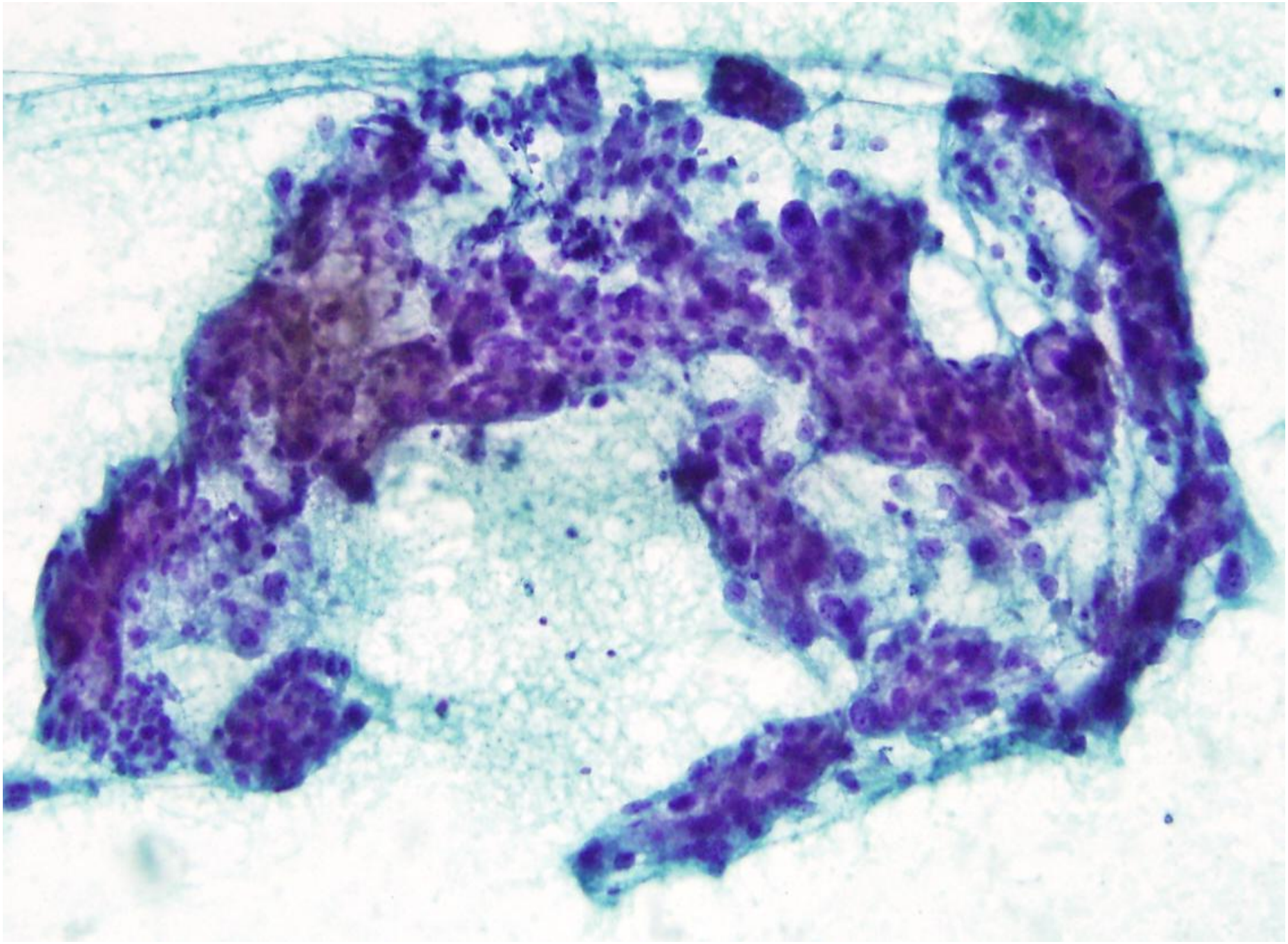
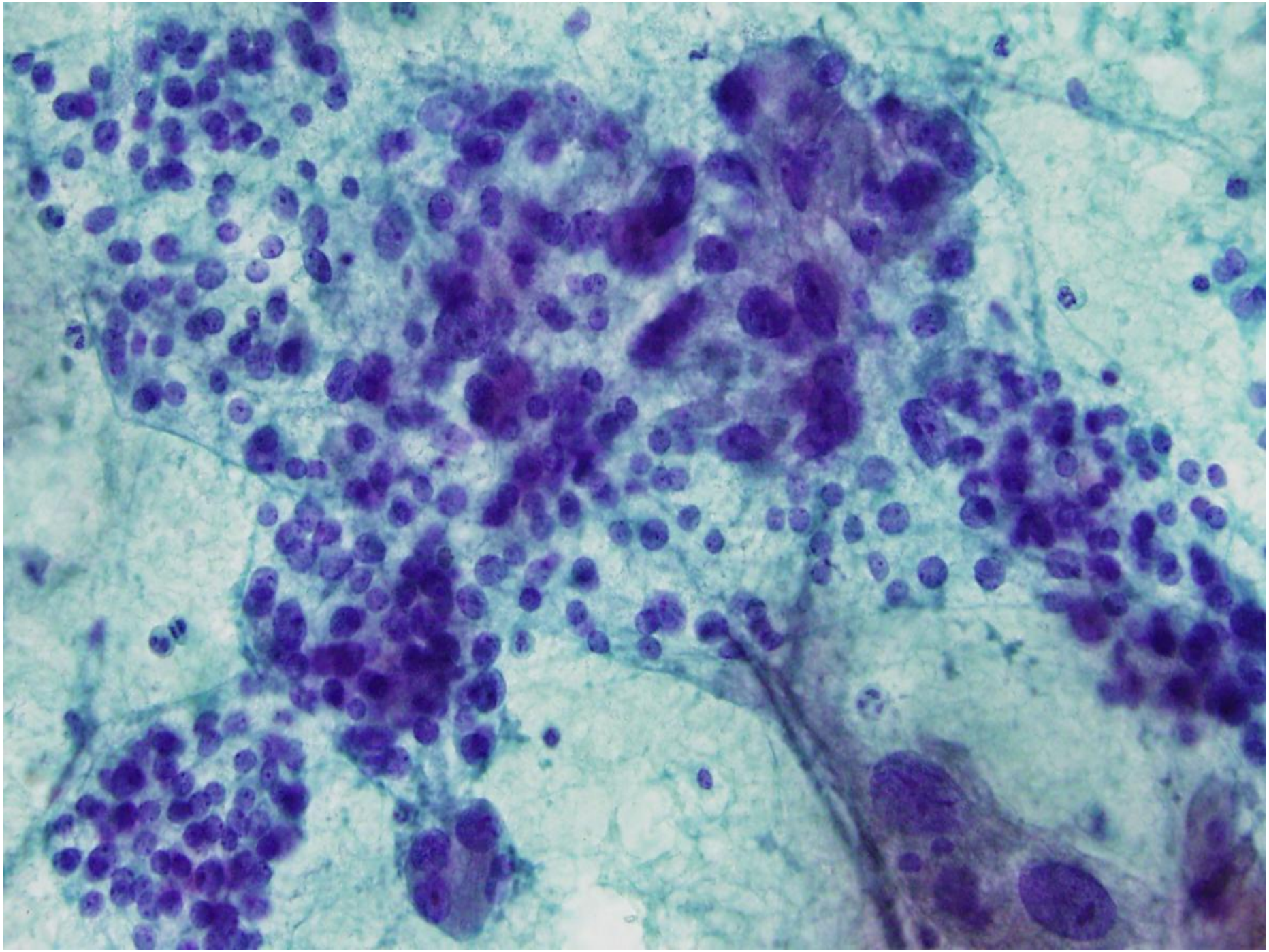
Interesting Case Conference

