

Thyroid Biopsy

Once a **thyroid nodule** has been detected (or suspected), there are a few things that AAEDA physicians want to know before any recommendations can be made regarding what actions to take. The vast majority of thyroid nodules are benign and nothing to worry about, so the focus is on determining which ones have any reasonable chance of being cancerous. It is those few worrisome nodules which will need to be operated upon with that portion of the thyroid removed.

One of the first tests which is routinely performed is the Fine Needle Aspiration Biopsy (FNA). In this test, a very small needle is passed into the nodule and some cells are aspirated out and then placed on a glass slide for a pathologist to stain and determine if they are malignant or not. This test is very simple, takes just 30-60 minutes, is virtually pain free, and can be very accurate. The FNA will usually (but not always) tell if a nodule is benign or malignant. Often this is the only test which is needed.

Thyroid fine needle aspiration (FNA) biopsy is the only non-surgical method which can differentiate malignant and benign nodules in most, but not all, cases. The needle is placed into the nodule several times and cells are aspirated into a syringe. The cells are placed on a microscope slide, stained, and examined by a pathologist. The nodule is then classified as **nondiagnostic, benign, suspicious or malignant**.

- **Nondiagnostic** indicates that there are an insufficient number of thyroid cells in the aspirate and no diagnosis is possible. A nondiagnostic aspirate should be repeated, as a diagnostic aspirate will be obtained approximately 50 percent of the time when the aspirate is repeated. Overall, five to 10 percent of biopsies are nondiagnostic, and the patient should then undergo either an ultrasound or a thyroid scan for further evaluation.
- **Benign** thyroid aspirations are the most common (as we would suspect since most nodules are benign) and consist of benign follicular epithelium with a variable amount of thyroid hormone protein (colloid).
- **Malignant** thyroid aspirations can diagnose the following thyroid cancer types: papillary, follicular variant of papillary, medullary, anaplastic, thyroid lymphoma, and metastases to the thyroid. Follicular carcinoma and Hurthle cell carcinoma cannot be diagnosed by FNA biopsy. This is an important point. Since benign follicular adenomas cannot be differentiated from follicular cancer (~12% of all thyroid cancers) these patients often end up needing a formal surgical biopsy, which usually entails removal of the thyroid lobe which harbors the nodule.
- **Suspicious** cytologies make up approximately 10 percent of FNA's. The thyroid cells on these aspirates are neither clearly benign nor malignant. Twenty five percent of suspicious lesions are found to be malignant when these patients undergo thyroid surgery. These are usually follicular or Hurthle cell cancers. Therefore, surgery is recommended for the treatment of thyroid nodules from which a suspicious aspiration has been obtained.

FNA is the first, and in the vast majority of cases, the only test required for the evaluation of a solitary thyroid nodule. (A TSH value should also be obtained to evaluate thyroid function.) Thyroid ultrasound and thyroid scans are usually not required for evaluation of a solitary thyroid nodule. FNA has reduced the cost for evaluation and treatment of thyroid nodules, and has improved yield of cancer found at thyroid surgery. Although a solitary thyroid nodule can enlarge or shrink over time, the natural history of solitary nodules reveals that most nodules change little with time.