



Endocrine Block

Pathology Practical

Cases:

- Case #1 : Multinodular Goiter
- Case #2 : Hyperthyroidism & Graves Disease
- Case #3 : Hashimoto's Thyroiditis
- Case #4 : Follicular Adenoma
- Case #5 : Papillary Thyroid Carcinoma
- Case #6 : Pheochromocytoma
- Case #7 : Cushing Syndrome

Done by:

Munerah alomari

Rawan aldhawayhi

Wael aloud

● **Important**

● Females notes.

Underlined words are VERY important.

Case #1 : Multinodular Goiter

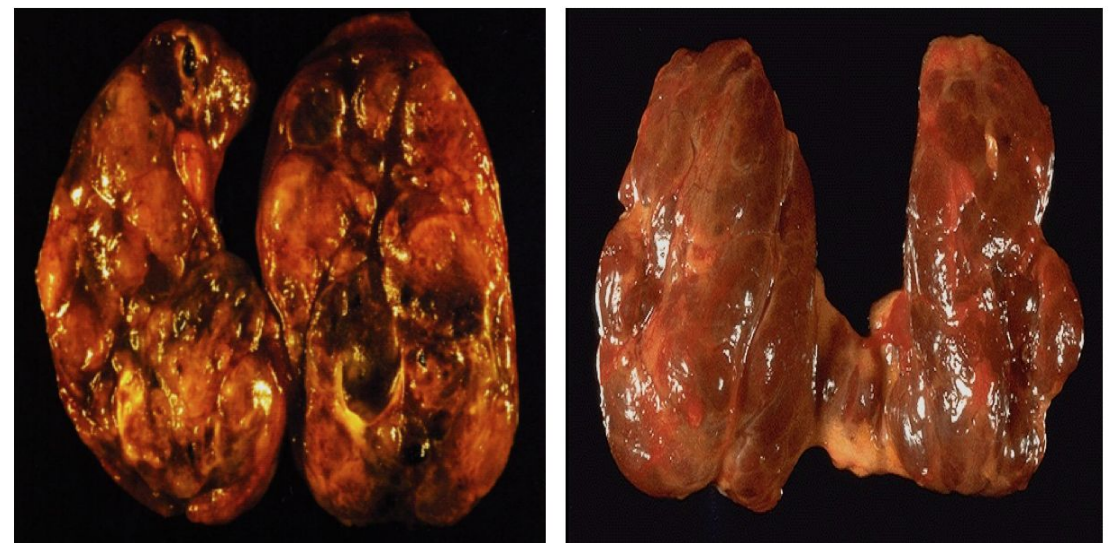
- **Multinodular Goiter:** Represents the most common cause for an enlarged thyroid gland and the most common disease of the thyroid
- **Etiology:** 1.Endemic goitre is caused by iodine deficiency in certain areas. 2.Hereditary enzymatic defects leading to dysmorphonogenetic goitre.
- **Complications:** 1.Airway obstruction,2. Dysphagia, 3.Compression of large vessels in the neck. (they may indicate malignancy)
- **Clinical presentation:** patient was euthyroid.

Multinodular Goiter – in situ



Markedly **enlarged and nodular** thyroid gland

Multinodular Goiter – Gross



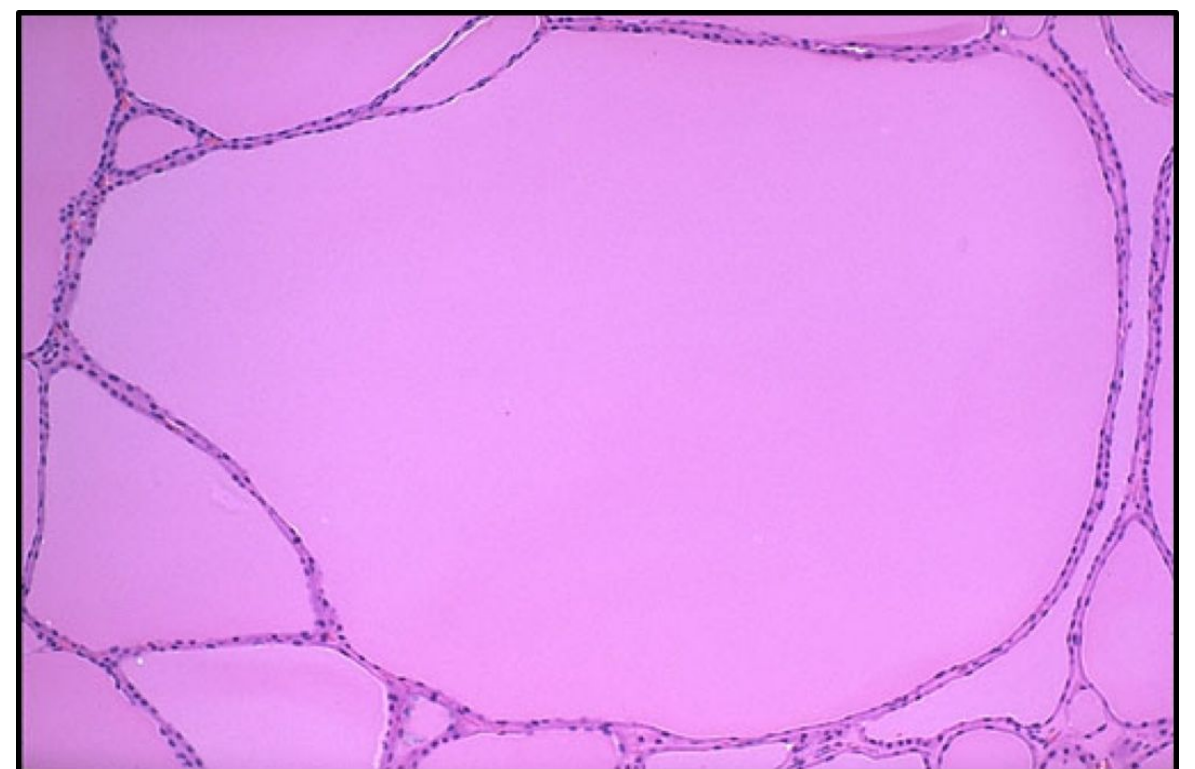
- 1.**Nodular with hemorrhage and cyst degeneration**
2. **Diffusely asymmetric enlargement**

Multinodular Goiter – LPF



- 1.**Numerous follicles varying in size filled with colloid lined by normal benign looking cells.**
- 2.Recent haemorrhage 3.Haemosiderin 4.Calcification
- 5.Cystic degeneration

