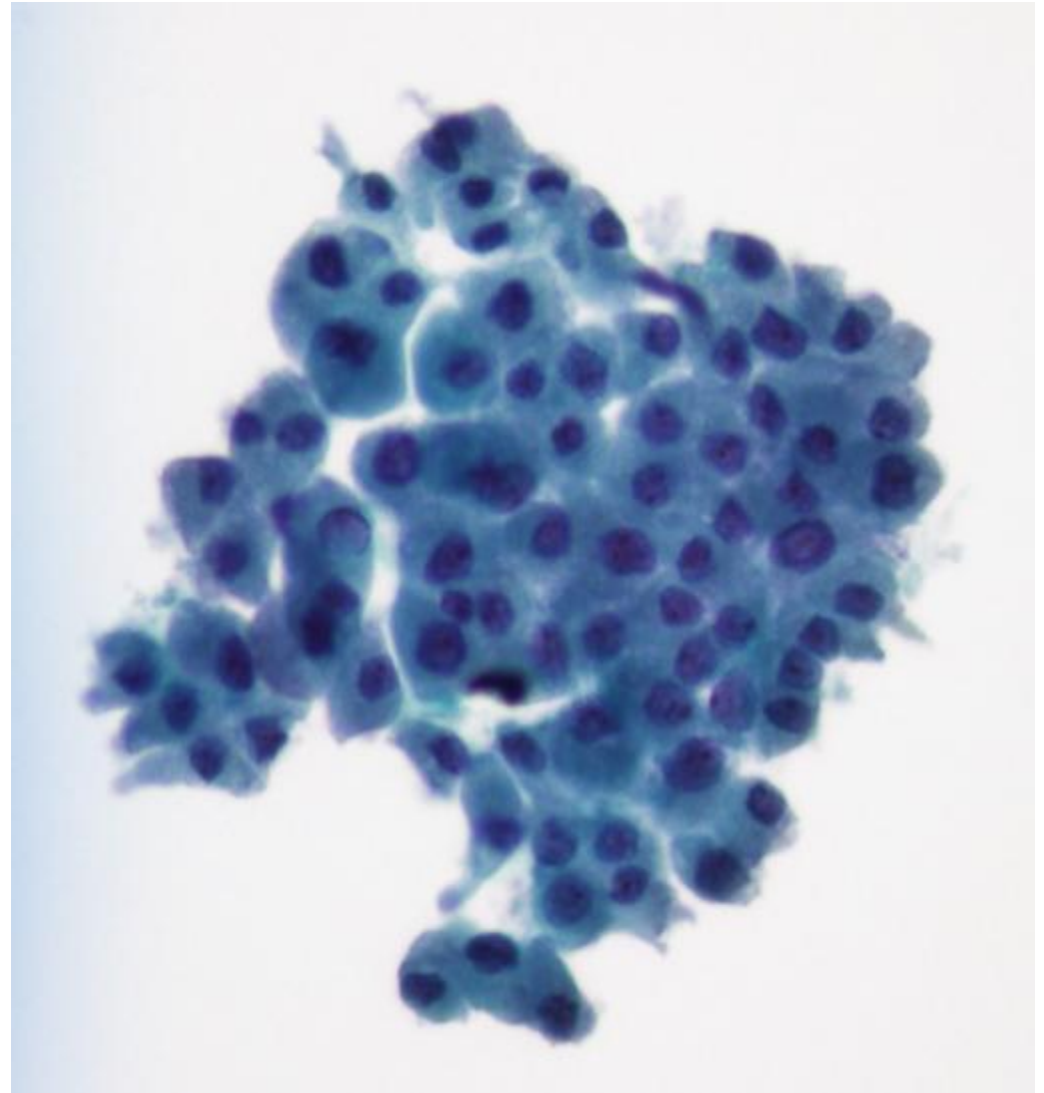


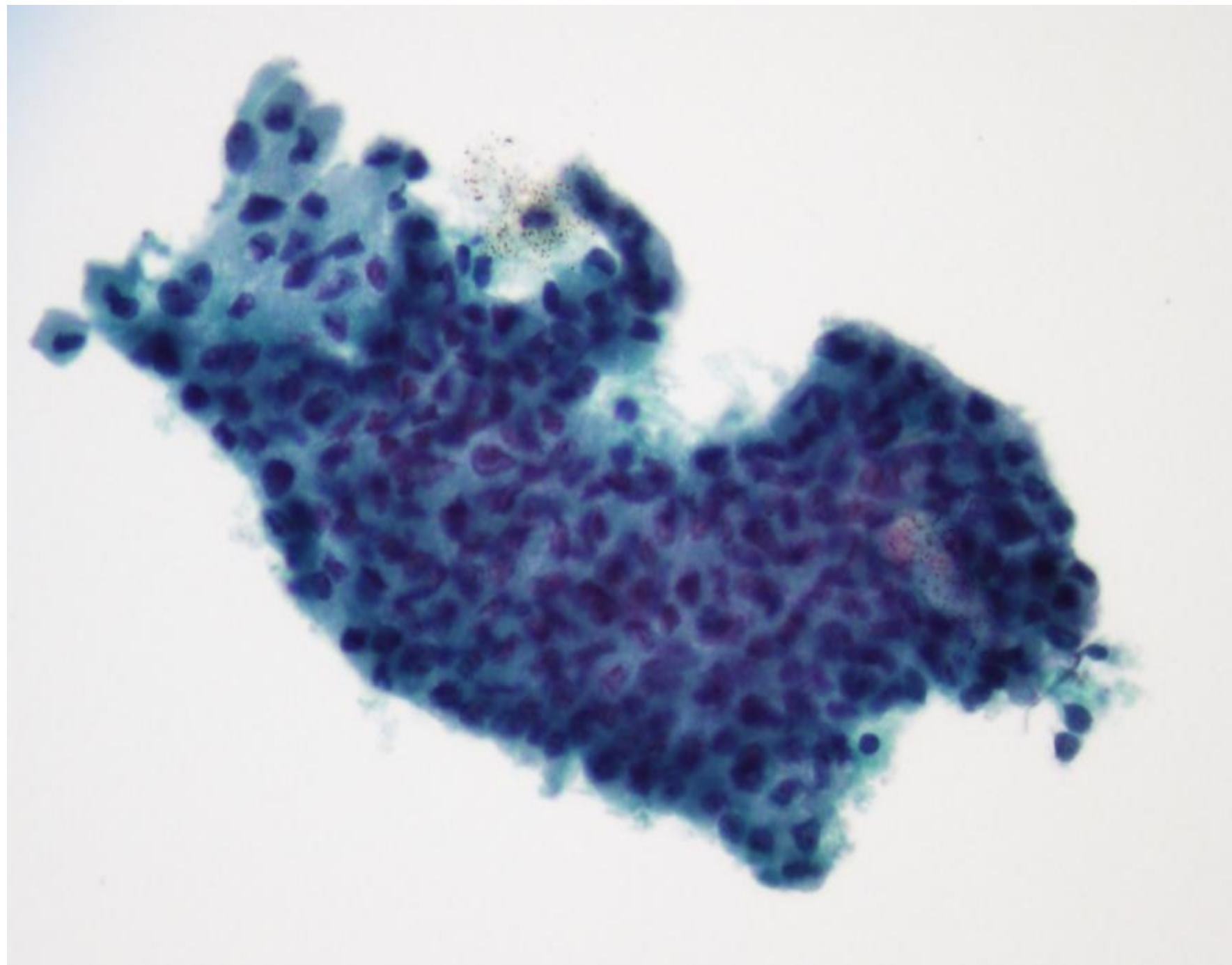
Interesting Case Conference

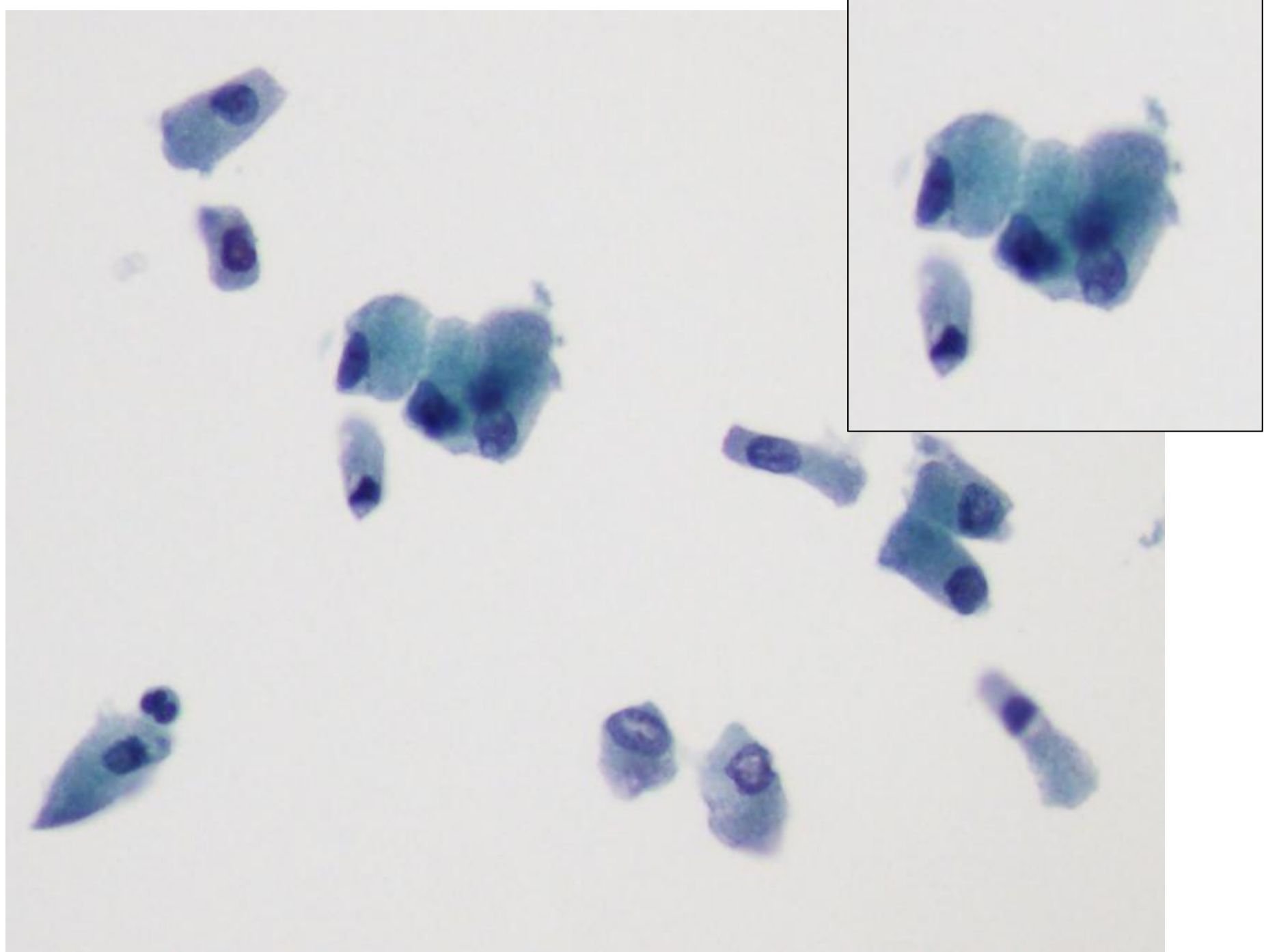
