

Advances in Cytology and Small Biopsies

Unusual Tumors of the Head and Neck

Kristine Wong, MD

Department of Pathology, Brigham and Women's Hospital and
Harvard Medical School

FNA of the Head and Neck

- Common FNA sites include thyroid, salivary gland, and cervical lymph nodes
- Broad range of tumors
- Rare tumor types may be misdiagnosed as more common entities





*Advances in Cytology and
Small Biopsies*

Unusual Tumors and
Mimics of Malignancy in
the Thyroid

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Objective

Discuss unusual entities in the thyroid that can mimic common tumors or
cause diagnostic confusion

1. Papillary carcinoma differential
 2. Oncocytic neoplasia differential
- Unusual morphologic patterns in follicular cell-derived lesions

1. Papillary Carcinoma: Mimics and Diagnostic Considerations

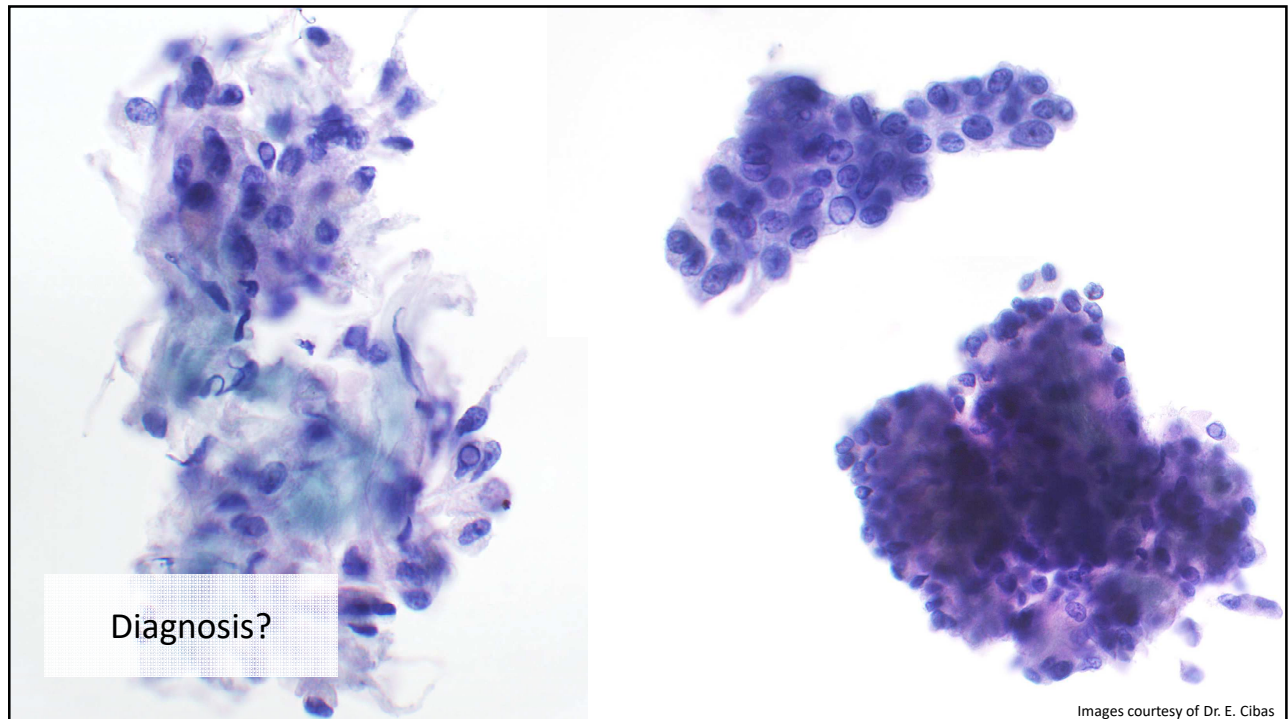
Benign	Low Risk	Malignant
Oncocytic adenoma	NIFTP	Oncocytic carcinoma
Papillary hyperplasia	Hyalinizing trabecular tumor	Cribriform morular thyroid carcinoma
FA with papillary architecture		Medullary thyroid carcinoma

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Case 1

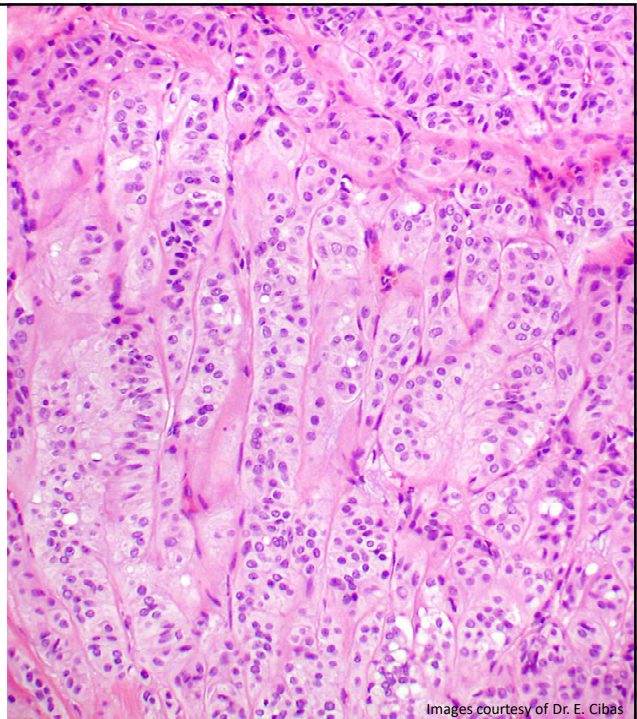
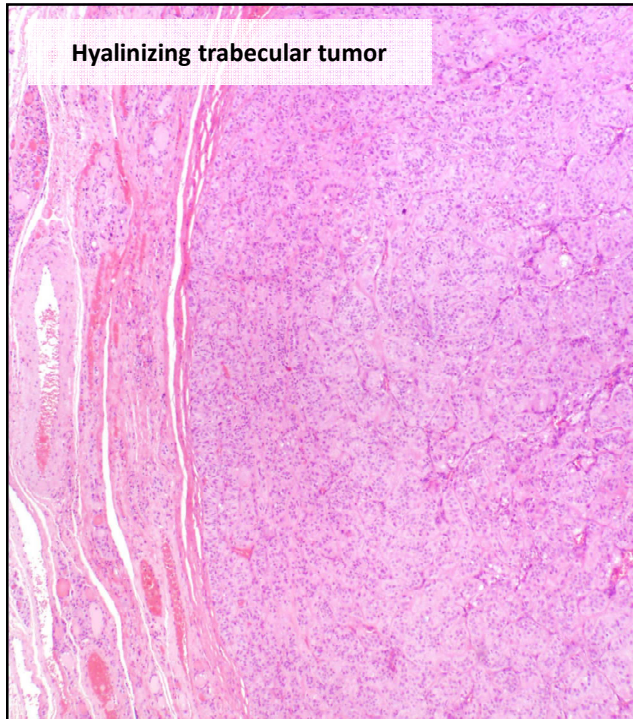
- 70F with an enlarged thyroid associated with tracheal deviation
- Ultrasound demonstrated a 4 cm hypoechoic nodule with smooth margins and coarse calcifications

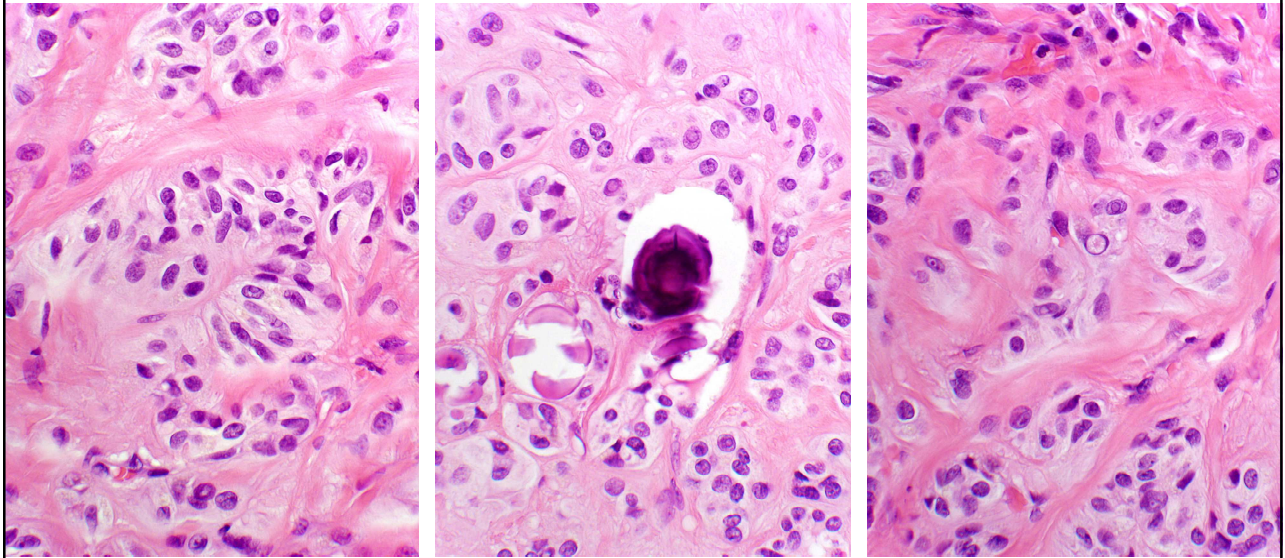


RIGHT THYROID NODULE, FINE NEEDLE ASPIRATION:

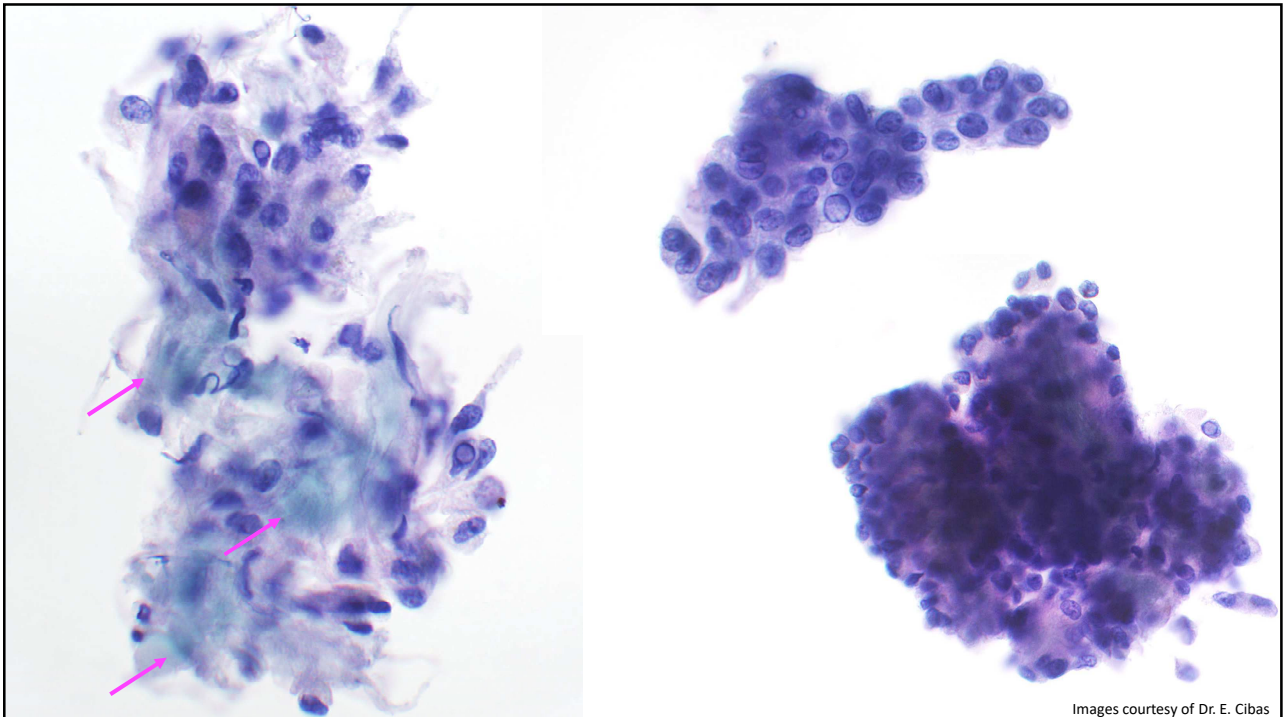
INTERPRETATION:
MALIGNANT.