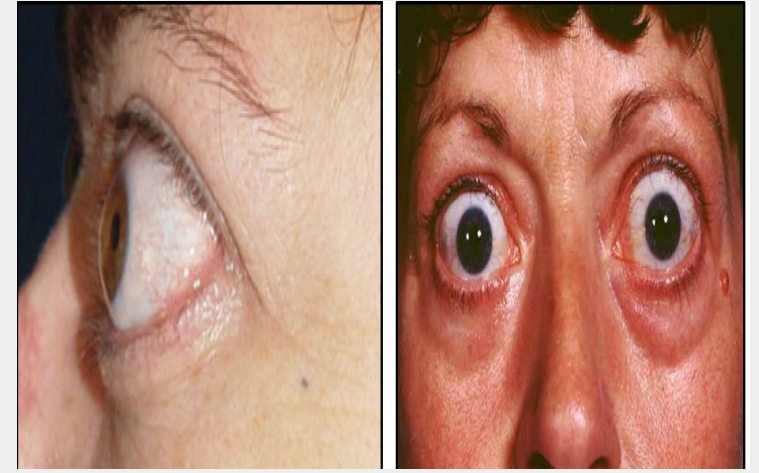
Multinodular Goiter – LPF



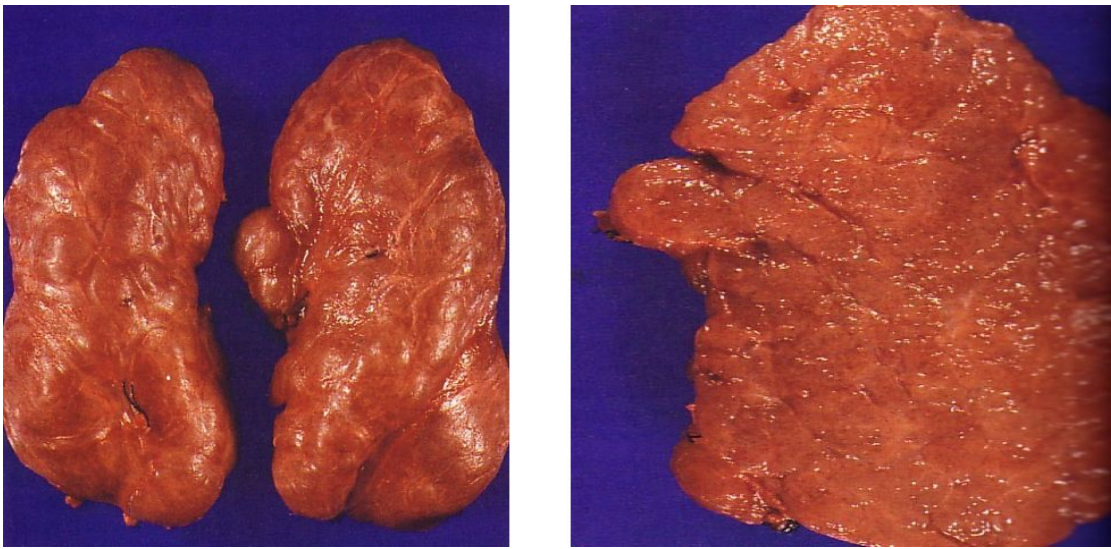
- 1.Enlarged thyroid follicles.
- 2.Follicles are lined by flat epithelium and contains colloid **Non-Functional**

Case #2 : Hyperthyroidism & Graves Disease

- **Clinical presentation:** 1.Hypermotabolism 2.Tachycardia, palpitations 3.Increased T3, T4 4.Goiter 5.Exophthalmos 6.Tremor 7.GIT hypermotility 8.Thyroid “storm”, 9.life threatening.
- **Signs:** Proptosis, Lid lag, Lid retraction, Peri-ocular fat deposition and Scleral rim above the iris →
- **Most common Cause of hyperthyroidism? Graves disease..**

