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:

• Guidelines of the Papanicolaou Society of Cytopathology for the examination of fine-needle aspiration specimens from thyroid nodules. Mod Pathol 1996; 9:710-715

• Demers LM, Spencer CA. Thyroid fine needle aspiration (FNA) and cytology. In: Laboratory medicine practice guidelines. Thyroid 2003; 13:80-86

References:


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

• Oertel YC. A pathologist trying to help endocrinologists to interpret cytopathology reports from thyroid aspirates. J Clin Endocrinol Metab 2002; 87:1459-1461