DIAGNOSIS:
Papillary thyroid carcinoma.





Images courtesy of Dr. E. Cibas



Images courtesy of Dr. E. Cibas

Hyalinizing trabecular tumor

Hyalinizing trabecular tumor

- Rare (<1% of all thyroid tumors)
- F>>M
- In the “low risk neoplasm” subcategory of follicular cell-derived neoplasms in the most recent WHO (5th Ed.)
 - Vast majority are clinically benign
- IHC of somewhat limited utility; however, membranous staining is seen with the MIB-1 antibody
- Characterized by *GLIS* rearrangements (*PAX8::GLIS1*, *PAX8::GLIS3*)

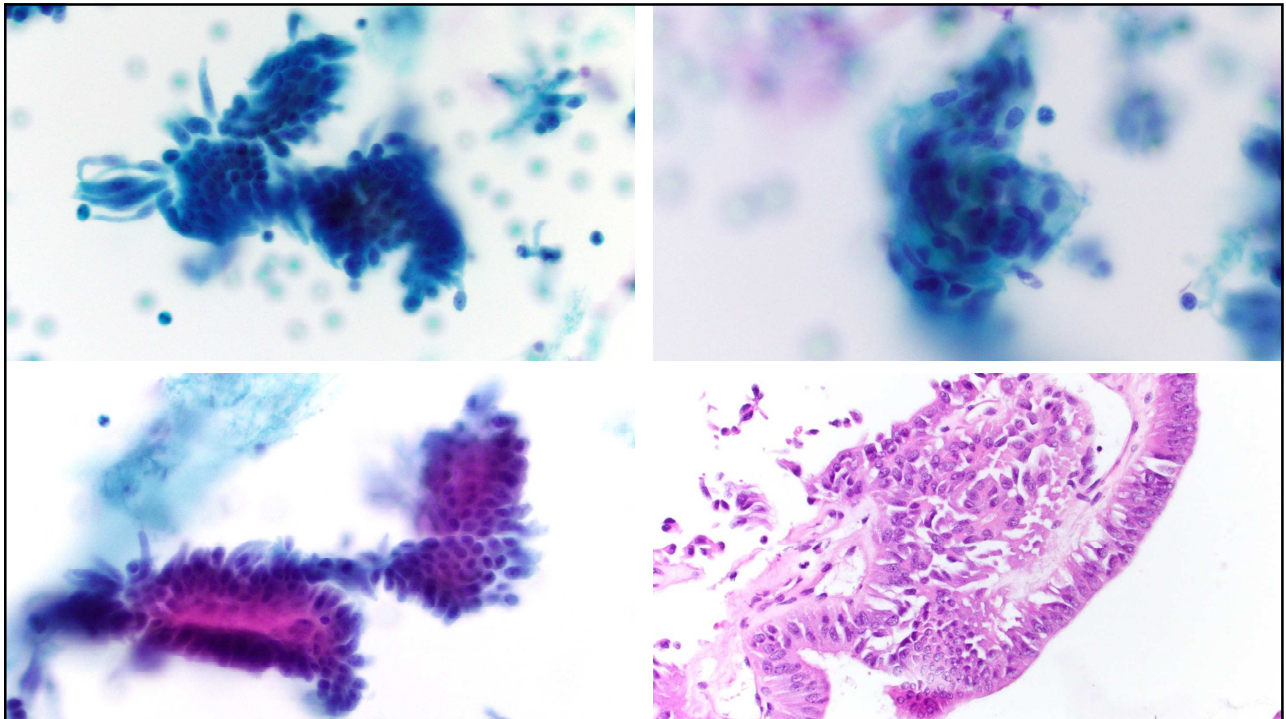
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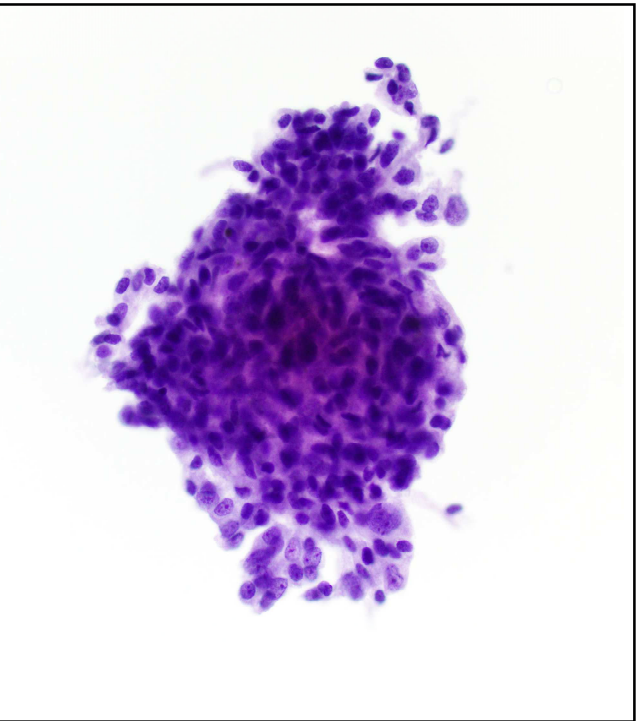
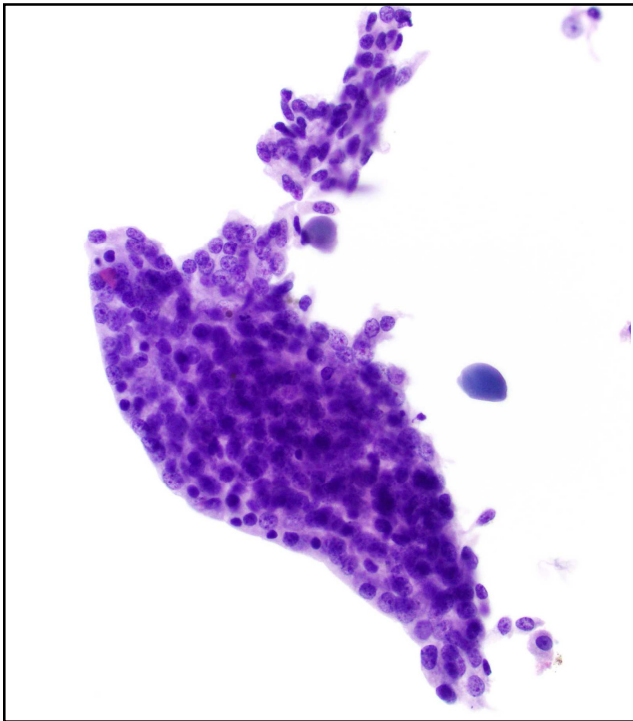
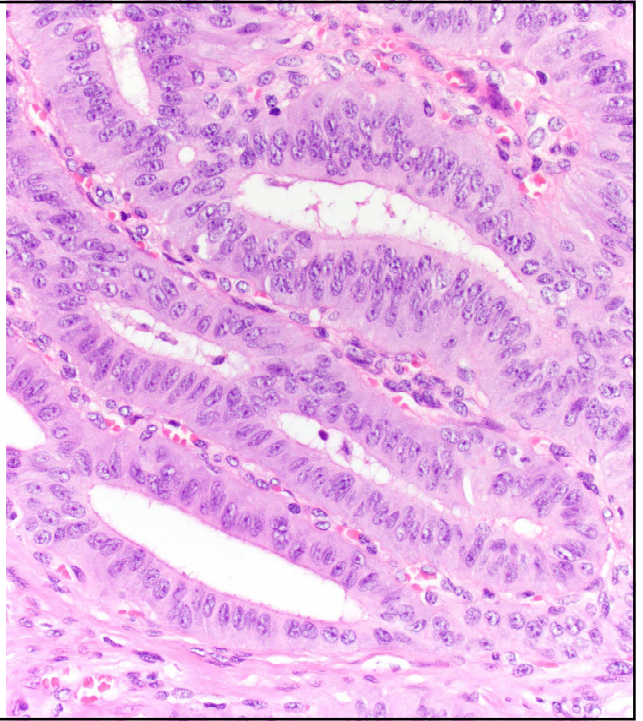
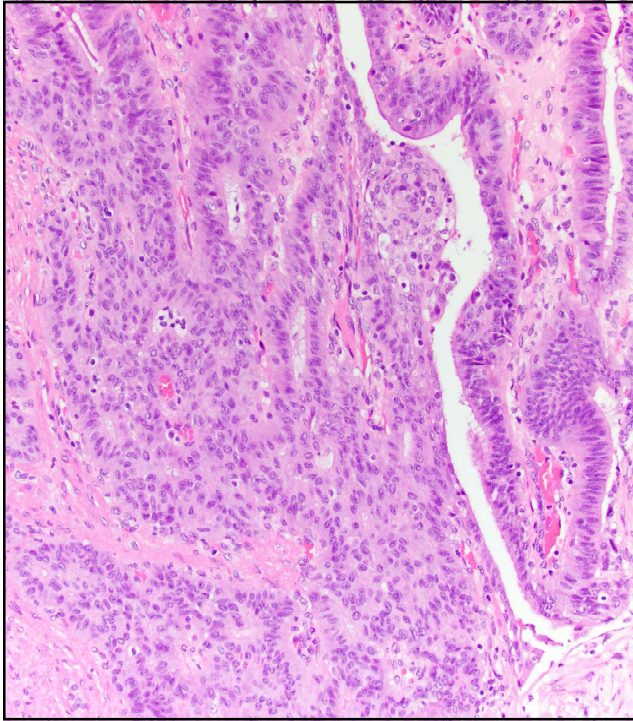
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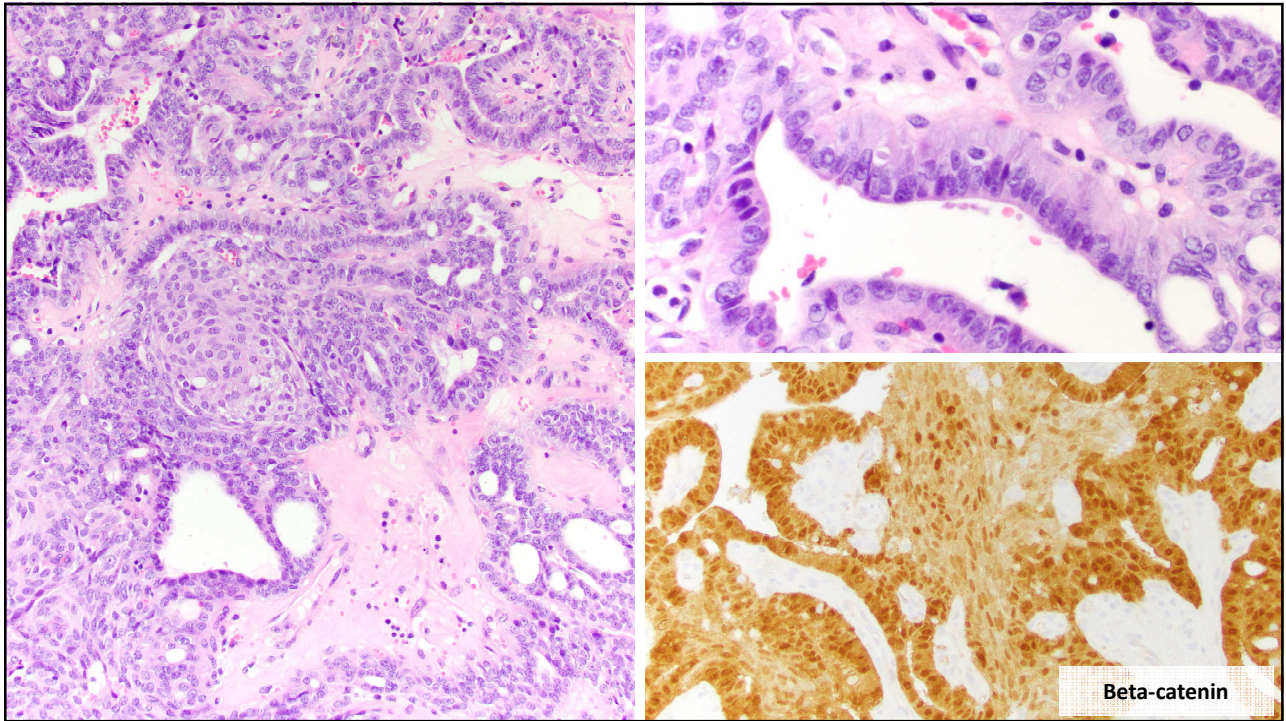
Cribriform-morular thyroid carcinoma