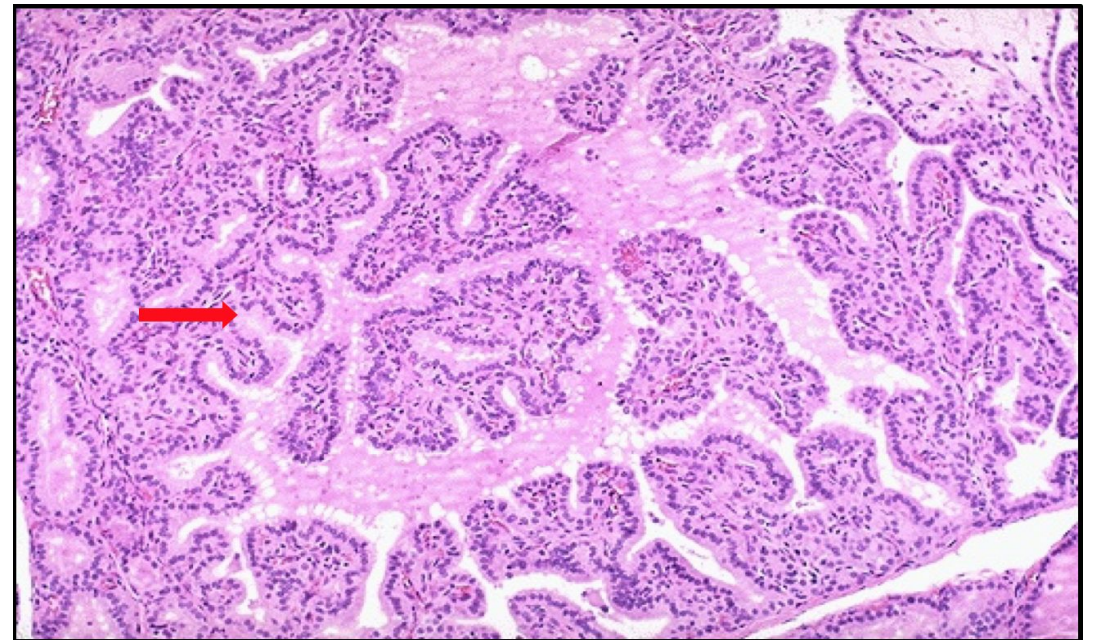


Grave's Disease - Gross



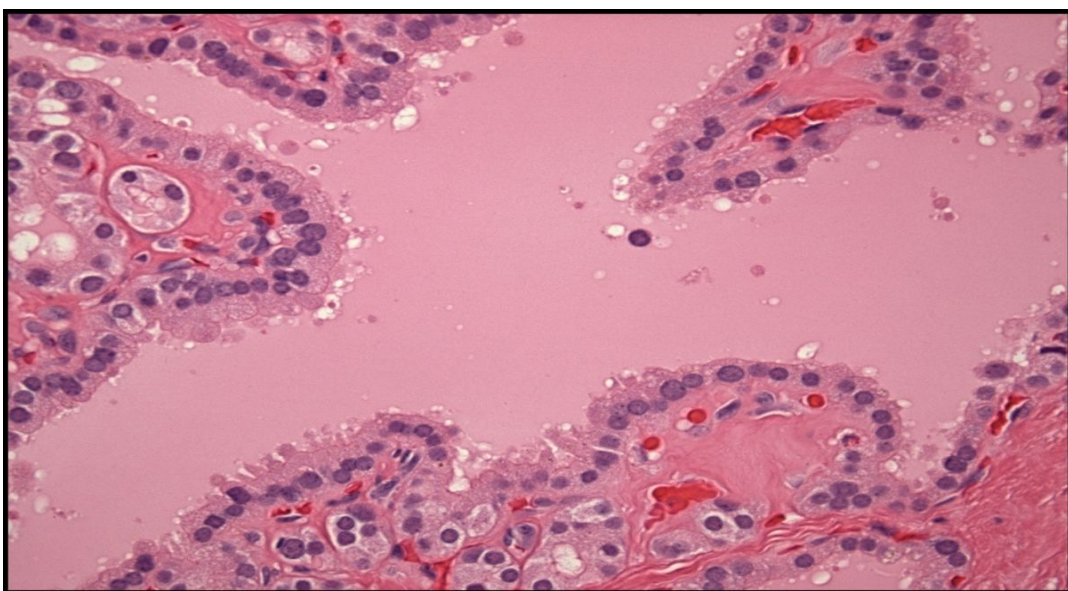
- 1.Symmetrical enlargement of thyroid gland NO NODULES
- 2.Cut-surface is homogenous, soft and appear meaty
- 3.Hyperplasia and hypertrophy of follicular cells

Grave's Disease - LPF



- 1.Diffusely enlarged thyroid with prominent infoldings of the hyperplastic follicular epithelium.

Grave's Disease - HPF



- 1.Columnar and high cuboidal cells with evidence of peripheral vacuoles within the intrafollicular colloid material.
- 2.presence of peripheral smaller thyroid follicles devoid of colloid but lined by similar cells.

Grave's Disease - HPF



- 1.clear vacuoles in the colloid next to the epithelium where the increased activity of the epithelium to produce increased thyroid hormone has led to scalloping out of the colloid in the follicle.

Case #3 : Hashimoto's Thyroiditis

- **Etiology/Pathogenesis:** Autoimmune ;T cell mediated disease.
- **Clinical presentation:** Initially, the thyroid is enlarged and there may be transient hyperthyroidism, followed by a euthyroid state, then hypothyroidism with eventual atrophy years later **The end result.**
- **Diagnosis:** antithyroglobulin and antimicrosomal (thyroid peroxidase) autoantibodies can often be detected in serum.
- **Cause of patient's symptoms:** Hypothyroidism secondary to lymphocytic thyroiditis.
- **Complications:** B cell lymphoma, Papillary carcinoma.

Hashimoto's Thyroiditis, Gross



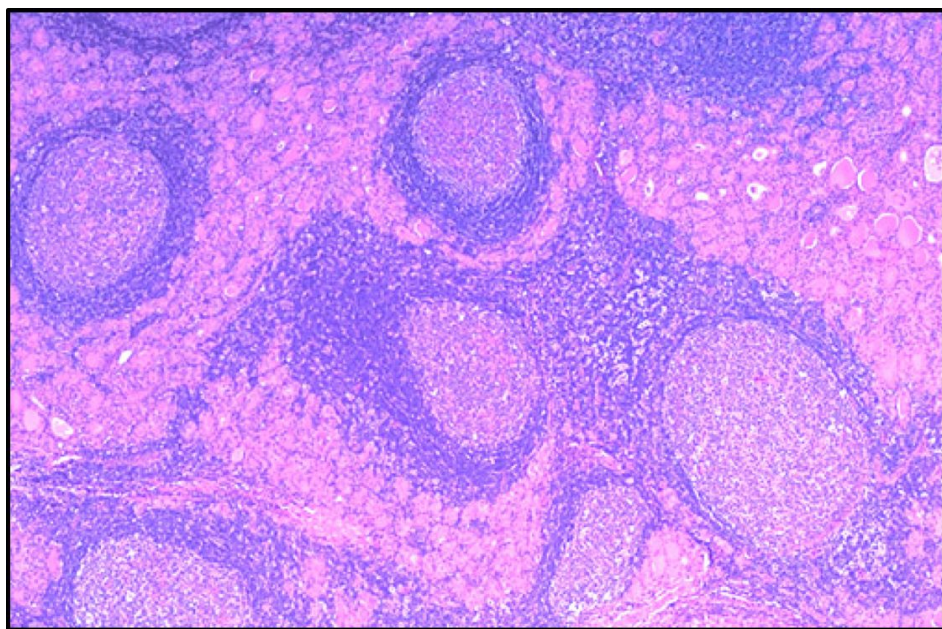
symmetrically small thyroid gland demonstrates atrophy hypothyroid symptoms.

Hashimoto's Thyroiditis, Gross



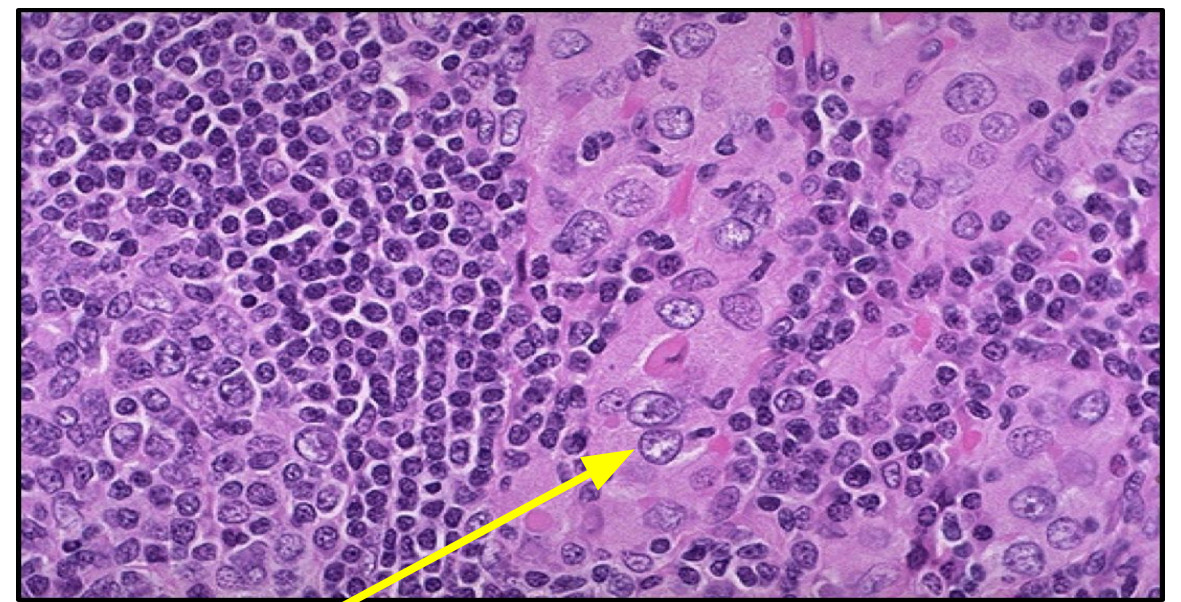
1. Diffuse enlargement.
 2. Firm or rubbery.
 3. Pale, yellow-tan, firm & somewhat nodular cut surface
- White due to:
Lymphocytic infiltration