12/2/2013

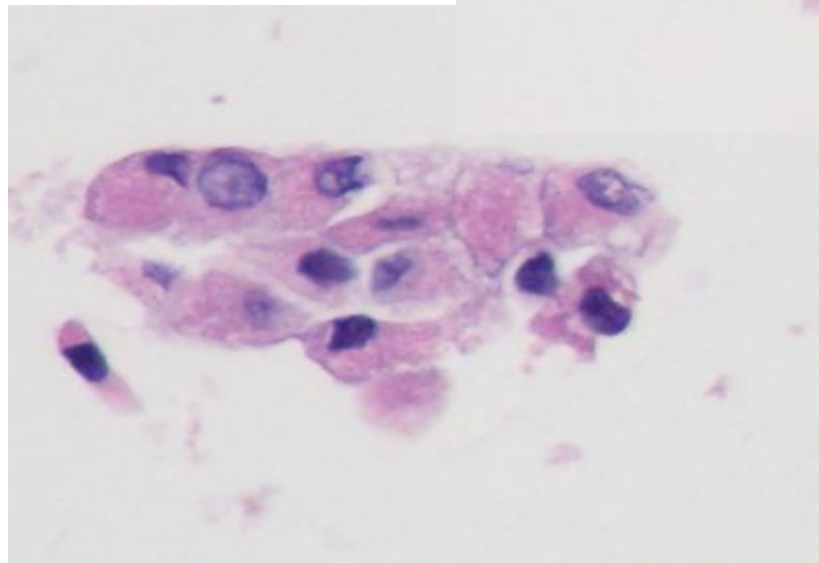
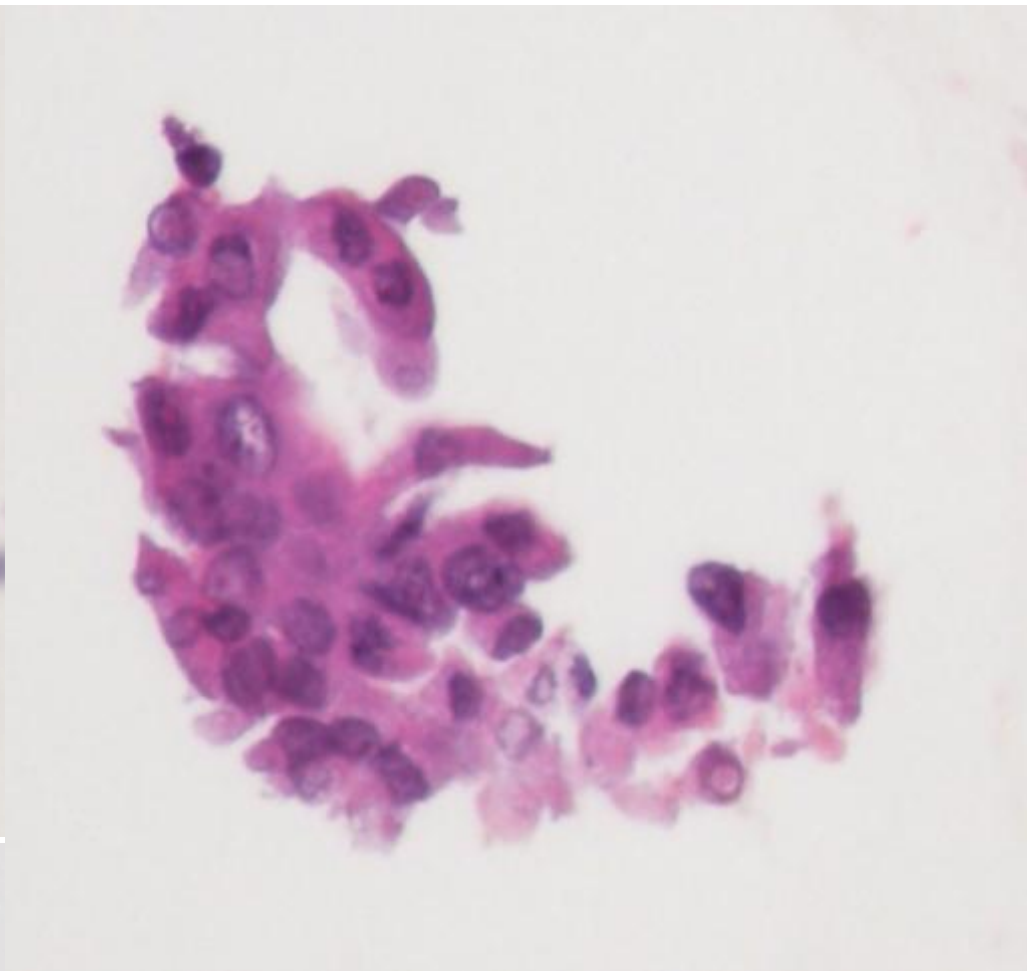
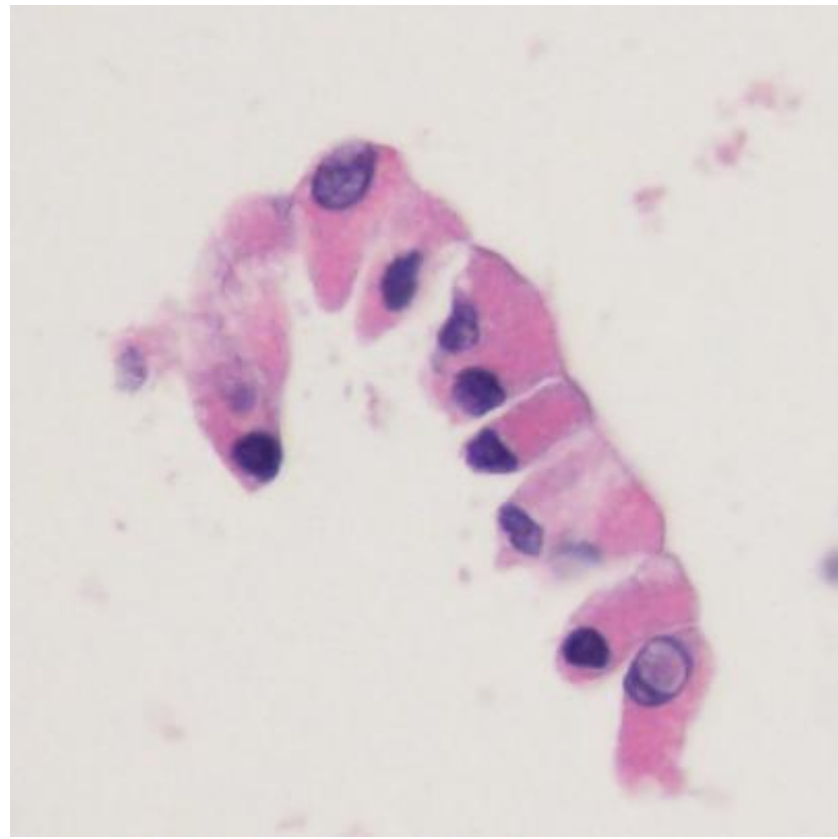
History

