

Thyroid

Neck Lump/Bump/Mass/Lymph Node: CT Neck w/Contrast is the ACR gold standard



Indications

- ◆ Evaluation of palpable mass or enlarged thyroid on exam or abnormal labs
- ◆ Follow up findings from other imaging studies
- ◆ Evaluation of presence, size and location of thyroid gland
- ◆ Evaluation of patients at high risk of thyroid malignancy
- ◆ Follow up thyroid nodules
- ◆ Evaluation of regional nodal metastases in patients with proven or suspected thyroid carcinoma prior to and post thyroidectomy
- ◆ Evaluation of thyroidectomy bed for local recurrence
- ◆ Evaluation of thyroid prior to non-thyroid related neck surgery
- ◆ Evaluation of thyroid prior to radioactive iodine ablation
- ◆ Localization of neck abnormalities prior to intervention
- ◆ Identification and localization of parathyroid abnormalities or evaluation for recurrent disease after surgery
- ◆ Guidance for aspiration or biopsy of thyroid abnormalities or other masses of the neck

Indications Cont.

- ◆ Localization of autologous parathyroid gland implants
- ◆ Evaluation of the parotid and submandibular glands for masses and non-neoplastic conditions, i.e. infection and stones

Equipment

- ◆ Linear Transducer
 - 10-15 MHz

Patient Position

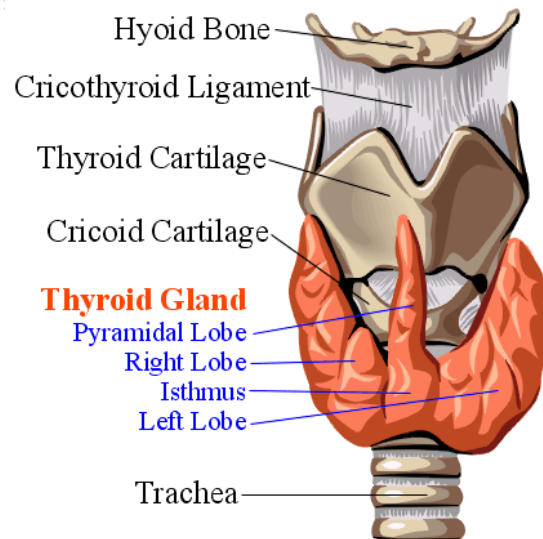
- ◆ Supine
- ◆ Neck in hyperextension (*roll under shoulders*)



Evaluation

Thyroid

- ◆ Measurements in 3 dimensions (Long, AP, Trans)
- ◆ Diffuse pathology
 - Overall heterogeneity
 - Hypervascularity
- ◆ Focal Pathology (significant abnormalities)
 - Document:
 - Location
 - Measurements (Long, AP, Trans)
 - Split screen
 - Number
 - Characteristics
 - Composition (solid/cystic)
 - Echogenicity
 - Margins (smooth or irregular)
 - Calcifications
 - Vascularity



Thyroid

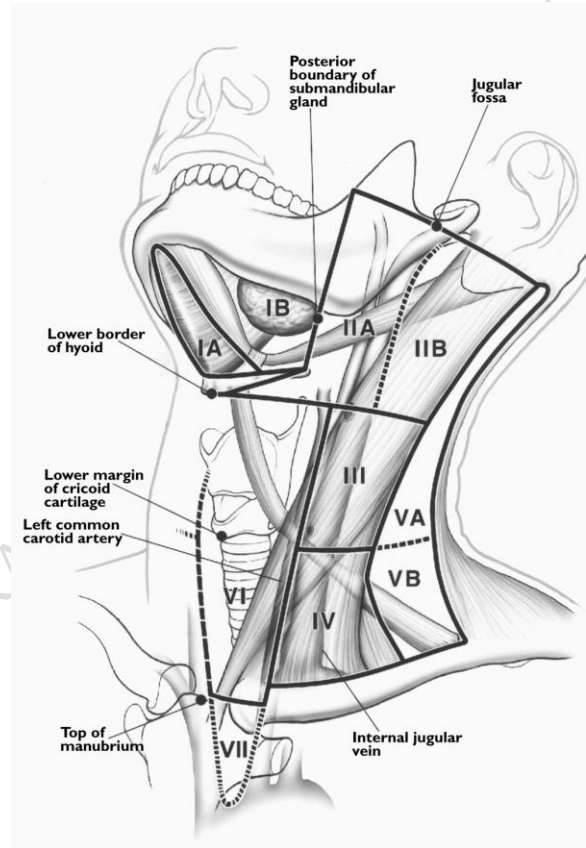
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Evaluation Cont.