Hashimoto's Thyroiditis, LPF



Early stage of Hashimoto thyroiditis with prominent lymphoid follicles containing large, **active germinal centers.**

Hashimoto's Thyroiditis, HPF



1. **Hurthle cell** (yellow arrow) or oxyphil cell change.
2. **Lymphocytic infiltration with lymphoid follicle formation**

Case #4 : Follicular Adenoma

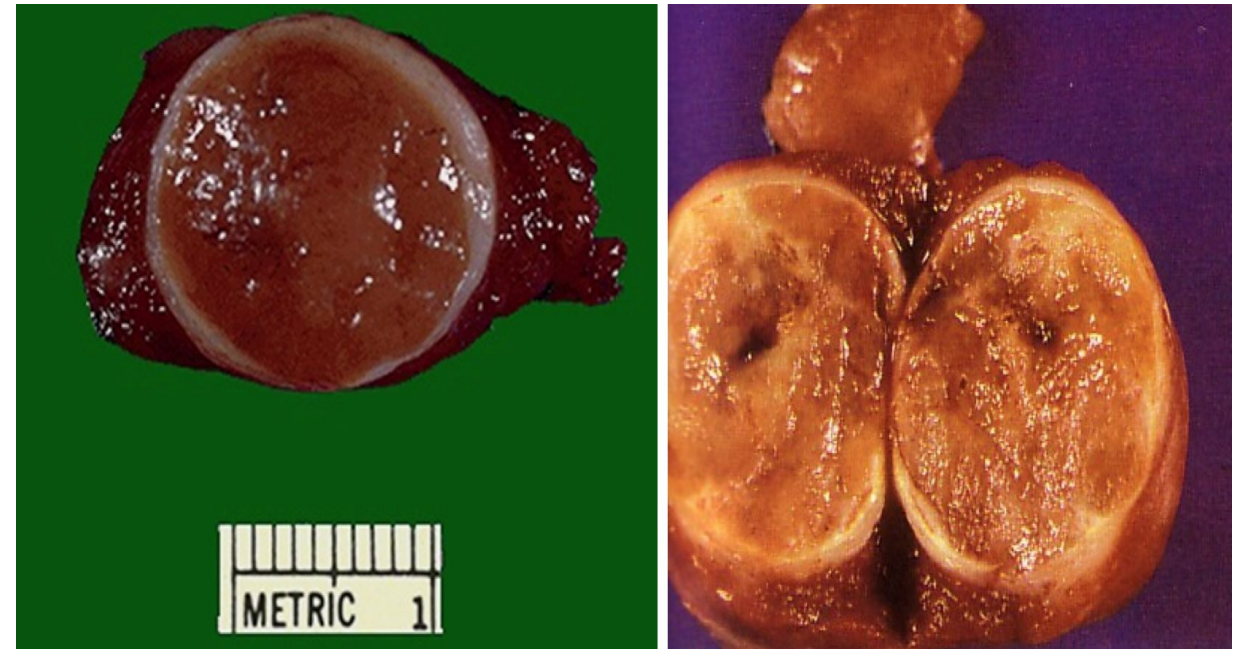
- **Pathologic features that if present they will indicate malignant transformation in this case:**
 1. Capsular invasion “**Penetrating the capsule**”.
 2. **Vascular invasion**
- **Prognosis:** excellent, it's a benign tumor.

Solitary Thyroid nodule



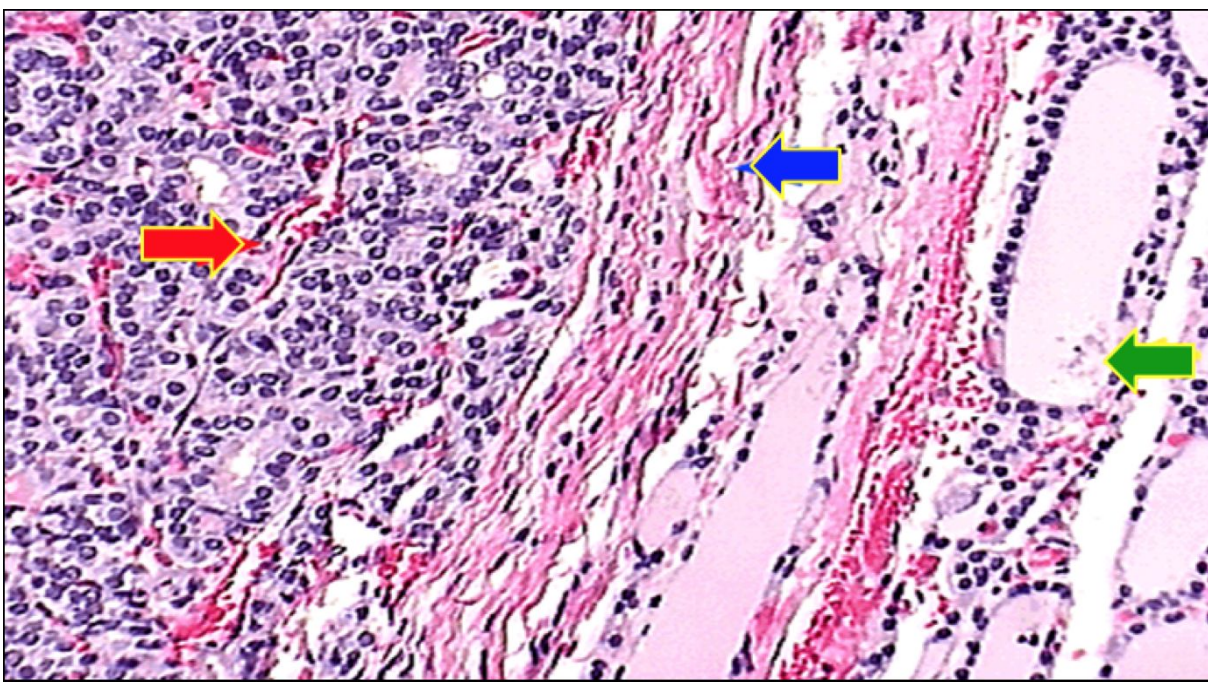
Central and slightly left sided “solitary” thyroid nodule.