Cribriform-morular thyroid carcinoma

- Rare, F>>>M
- No longer considered a “variant” of PTC
- Characteristic morphologic features—variable nuclear atypia, but often without typical PTC-like nuclei
- Unclear histogenesis
 - Usually negative for PAX8, thyroglobulin
 - Associated with germline (i.e. FAP) and somatic mutations in *APC*
 - Cause nuclear/cytoplasmic beta-catenin expression



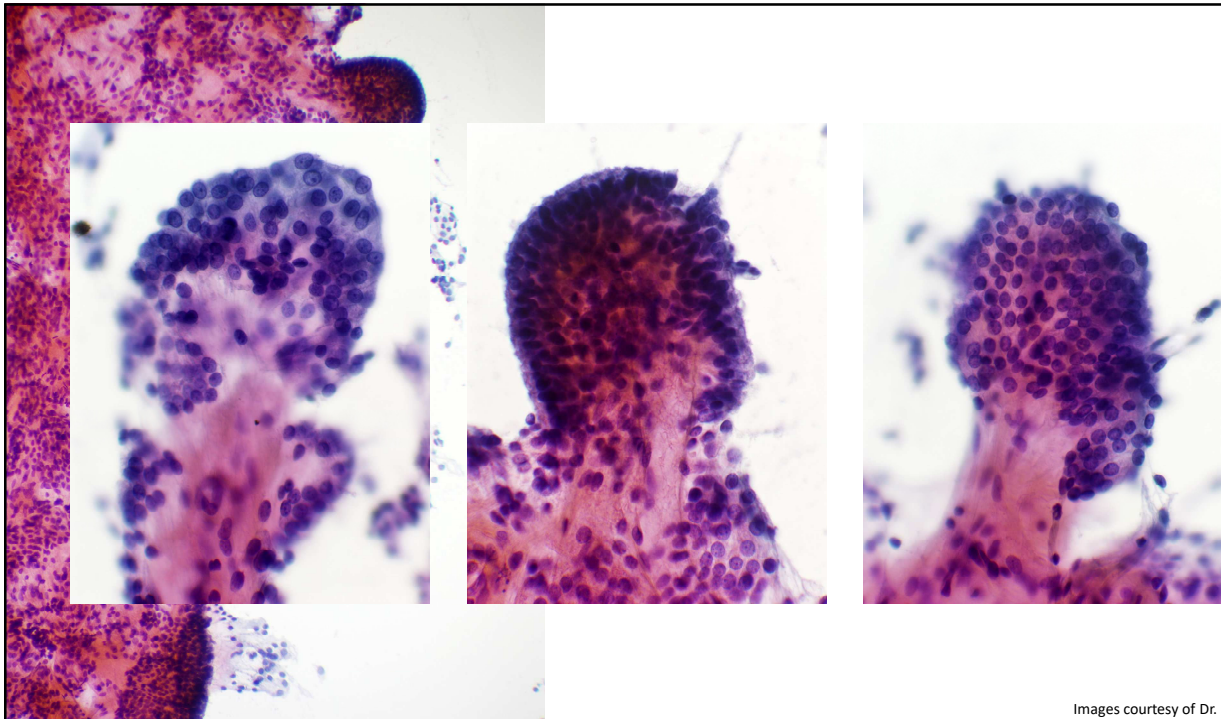




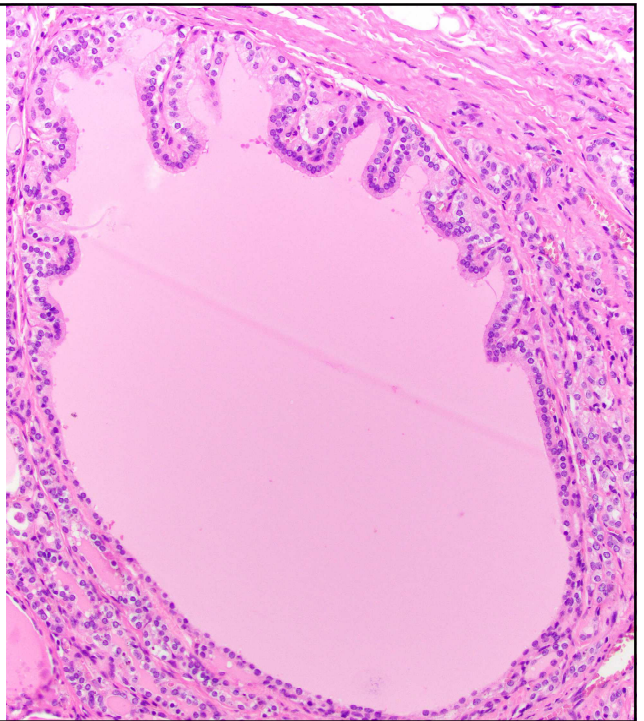
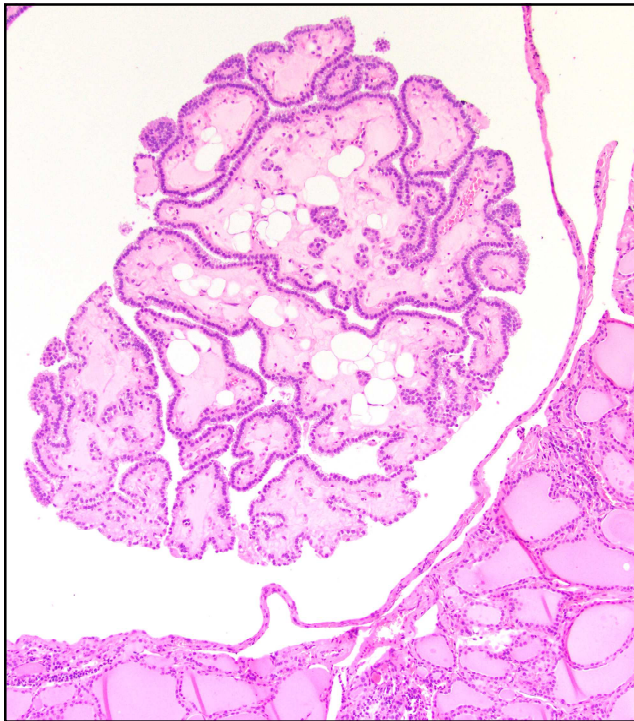
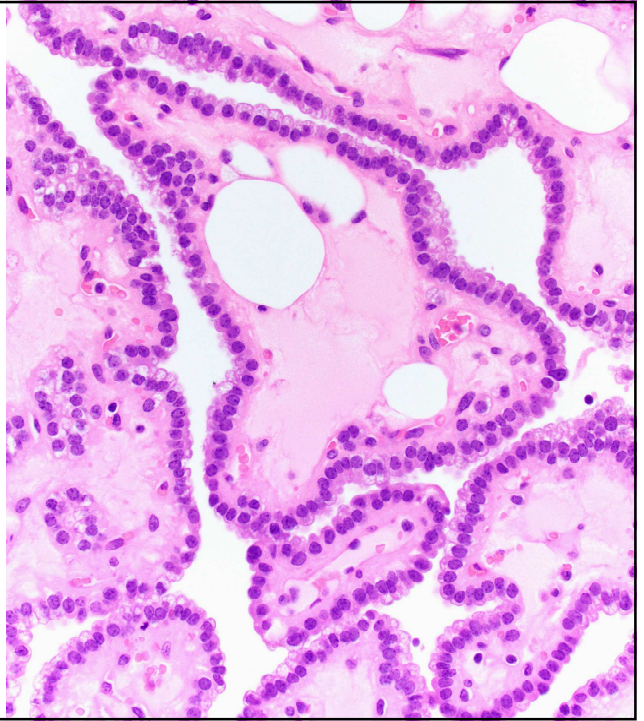
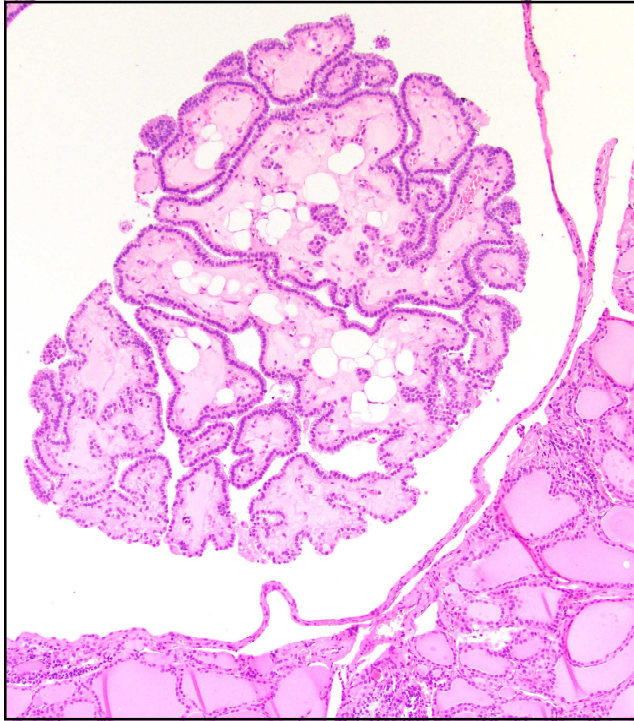
Papillary hyperplasia

