

# THYROID NODULE

## What is a thyroid nodule?

The thyroid gland is located in the lower front of the neck, above the collarbones and below the voice box (larynx). A thyroid nodule is a lump in or on the thyroid gland. Thyroid nodules are common, but are usually not diagnosed. They are detected in about six percent of women and one to two percent of men. They are 10 times as common in older individuals than in younger ones. Sometimes several nodules will develop in the same person. Any time a lump is discovered in thyroid tissue, the possibility of malignancy (cancer) must be considered. Fortunately, the vast majority of thyroid nodules are benign (not cancerous).

Most patients with thyroid nodules have no symptoms whatsoever. Many are found by chance to have a lump in the thyroid gland on a routine physical exam or an imaging study of the neck done for unrelated reasons (CT or MRI scan of spine or chest, carotid ultrasound, etc.). In addition, a substantial number are first noticed by patients or those they know who see a lump in the front portion of the neck, which may or may not cause symptoms such as a vague pressure sensation or discomfort when swallowing. Obviously, finding a lump in the neck should be brought to the attention of your physician, even in the absence of symptoms.

Nodules can be caused by a simple overgrowth of “normal” thyroid tissue, fluid-filled cysts, inflammation (thyroiditis), or a tumor (either benign or cancerous). Most nodules were surgically removed until the 1980s. In retrospect, this approach led to many unnecessary operations, since fewer than 10 percent of the removed nodules proved to be cancerous. Most removed nodules could have simply been observed or treated medically.

## What is a thyroid needle biopsy?

A thyroid fine needle biopsy that employs a very thin needle, usually smaller than one used to draw blood, is a simple procedure that can be performed in the physician’s office. Many physicians numb the skin over the nodule prior to the biopsy, but it is not necessary to be put to sleep, and patients can usually return to work or home afterward with no ill effects. This test provides specific information about a particular patient’s nodule, information that no other test can offer short of surgery. Although the test is not perfect, a thyroid needle biopsy will provide sufficient information on which to base a treatment decision more than 75 percent of the time, eliminating the need for additional diagnostic studies.

The use of fine needle biopsy has drastically reduced the number of patients who have undergone unnecessary operations for benign nodules. However, about 10 to 20 percent of biopsy specimens are interpreted as inconclusive or inadequate; that is, the pathologist cannot be certain whether the nodule is cancerous or benign. This situation is particularly common with cystic (fluid-filled) nodules, which contain very few thyroid cells to examine and with those nodules composed of clusters of thyroid or follicular cells that cannot be conclusively determined to be either benign or malignant. In such cases, a physician who is experienced with thyroid disease can use other criteria to make a decision about whether or not to operate or to use newer methods known as “molecular markers” for diagnosing thyroid nodules (see additional information at: <http://empoweryourhealth.org/vol4-issue3/thyroid-nodule-a-common-problem-now-more-easily-resolved>). The fine needle biopsy can be repeated in those patients where the initial attempt failed to yield enough material to make a diagnosis. Many physicians use thyroid ultrasonography to guide the needle’s placement.

## What is thyroid ultrasonography?

After a physical exam you will probably have a thyroid ultrasound. Thyroid ultrasonography is a procedure for obtaining pictures of the thyroid gland by using high-frequency sound waves that pass through the skin and are reflected back to the machine to create detailed images of the thyroid. It can visualize nodules as small as two to three millimeters. Ultrasound distinguishes thyroid cysts (fluid-filled nodules) from solid nodules. Many nodules have both solid and cystic components, and very few purely cystic nodules occur. Recent advances in ultrasonography help physicians identify nodules that are more likely to be cancerous.

Thyroid ultrasonography is also utilized for guidance of a fine needle for aspirating thyroid nodules. Ultrasound guidance enables physicians to biopsy the nodule to obtain an adequate amount of material for interpretation. Such guidance allows the biopsy sample to be obtained from the solid portion of those nodules that are both solid and cystic, and it avoids getting a specimen from the surrounding normal thyroid tissue if the nodule is small.

Even when a thyroid biopsy sample is reported as benign, the size of the nodule should be monitored. A thyroid ultrasound examination provides an objective and precise method for detection of a change in the size of the nodule. A nodule with a benign biopsy that is stable or decreasing in size is unlikely to be malignant or require surgical treatment.



## What is a thyroid scan?

Thyroid scans are pictures of the thyroid gland taken after a small dose of a radioactive material, concentrated by thyroid cells, has been injected or swallowed. Scans are able to distinguish benign from malignant nodules five percent of the time. For this reason, thyroid scans are of relatively little value in most patients. The exception to this is when the levels of TSH, a pituitary hormone which reflects the amount of thyroid hormone inside of cells, are toward the lower end of the normal range or below the normal range. When the TSH is in this range the odds go up that a scan will be “hot” or hyperfunctioning, taking up more radioactivity than normal thyroid tissue—as opposed to “warm,” when it equals surrounding tissue, or “cold,” when it is less than surrounding tissue. Because cancer is rarely found in hot nodules, a scan showing a hot nodule eliminates the need for fine needle biopsy. If a hot nodule causes hyperthyroidism, it can be treated with radioiodine or surgery.

Neither a thyroid scan nor radioiodine treatment should ever be given to a pregnant woman! Small amounts of radioactive iodine will also be excreted in breast milk. Since radioiodine could permanently damage the infant’s thyroid, breastfeeding is not allowed. If radioiodine is inadvertently administered to a woman who is subsequently discovered to be pregnant, the advisability of terminating the pregnancy should be discussed with the patient’s obstetrician and endocrinologist. Therefore, prior to administering diagnostic or therapeutic radioiodine treatment, pregnancy testing is mandatory whenever pregnancy is possible.

## How are thyroid nodules treated?

Your endocrinologist will use the tests mentioned above to arrive at a recommendation for optimal management of your nodule. Most patients who appear to have benign nodules require no specific treatment and can simply be followed by a physician. Some physicians prescribe thyroid hormone with the hope of preventing nodule growth or reducing the size of cold nodules, while radioiodine may be used to treat hot nodules.

If cancer is suspected, surgical treatment will be recommended. The primary goal of therapy is to remove all thyroid nodules that are cancerous, and, if malignancy is confirmed, remove the rest of the thyroid gland along with any abnormal lymph nodes. If surgery is not recommended, it is important to have regular follow-up of the nodule by a physician experienced in such an evaluation.