Follicular Adenoma – Gross cut section



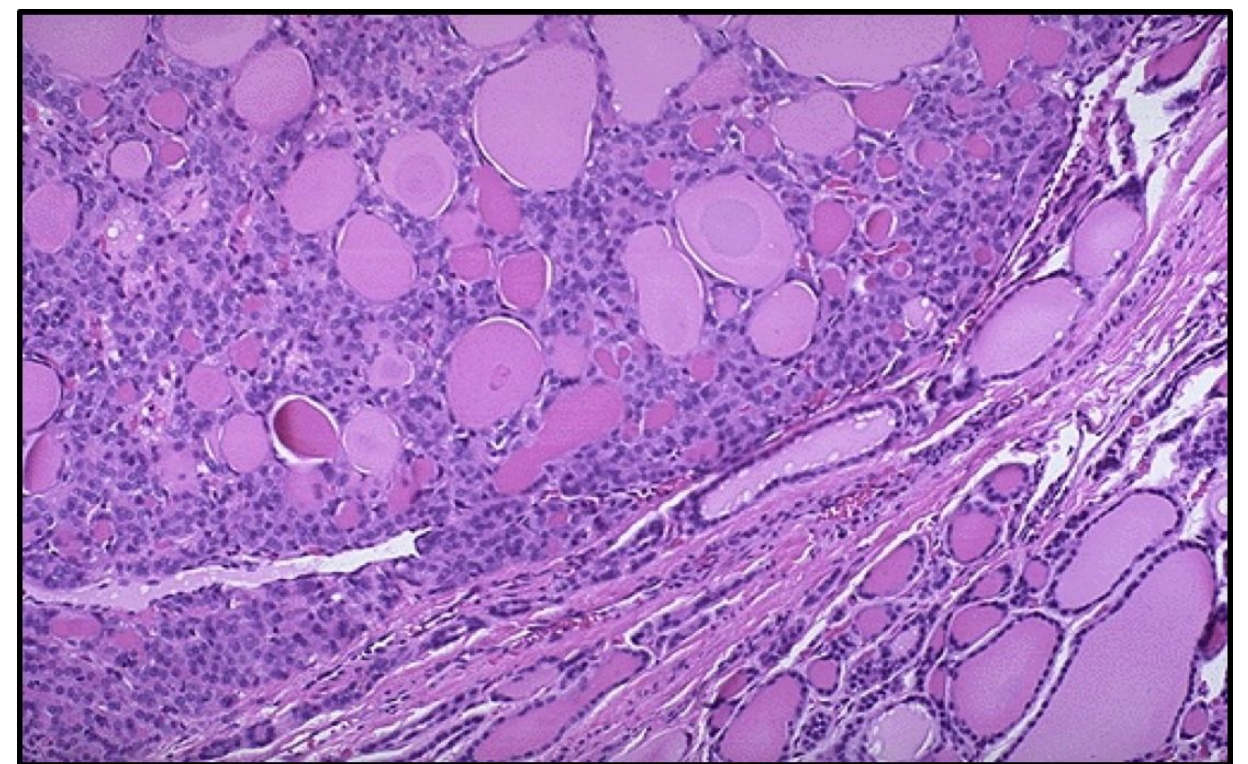
1. **Well circumscribed and encapsulated tumour nodule.**
2. **Pale and yellowish cut-surface**
3. The surrounding thyroid tissue is unremarkable .

Follicular Adenoma – LPF



1. **Red arrow:** Small neoplastic follicles with little colloid material.
2. **Blue arrow:** Capsule.
3. **Green arrow:** Normal thyroid follicles outside the tumor.

Follicular Adenoma – HPF



1. Normal thyroid follicles appear at the lower right.
2. The follicular adenoma is at the center to upper left. **More cuboidal and thick.**

Case #5 : Papillary Thyroid Carcinoma

- **Clinical presentation:** Large central and right sided thyroid gland swelling.
- **Diagnosis:** Nuclear features: 1.Orphan annie nuclei 2.Nuclear groove 3.intranuclear inclusion 4. Calcified Psammoma bodies.
- **Follow up:** First step: fine-needle aspiration then radiologically.
- **Metastasis:** lymph node metastases are common.
- **Hashimoto's or lymphocytic thyroiditis in the thyroid gland can predispose to PTC.**



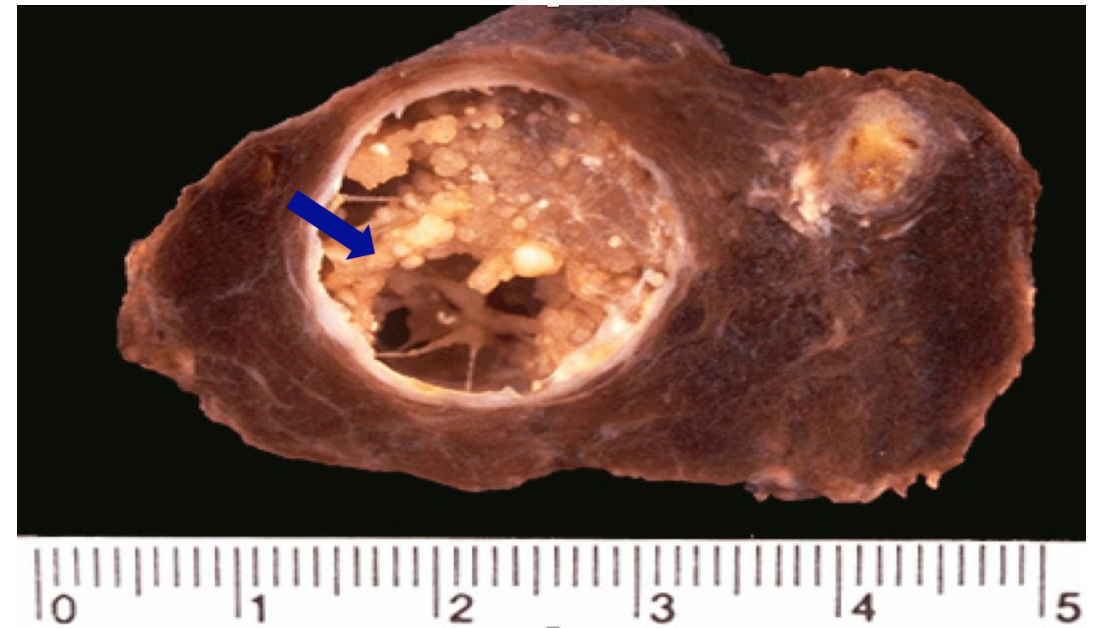
Papillary Thyroid Carcinoma– Gross



1. well circumscribed pale and firm nodule
2. whitish cut surface with vague scattered papillary areas.

