



## THYROID NODULES

# The American Thyroid Association ultrasound classification system can help determine the risk of cancer in indeterminate thyroid nodules

### BACKGROUND

Thyroid nodules are very common, occurring in up to 50% of patients. The best imaging method for evaluation of thyroid nodules is ultrasound. The American Thyroid Association guidelines for management of thyroid nodule offers a system for classifying thyroid nodules from benign to very low, low, intermediate and highly suspicious for thyroid cancer depending on the findings of ultrasound. This helps clinicians to choose the right thyroid nodule for thyroid biopsy.

Up to 20% of thyroid nodule biopsies come back as indeterminate, meaning a diagnosis of cancer or benign cannot be made looking at the cells alone. The chance of thyroid cancer in these nodules ranges from 5 to 30%. For further evaluation, a repeat biopsy using molecular markers to determine the risk of cancer can be helpful. Alternatively, surgery can be used to establish a definitive diagnosis. The current study evaluated the ability of The American Thyroid Association guidelines classification system to predict cancer in nodules with indeterminate biopsies.

### THE FULL ARTICLE TITLE

Valderrabano P et al Thyroid Nodules with Indeterminate Cytology: Utility of the American Thyroid Association Sonographic Patterns for Cancer Risk Stratification. *Thyroid* (2018) 28: 1004-1012 (PMID: 29848195)

### SUMMARY OF THE STUDY

The study was conducted by researchers in H Lee Moffit Cancer Center and Research Institute in Tampa, Florida. A total of 3325 thyroid biopsies done in this center from 2008 to 2015, with 861 ended up with indeterminate results. The final diagnosis (benign or cancer) was available for 463 of these nodules after surgery.

Three different physicians (one endocrinologist and two radiologists) reviewed the ultrasound images of these 463 nodules with indeterminate biopsy results. They classified these nodules independently according to The American Thyroid Association guidelines classification system to very low, low, intermediate and highly suspicious for thyroid cancer. A total of 5% of nodules were characterized as very low, 34% as low, 16% as intermediate and 8% as highly suspicious for thyroid cancer. Due to disagreement of the three physicians, 37% of the nodules were not assigned into any groups.

No cancer was found in nodules found in the very low category. A total of 20% of nodules ranked in the low or intermediate category were found to be cancerous. In nodules found to be in high-suspicious risk group, 56% were cancer. Of the nodules which were not assigned into any of the groups, 36% of were found to be cancerous after surgery.

Thyroid cancer with aggressive features like spread outside of the thyroid were predominantly in the highly suspicious group based on ultrasound.

### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The authors concluded that The American Thyroid Association guidelines classification system could help to predict the chance of thyroid cancer in indeterminate nodules. Nodules identified highly suspicious by ultrasound have a higher chance of thyroid cancer.

— Shirin Haddady, MD

### ATA THYROID BROCHURE LINKS

Papillary and Follicular Thyroid Cancer: <https://www.thyroid.org/thyroid-cancer/>

Thyroid Nodules: <https://www.thyroid.org/thyroid-nodules/>





**THYROID NODULES, continued**

**ABBREVIATIONS & DEFINITIONS**

**Thyroid nodule:** an abnormal growth of thyroid cells that forms a lump within the thyroid. While most thyroid nodules are non-cancerous (Benign), ~5% are cancerous.

**Thyroid Ultrasound:** a common imaging test used to evaluate the structure of the thyroid gland. Ultrasound uses soundwaves to create a picture of the structure of the thyroid gland and accurately identify and characterize nodules within the thyroid. Ultrasound is also frequently used to guide the needle into a nodule during a thyroid nodule biopsy.

**Thyroid biopsy:** a simple procedure that is done in the doctor's office to determine if a thyroid nodule is benign (non-cancerous) or cancer. The doctor uses a very thin needle to withdraw cells from the thyroid nodule. Patients usually return home or to work after the biopsy without any ill effects.

**Indeterminate thyroid biopsy:** this happens usually when the diagnosis is a follicular or hurthle cell lesion. Follicular and hurthle cells are normal cells found in the thyroid. Current analysis of thyroid biopsy results cannot differentiate between follicular or hurthle cell cancer from noncancerous adenomas. This occurs in 15–20% of biopsies and often results in the need for surgery to remove the nodule.

**Molecular markers:** genes and microRNAs that are expressed in benign or cancerous cells. Molecular markers can be used in thyroid biopsy specimens to either to diagnose cancer or to determine that the nodule is benign.

