Skagit RADIOLOGY	US Thyroid		
	Reviewed:	Date: 4/11/2024	
	Revised:	Date: 4/11/2024	

PURPOSE

Practice parameter for the performance of diagnostic ultrasound of the thyroid and parathyroid

SUPPORTIVE DATA

- Obtain a written, verbal, or electronic order from provider
- Verify that written orders are scanned into Epic
- Previous relevant imaging procedures

INDICATIONS

Indication for thyroid and parathyroid ultrasound including but not limited to:

- Evaluation of the location and characteristics of palpable neck masses, including an enlarged thyroid.
- Evaluation of abnormalities detected by other imaging modalities.
- Evaluation of abnormal thyroid lab values.
- Evaluation of presence, size and location of thyroid gland.
- Evaluation of patients at high risk for occult thyroid malignancy.
- Follow-up imaging of previously detected thyroid nodules.
- Identification and localization of parathyroid abnormalities in patients with known or suspected hyperparathyroidism.

CONTRAINDICATIONS

- There are no absolute contraindications. It is departmental policy that if there is a Nuclear medicine study ordered to evaluate parathyoroid at the same time as an ultrasound to evaluate parathyroid, the NM study should be done at least one day prior to allow for imaging correlation.

EQUIPMENT LIST

- Real-time ultrasound scanner with transducer of appropriate frequency'
- Gel
- Towels
- Patient gown

SAFETY

- Universal precautions for bodily fluids should be observed as per hospital protocol.

- All ultrasound carts are annually checked and are up to date with all state and manufacturer guidelines.
- Exams will be prioritized according to ordering status (STAT, ASAP or Routine)

PATIENT PREPARATION

- None

PROCEDURE

1. Check provider's orders for reason for exam and any comments.
2. Review report of patient's most recent ultrasound, relevant imaging or relevant labs if applicable.
3. Start exam in Epic
4. Verify patient by 2 patient identifiers (name, DOB, wristband).
5. Process should be explained to patient.
6. Have patient change into gown if appropriate
7. Perform imaging procedure
8. End exam in Epic

IMAGING PROCEDURE

A normal ultrasound of the Thyroid will aim to include the following views:

Right Lobe

1. SAG ML
2. SAG ML with measurments
3. SAG ML with Color Doppler
4. TRANS Mid
5. Trans mid with measurement
6. Trans Sup Pole
7. Trans Inf Pole
8. Document pathological findings with all appropriate additional views to include color doppler and/or pulsed wave doppler

Left Lobe

1. SAG ML
2. SAG ML with measurments
3. SAG ML with Color Doppler
4. TRANS Mid
5. Trans mid with measurement
6. Trans Sup Pole

7. Trans Inf Pole
8. Document pathological findings with all appropriate additional views to include color doppler and/or pulsed wave doppler

Additional

1. Image comparing both lobes and isthmus
2. Document nodules that are < 1cm
3. Document on additional worksheet w/tirads criteria filled out for suspicious nodules 1cm or larger. Label and number each nodule on the image to correlate with the worksheet
4. Document pathological findings with all appropriate additional views to include color doppler and/or pulsed wave doppler
5. Scan bilateral anterior neck and note any abnormal lymph nodes. Take representative image showing right and left side if no abnormal nodes are found.

DOCUMENTATION

1. Written, verbal, or electronic order from provider
2. The worksheet and images need to be scanned into PACS under appropriate exam and put online.
3. Ultrasound images should be labeled with anatomy imaged and orientation (SAG or TRANS)
4. All images are submitted with above documentation for dictation and stored in PACS
5. For all STAT, ER and Urgent Care ultrasound exams, call radiologist for prelimanary report to give to ordering provider
6. If it is between 2200 - 0700, submit exam along with proper documentation to teleradiology

