Thyroid Ultrasound Protocol

I. Patient Preparation

a. None

II. Equipment

a. Performed with real-time scanner using a linear 12.5 MHz transducer. Occasionally a linear 17 MHz transducer may be needed for optimization of thyroid nodule(s) or for pediatric neck imaging. A curved 5MHz transducer may be needed for additional images to measure an abnormally long or deep thyroid gland.

III. Procedure Protocol

a. Patient Positioning
    i. Patient is supine on stretcher/bed with pillow placed underneath shoulders.
    ii. Neck is hyper-extended over edge of pillow.
    iii. Low collared shirt, remove jewelry around neck, towel across shoulders/chest, pillow or towel can be placed under shoulders
b. Normal values:
    i. Long thyroid:
    ii. Transverse thyroid:
    iii. Isthmus:
    iv. Calculated thyroid lobe volume:
c. Basic scan technique: Begin with a survey scan in transverse down the midline to assess for tracheal deviation and obvious pathology, tilt the patient's head slightly to the contralateral side and scan down in transverse, rotate into longitudinal and scan from medial to lateral, repeat on opposite side with head tilted the other way, with patient's head/neck straight scan the isthmus in longitudinal and transverse, scan down each neck in transverse for alternate pathology (i.e., fat roll at base of neck, lymphadenopathy, brachial cleft cyst [located superolateral to the thyroid, may be transient], thyroglossal duct cyst [midline superior to thyroid], parathyroid gland mass [typically small and along posterior mid and lower pole of thyroid gland])
d. Document any visualized thyroid abnormalities to include size, shape and position using dual screen; PW and/or Color Doppler used to document vascularity of thyroid gland or any abnormality, to distinguish between cystic structures and prominent thyroid vessels, or when clinically indicated. Also, document the most suspicious features of any thyroid nodule (microcalcification, septation, solid hypoechoic, halo)
e. Initially, a full survey of the thyroid should be performed to check for abnormalities, as discussed above. Imaging should start with the general survey pictures as listed below for right/left/isthmus and then followed by split-screen images of each nodule/mass, in order of importance, with and

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without calipers and color/power Doppler. The images must be labeled clearly with side of thyroid, trans/long and level of which the area is within the gland (sup, mid, inf).

f. Right Lobe of Thyroid

i. Transverse Views
   1. Mid Pole
   2. Mid Pole – include maximum width and AP diameter measurements and color/power Doppler
   3. Superior Pole
   4. Inferior Pole

ii. Long Axis Views
   1. Mid portion
   2. Mid portion – include maximum length measurement and color/power doppler
   3. Lateral portion
   4. Medial portion

iii. If nodules are present:
   1. Dual screen images of each mass/nodule with long axis view on left, transverse view on right.
   2. Label on screen left lobe, what level (inf,mid,sup) and number each one.
   3. Take gray scale images with and without calipers and color/power Doppler.
   4. Also, image the most suspicious features of the thyroid nodule

g. Left Lobe of Thyroid

i. Transverse Views
   1. Mid Pole
   2. Mid Pole – include maximum width and AP diameter measurements and color/power Doppler
   3. Superior Pole
   4. Inferior Pole

ii. Long Axis Views
   1. Mid portion
   2. Mid portion – include maximum length measurement and color/power doppler
   3. Lateral portion
   4. Medial portion

iii. If nodules are present:
   1. Dual screen images of each mass/nodule with long axis view on left, transverse view on right.
   2. Label on screen left lobe, what level (inf,mid,sup) and number each one.
   3. Take gray scale images with and without calipers and color/power Doppler.

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4. Also, image the most suspicious features of the thyroid nodule

h. Thyroid Isthmus

i. Transverse Views
   1. Superior Portion
   2. Mid Portion – include maximum AP measurements
   3. Inferior Portion

ii. If nodules are present:
   1. Dual screen images of each mass/nodule with long axis view on left, transverse view on right.
   2. Label on screen isthmus, what level (inf,mid,sup) and number each one.
   3. Take gray scale images with and without calipers and color/power Doppler.
   4. Also, image the most suspicious features of the thyroid nodule

i. Special circumstances

i. Distinguishing between a thyroid nodule and the esophagus, may need to have the patient swallow water during real time evaluation (as the esophagus would be expected to distend with fluid)

ii. Normal variant pyramidal lobe

j. Adjacent Soft Tissues

i. Abnormalities of adjacent soft tissue should be documented to include size, shape and position.
   1. Enlarged lymph nodes
   2. Thrombosed veins
   3. Adjacent soft tissue mass/lesion

k. Neck with Entire Thyroid Gland

i. Transverse view of ML neck with entire thyroid gland visible to compare echogenicity of lobes simultaneously.

ii. Same image including color/power Doppler to check for symmetry of vascularity.

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