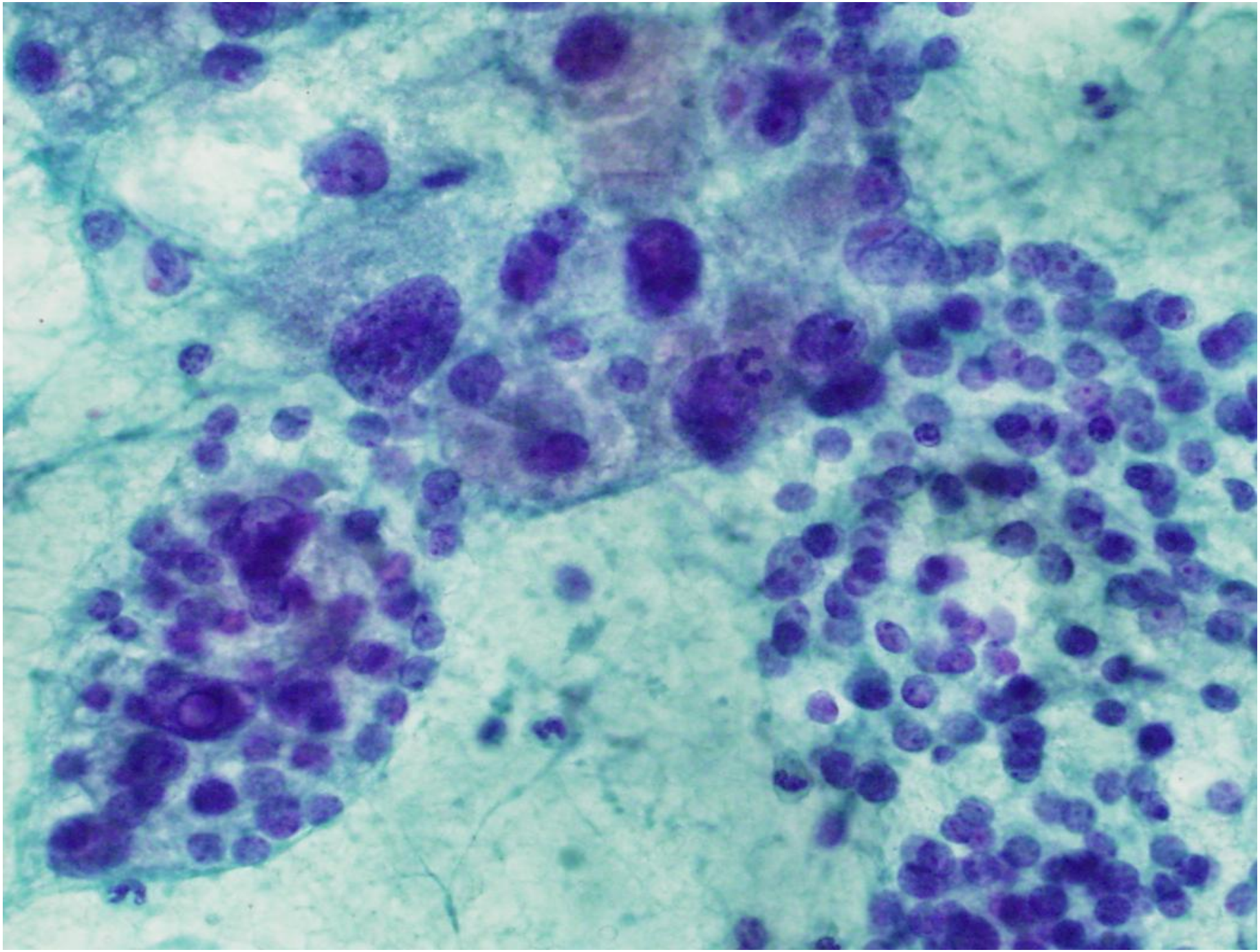
9/9/2013

History

- 48 year old Female
- Right thyroid nodule
  - 2.3 x 1.6 x 1.7 cm
- Sent here in Consultation