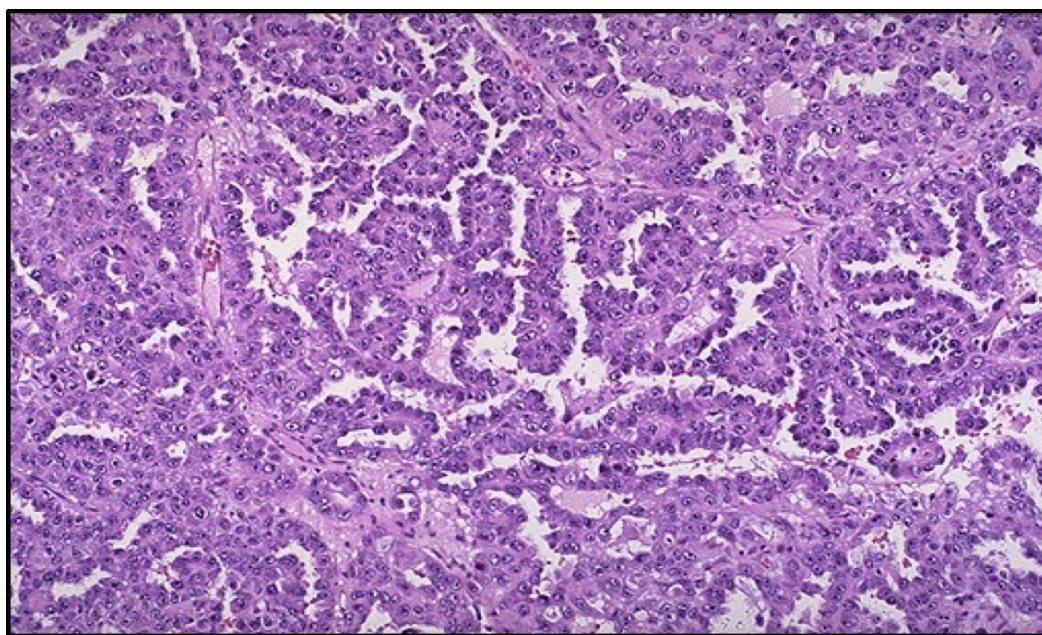
notice the penetration.

Multifocal Papillary Thyroid Carcinoma– Gross



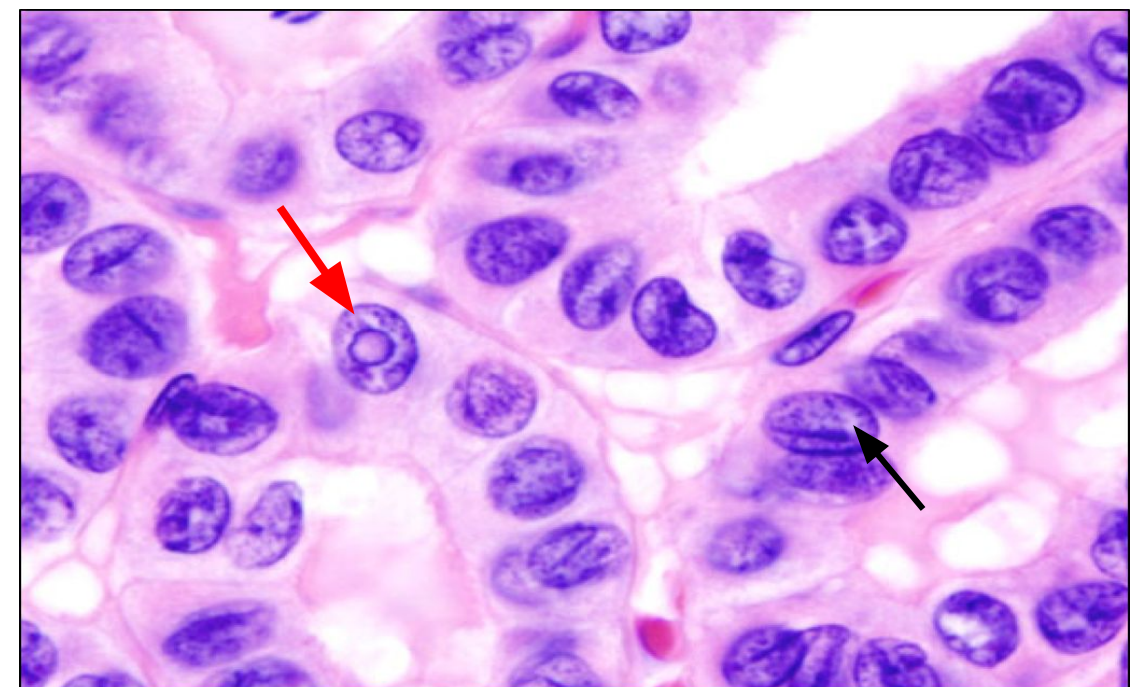
1. Large well circumscribed cystic lesion.
2. Papillary projections or excrescences.

Papillary Thyroid Carcinoma– LPF



1. Nuclear enlargement.
2. Overlapping nuclear clearing (Orphan Annie nuclei).
3. Calcified Psammoma bodies.

Papillary Thyroid Carcinoma– HPF



1. Intranuclear inclusion (red arrow)
2. Coffee bean nucleus with prominent nuclear groove (black arrow)

Case #6 : Pheochromocytoma

- **Diagnosis:** By electron microscopy, cells contain neurosecretory granules
- **Type:** a neuroendocrine tumor secreting catecholamines.
- **Prognosis:** Good, it's a benign tumor of adrenal medulla." NOT COMMON"
- **10% rule:** 10% familial, 10% malignant, 10% extra-adrenal

