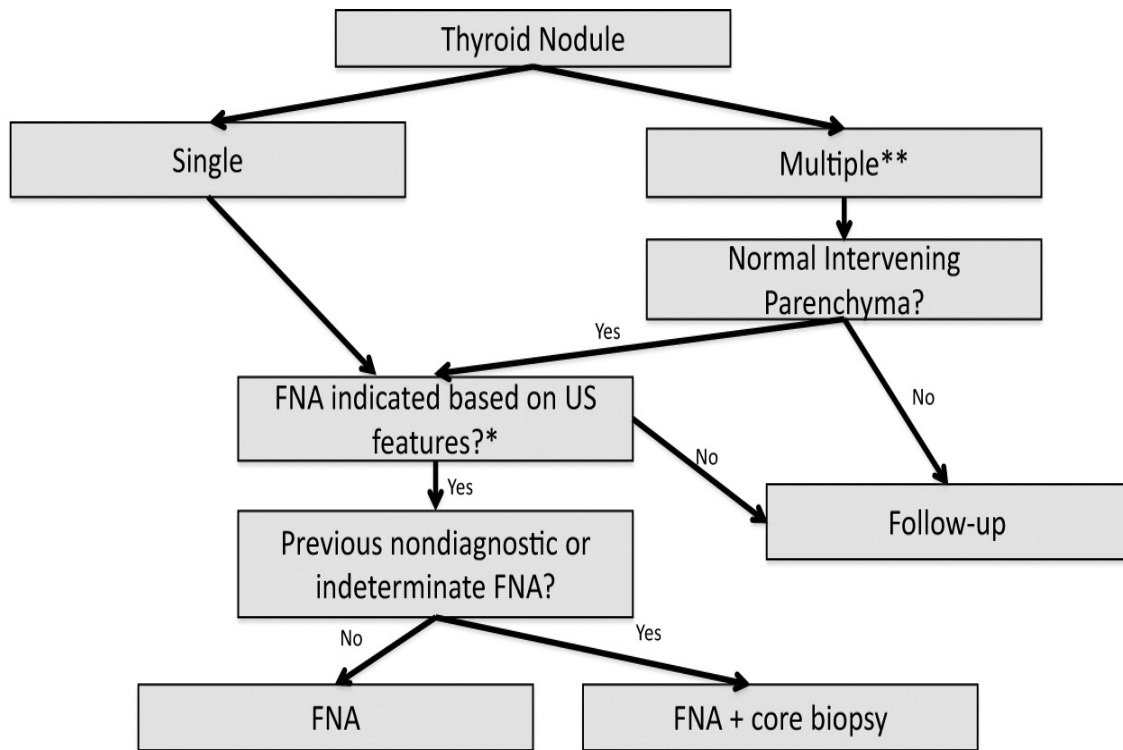


US/Clinical Features	Indication Threshold for FNAB
<b>Solitary nodule</b>	
Solid nodule with suspicious US features, particularly microcalcifications	≥1 cm
Solid nodule without suspicious US features	>1.5 cm
Mixed cystic-solid nodule with suspicious US features	>1.5cm
Mixed cystic-solid nodule without suspicious US features	>2 cm
Spongiform nodule	>2 cm
Simple cyst with none of the aforementioned characteristics	FNAB not necessary
Substantial growth (>50%) since previous US examination	FNAB indicated
Suspicious cervical lymph node	FNAB lymph node with or without a nodule
<b>Multiple nodules</b>	
Normal intervening parenchyma	FNAB of up to four suspicious nodules, with selection based on criteria for a solitary nodule; If no suspicious nodule is present, biopsy of The largest nodule may be considered
No normal intervening parenchyma	FNAB not necessary
<b>Diffuse rapid enlargement of thyroid</b>	FNAB indicated to exclude anaplastic carcinoma, Lymphoma, or metastasis
<b>Clinically high risk of thyroid cancer</b>	Threshold for FNAB is lower due to high risk Of thyroid cancer (eg, threshold >0.5 cm for a Suspicious solid nodule)
History of radiation exposure in childhood or adolescence FDG-avid nodule at PET Age <15 y or >45 y, particularly in males First-degree relative with thyroid cancer or type 2 MEN Personal history of thyroid cancer at lobectomy Personal history of thyroid cancer-associated conditions (familial adenomatous polyposis, Carney complex, Cowden syndrome, or type 2 MEN)	



\*FNA indications based on US features-

- Solid: suspicious nodule  $\geq 1$  cm; non-suspicious nodule  $\geq 1.5$  cm
- Mixed solid & cystic: suspicious nodule  $\geq 1.5$  cm; non-suspicious nodule  $\geq 2$  cm
- Spongiform nodule  $\geq 2$  cm
- Substantial growth (>50%) since prior US examination

\*\* If multiple nodules >1 cm in size are present, biopsy is indicated for up to 4 suspicious nodules; however, if there is no suspicious nodule, consider FNA of largest nodule

### Features suggesting benignity\*

- Uniform halo around nodule
- Predominantly cystic
- Avascular
- Enlarged thyroid with multiple nodules

### Features suspicious for malignancy

#### *Specific features*

- Microcalcifications
- Extension beyond thyroid margin
- Cervical lymph node metastasis
- Taller than wide in transverse plane
- Markedly hypoechoic

#### *Less Specific features*

- No halo around nodule
- Ill-defined or irregular margin
- Solid
- Increased central vascularity

Figure 22 Flow chart illustrates a decision algorithm based on US features that helps determine whether biopsy is indicated for a thyroid nodule and which biopsy technique to use. FNA = fine-needle aspiration. RadioGraphics,

<http://pubs.rsna.org/doi/abs/10.1148/rg.342135067>

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