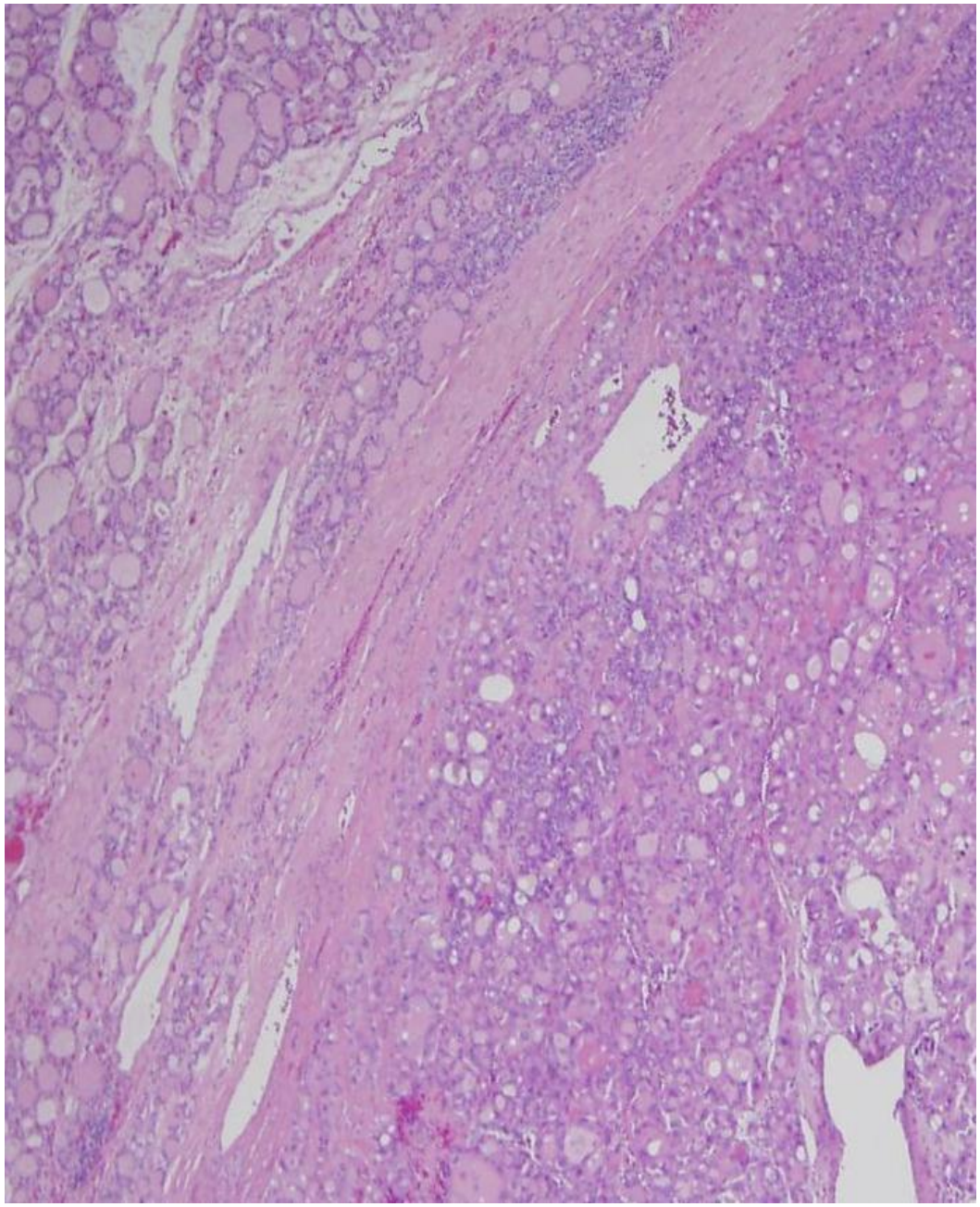
Differential Diagnosis

- Poorly differentiated thyroid carcinoma
- Anaplastic (undifferentiated thyroid carcinoma)
- Metastasis