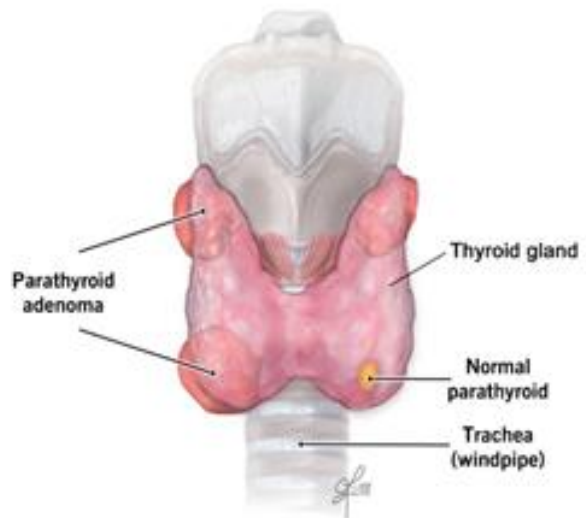
Lateral Neck

- ◆ Evaluate for abnormal cervical lymph nodes
 - From angle of mandible/parotid gland to clavicle
 - Lateral to Jugular Vein & Carotid Artery
- ◆ Abnormal lymph nodes characteristics:
 - Calcifications
 - Cystic areas
 - Absence of central hilum
 - Round appearance
 - Abnormal color Doppler
- ◆ Document:
 - Measurement (*shortest dimension*)
 - Location (*Do NOT label images with level*)
 - Level I
 - Superior to hyoid bone/submental
 - Level II
 - Angle of the mandible to the carotid bifurcation/hyoid bone
 - Level III
 - Inferior to carotid bifurcation to lower cricoid cartilage
 - Level IV
 - Inferior to lower cricoid cartilage to clavicle
 - Level V
 - Lateral/posterior to sternocleidomastoid muscle from the skull base to the clavicle
 - Level VI
 - Anterior neck
 - Between hyoid bone and manubrium
 - Level VII
 - Inferior to manubrium



Parathyroid Adenomas

- ◆ Abnormal appearance:
 - Hypoechoic to thyroid
 - Homogenous
 - Greater than 1 cm
 - Feeding vessel on color Doppler
- ◆ Document:
 - Measurements (3 dimensions)
 - Location
 - Relation to thyroid lobe (posterior & inferior most common)
 - Color Doppler of feeding vessel



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Images

Thyroid

Transverse (Right & Left)

- ◆ Superior lobe
- ◆ Mid lobe
- ◆ Inferior lobe
- ◆ Cine clip superior to inferior

Longitudinal (Right & Left)

- ◆ Lateral
- ◆ Mid
- ◆ Medial
- ◆ Cine clip lateral to medial

Color Doppler (Right & Left)

- ◆ Either plane

Transverse

- ◆ Isthmus

Measurements

- ◆ Right & Left Thyroid Lobes
 - Long, AP & Trans
- ◆ Isthmus Trans
 - AP

Transverse Comparison

- ◆ Comparison of Right & Left lobes
 - Gray-scale
 - Color Doppler

Thyroid Pathology*

- ◆ Thyroid
 - Measure 3 planes
 - Split screen
 - AP on Trans image
 - Color Doppler
 - Max 1 nodule each side