- 48 year old man
- Thyroid nodule









Sign-out

- Papillary carcinoma, with features of tall cell variant
- Confirmed on histologic examination

PTC, Tall cell variant

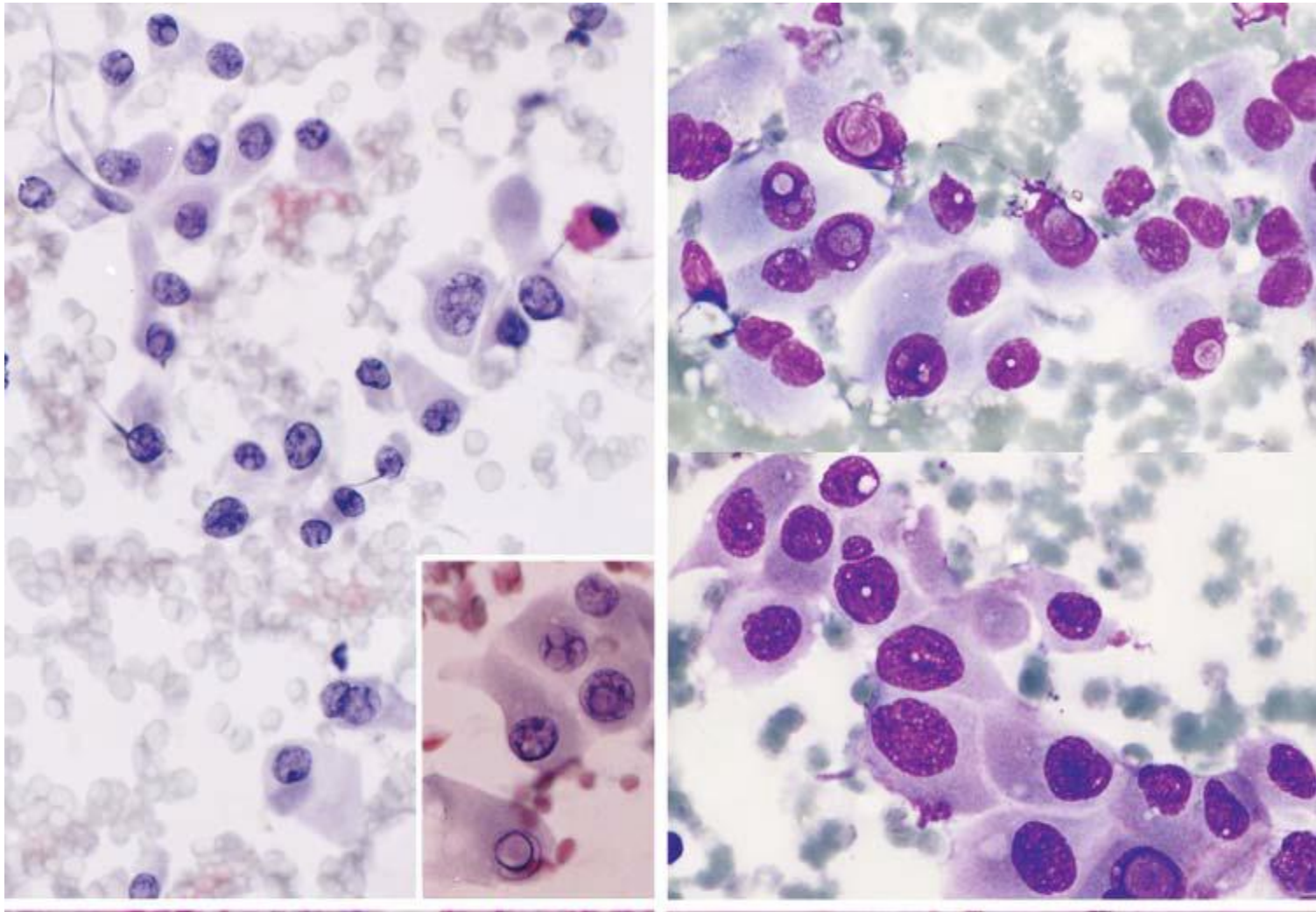
- Most aggressive form of PTC
- Increased incidence of
 - extrathyroidal extension
 - distant metastasis
 - local reoccurrence
- Elderly
- Male

Cytomorphology

- Often arranged in papillary fragments
- Height: width ratio of at least 3:1
- Dense cytoplasm (oncocytic)
- *At least 50% of tumor with cytomorphology per Bethesda System*