  - Melanoma
  - Renal cell carcinoma

Sign-out

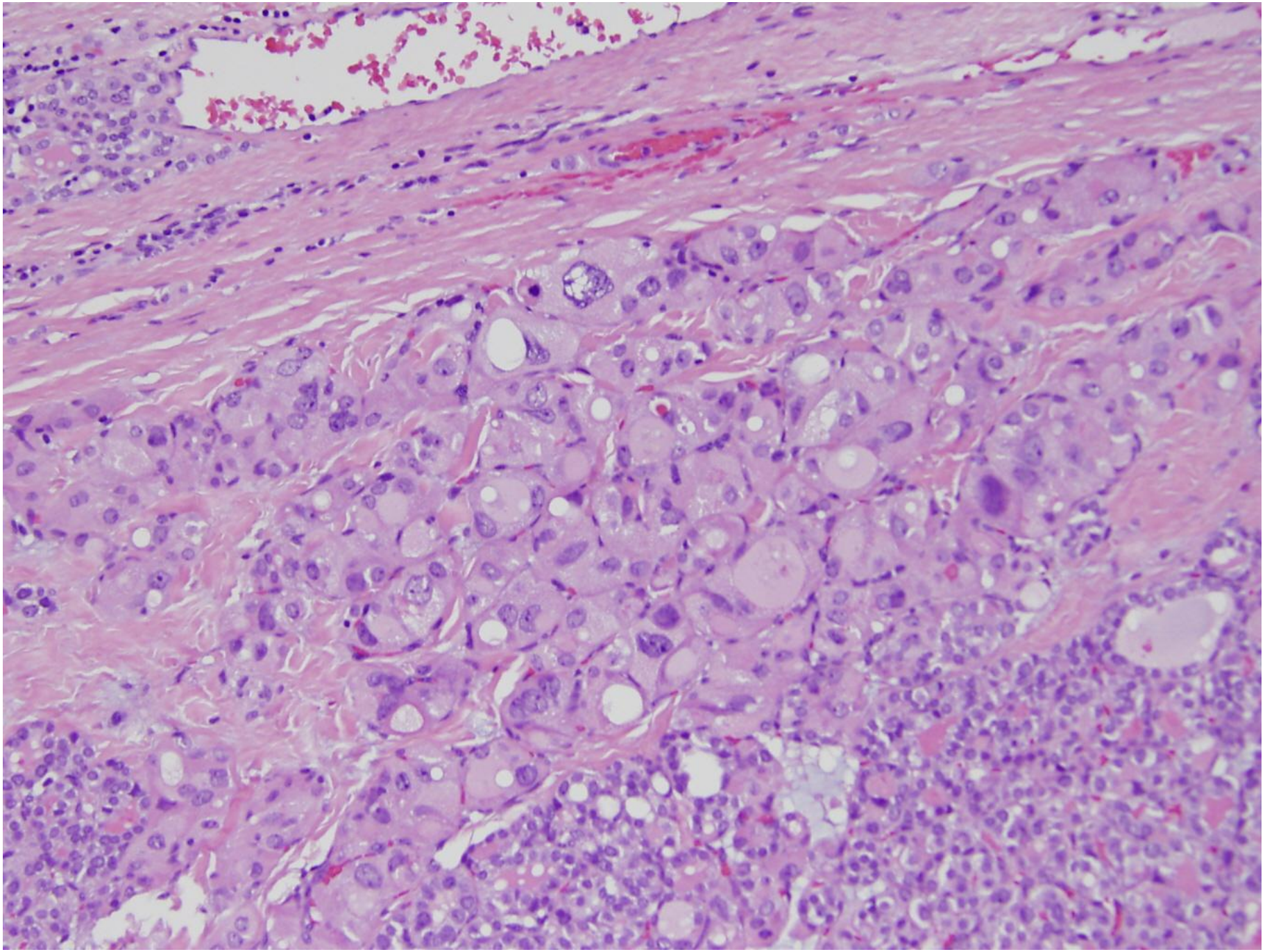
- Right thyroid, fine needle aspiration: positive for malignant cells