REFERENCE

- Approved by Pharmacy and Therapeutics Board on 08/14/2020
- Approved by Medical Executive Team on 09/11/2020
- Approved by Medical Director, Dr. Muneer Desai, on 08/20/2020
- Approved by Radiology Protocol Committee on 3/9/2020
- ACR Practice Parameters Resolution 25 (2018)

References

Reference Type	Title	Notes
Documents referenced by this document		
Referenced Documents	ACR Practice Parameters Resolution 25 (2018)	

TI-RADS PRIMER

CREATED BY TEAM GRANT

PAUL GRANT CRAIG AND KRISTIN GRANT

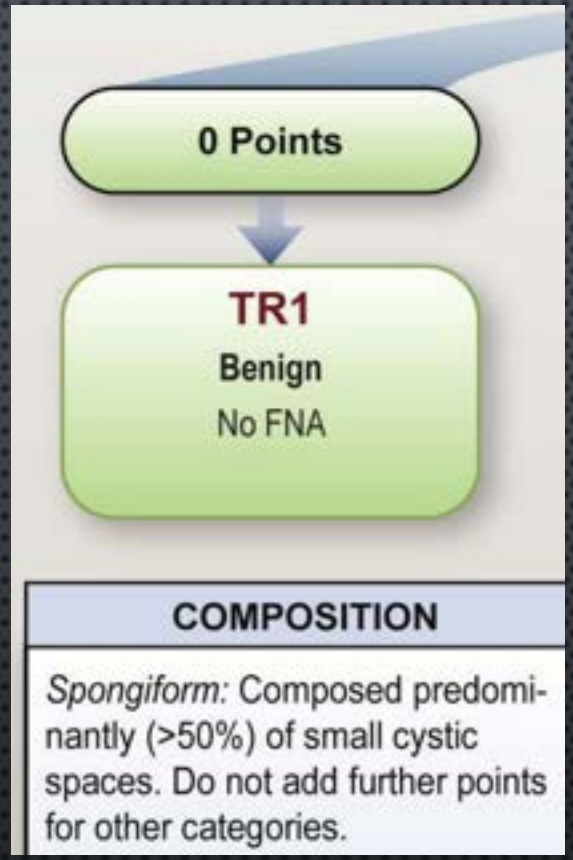
Background:

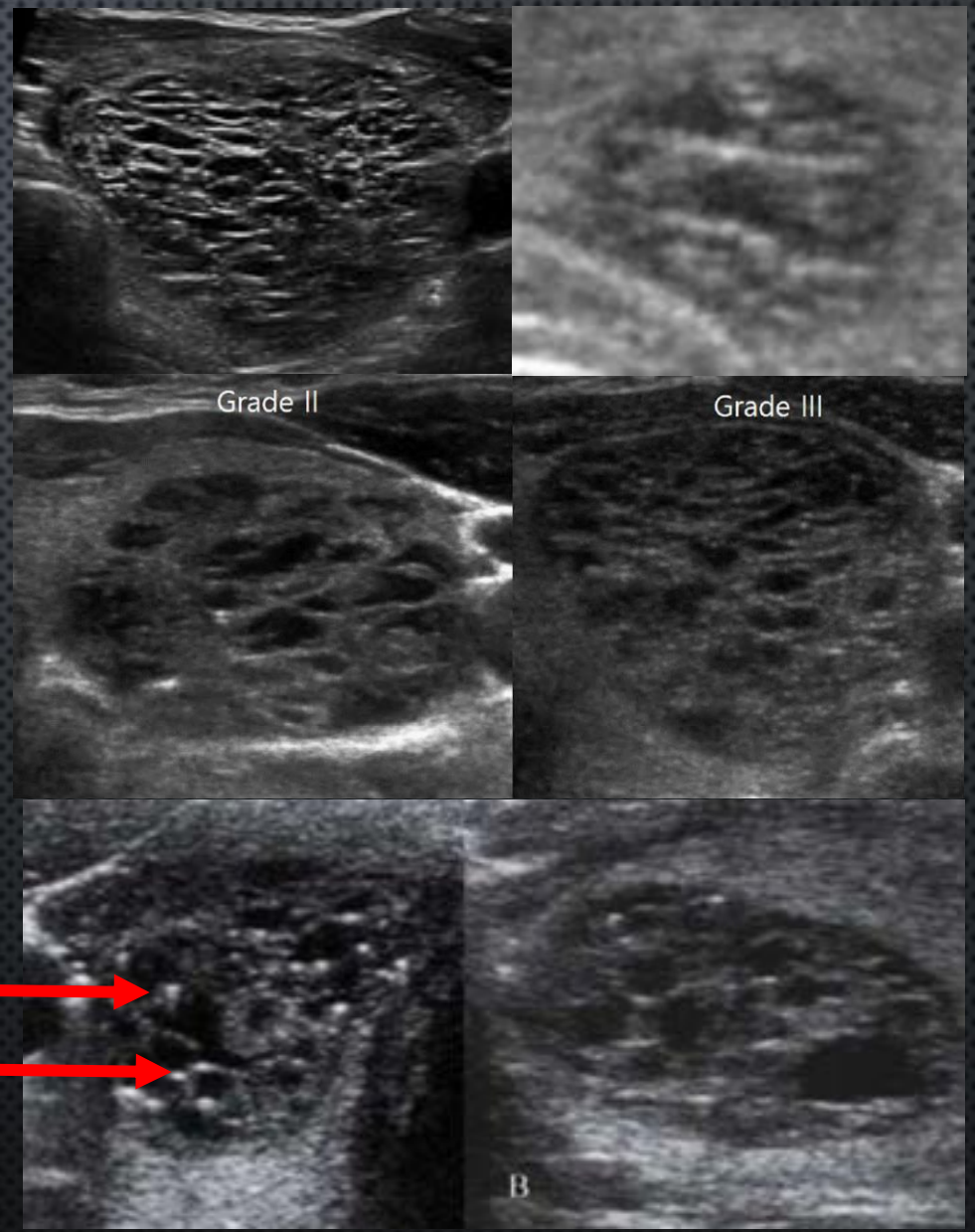
- We are overreporting thyroid nodules based on size and number. Do not report the following:
  - Nodules less than 1 cm in size unless highly suspicious (TI-RADS 5) or someone with MEN disorder.
  - *More than 4 nodules*

- We are overclassifying benign nodules as TI-RADS 4
  - Colloid cysts
  - Spongiform cysts
    - If you spot a spongiform nodule or colloid cyst, give it a score of 0 and move on. If this is one of >4 nodules, can state 'benign spongiform/colliod cysts present; no biopsy warranted' or something along those lines

Concept 1: Spongiform nodule

- A spongiform nodule is a hypoechoic nodule composed of >50% small, cystic spaces
- May contain comet tail artifacts (which are commonly misclassified as punctate calcifications).
  - These comet tail artifacts are typically within the cystic spaces
  - When in doubt, punctate calcifications are not within the cystic spaces, so look at the location of the echogenic foci
  - "Large comet-tail artifacts" are echogenic foci with V-shaped echoes >1 mm deep to them.
- **This is TI-RADS 0. Don't even have to report it, technically.**





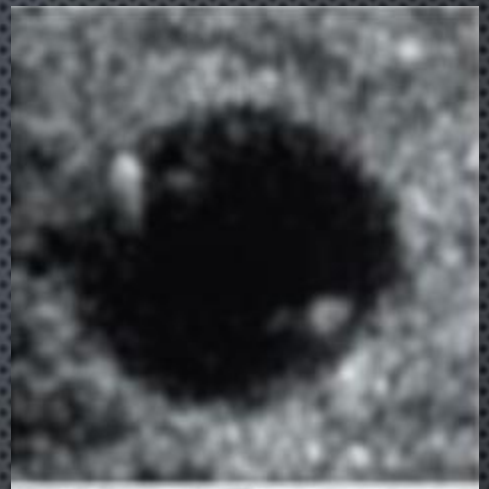
Comet tail artifact and echogenic foci within cystic spaces