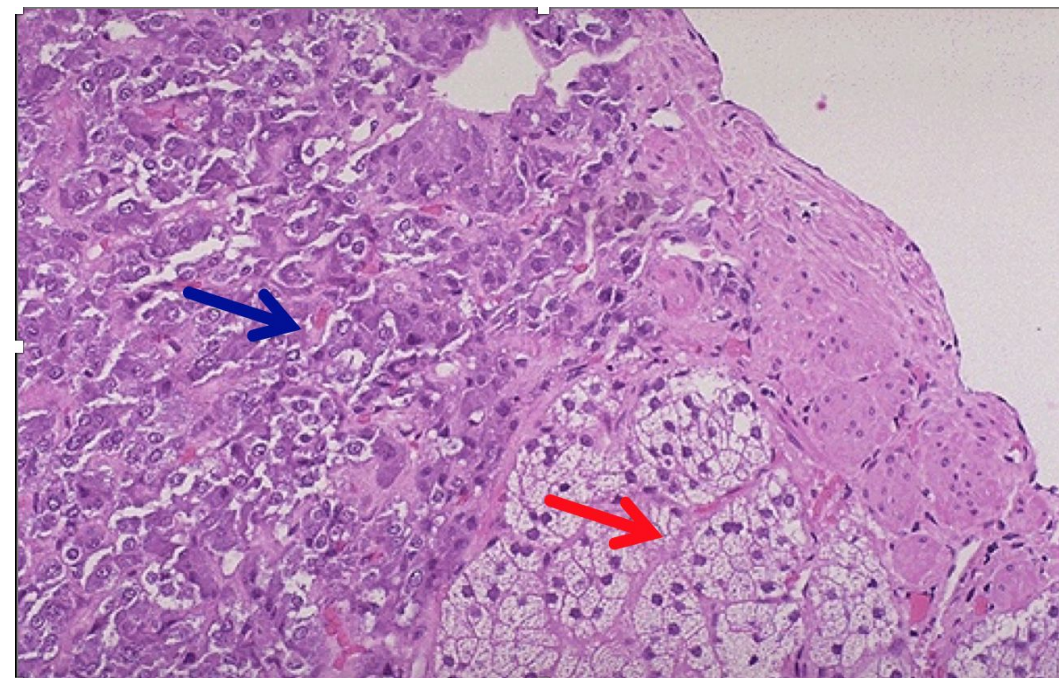
Pheochromocytoma – Gross cut section



single partly pale and partly hemorrhagic adrenal medullary mass

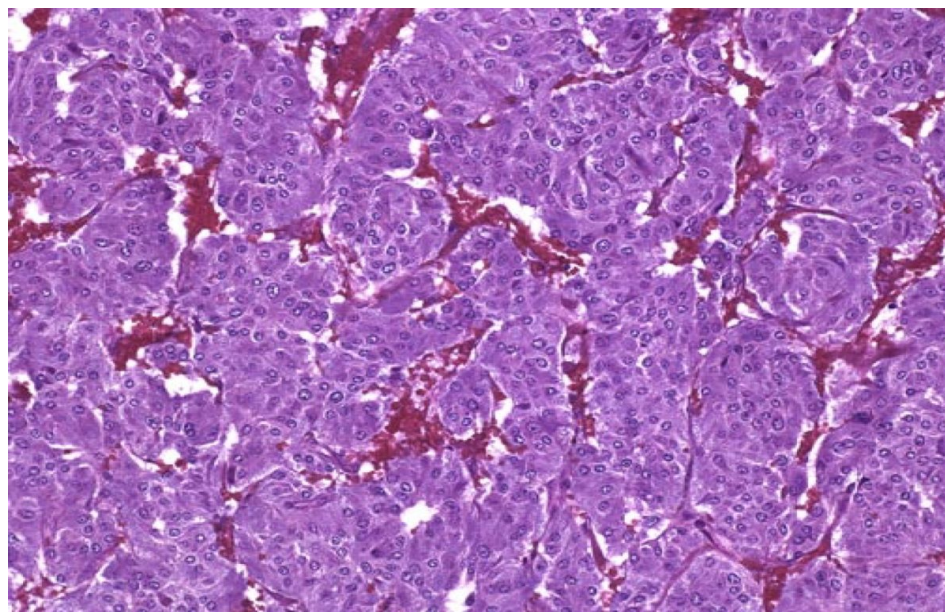
Blue arrow: small remnant of remaining adrenal cortex.

Pheochromocytoma – LPF



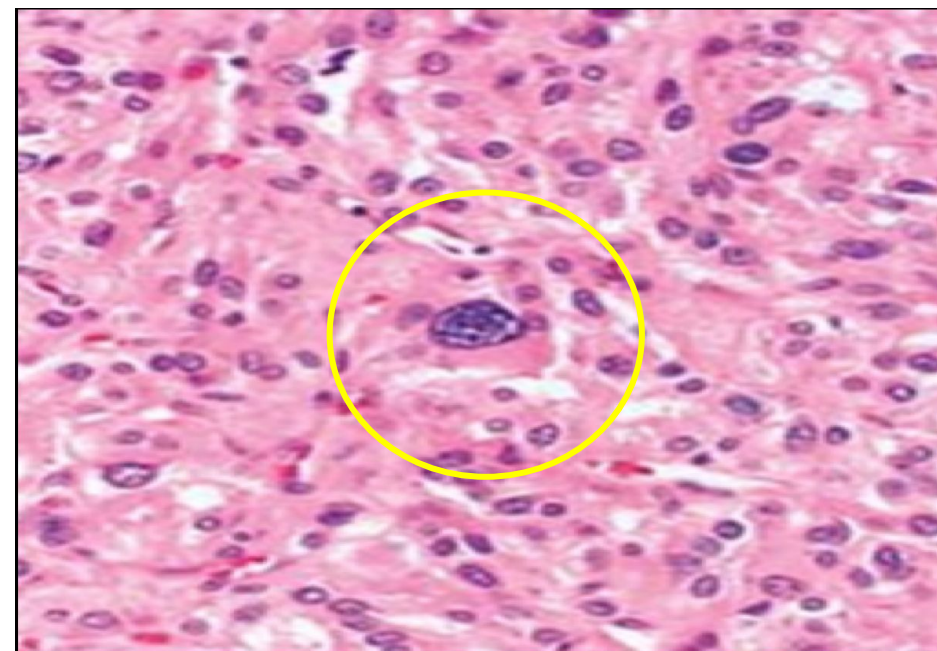
1. Blue arrow: **darker cells of the pheochromocytoma**
2. Red arrow: **residual adrenal cortical tissue**

Pheochromocytoma – LPF

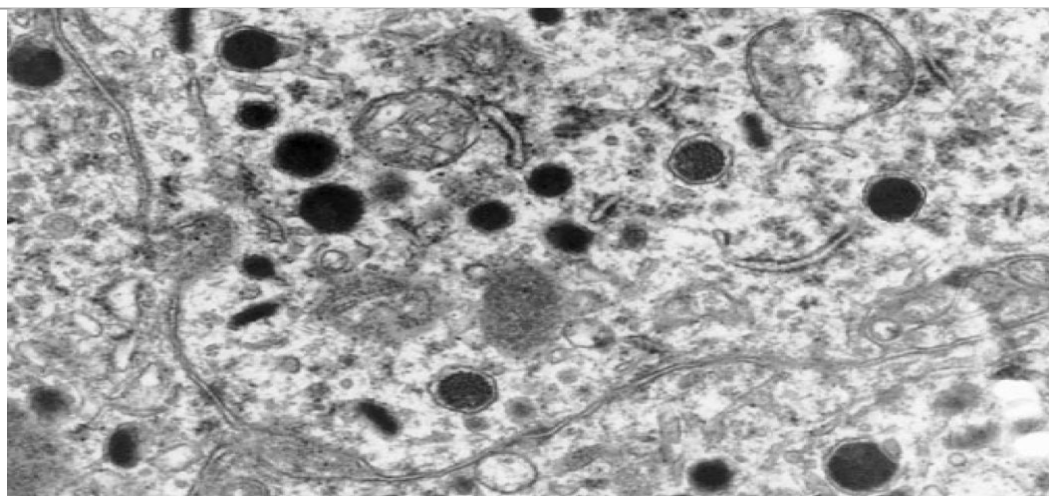


1. **Circular balls of cells with trabecular areas.**
2. **Numerous blood vessels between the tumor cells**

Pheochromocytoma – HPF



1. **Large polymorphic cell.**



Electron Microscopy to confirm the diagnosis containing Neurosecretory Granules.