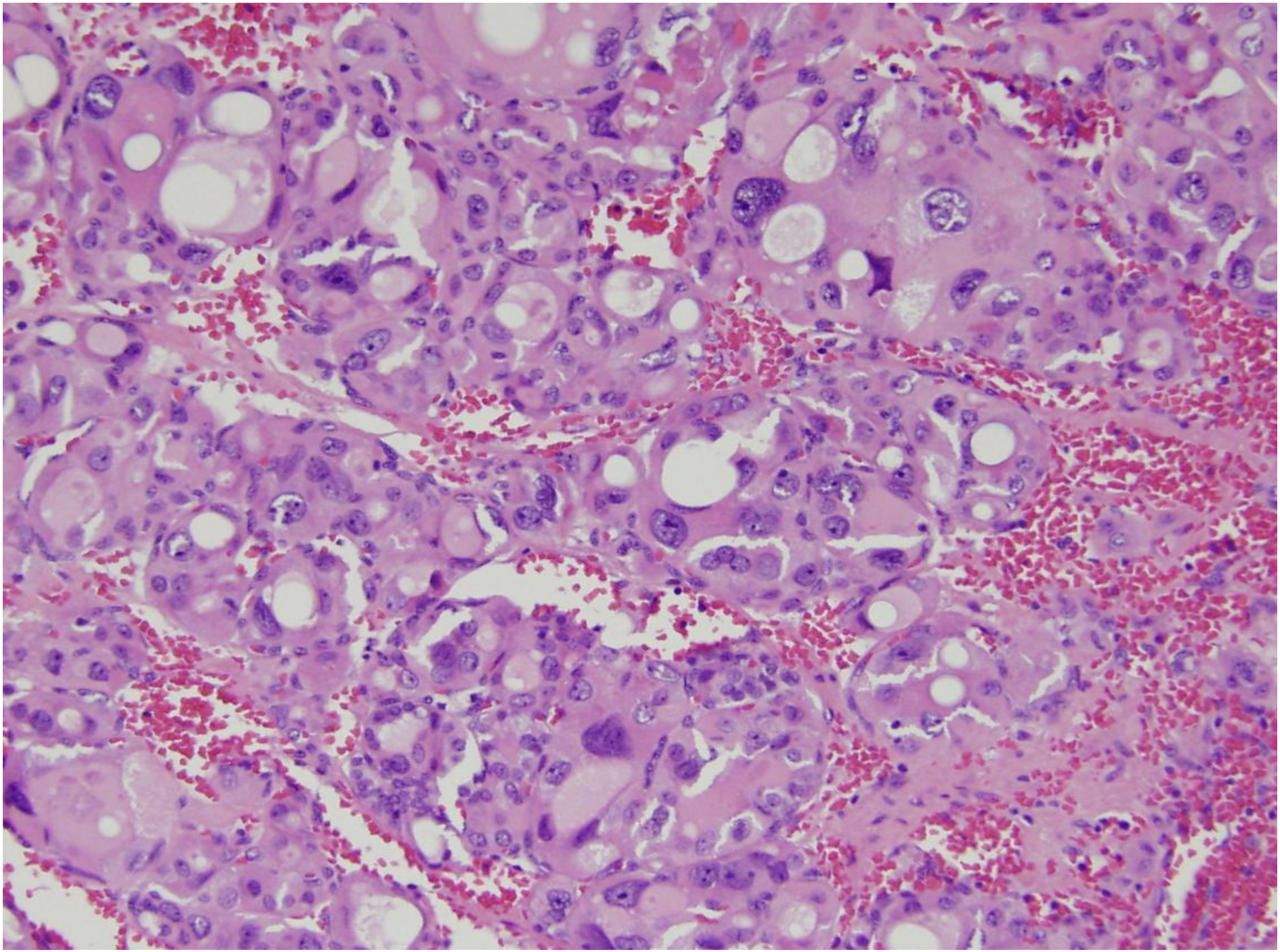
Comment: The aspirate material is cellular and consists of an admixture of bland appearing crowded follicular cells and large atypical pleomorphic cells with anaplastic features. These findings raise suspicion of an anaplastic carcinoma arising in a follicular neoplasm