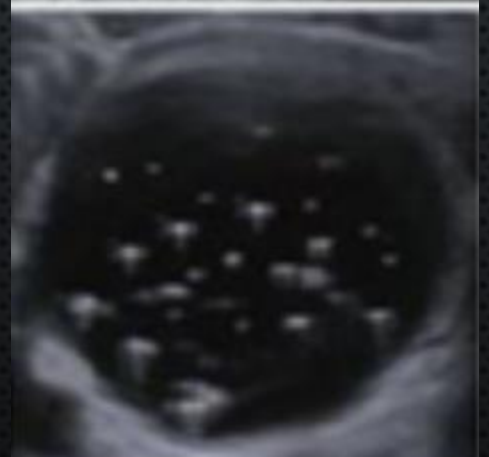
Concept 2: Colloid cysts

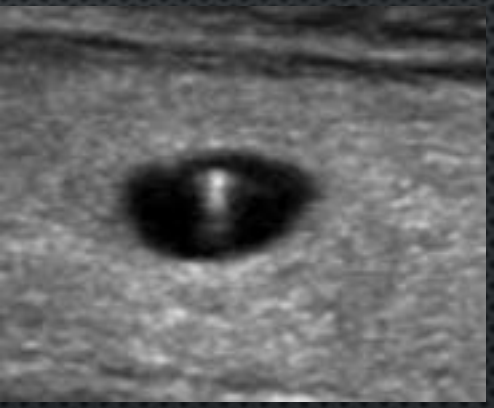
- A colloid cyst is an anechoic cyst containing colloid, which typically has comet-tail artifact.
  - Make sure it looks like a CYST

- This is not to be classified as a very hypoechoic, solid mass with echogenic foci.