Papillary hyperplasia

- Papillary architecture can frequently be seen in hyperplastic nodules, including in nodular hyperplasia/thyroid follicular nodular disease and in the setting of Graves' disease
 - Can also be seen in follicular and oncocytic neoplasms (including follicular adenoma with papillary architecture → associated with autonomous hyperfunctioning state and mutations in *TSHR* and *GNAS*)
- May have mixture of true papillae and pseudopapillary structures (i.e. Sanderson's nodules)



Images courtesy of Dr. E. Cibas



2. Oncocytic Neoplasia: Mimics and Diagnostic Considerations

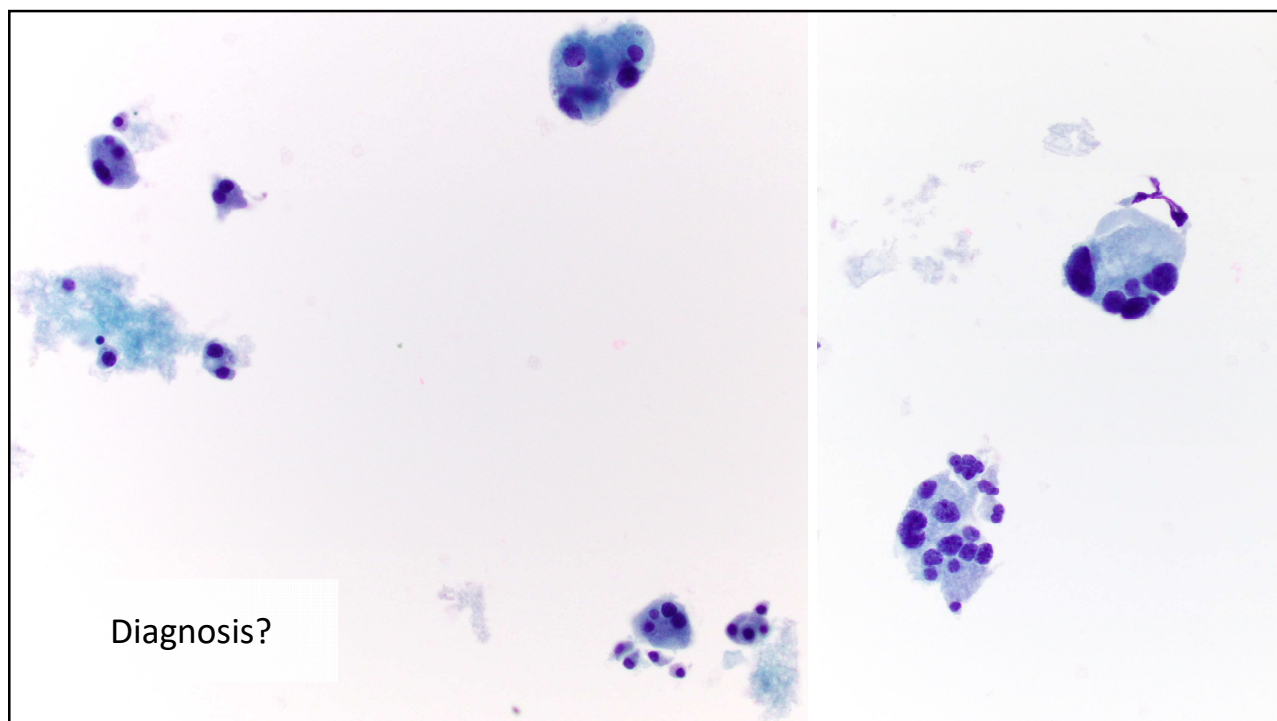
Follicular cell-derived	Non-follicular cell-derived
Thyroiditis (with oncocytic metaplasia)	Parathyroid tissue
Hyperplastic nodule	Medullary carcinoma
Non-oncocytic follicular neoplasm	Granular cell tumor
Papillary carcinoma	Metastasis

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Follicular cell-derived	Non-follicular cell-derived
Thyroiditis (with oncocytic metaplasia)	Parathyroid tissue
Hyperplastic nodule	Medullary carcinoma
Non-oncocytic follicular neoplasm	Granular cell tumor
Papillary carcinoma	Metastasis

Case 2

- 60F with an incidentally detected thyroid nodule
- Ultrasound demonstrated a 1 cm hypoechoic nodule with smooth margins and coarse calcifications



FINE NEEDLE ASPIRATION, LEFT THYROID NODULE:

INTERPRETATION:

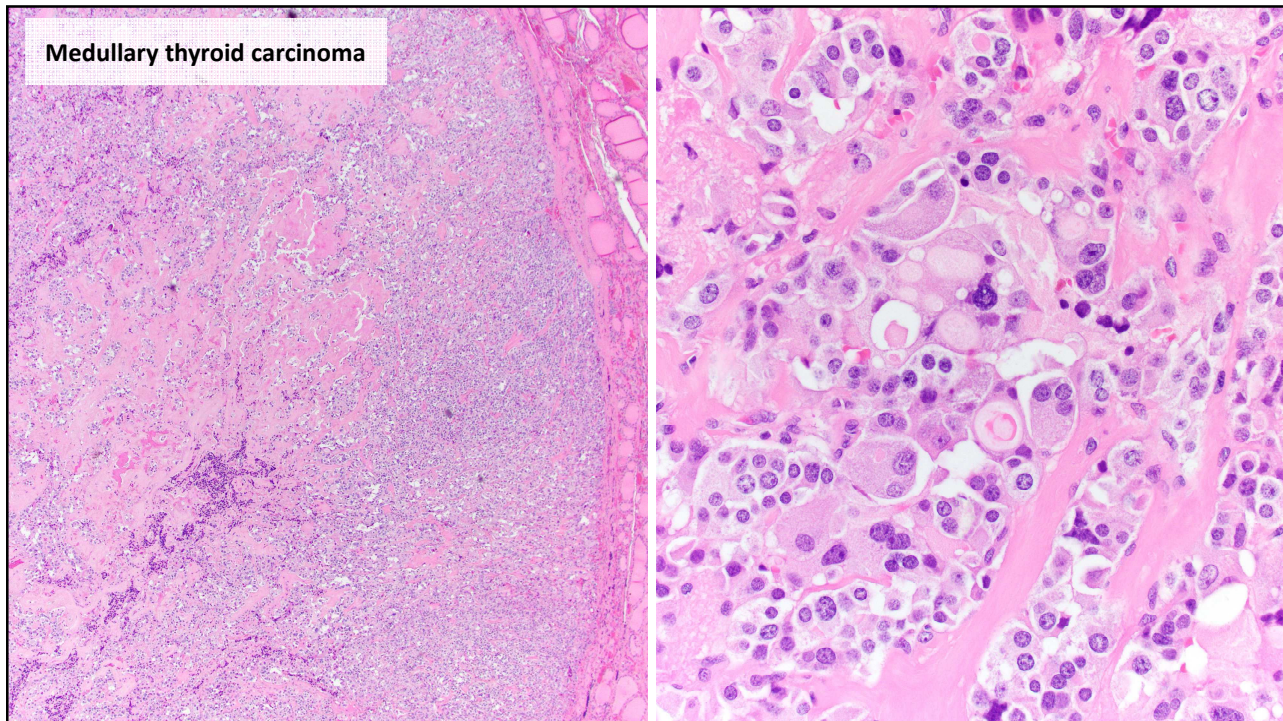
SUSPICIOUS FOR A HÜRTHLE CELL (ONCOCYTIC) NEOPLASM.

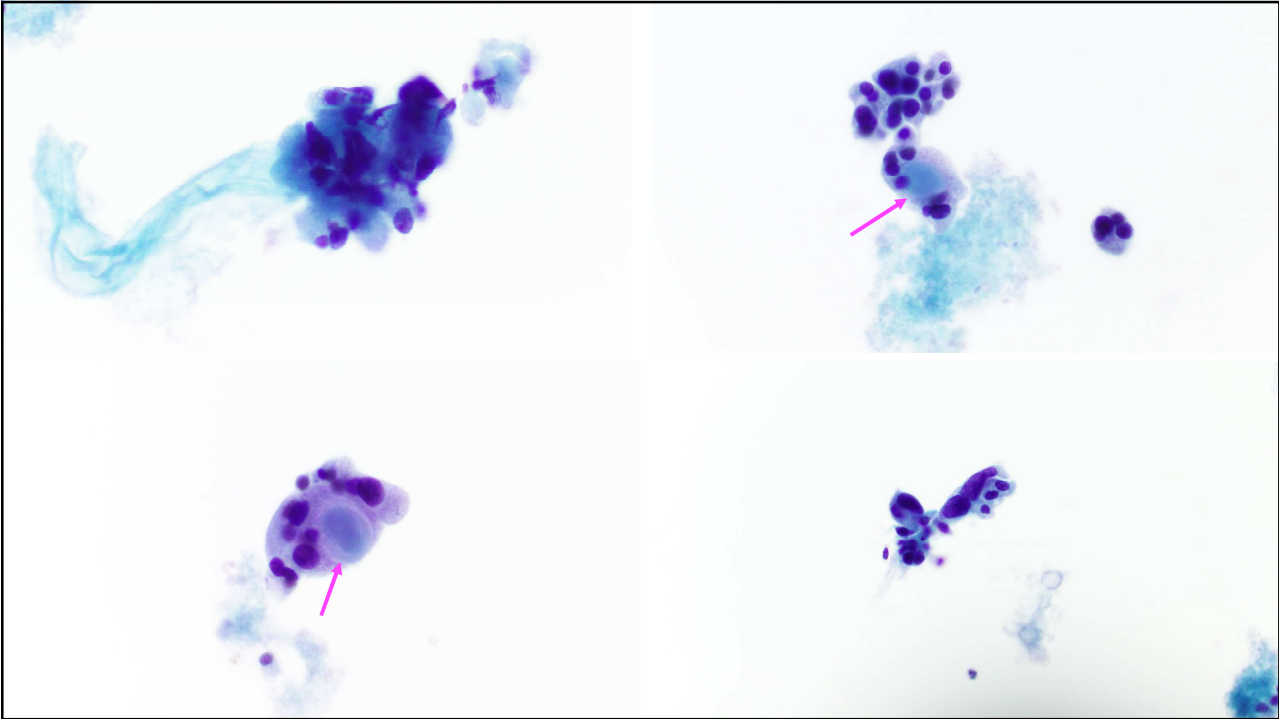
DIAGNOSIS:

The cytologic features suggest a neoplasm. Definitive distinction between an adenoma and carcinoma is not possible on cytologic material.