In contrast to conventional PTC

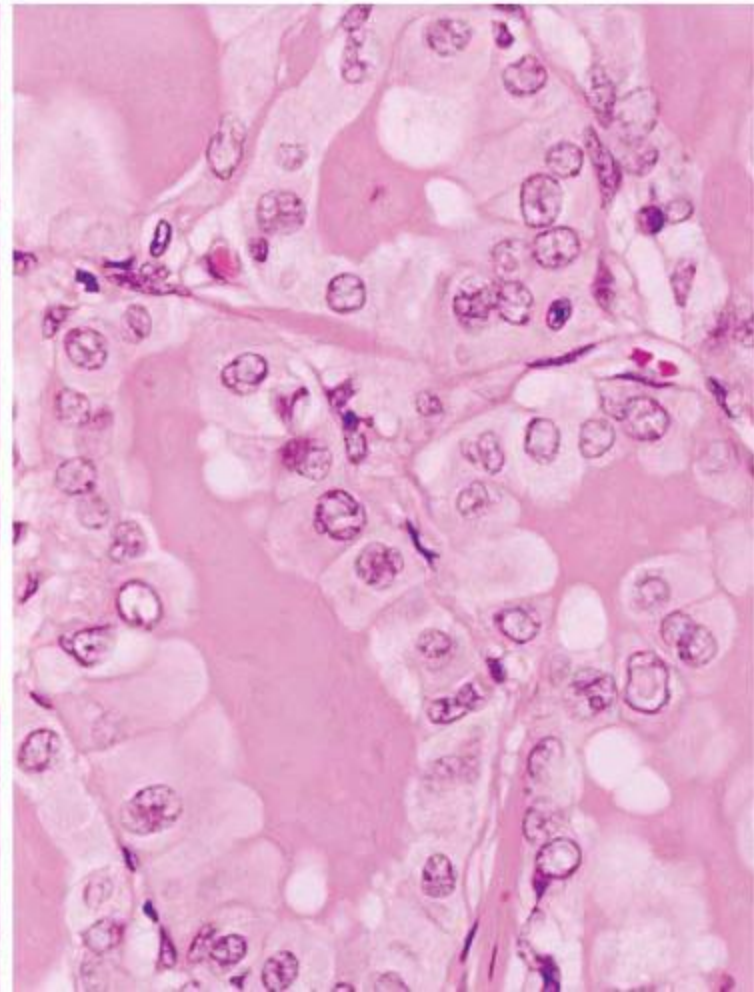
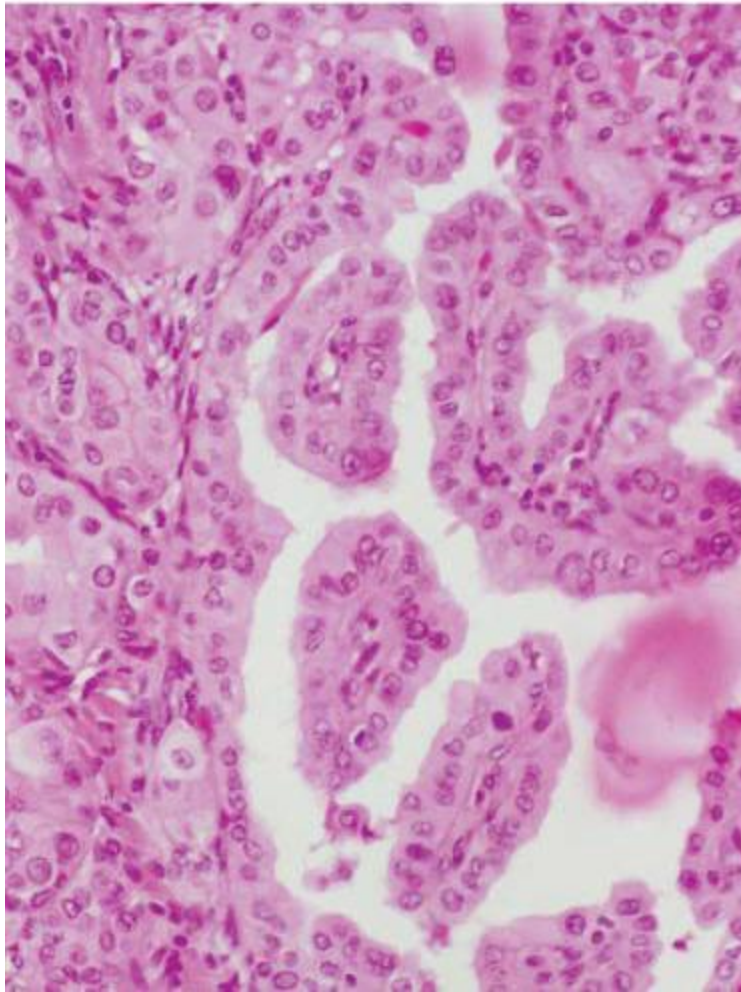
- Nuclear chromatin less powdery and more granular
- Fewer psammoma bodies
- INCI are frequent and multiple imparting a “*soap bubble appearance*”



Papillary Thyroid Carcinoma and Its Variants in Fine Needle Aspiration Smears

*A Cytomorphologic Study with Special Reference to Tall Cell
Variant*

Das et al. Acta Cytologica. Volume 48, Number 3/May–June 2004.



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Variant*

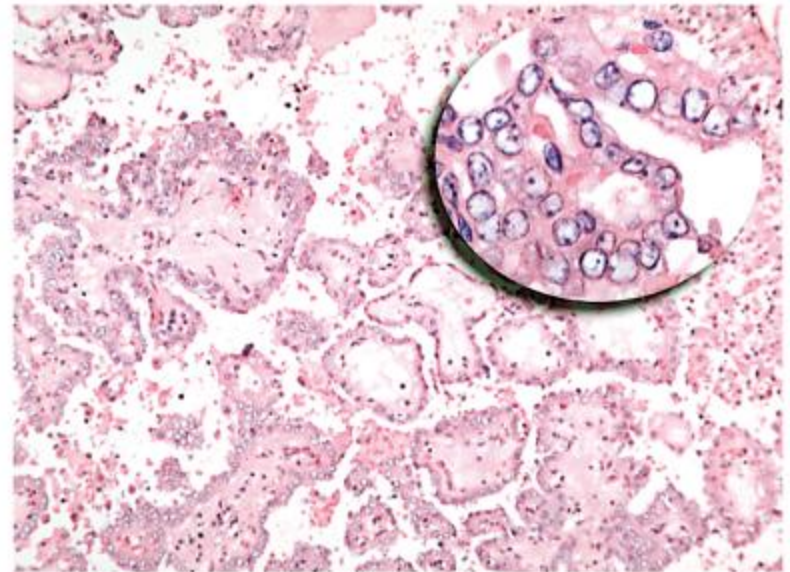
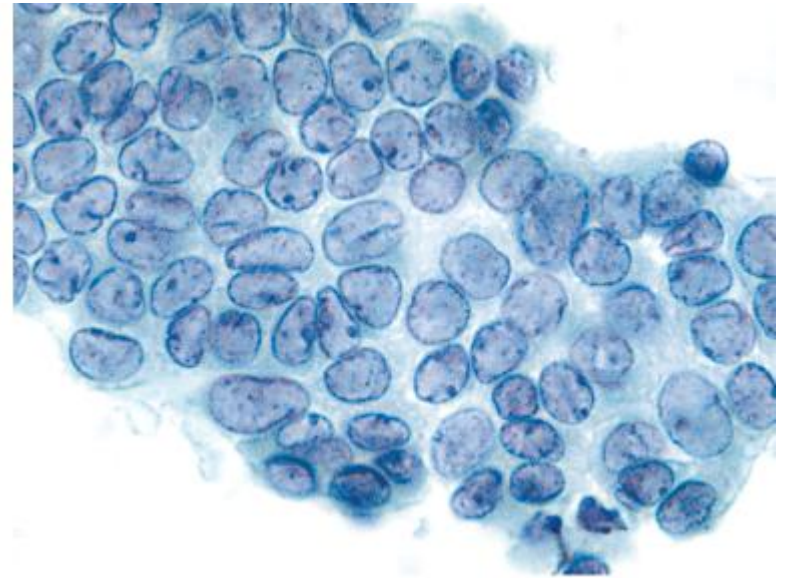
Das et al. Acta Cytologica. Volume 48, Number 3/May–June 2004.

