

# Thyroid Nodules – The Good, Bad and Ugly



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**Thyroid nodules commonly present as a neck swelling or as an incidentally detected imaging lesion. While the majority are benign, the risk of malignancy in an adult ranges from 7% to 15%.**

A history of childhood head and neck irradiation significantly increases the likelihood of a thyroid nodule being malignant. While the majority of thyroid malignancies are sporadic, a number of familial conditions can predispose to thyroid malignancies. Larger nodules can cause compressive symptoms including dyspnoea, globus and dysphagia. Any symptom suggestive of invasion, including dysphonia or dysphagia, should raise suspicion for an underlying malignancy.

Clinical examination should involve inspection and palpation of the thyroid gland and examination of the cervical lymph nodes. The presence of a firm, fixed nodule or ipsilateral cervical lymphadenopathy are late features suggestive of malignancy.

The key tests in differentiating a benign from a malignant nodule involve thyroid ultrasound and fine needle aspiration cytology (FNA).

## Ultrasound and TSH

Ultrasound is the best imaging modality for thyroid nodules. All patients in whom a nodule has been incidentally detected on another imaging modality should

## Key messages

- Thyroid nodules are increasingly encountered due to the widespread use of imaging
- Serum TSH, ultrasonography and FNA remain the key initial investigations whilst radionuclide scans are reserved for patients with low TSH
- The majority of nodules are benign and may require follow up based on sonographic features. Refer malignant nodules to a high-volume thyroid surgeon.

be referred for an ultrasound of the neck and thyroid.

Numerous ultrasound-based risk stratification systems are in use. The 2015 American Thyroid Association guidelines for Thyroid nodules categorised nodules into five groups based on the sonographic pattern that provides an estimate of the malignancy risk.

Notably, the guidelines discourage FNA for thyroid nodules less than 1cm in size. Papillary thyroid carcinoma (the most common type of thyroid carcinoma), less than 1cm in size, is defined as a microcarcinoma.

Many studies have demonstrated that, in the great majority of patients, papillary thyroid microcarcinoma is an indolent

disease. Furthermore, inconclusive cytology reports, resulting in patient anxiety and unnecessary interventions, are not infrequent. Therefore, it is considered that at the population level, the morbidity and cost are not in favour of diagnosing thyroid nodules that are <1cm in size.


A thyroid-stimulating hormone (TSH) serum level should be obtained in all patients. While most patients will be euthyroid, a suppressed TSH level might indicate a toxic nodule.

Ultrasound-guided fine needle aspiration should occur for thyroid nodules that satisfy the criteria for biopsy. The table outlines the cytology reporting categories and corresponding risk of malignancy.

## Management

The good comprise: Asymptomatic and euthyroid, ultrasonographically benign/ indeterminate, under 3cm nodule, and benign cytology. These patients can be reassured and do not require further investigation or surveillance. Thyroidectomy would be appropriate if there is future development of clinical enlargement or symptoms.

The bad comprise: Symptomatic or hyperthyroid, ultra-sonographically suspicious/malignant or >3cm and indeterminate/ follicular cytology. These patients require referral to an endocrinologist or an endocrine/ thyroid surgeon.

The ugly comprise: Ultra-sonographically malignant/ lymphadenopathy and suspicious/ malignant cytology. These patients require referral to an endocrine/ thyroid surgeon. With the exception of benign cytology, all other results should be referred to an endocrinologist or thyroid surgeon for further assessment. A significant proportion of thyroid nodules do not meet FNA criteria, and ultrasound features guide follow-up. 

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FNA Result	Risk of Malignancy	Clinical recommendation
Non-diagnostic	Unknown	Repeat FNA
Benign	1%	Consider Thyroidectomy if >3cm or symptomatic/ toxic nodule
Indeterminate	15%	Surveillance or Diagnostic Hemithyroidectomy
Atypical/ Follicular Neoplasm	20%	Surveillance or Diagnostic Hemithyroidectomy
Suspicious	>90%	Thyroidectomy
Malignant	99%	Thyroidectomy

**Bethesda diagnostic categories for thyroid cytopathology with associated malignancy risk and suggested management options in general practice**