Thyroidectomy specimen (Gross)

- **Right lobe**
- **2.0 x 1.6 x 1.5 cm circumscribed mass forming a tan-white nodule abutting the posterior surface**
- **Remaining parenchyma red-beefy without additional nodules**





Diagnosis on Thyroidectomy Specimen

- Thyroid, total thyroidectomy: follicular adenoma with bizarre nuclei. Chronic lymphocytic thyroiditis

- Comment: "…within the follicular adenoma there are foci characteristic of so-called adenoma with bizarre nuclei manifested as cells with huge, hyperchromatic nuclei"

Bizarre nuclear atypia - “atypical adenoma”

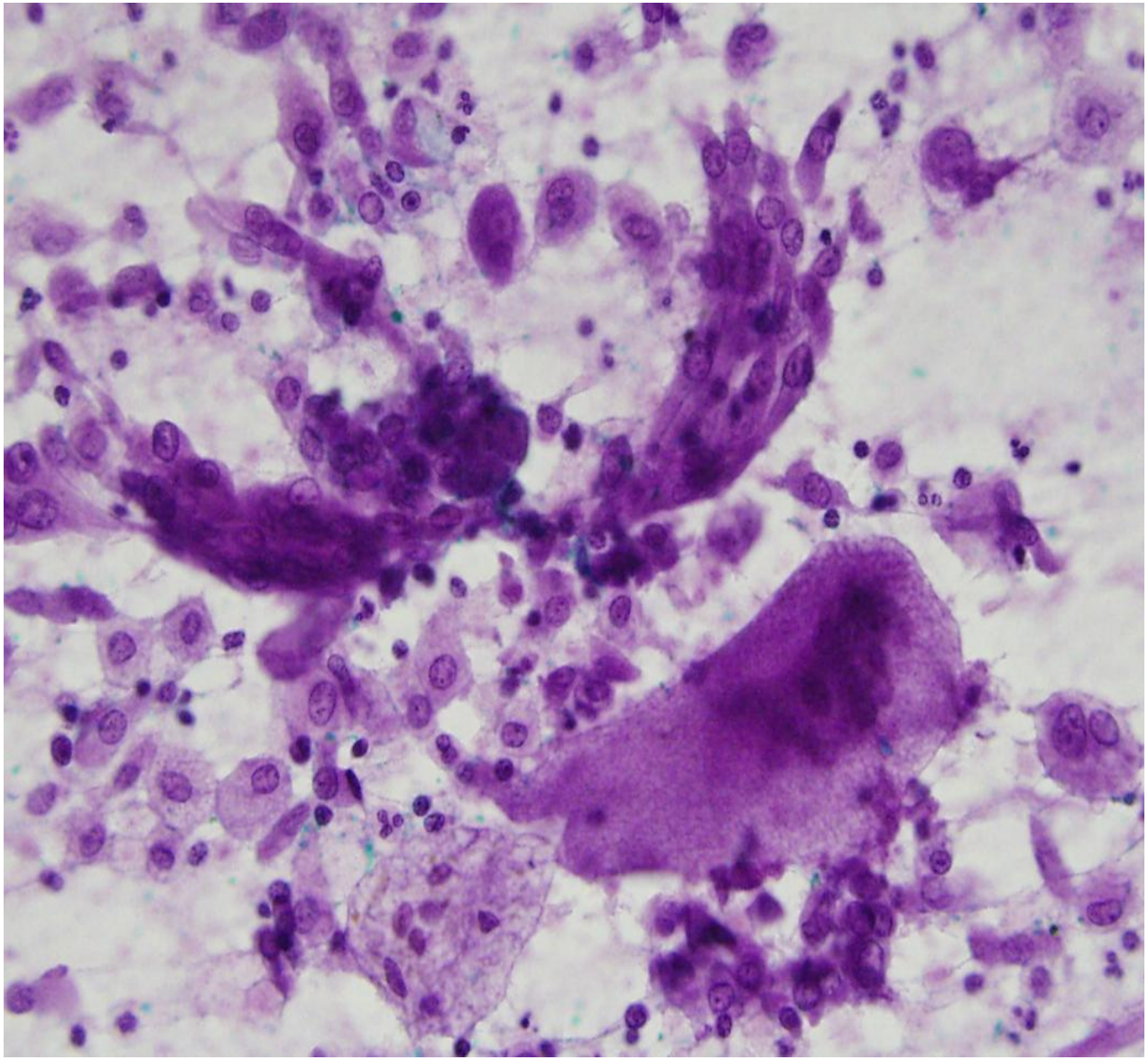
- Completely encapsulated follicular neoplasm that exhibits prominent cytologic atypia and mitotic activity but lacks:
  - capsular invasion
  - vascular invasion
  - metastasis
- All variants of PTC excluded
- Endocrine type atypia
- Benign biologic behavior
  - No reoccurrence, metastasis or death