The many faces of PTC

- ***By definition have***
 - Essential nuclear features
 - Different architectural pattern
 - Unusual cytologic features
 - Different background features
- *Conventional*
- *Variants*
 - Follicular
 - Macrofollicular
 - Cystic
 - Oncocytic
 - Warthin-like
 - Tall cell
 - Columnar cell
 - Diffuse sclerosing
 - Cribriform morular variant
 - Hyalinizing trabecular adenoma

Classic features

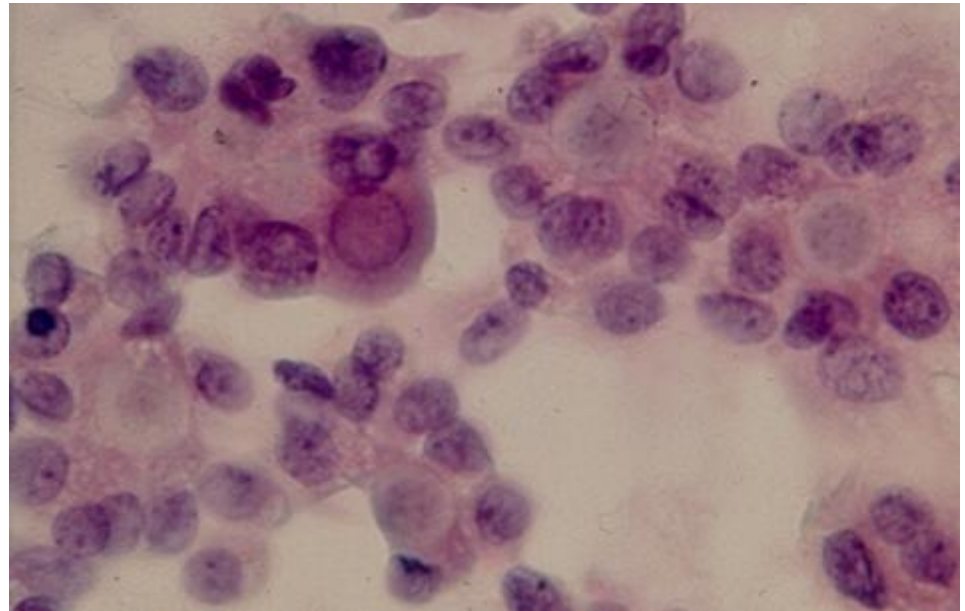
- Papillae, sheets, syncytial monolayers
- Enlarged nuclei
- Oval, irregularly shaped nuclei (sometimes molded)
- Nuclear grooves
- INCI
- Pale nuclei with powdery chromatin “Orphan Annie”
- Marginally placed micronuclei
- Psammoma bodies
- Multinucleation



Solomon, A. et al. Distinguishing Tall Cell Variant of Papillary Thyroid Carcinoma From Usual Variant of Papillary Thyroid Carcinoma in Cytologic Specimens. Diagnostic Cytopathology, Vol 27, No 3. 2002

Follicular variant

- Completely or almost completely composed of small-medium sized (MICRO)follicles
- Most common variant, up to 30% in some series
- Nuclear features often more subtle



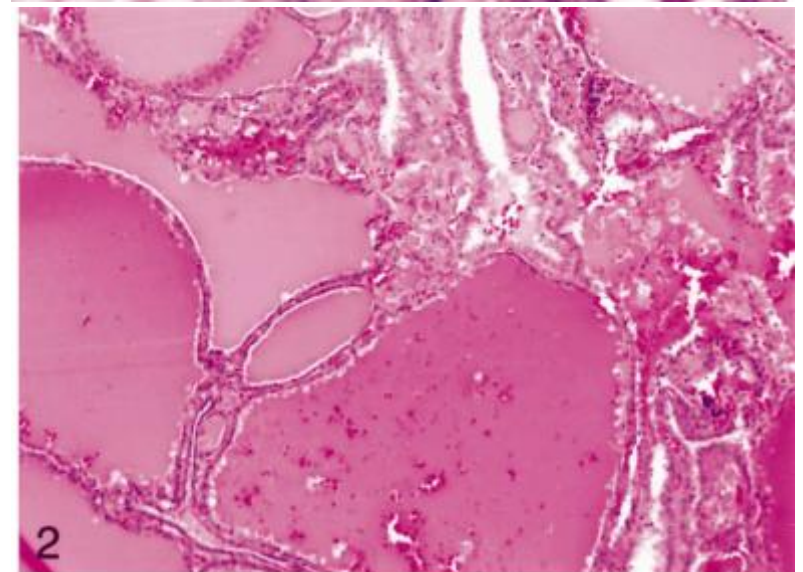
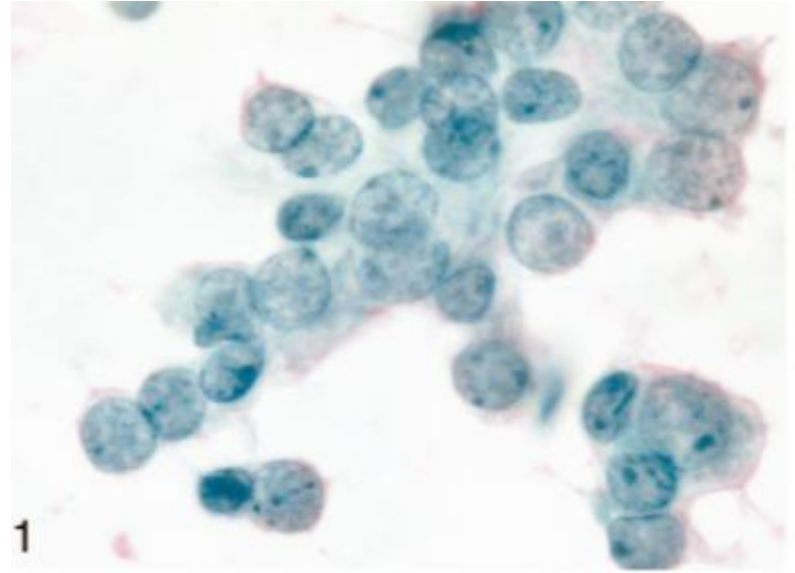
Fine-needle aspiration of the thyroid: an overview

[Gia-Khanh Nguyen](#),¹ [Mark W Lee](#),¹ [Jody Ginsberg](#),² [Tina Wragg](#),¹ and [Darcy Bilodeau](#)¹

Cytojournal. 2005; 2: 12. Published online 2005 June 29. doi: [10.1186/1742-6413-2-12](https://doi.org/10.1186/1742-6413-2-12)