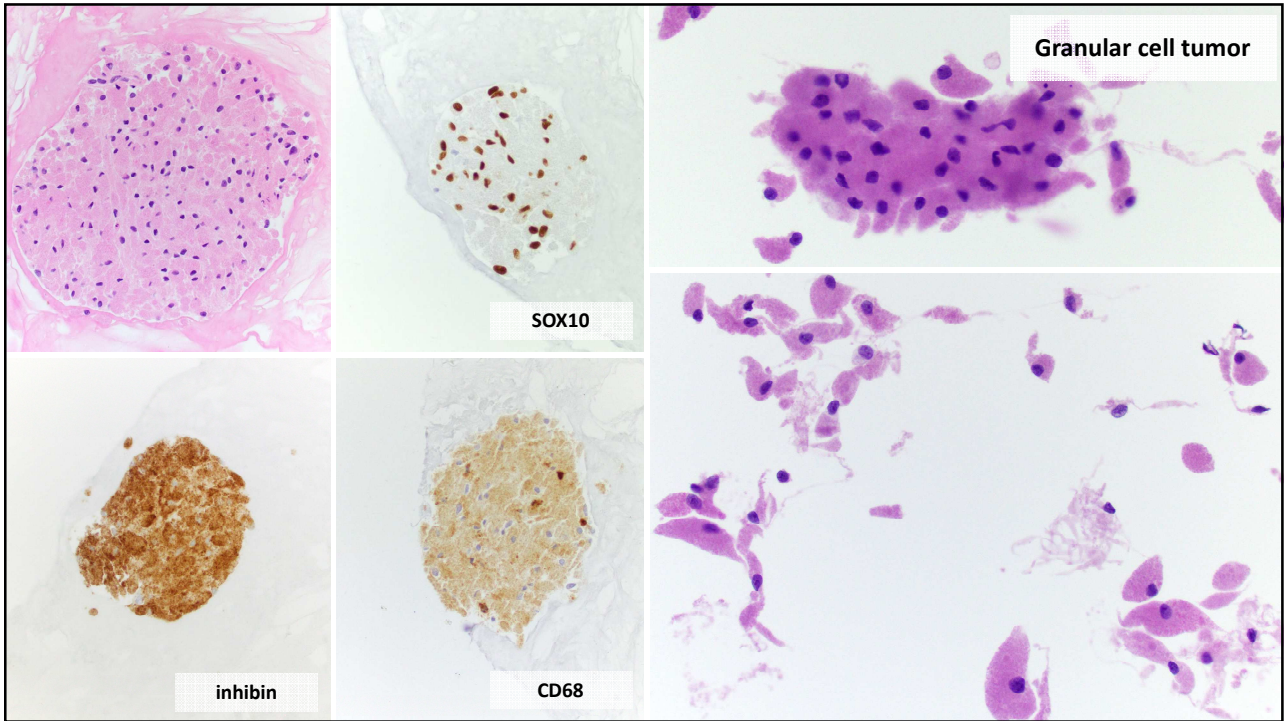
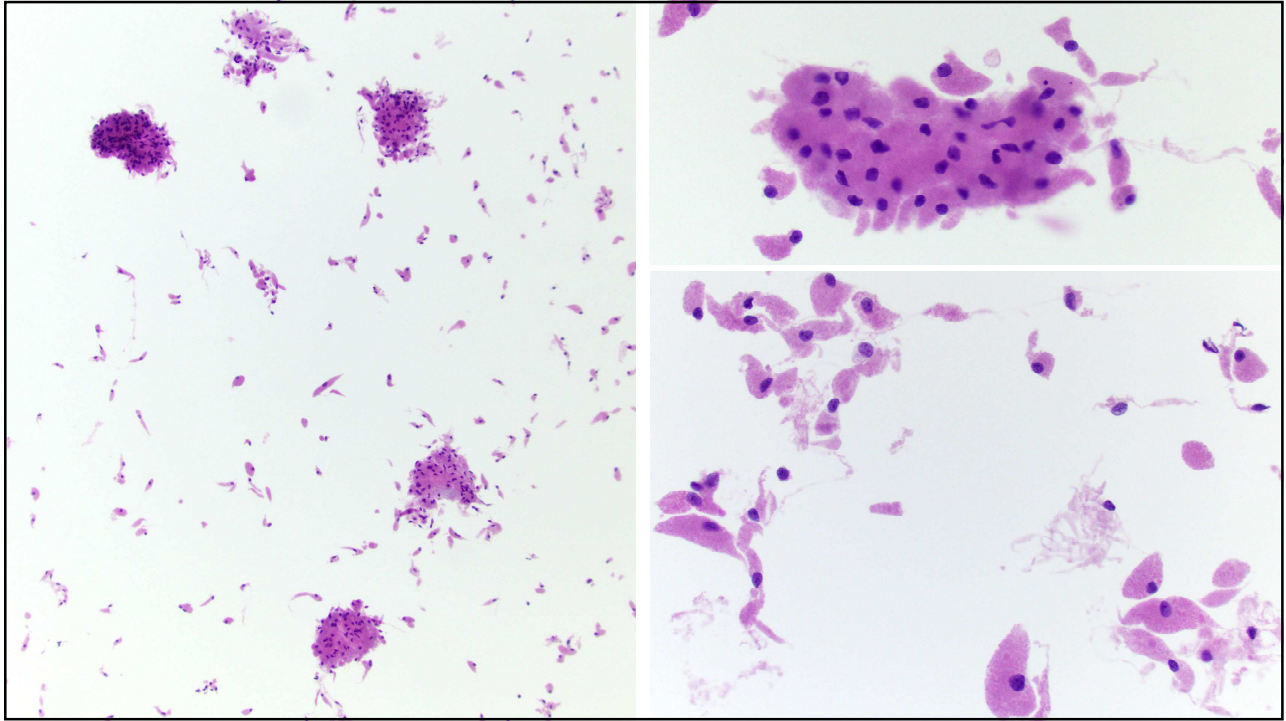
FINE NEEDLE ASPIRATION, LEFT THYROID NODULE:

AFIRMA GENOMIC SEQUENCING CLASSIFIER	AFIRMA XPRESSION ATLAS			
Suspicious	HRAS:p.G13R c.37G>C		BRAF p. V600E c. 1799T>A: TNP RET/PTC1, RET/PTC3: TNP	
MTC: Positive (Risk of Malignancy >99%)	Clinical Relevance	Risk of Malignancy	Associated Neoplasm Type	FDA Approved Therapy*
Parathyroid: Negative	Evidence of clinical significance in thyroid cancer	>99% ³	MTC	No alteration-specific therapy currently approved

