

MANAGEMENT OF THYROID NODULES

Rajan Patel (Head & Neck, Facial Plastics, Reconstructive Surgeon)

0.25 CME Credits



Are thyroid nodules common?

Thyroid nodules are lumps that commonly arise within an otherwise normal thyroid gland. Thyroid nodules are three times more common in women than in men. The incidence of thyroid nodules increases with age with 50% of 50-year-old women having at least one thyroid nodule. Most thyroid nodules are benign (solid, cystic or a combination) and do not cause symptoms. These nodules are often discovered incidentally during examination or imaging (ultrasound or CT) for an unrelated reason. Abnormal thyroid function tests may prompt discovery of thyroid nodules. However, most thyroid nodules, including malignant nodules, are associated with normal thyroid function.

What are typical symptoms of thyroid nodules?

- Lump that is visible and/or palpable
- Compressive pharyngeal symptoms – pharyngeal sensation, nocturnal/unproductive cough, dysphagia
- Compressive airway symptoms – dyspnoea, stridor, dysphonia

What causes thyroid nodules?

- Thyroid adenomas – most adenomas have no known aetiology
- Thyroid cyst (degenerating adenoma)
- Iodine deficiency
- Thyroiditis (Grave's disease and often associated with hyperthyroidism)
- Thyroid cancer



1. Thyroid nodule causing compressive symptoms

What is the risk of thyroid cancer?

Thyroid nodules are malignant in about 5% of cases^{1,2} and occur with the same frequency in solitary nodules and multinodular goitres¹.

Thyroid cancer is more likely when any of the following factors (red flags) are also present¹:

- Male
- Young (<30 years)
- Elderly (>60 years)
- Family history of thyroid or other endocrine cancers
- Radiation exposure (environmental or head and neck radiation therapy)
- Rapid enlargement of nodule over several weeks
- Large, hard
- Palpable lymphadenopathy
- Dysphonia
- Stridor

How should thyroid nodules be investigated?

- TSH
- Ultrasound
- Ultrasound-guided FNA

Can ultrasound alone differentiate malignant from benign thyroid nodules?

Ultrasound is a useful triage tool to select high risk nodules that require FNA, particularly when ultrasound is performed by skilled and experienced personnel. However, ultrasound alone is insufficient to make a diagnosis of thyroid cancer³



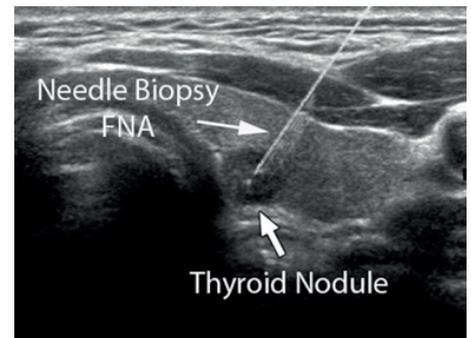
2. Ultrasound-guided FNA biopsy

How accurate is FNA?

False negative diagnosis in cases of thyroid cancer occur in up to 5%².

Is ultrasound necessary to guide FNA biopsy?

Ultrasound guidance of FNA reduces the risk of non-diagnostic biopsy from 15% to 3%⁴, and FNA of non-palpable thyroid nodules is not possible without ultrasound.



3. Image showing needle passing into non-palpable thyroid nodule with ultrasound guidance

When to refer a patient with a thyroid nodule?

- New thyroid nodules
- Enlarging thyroid nodules
- Red flag features present

When should a patient with a thyroid nodule consider surgery?

- FNA biopsy that is indeterminate or suspicious of thyroid cancer
- symptomatic benign thyroid nodule/s
- Graves thyroiditis that is refractory to medical therapy

What is management of asymptomatic benign thyroid nodule?

The specialist will make a management recommendation to the patient with a benign nodule based on a number of variables including patient demographics, thyroid cancer risks factors, patient anxiety, size of nodule, etc. Typically a repeat ultrasound scan after an interval of 6–12 months is recommended because of the small risk of a false negative result². In these cases repeat FNA biopsy can reduce the risk of a false negative result to 1%^{5,6}.

Summary

- The majority of thyroid nodules are asymptomatic and do not require treatment
- More than 90% of thyroid nodules are benign
- Thyroid function blood tests do not discriminate malignant from benign nodules
- Ultrasound-guided FNA biopsy is the investigation of choice to confirm/exclude malignancy
- Thyroid surgery is indicated when
 - Cancer is confirmed or suspected
 - Nodules are associated with troublesome symptoms
 - Thyrotoxicosis is refractory to medical therapy

References

1. Deandrea M, Mormile A, Veglio M, Motta M, Pellerito R, Gallone G, et al. Fine needle aspiration biopsy of the thyroid: comparison between thyroid palpation and ultrasonography. *Endocr Pract* 2002;8:282-6.
2. Mazzaferri EL. Management of a solitary thyroid nodule. *N Engl J Med* 1993;328:553-9.
3. Kountakis SE, Skoulas IG, Maillard AA. The radiologic work-up in thyroid surgery: fine needle biopsy versus scintigraphy and ultrasound. *Ear Nose Throat J* 2002;81:151-4.
4. Baskin HJ. Ultrasound guided fine needle aspiration biopsy of thyroid nodules and multinodular goiters. *Endocr Pract* 2004;10:242-5.
5. British Thyroid Association, Royal College of Physicians. British Thyroid Association guidelines for the management of thyroid cancer. *Clin Endocrin* 2014;81:S1
6. Haugen BR, Alexander EK, Bible KC, et al. 2015 American Thyroid Association management guidelines for patients with thyroid nodules and differentiated thyroid cancer. *Thyroid* 2016;26:1-133.