Macrofollicular Variant

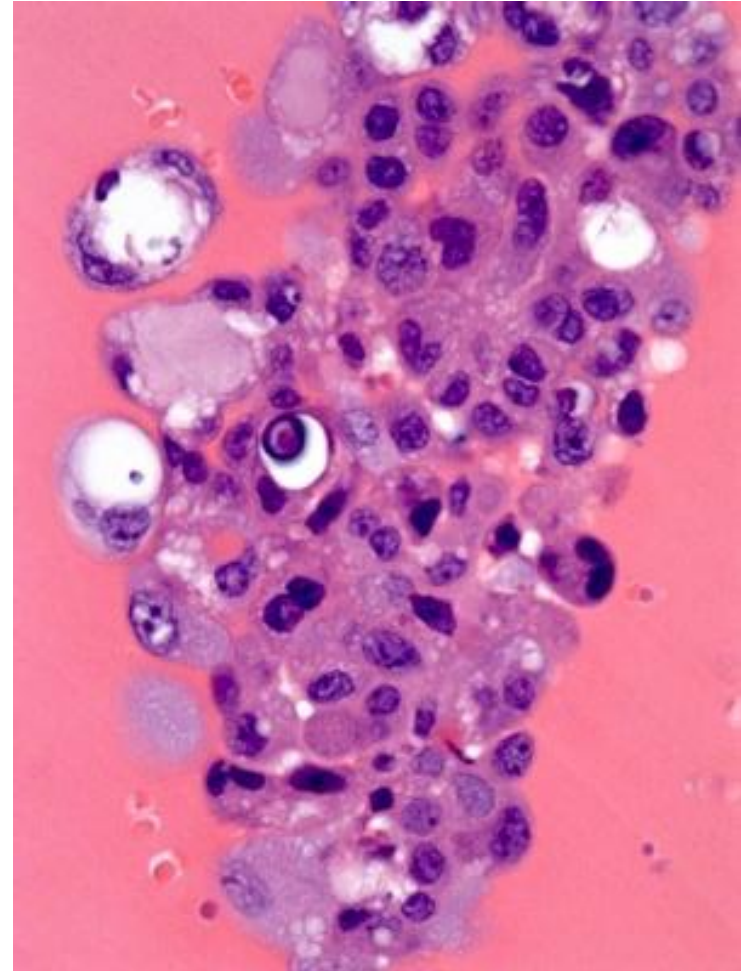
- Over 50% of the follicles are MACRO follicles.
- Abundant colloid may be present
- Subtle nuclear changes
- May be easily overlooked at low power



Lungli, A. et al. Macrofollicular Variant of Papillary Carcinoma of the Thyroid A Histologic, Cytologic, and Immunohistochemical Study of 3 Cases and Review of the Literature. Arch Pathol Lab Med. 2004;128:54–58.

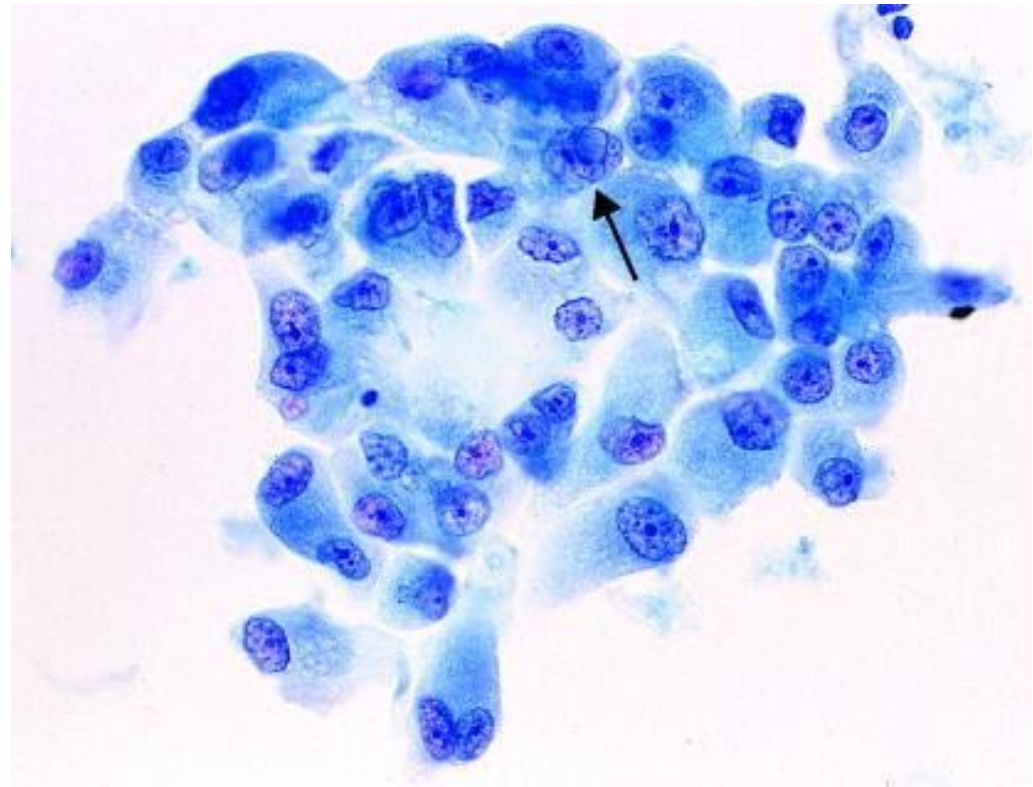
Cystic Variant

- Hypervacuolated tumor cells
- Macrophages with hemosiderin
- Watery fluid
- Thin colloid
- *~10% of PTC are cystic*
- Beware of atypia in cyst lining cells



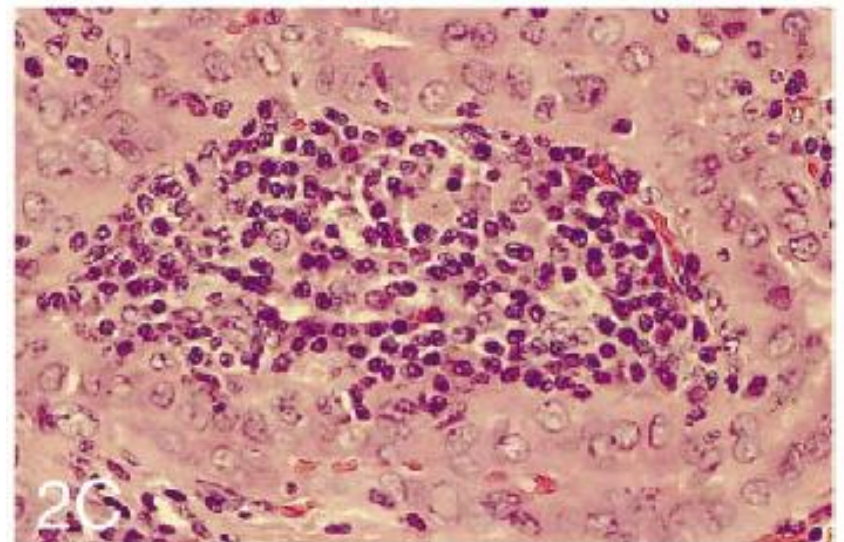
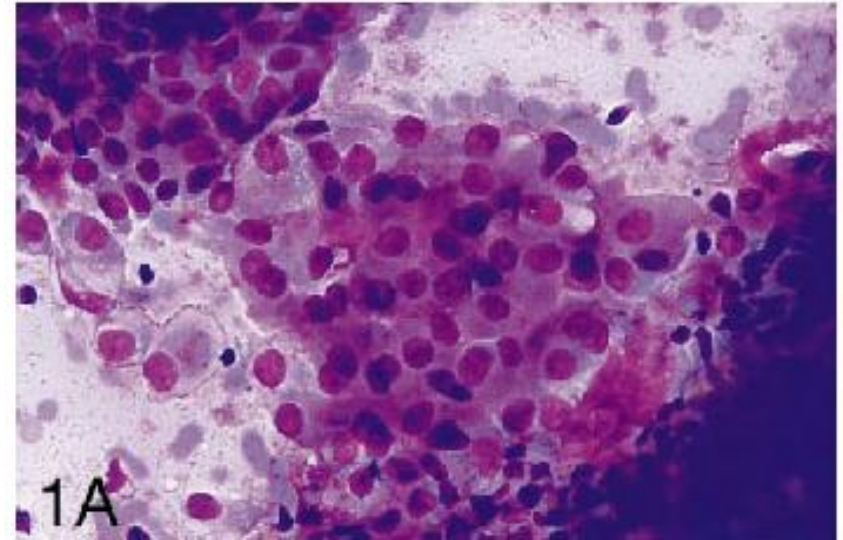
Oncocytic Variant

