

Fine Needle Aspiration Biopsy of Thyroid Nodules

Procedure and interpretation of results

WHAT IS THE THYROID GLAND?

The thyroid gland is a butterfly-shaped endocrine gland that is normally located in the lower front of the neck. The thyroid's job is to make thyroid hormones, which are secreted into the blood and then carried to every tissue in the body. Thyroid hormone helps the body use energy, stay warm and keep the brain, heart, muscles, and other organs working as they should.

WHAT IS A FINE NEEDLE ASPIRATION BIOPSY (FNA OR FNAB) OF A THYROID NODULE?

A fine needle aspiration biopsy of a *thyroid nodule* is a simple and safe procedure performed in the doctor's office. Typically, the biopsy is performed under ultrasound guidance to ensure accurate placement of the needle within the *thyroid nodule*. You will be asked to lie down on your back with your head tipped backwards, so that your neck is extended. Sometimes, a pillow is placed under your shoulders to help you get in best position for the biopsy.

During the procedure you may feel some neck pressure from the ultrasound probe and from the needle. You will be asked to remain as still as possible and avoid coughing, talking and swallowing during the biopsy.

HOW CAN YOU PREPARE FOR YOUR THYROID FNA?

Most medications can be continued. However, anticoagulants, also called "blood thinners", often need to be stopped temporarily in anticipation of your thyroid biopsy. These medications can increase the risk of bleeding. It is common to receive specific instructions regarding when to stop taking medications from your doctor's office prior to the procedure. If you have any questions about taking your medications prior to the thyroid biopsy, be sure to talk to your doctor.

Generally, you will not be required to be fasting on the day of your appointment. During the thyroid biopsy, ultrasound gel will be applied to the neck to obtain ultrasound images. This gel is water soluble and non-toxic, but may get on clothing or jewelry. You may wish to wear comfortable clothing and take off any jewelry from around the neck for the procedure.

HOW IS A THYROID FNA PERFORMED?

The neck will first be cleaned with an antiseptic. A local or topical anesthetic may be applied. For the biopsy, your doctor will use a very thin needle to withdraw cells from the thyroid nodule. The needle used is smaller in diameter than those used in most blood draws. Your doctor will insert the needle through the skin and into the thyroid nodule. After the sampling, which only takes several seconds, the needle will be removed. New needles are used for additional samples. Several samples of cells will be obtained, by sticking a fine needle in various parts of the nodule usually between two and six times. This assures a better chance to find cancerous cells if they are present. If there is fluid in the nodule, a syringe may be used to drain it.

Once the biopsy is completed, pressure will be applied to the neck. The procedure usually lasts less than 30 minutes.

WHAT SHOULD YOU EXPECT AFTER THE PROCEDURE?

The procedure is usually performed using a local anesthetic and no medications are used that affect consciousness or thinking. After the procedure, you may be asked to sit up slowly to prevent you from getting lightheaded. Most patients typically leave feeling well. There are very few, if any, restrictions on what you can do after a thyroid biopsy. Because of this, it is not generally necessary to bring a companion to help or drive you home.

Some neck discomfort at the site of the biopsy is expected following the procedure. Tylenol® and ice compresses can be used to relieve discomfort.

WHAT HAPPENS TO THE BIOPSY MATERIAL AFTER THE PROCEDURE?

The biopsy samples may be used to make slides immediately and/or collected in a solution to wash excess blood. Specially trained doctors, cytopathologists, then make slides from the material and examine them under a microscope to make a diagnosis.



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HOW LONG DOES IT TAKE FOR THE RESULTS TO RETURN?

Generally, it can take anywhere from a few days to 2 weeks for the result to return.

WHAT ARE THE POSSIBLE RESULTS?

Please note that different institutions and centers will have different rates of results depending on their specific populations.

- 1. Benign** – This accounts for up to 70% of biopsies when using the Bethesda System (one of the most common ways that cytopathologists classify nodule biopsy specimens). The risk of malignancy in this group is typically less than 3%. These nodules are generally monitored with a follow up ultrasound within 18 months and if needed, periodically after that.
- 2. Malignant (cancer)** – This accounts for 3-7% of all biopsy specimens. The most common type of thyroid cancer seen in these biopsies is papillary thyroid cancer. When a biopsy comes back as malignant, there is a 97-99% chance that it is truly a cancerous lesion. Almost all of these nodules will go to surgery (thyroidectomy).
- 3. Suspicious for malignancy** – When a biopsy result returns as suspicious for malignancy, there is a 60-75% chance of cancer. The cytopathologist will see features that are worrisome, but not diagnostic of a malignant or cancerous lesion. The treatment is typically surgery.
- 4. Atypia of Undetermined Significance (AUS) or Follicular Lesion of Undetermined Significance (FLUS)** – These categories may be alternatively called “indeterminate.” These specimens have some features that are worrisome and some features that look more benign. This diagnosis carries a 5-15% risk of malignancy, although there is some variability among institutions. A repeat biopsy and/or genetic testing may be useful in these cases.
- 5. Follicular Neoplasm or ‘Suspicious for follicular neoplasm’** – This category carries a 15-30% risk of malignancy. It is difficult to tell if the nodules are a benign condition called follicular adenoma or a malignant nodule unless it is taken out. Generally, at least half of the thyroid is removed (the side with the nodule) for diagnosis and treatment.

- 6. Non-diagnostic** – This means that there are not enough cells in the sample to make a diagnosis. Despite our best efforts and even when we can see that the needle was in the nodule during the biopsy, the specimen sometimes does not have enough thyroid follicular cells to make a proper diagnosis. Non-diagnostic samples can also occur when only cyst fluid is taken out, and for other reasons, such as the presence of too much blood. In these cases, the biopsy should be repeated, and if non-diagnostic a second time, consideration is given to a third biopsy, monitoring, or surgery.

For more detailed information about FNA results, please see the *Thyroid Nodules* brochure.

WHAT GENETIC TESTS ARE USED FOR THYROID BIOPSIES OF NODULES?

Within the past few years, several molecular tests have become available to help determine whether some nodules are cancerous or benign. These tests look at many genes within the thyroid nodule’s genetic make-up (DNA). They are being used when a nodule biopsy comes back with a diagnosis of ‘indeterminate’. Sometimes, the person doing the biopsy will perform an additional pass of the needle to obtain material for such a test. This may be done on the first biopsy or at the time of a repeat biopsy.



FURTHER INFORMATION

Further details on this and other thyroid-related topics are available in the patient thyroid information section on the American Thyroid Association® website at www.thyroid.org.

For information on thyroid patient support organizations, please visit the *Patient Support Links* section on the ATA website at www.thyroid.org