- This is also BENIGN and doesn't need to be reported



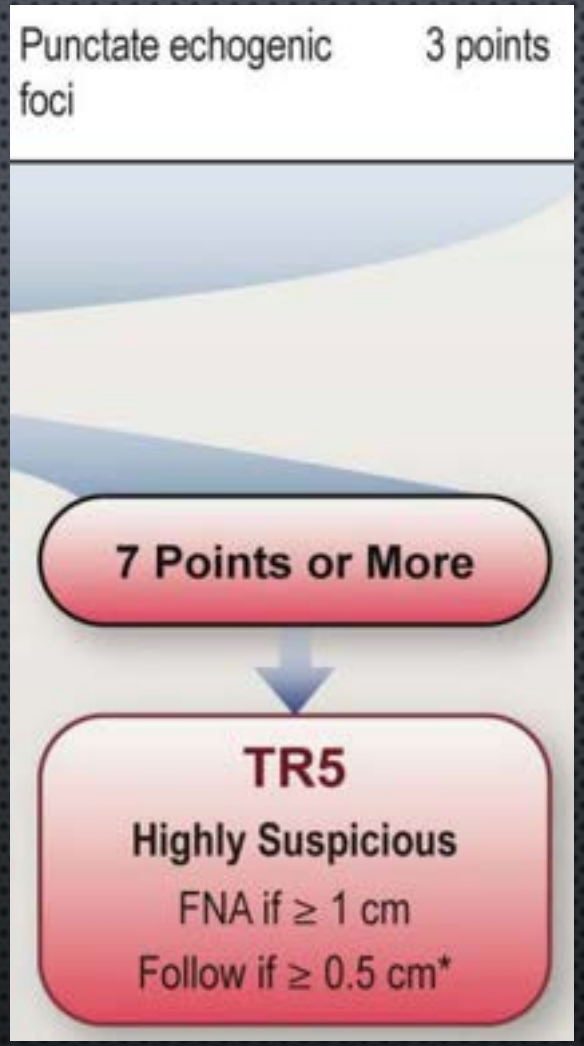


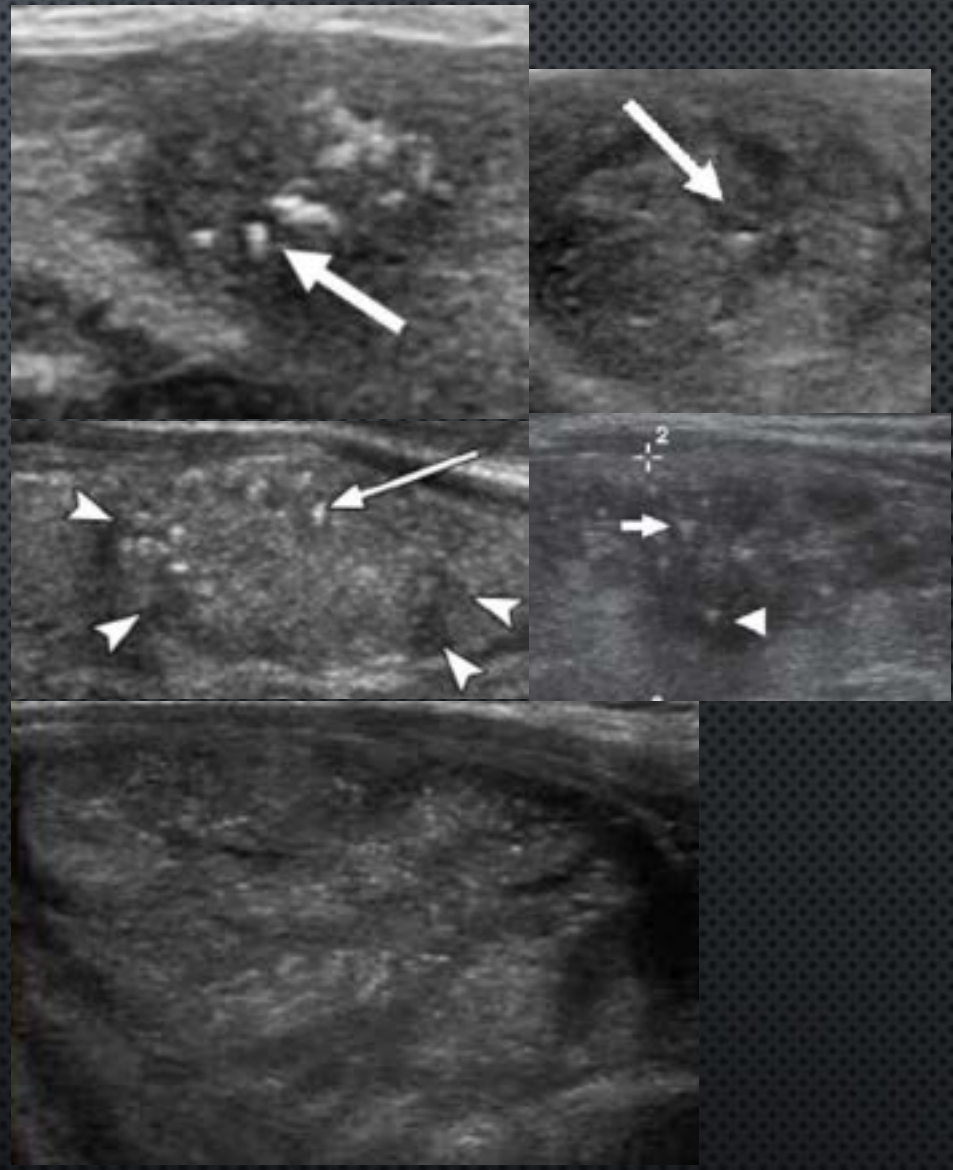


Concept 3: Punctate echogenic foci

- These are the bad things you don't want to miss, as they add 3 points to the score and are typically associated with malignancy