Atypical adenomas

- Atypical adenomas ~ 2% of adenomas
- Marked cytologic atypia is more common in adenomas than carcinomas
- Random atypia > diffuse atypia
- *Cytologic features*
  - Huge nuclei 10X variation seen
  - Irregular nuclear membranes
  - Abnormal coarse, dark chromatin
  - Prominent nucleoli
  - Numerous mitotic figures and atypical forms
  - Colloid is absent of scant

DeMay – Art and Science of Cytopathology 2nd edition. P 884

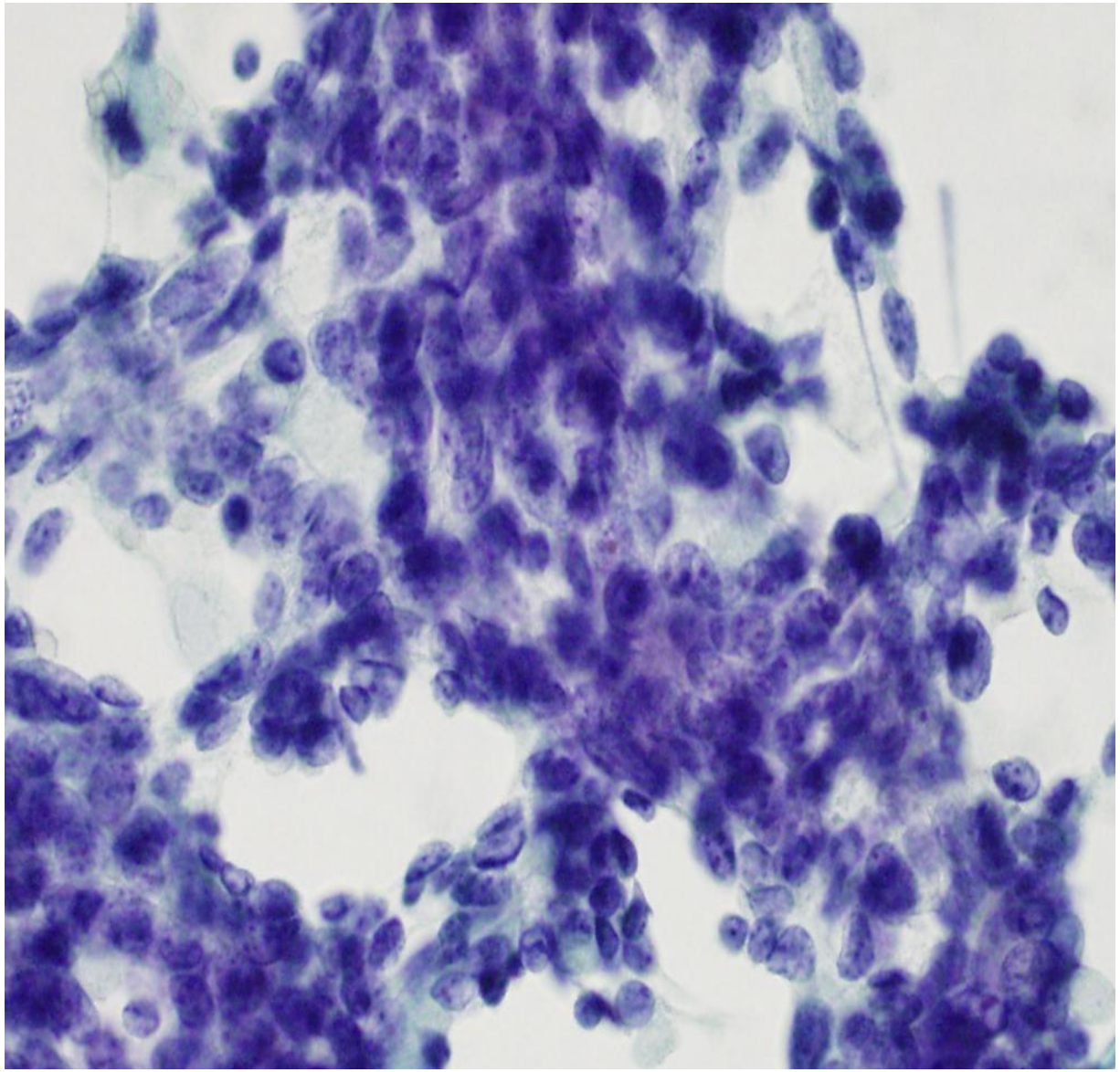
DDx – Anaplastic Carcinoma



Features:

- Mostly isolated cells
- Marked nuclear pleomorphism
- Large cells
- Epithelioid and spindle forms
- Multinucleated giant cells
- Clinical
  - rapid growth
  - adherent to surrounding structures

DDx – poorly differentiated carcinoma



Features:

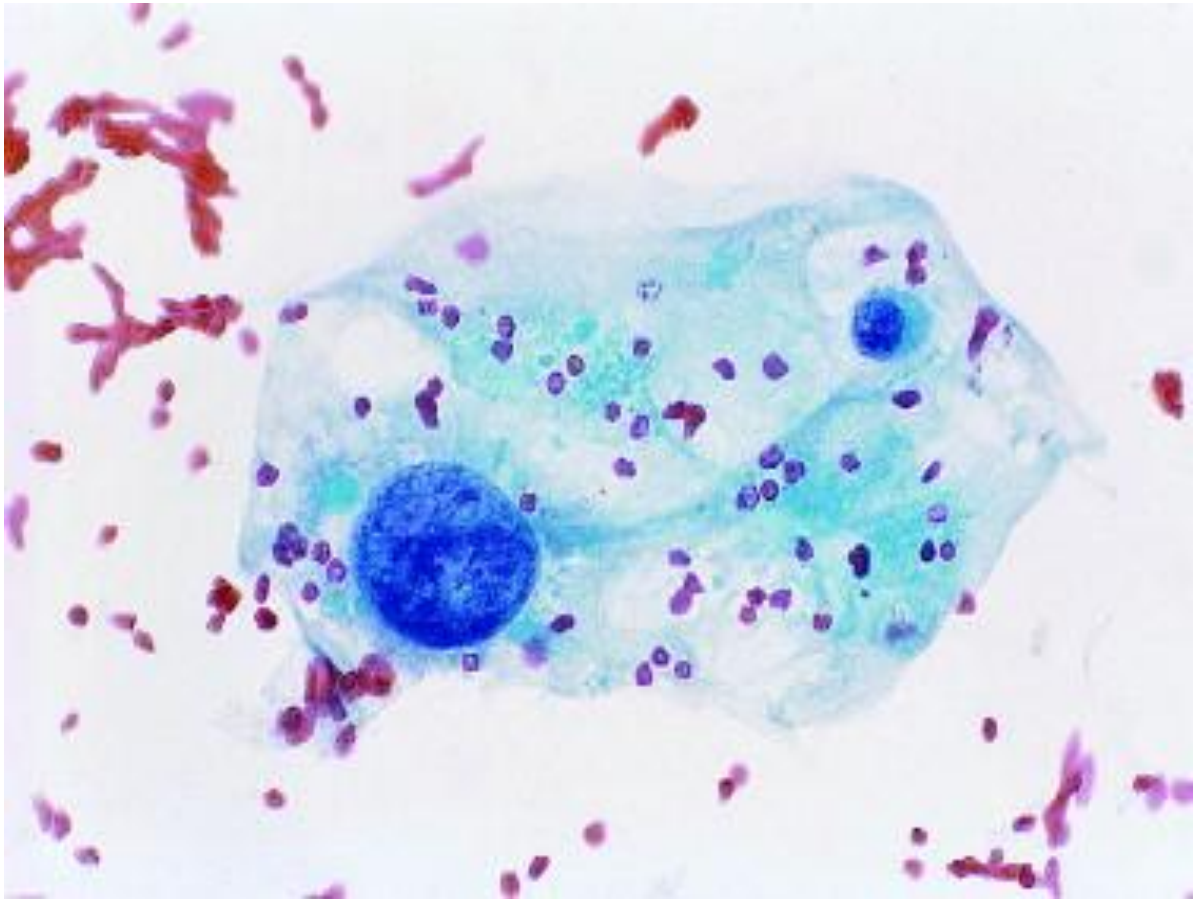
- Solid/trabecular/insular
- No features of PTC
- At least 1 of:
  - convoluted nuclei
  - increased mitotic activity
  - necrosis
- Cells
  - crowded groups and single cells
  - plasmacytoid
  - high N/C ratios
- Colloid scant to absent.
- IHC

  Thyroglobulin+

  TTF+,

  Calcitonin -

DDx – Radiation induced atypia



Features:

- Sheet (macrofollicles) or singly as enlarged cells
- Normal N/C ratio
- Hurthle change
- Cytoplasmic vacuolization
- Marked nuclear atypia
- Marked size variation
- Hyperchromasia
- Smudged chromatin
- Grooves
- Pseudoinclusions
- Naked nuclei

Cibas, E. Ducatman, B. Cytology Diagnostic Principles and Clinical Correlates. Third edition. 2009. Figure 9.13

Take home points

- Atypical adenomas are a potential pitfall in thyroid FNA interpretation
- Surgical intervention appropriate to evaluate for features of malignancy
- Histologic examination necessary