Case #7 : Cushing Syndrome

- **Causes of cushing syndrome:(very imp) احفظوها عن ظهر قلب**

A-Cortical adenoma

B- Pituitary gland adenoma.

C- Adrenal cortical hyperplasia.

D- Ectopic ACTH secretion (small cell carcinoma of lung.) Paraneoplastic syndrome.

F- Iatrogenic Cortisone intake.

Cushing Syndrome – Clinical Case



A child with Cushing syndrome as a result of Long-term corticosteroids treatment. Note the classical Moon face appearance



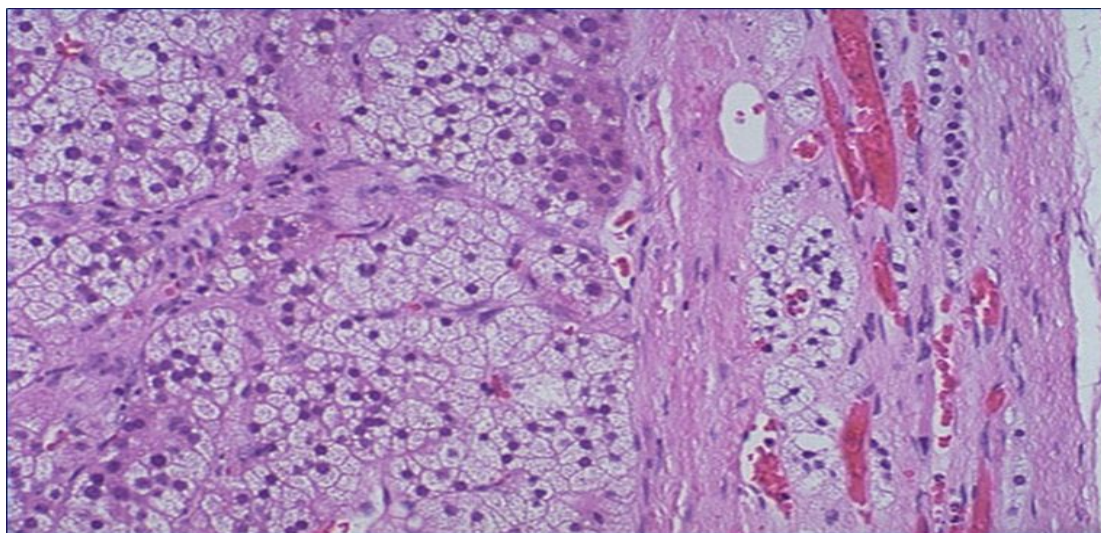
A patient with Cushing syndrome. **Note the truncal obesity and purple striae.**

Cushing syndrome with Cortical Adenoma - Gross



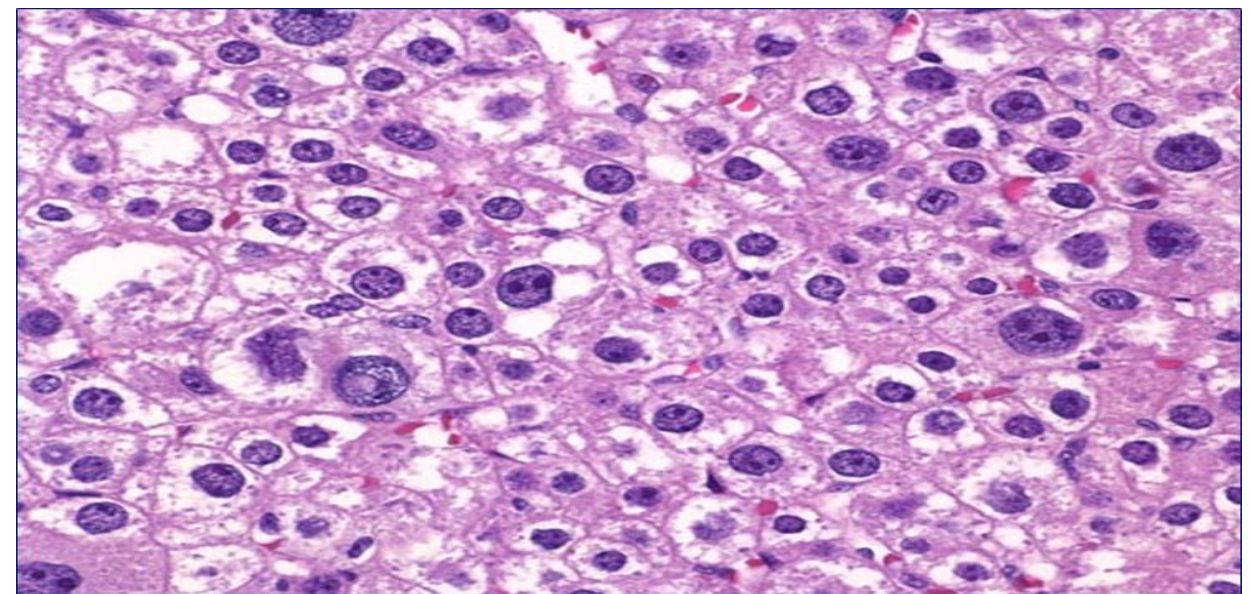
1. Atrophic adrenal gland on the right.
2. Adrenal cortical well circumscribed mass benign with areas of hemorrhage.

Cortical Adenoma - MPF



1. The **capsule** of this benign neoplasm is at the right اي بيناين تومر بنشوف فيه كابسول
2. t the left resembles normal adrenal zona fasciculata.
3. There may be minimal cellular pleomorphism within adenomas. **even it's a benign tumor**

Adrenal Gland – Cortical Adenoma - HPF



1. **Cells with large hyperchromatic nuclei.**
 2. **Prominent nucleoli.**
- With some degrees of polymorphism (even it's a benign)