- These can have <u>small</u> comet tail artifact, but are **located within the solid parts of the nodule**





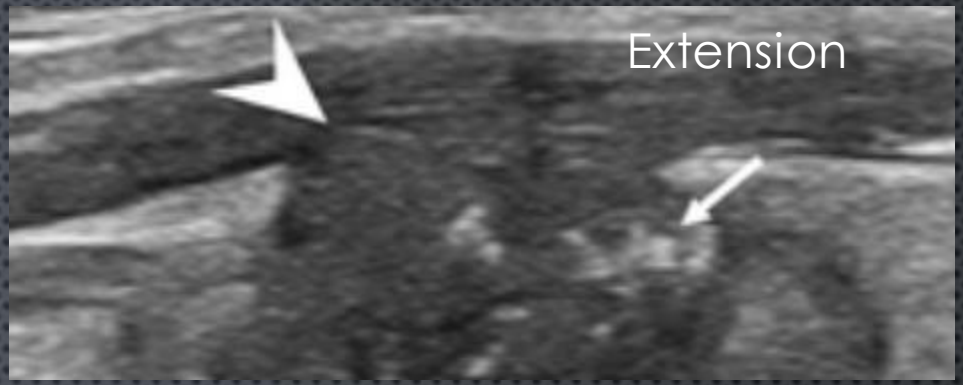
Concept 4: Margin

- Extrathyroid extension is always bad, and should be evaluated on suspicious nodules
  - Will see the nodule passing through the capsule into the sternohyoid

- Lobulations are always bad, and this is probably underreported

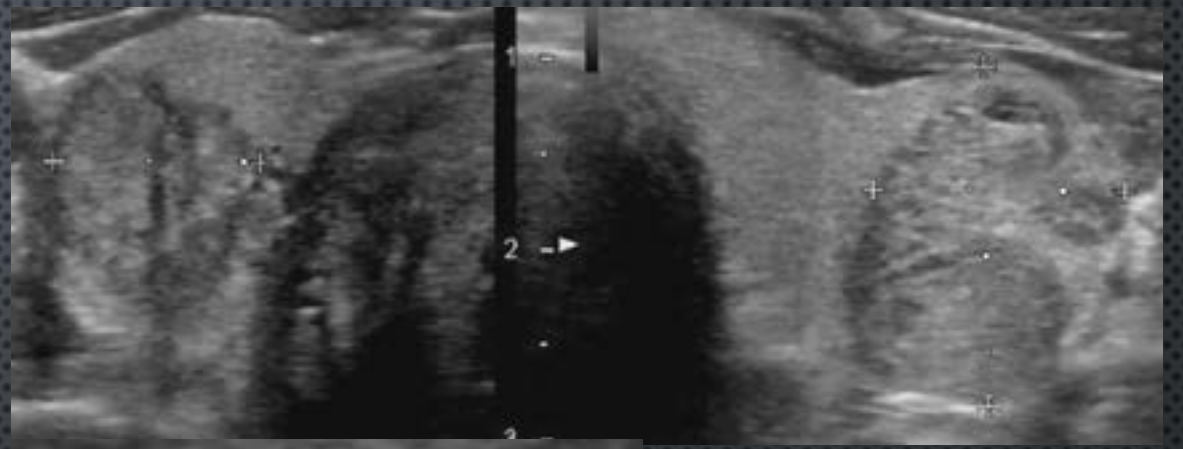
- Irregular margins: jagged, spiculated or irregular angles

- Ill-defined/ indistinct margins are common and score 0 points.
  - (can you see margins of nodule? If not= indistinct)



Concept 5: Taller-than-wide

- Insensitive but specific indicator of malignancy, hence 3 points.
- Per ACR: "A taller-than-wide configuration is usually evident on visual inspection and rarely requires formal measurements."
    - This is why it is important to look at the images