Lateral Neck

Transverse (Right & Left)

- ◆ Superior to inferior (Lateral to jugular vein and carotid artery)
 - Cine clip
 - Document abnormal lymph nodes
 - Measurement (*shortest dimension*)
 - Split Screen
 - Color Doppler
 - Do NOT label level on images

Parathyroid

(Right & Left) if visible

- ◆ 2 located posterior to the thyroid gland on each side (4 total)
 - Normal glands are not visible
- ◆ Document parathyroid adenomas if seen
 - Measurements (Long, AP, Trans)
 - Split screen
 - Location
 - Color Doppler
 - Feeding vessel

**Concerning features include:*

Composition: Solid, mixed solid & cystic

Echogenicity: Hypoechoic

Shape: Taller-than-wide

Margin: Lobulated/irregular, extra-thyroidal extension

Echogenic Foci: Calcifications

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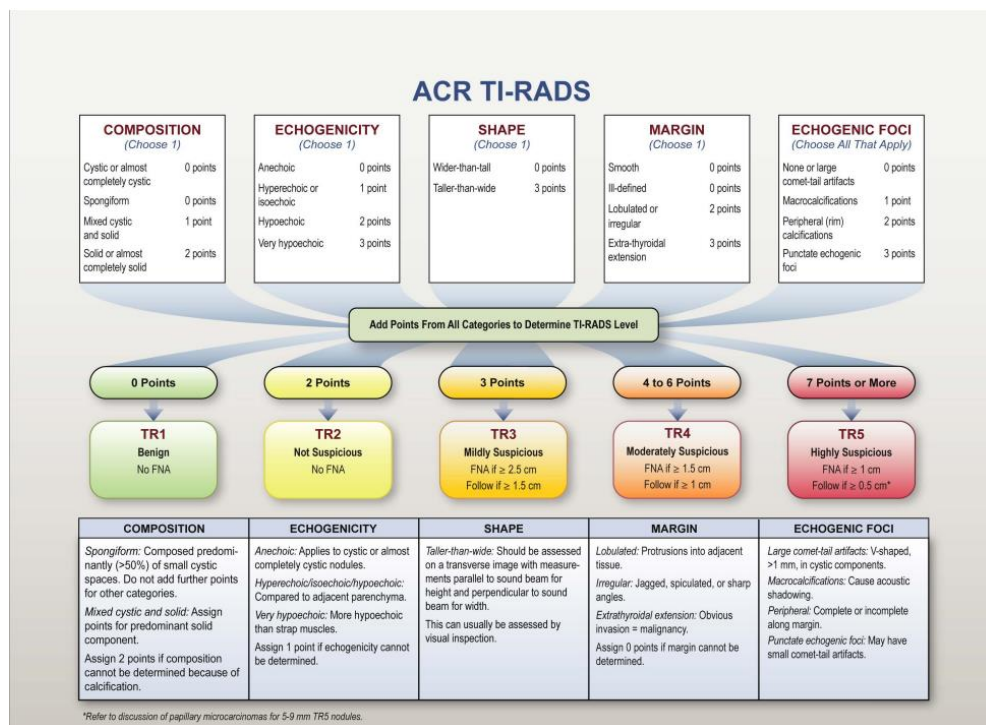
Additional Information

Thyroid

- ◆ Scan superior to the isthmus to evaluate for:
 - Possible pyramidal lobe of the thyroid
 - Thyroglossal duct cyst

Parathyroid

- ◆ Can be supernumerary and in ectopic locations
- ◆ Evaluate infraclavicular and near upper mediastinum



References

- ◆ ACR-AIUM-SPR-SRU Practice Parameters for the Performance and Interpretation of Diagnostic Ultrasound of the Thyroid and Extracranial Head and Neck Revised 2022
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