- Polygonal cells with abundant granular cytoplasm
- Few lymphs
- Changes must be widespread as focal Hurthle cell features is seen in many PTC's



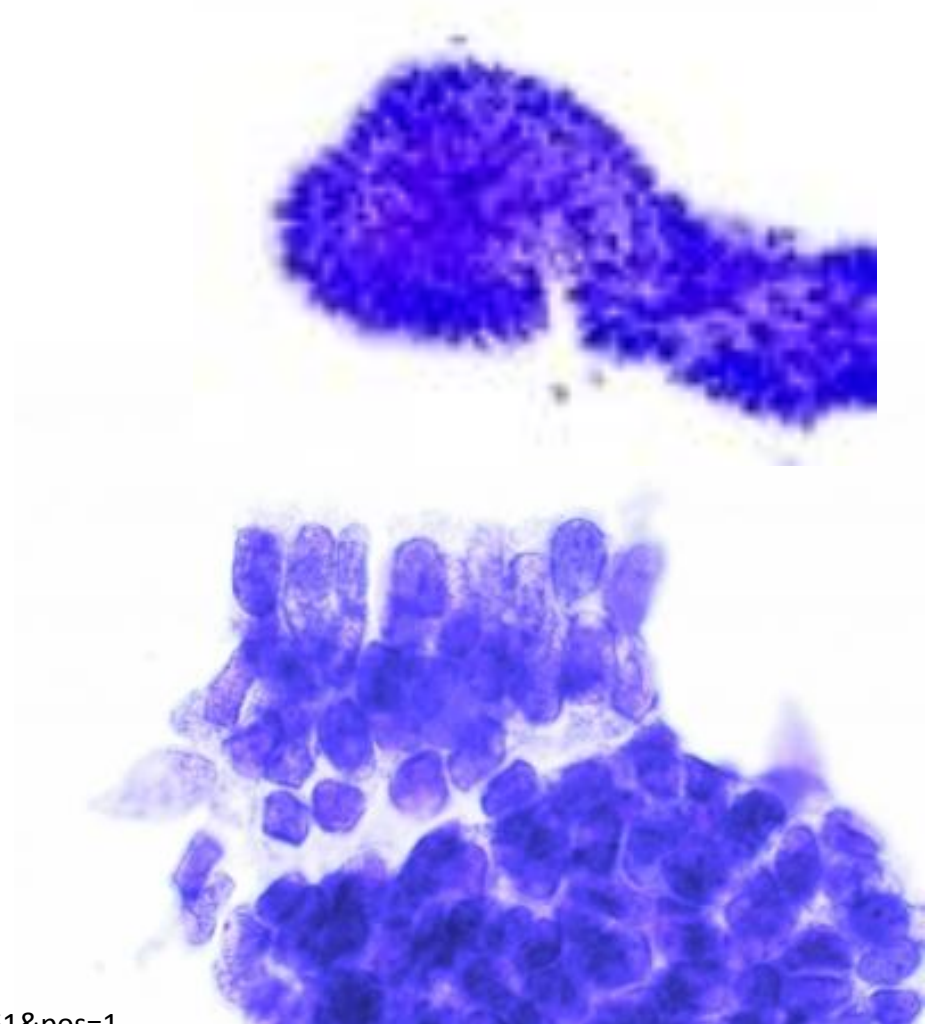
Warthin-Like Variant

- Papillary architecture with lymphocytes permeating the fibrovascular stalk
- Lymphoid follicles
- Oncocytic cytoplasm
- Hashimoto's in DDx



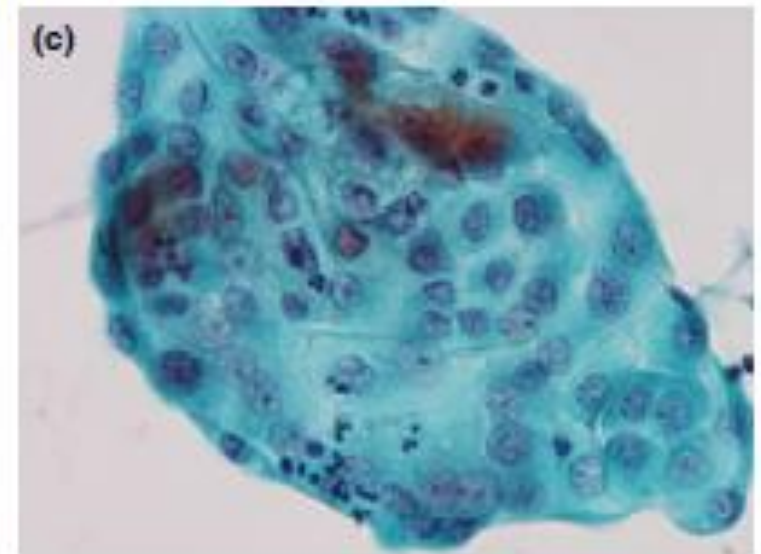
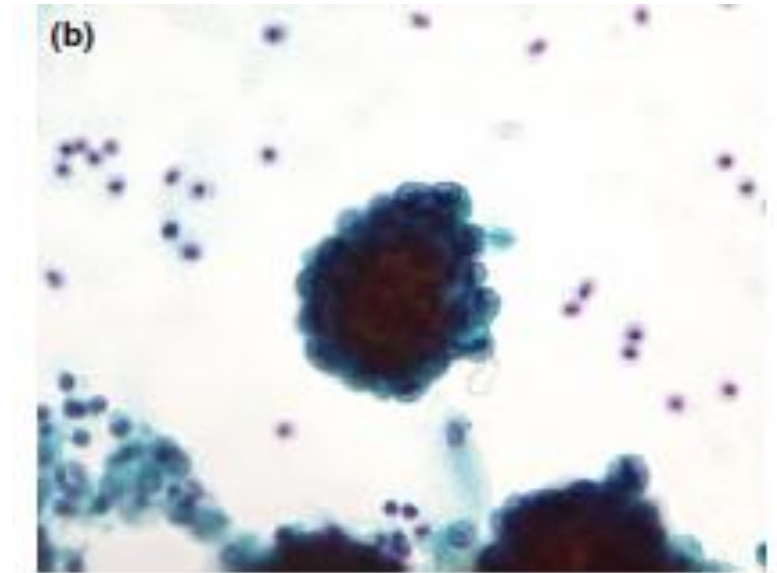
Columnar cell variant

- Aggressive
- Varying architecture
- Columnar cells
- *Hyperchromatic, oval, stratified nuclei*
- Supranuclear or sub nuclear cytoplasmic vacuoles