Concept 6: Peripheral calcifications

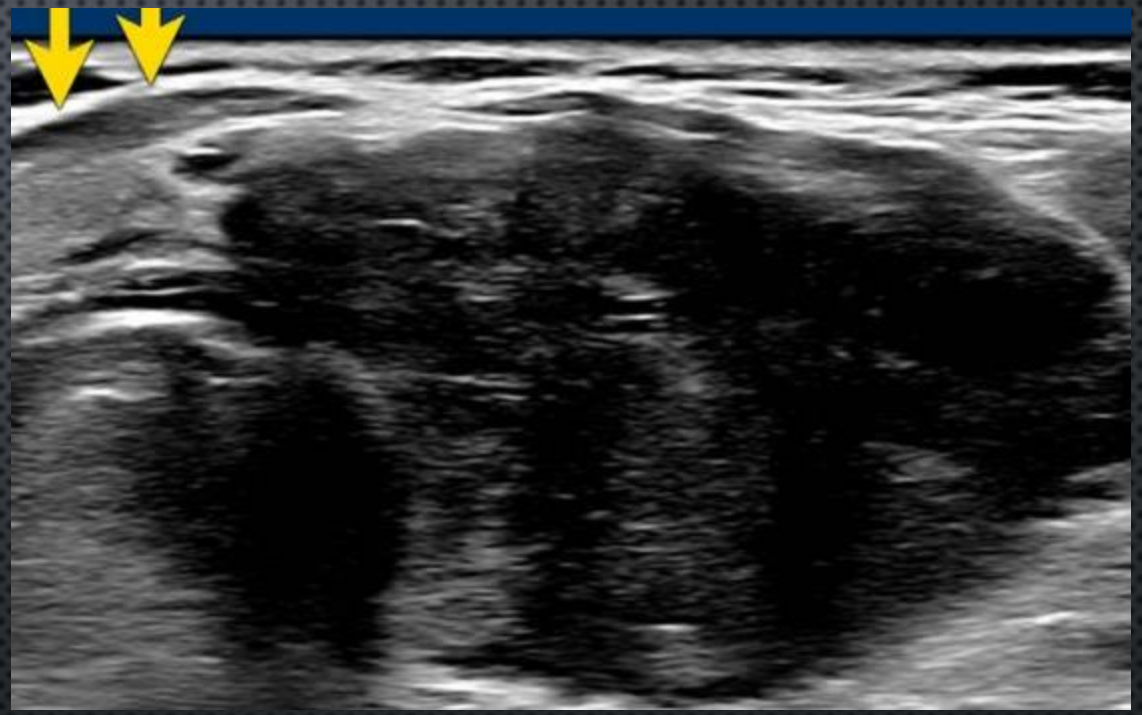
- These can shadow the underlying lesion. In this case, assign 2 points for composition and 2 points for rim calcification

- Nodules can contain peripheral and punctate calcification (+5 score)

COMPOSITION
Spongiform: Composed predominantly (>50%) of small cystic spaces. Do not add further points for other categories.
Mixed cystic and solid: Assign points for predominant solid component.
Assign 2 points if composition cannot be determined because of calcification.

Concept 7: "Very Hypoechoic"

- This refers to a nodule which is more hypoechoic than the muscle anterior to the thyroid (sternohyoid)



Concept 8: When to biopsy or rebiopsy

- Per Bethesdia criteria (referenced by TI-RADS), a rebiopsy is warranted when:
  - TI-RADS 5: High suspicion category comes back as benign; repeat US and FNA within 12 months
  - TI-RADS 3-4: Repeat US in 12 months. Biopsy if growing- which is defined as: **20% increase in at least two nodule dimensions with a minimal increase of 2 mm, OR more than a 50% change in volume**
  - TIRADS 0-2: do not repeat

  - Please do NOT recommend a biopsy of more than 2 nodules at one time. Pick the two with highest suspicion to recommend. If there are others which do warrant biopsy, please clearly state that these should be biopsied at a later date, or pending results of the first biopsy.