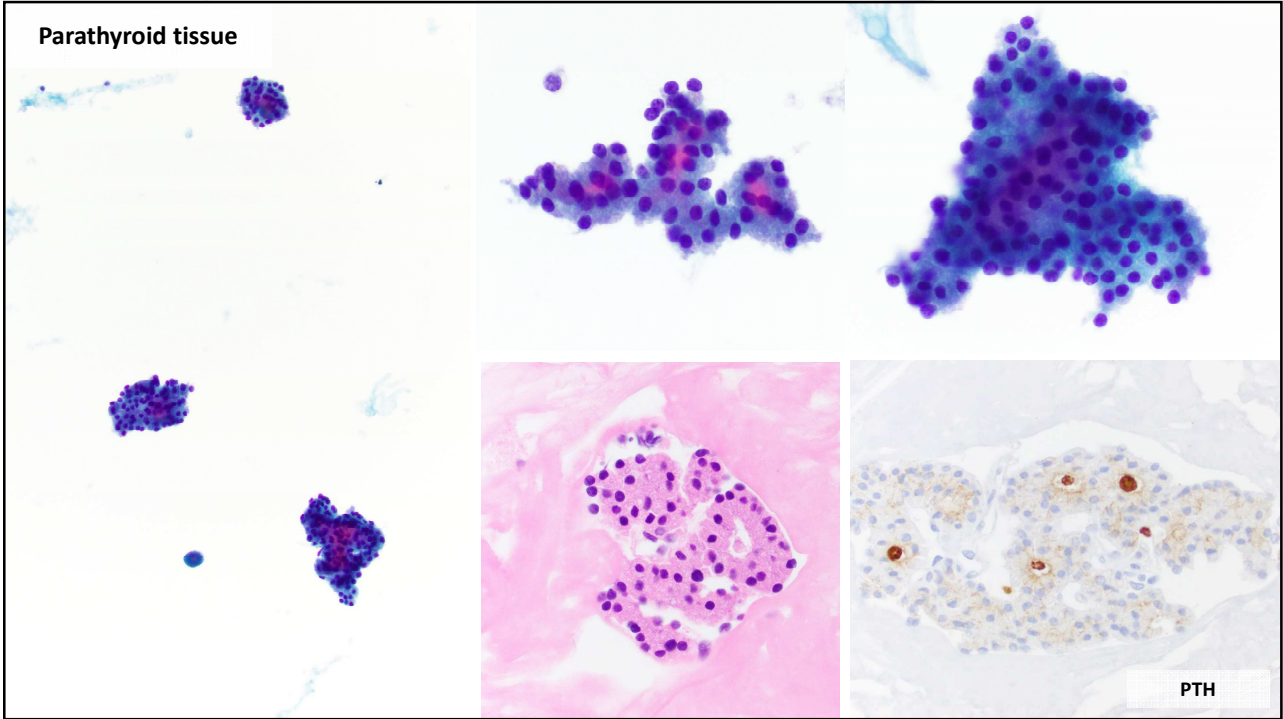




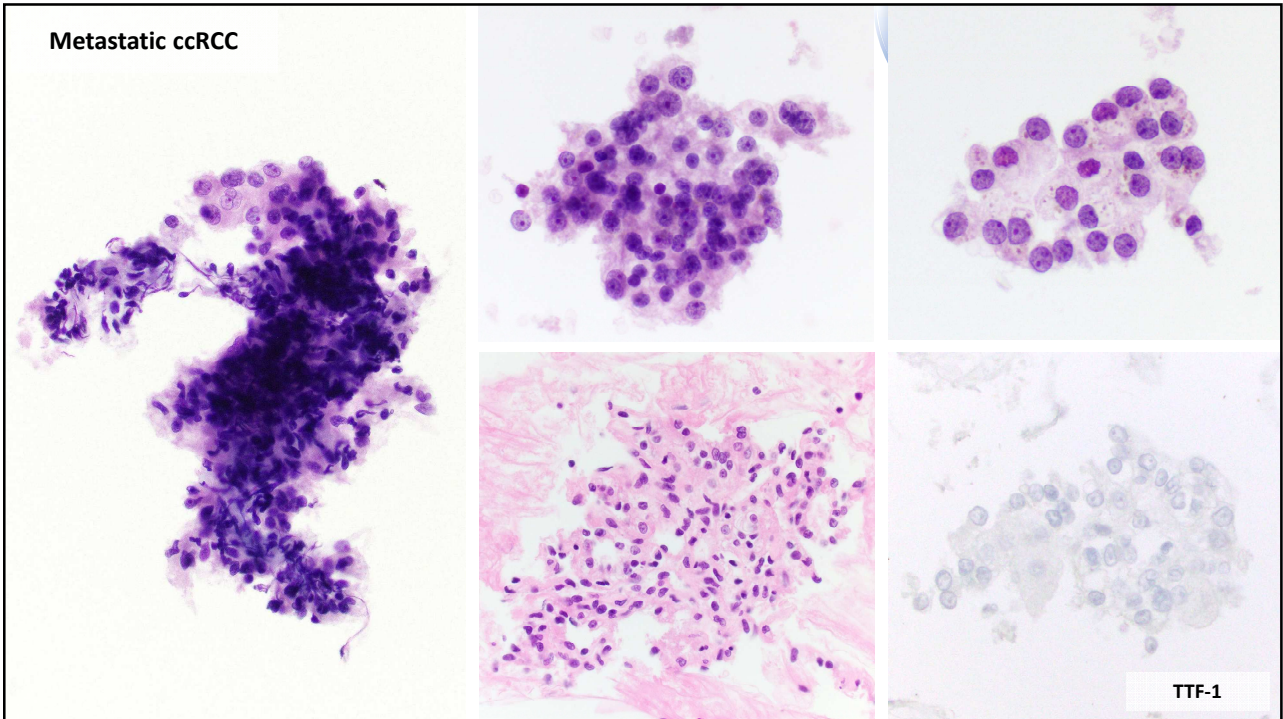
Other uncommon mimics

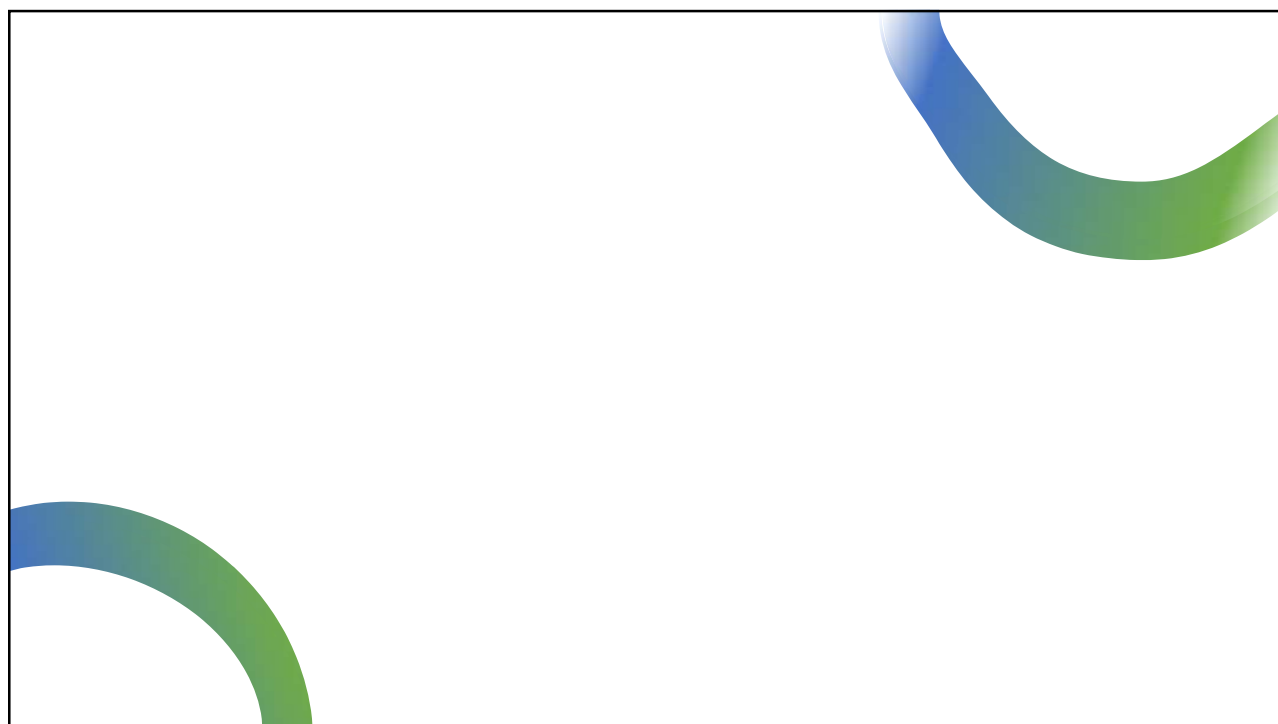


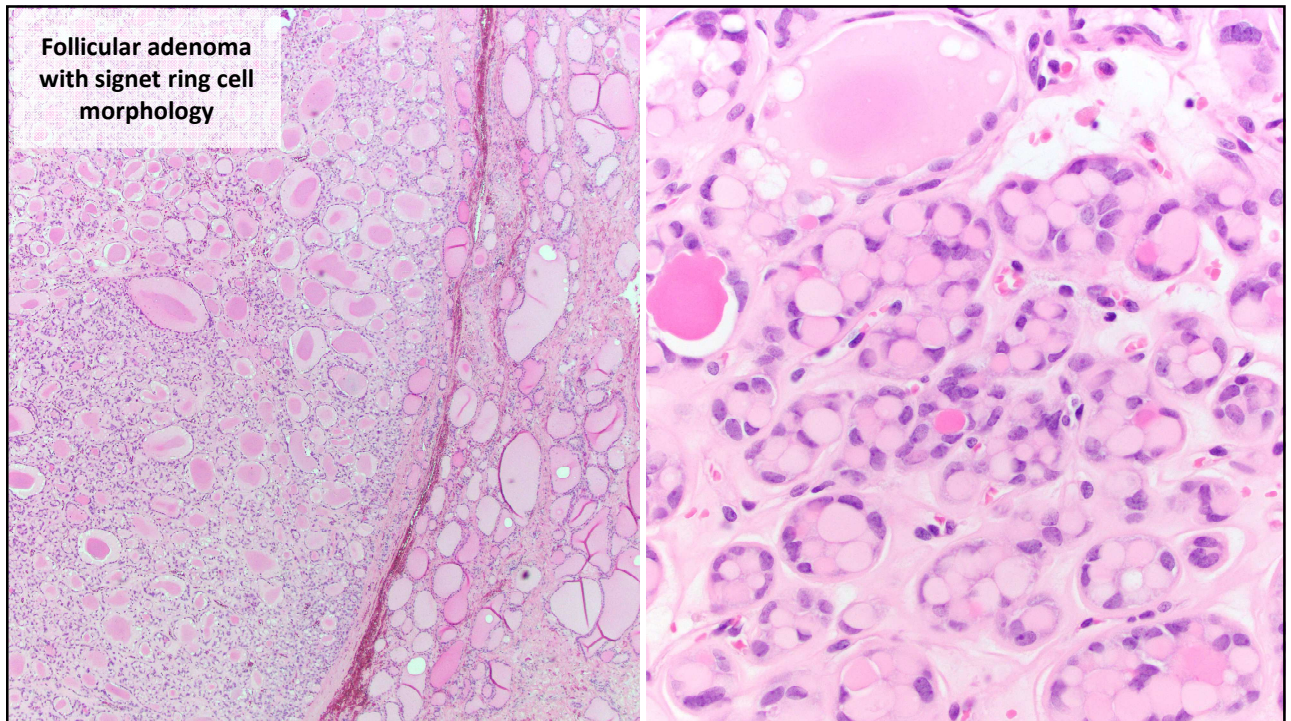
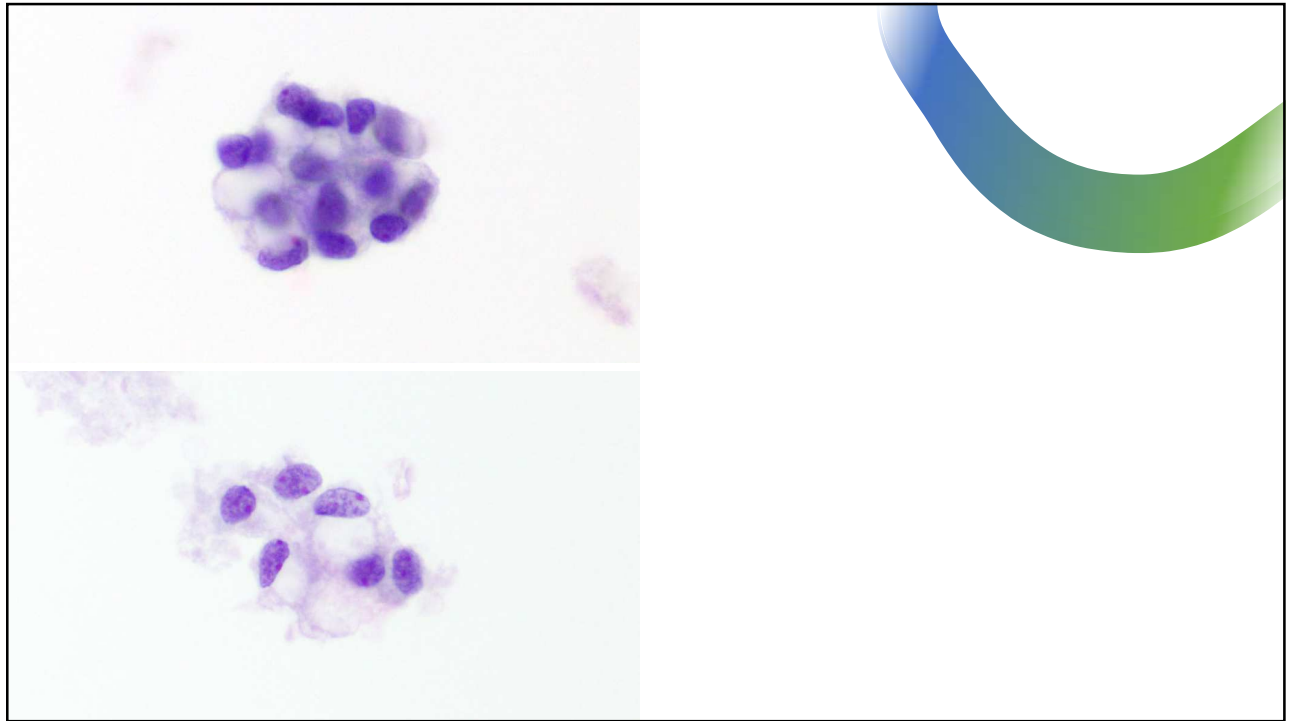
Parathyroid tissue



