applications
- Thyroid – Solid vs Cystic
- Characterize Thyroid Nodules: Benign vs Suspicious
- Evaluate lymphadenopathy

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Head & Neck Applications
Metastatic PTC nodes

Head & Neck Applications
Parathyroid - localization

Head & Neck Applications
Parathyroid – anatomic mapping

Head & Neck Applications
Salivary gland pathology – sialadenitis, calculi, neoplasms, cysts

Pleomorphic adenoma of parotid
Applications
Congenital cysts – branchial cleft, thyroglossal

Common Artifacts in Head & Neck

**Shadowing**
- Behind a region of
  - High attenuation
  - Macrocaldification
- Interface with acoustic impedance mismatch
  - Soft tissue/fluid interface
  - Soft tissue/air interface

**Enhancement**
- Behind region of low attenuation
- Cysts, fluid

Head & Neck Applications
- Monitor size of lesions
- Thyroid nodules
- Lymph nodes
- Response to therapy
- Anatomic relationships
Applications
- Ultrasound guided intervention
- Diagnostic
- Treatment
- Ethanol injection

Head & Neck Anatomy
- Skin & Subcutaneous tissue
- Strap
- isthmus
- L. lobe
- R. lobe
- Trachea

Anatomy
- Carotid
- LV
- Trachea
- Esophagus

Anatomy
- Thyroid
- Esophagus
Head & Neck Anatomy

Normal lymph nodes

Digastric

Submandibular gland
Head & Neck Anatomy
Normal lymph nodes