

Fine Needle Aspiration of the Thyroid Gland

What is an adequate sample?



An adequate sample must be:

- Representative of the lesion
- Adequate in amount
- Technically well prepared
- Interpreted in the clinical context and taking practice setting into consideration

Representative of the lesion

- Sample must be from the appropriate location (sample of normal tissue only is not adequate).
- Single aspirate may not be representative.
- Average 3 samples, for 1-2 cm. lesion.

Exception: cystic lesion which collapses completely or is no longer palpable after evacuation of fluid

Adequate in amount

- 5-6 groups of well preserved follicular epithelial cells with 10 or more cells/group (Goellner et al)
- 10 large clusters of follicular epithelial cells with more than 20 cells each (Nguyen et al)
- 6 groups of follicular epithelial cells on at least 2 of 6 aspirates (Hamburger et al)

Adequate in amount

- Papanicolaou Society of Cytopathology

NO - MAGIC - NUMBER

Cellularity of specimen is influenced by intrinsic nature of lesion (colloid rich nodules, cystic lesions).

Add a qualifier.



Technically well prepared

- Smearing
 - Promptly, to avoid clotting artifact
 - Thinly
- Fixation (OH) vs. air-drying
- Staining
 - Papanicolaou stain
 - Diff-Quik stain



Interpretation

- Clinical information needed
 - Size of lesion
 - Consistency
 - Fixation to surrounding structures
 - Response to suppressive therapy
 - History of head & neck irradiation
 - Age, sex, family history
 - Sonographic findings

Interpretation

- Pathologist performs FNA
- Endocrinologist performs FNA
- Radiologist performs FNA assisted by pathologist or cytotechnologist
 - Adipose tissue only
 - Cystic fluid
 - Fragments of fibrocollagenous tissue



Adipose tissue only

- If the pathologist performs FNA
 - Will take several samples
 - Will use different lengths of needles
 - Determine whether we are dealing with a lipoma of neck mimicking a thyroid nodule

If endocrinologist performs FNA, could be unsatisfactory specimen (subcutaneous fat)



Cystic fluid

- If few follicular epithelial cells are present, add a qualifier.

Clinical behavior is most relevant

- If lesion refills rapidly (24 hrs), suspect cystic papillary carcinoma.

Fibrocollagenous tissue

If you applied ample suction, consider fibrous phase of Hashimoto's thyroiditis.

- Look for:
 - “basket cells”
 - skeletal muscle fibers
- Aspirate contralateral lobe.

Summary

- Cytologic diagnosis should be rendered only on adequate specimens
- Keep in mind that the cellularity of a specimen is greatly influenced by the intrinsic nature of the lesion
- The pathologist should know how to count, but it is more important to know what counts



ASK YOURSELF

- Does this sample explain what you palpate?
- If this specimen is from a nodule in your thyroid: *Do you think it has been sampled adequately?*

References:

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- Hamburger JI, Husain M. Semiquantitative criteria for fine-needle biopsy diagnosis: Reduced false-negative diagnoses. *Diagn Cytopathol* 1988; 4:14-17
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