Metastatic ccRCC

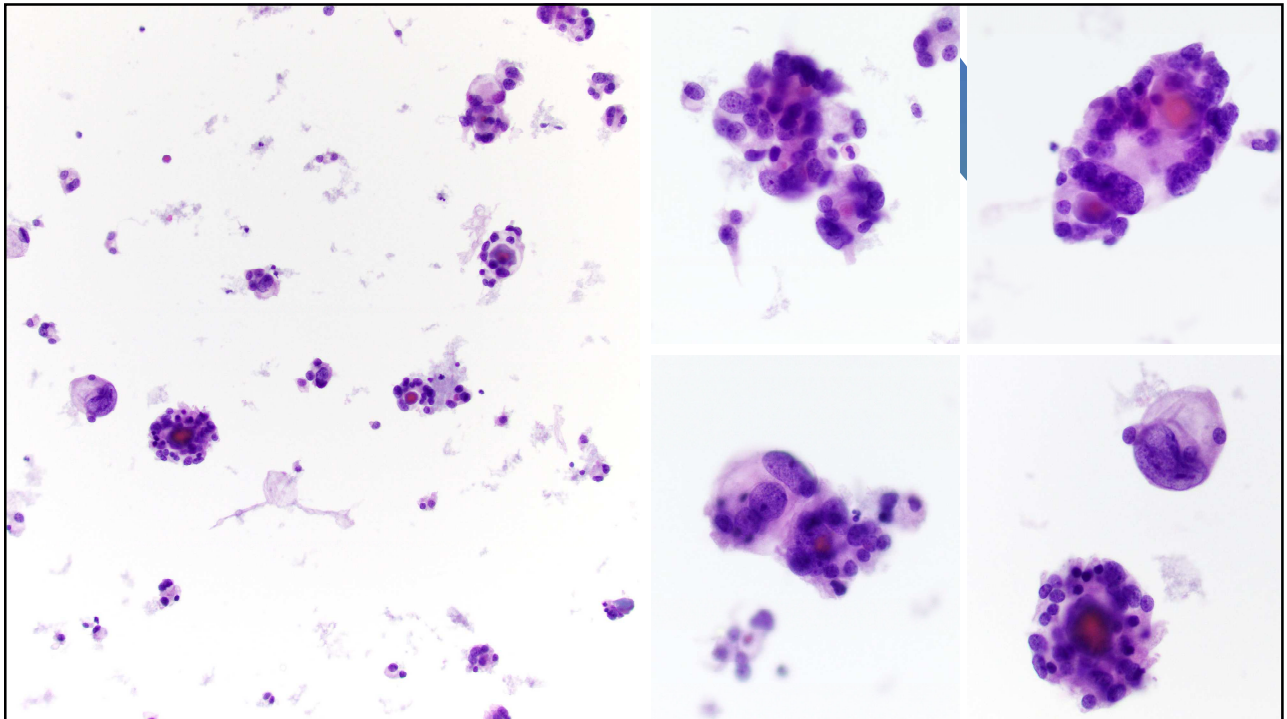






Case 3

- 30F with a palpable thyroid nodule
- Ultrasound demonstrated a 2 cm hypoechoic solid nodule with smooth margins



FINE NEEDLE ASPIRATION, RIGHT THYROID NODULE:

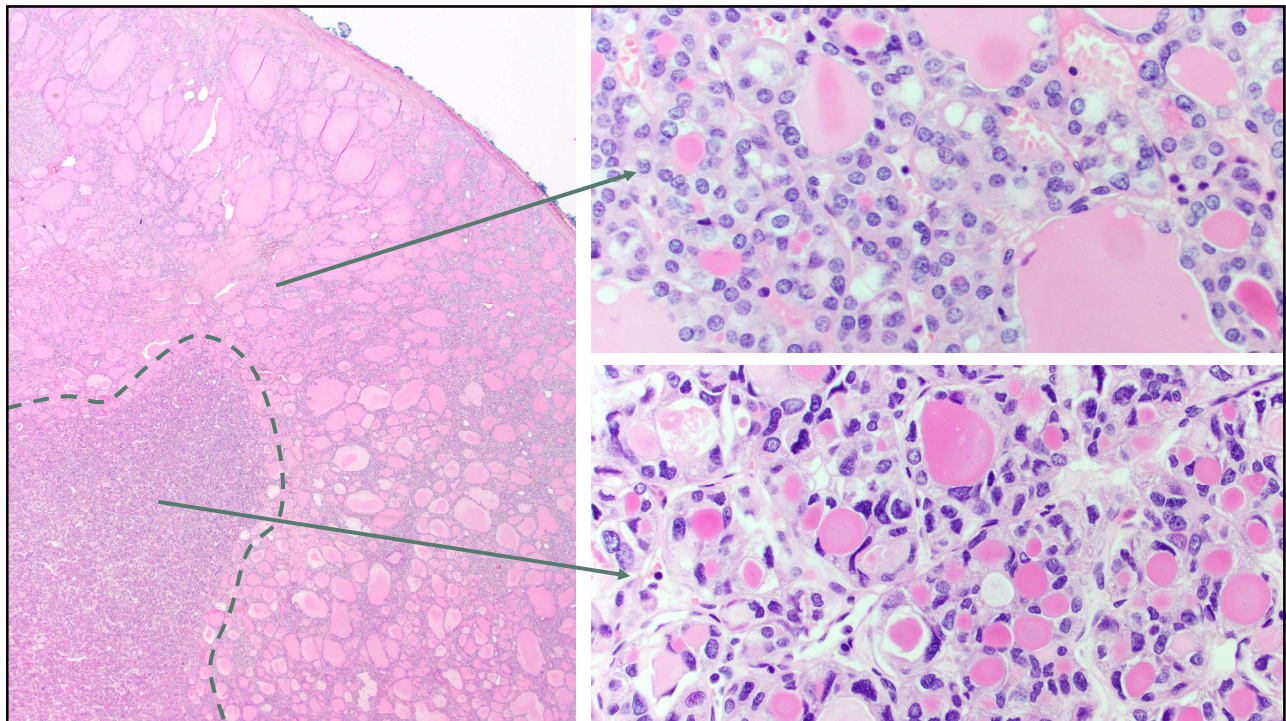
INTERPRETATION:

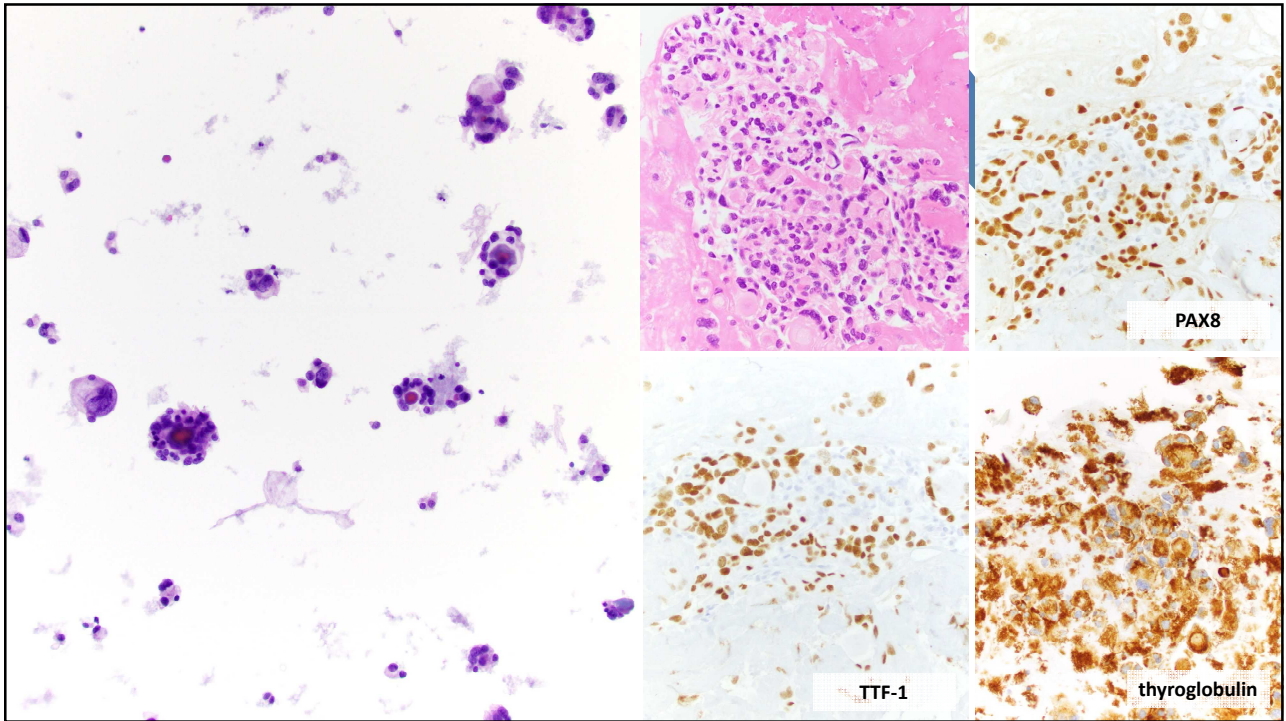
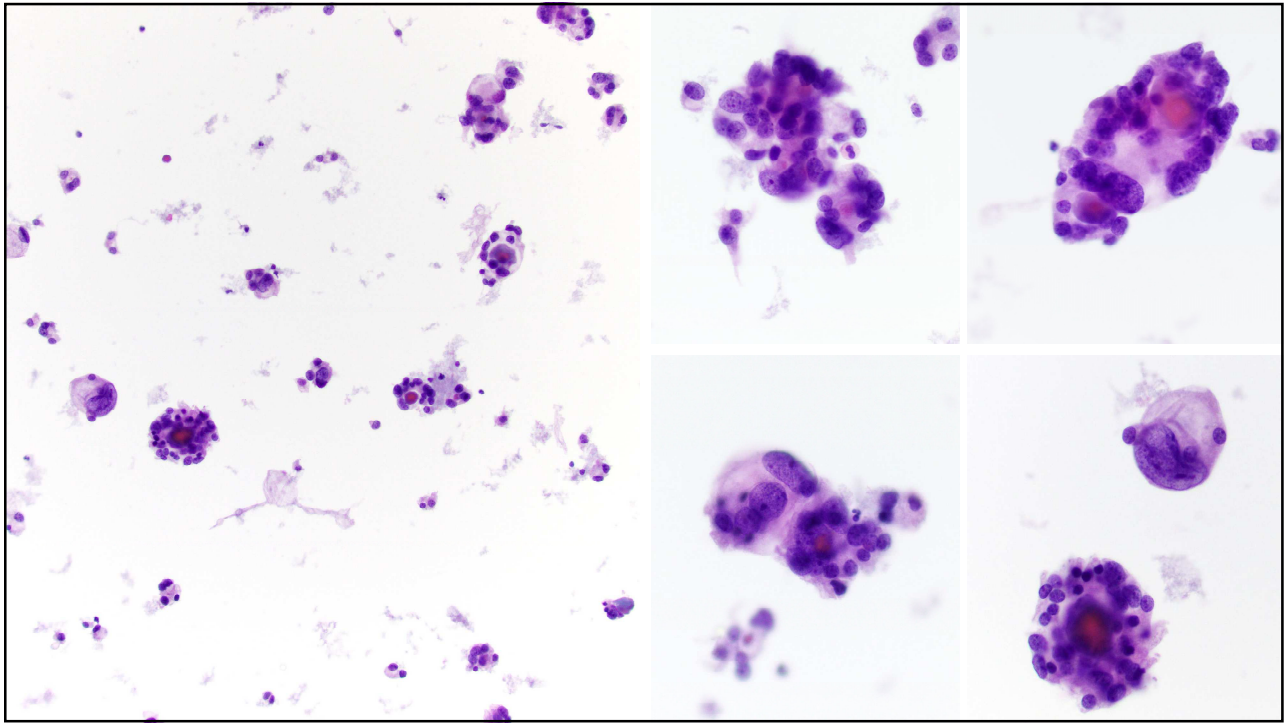
MALIGNANT.