Diffuse sclerosing variant

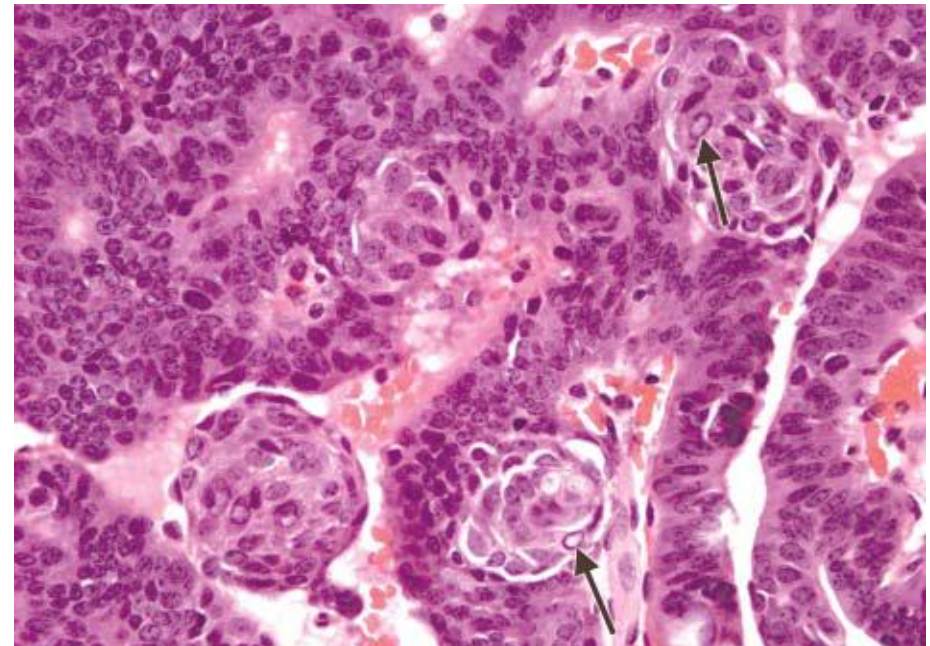
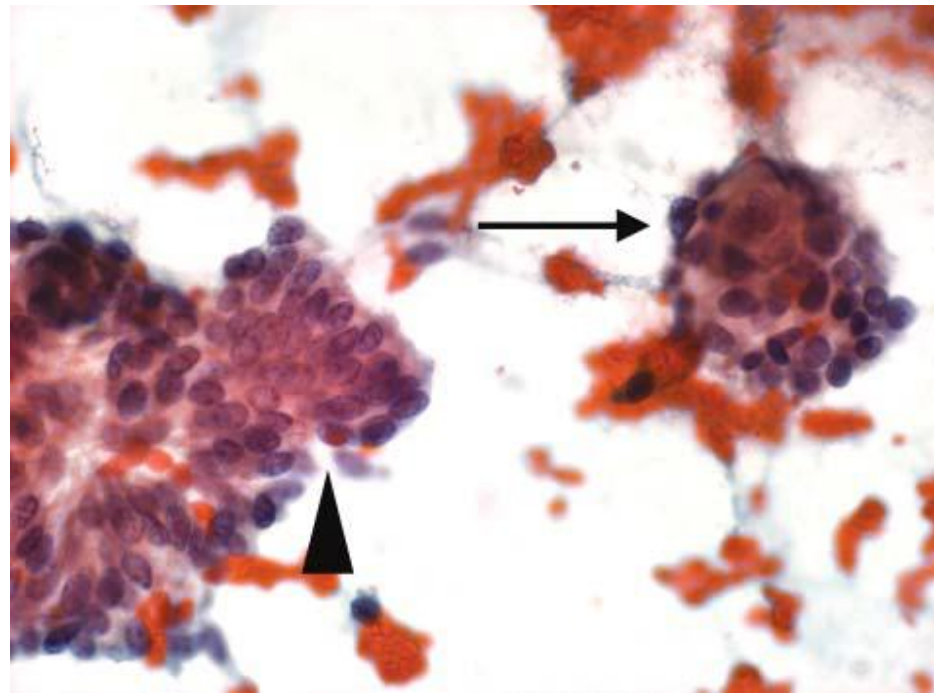
- Solid cell balls and or hollow balls containing lymphocytes
- Hobnail cells
- Cytoplasmic vacuoles
- Squamous differentiation



Takagi, N. et al. Diffuse Sclerosing variant of papillary thyroid carcinoma: a study of fine needle aspiration cytology in 20 patients. *Cytopathology* 2013

Cribriform-Morular Variant

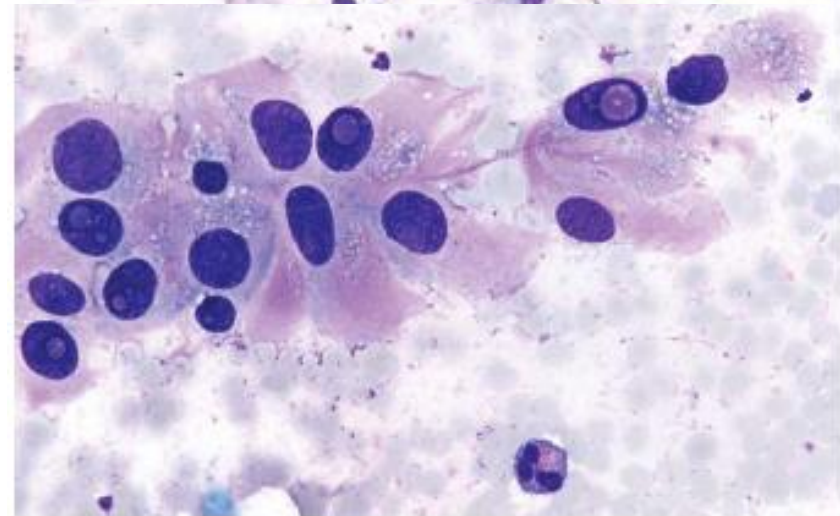
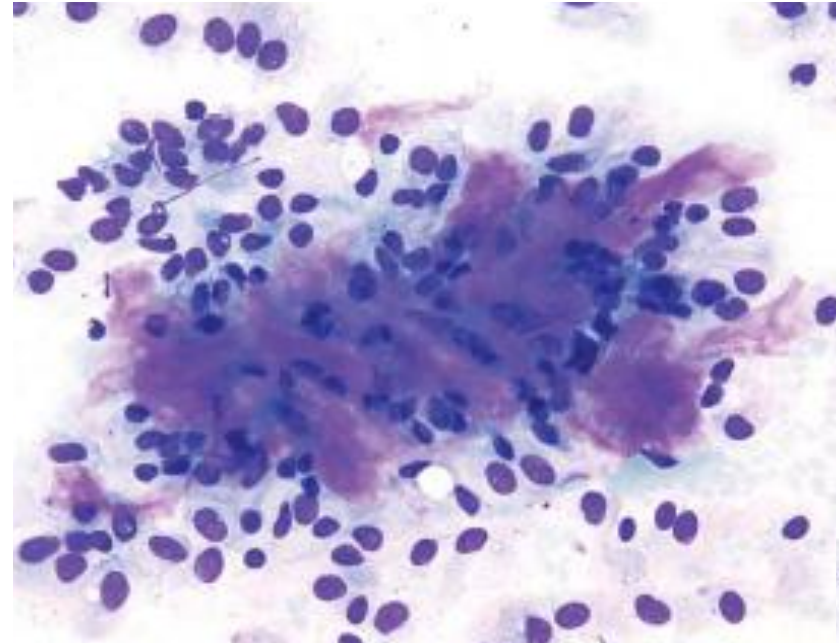
- Associated with RET gene mutation and FAP
- Younger: <30 yo, F
- Varying architecture
- PTC features focal
- Squamoid morules.



Chuah, K. et al. **Cytologic Features of Cribriform-Morular Variant of Papillary Carcinoma of the Thyroid A Case Report.**
ACTA CYTOLOGICA Vol 49 Number 1 January–February 2005

Hyalinizing trabecular adenoma

- Controversial neoplasm that some consider a variant of PTC
- Trabecular growth pattern
- Neoplastic cells radially oriented around amyloid-like hyaline stromal material.



Ali, S, etal. Hyalinizing Trabecular Adenoma of the Thyroid Gland. Diagnostic Cytopathology, 2010. Vol 39, No 4