DIAGNOSIS:

Poorly differentiated follicular cells present.

Note: The differential includes poorly differentiated thyroid carcinoma and anaplastic thyroid carcinoma.



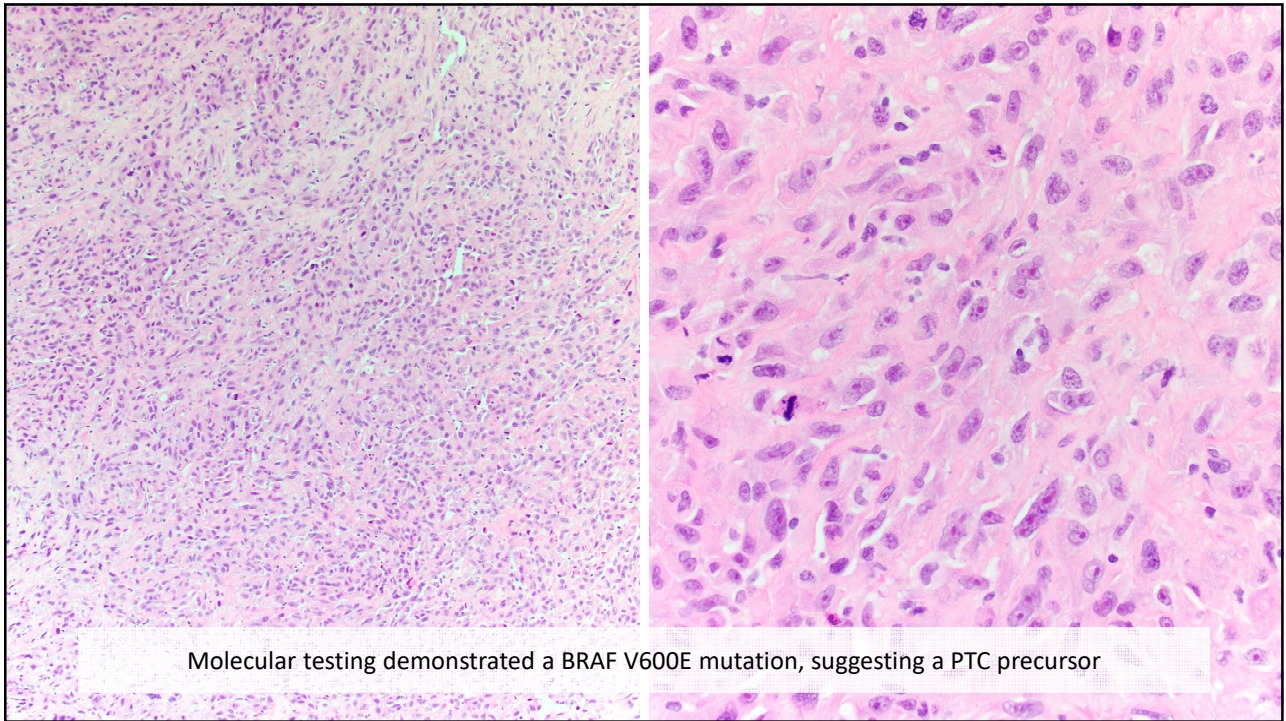
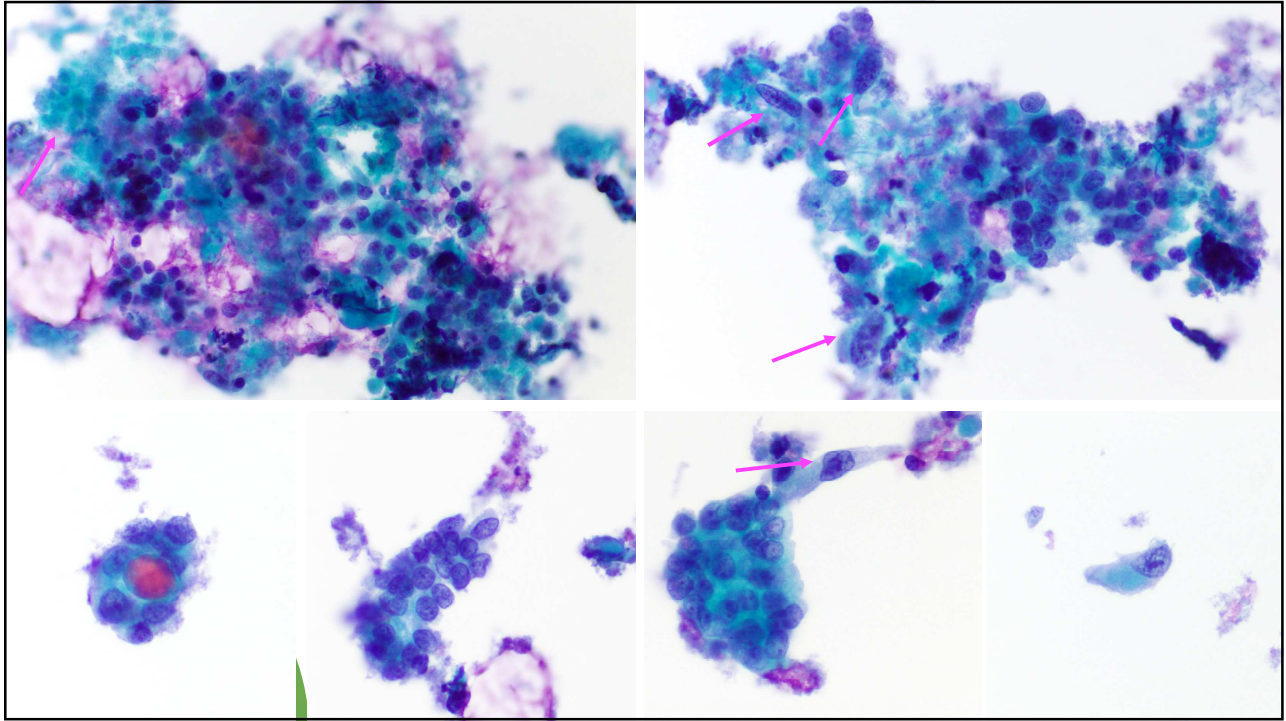


Differential diagnosis of marked anisonucleated thyroid FNA

- Follicular cell-derived lesions
 - **Endocrine-type atypia** in non-neoplastic and neoplastic follicular lesions
 - Frequently seen in (but not limited to) oncocytic lesions
 - Usually more limited in extent
 - De-differentiation (i.e. anaplastic carcinoma)
- Non-follicular cell-derived lesions
 - Medullary thyroid carcinoma
 - Other rare primary thyroid tumors
 - Metastasis

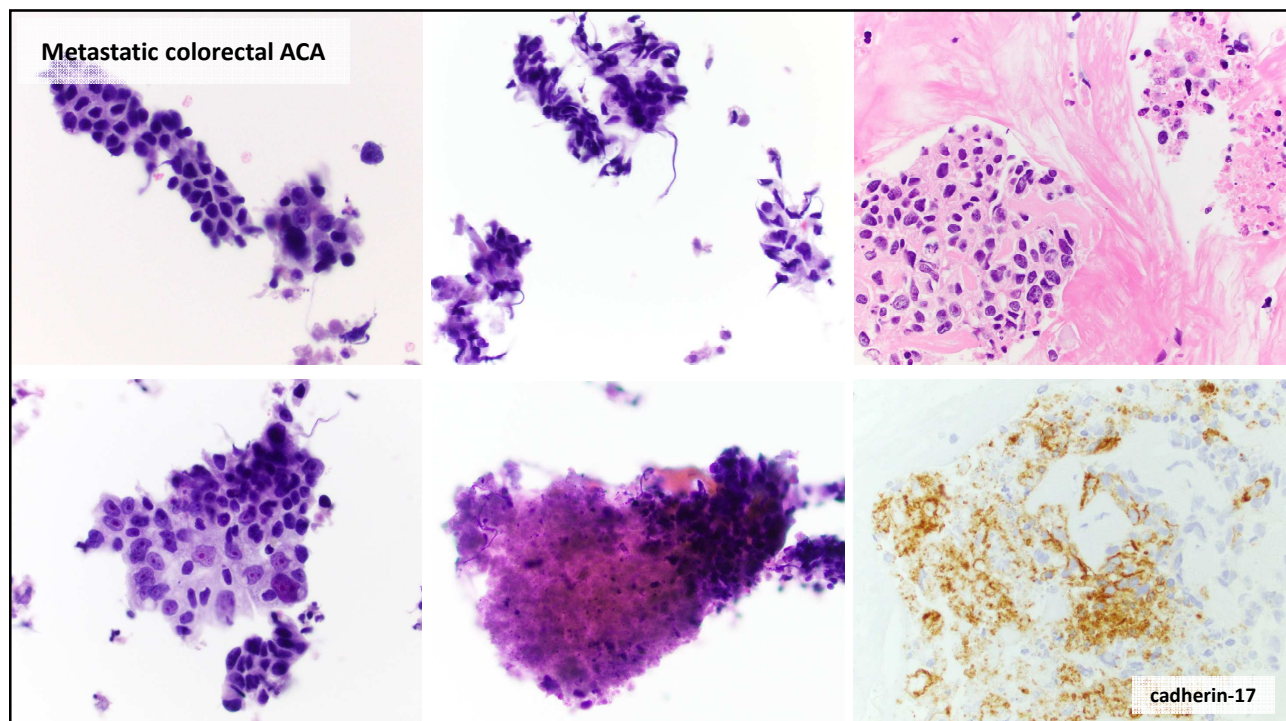
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Metastasis to the thyroid

- Most common primary sites
 - **Renal**
 - **Lung**
 - Colorectal
 - Breast
 - Head and Neck

Nixon IJ. Ann Surg Oncol. 2017 Jun;24(6):1533-1539.

Questions?

