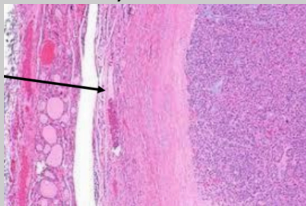
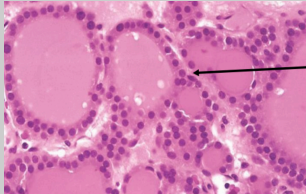
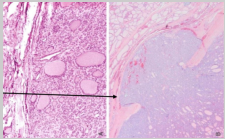
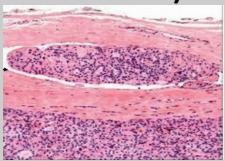
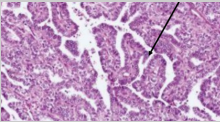
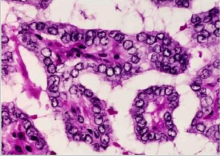
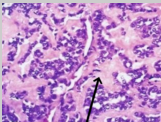
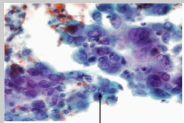


Malignancy Type	Follicular Adenoma	Follicular Carcinoma	Papillary Carcinoma	Medullary Carcinoma	Anaplastic Carcinoma	Lymphoma
Defining features ( <u>Not histology</u> )	-- Mostly non-functional. Less commonly, may secrete thyroid hormones.	-- Common in <b>iodine deficient regions</b> .  -- Can present with <b>Multiple lung nodules</b>	-- <b>MOST COMMON</b> type of thyroid carcinoma.  -- <b>Exposure to radiation</b> in childhood. (Major RF)  -- Can arise from <b>Hashimoto thyroiditis</b> .  -- Thyroid nodule with <b>lymph node enlargement</b> .	-- ↑ <b>calcitonin</b> → Hypocalcemia  -- <b>Younger patients</b> than other malignancies	-- Often invades <b>local structures</b> → Dysphagia or respiratory compromise  -- <b>Rapidly enlarging mass</b> in the neck.	-- Can arise from <b>Hashimoto thyroiditis</b> .
Demography	<b>Women&gt;Men</b>	<b>Women&gt;Men</b> 40-60 years	<b>Women&gt;Men</b>	<b>Women&gt;Men</b> . Sporadic cases -- 50-60y Familial cases -- <b>Younger groups</b>	<b>Women&gt;Men</b>  -- <b>Mostly affects the elderly</b> of >65 years.  -- 25% have Hx of previous well-differentiated thyroid Carcinoma.	<b>Women&gt;Men</b>
Metastasis	--	Hematogenously (Blood and bone → <b>Bonophilic</b> )	To <b>cervical lymph nodes (Neck)</b>	--	--	--
Sporadic/ Familial	--	--	--	Can be sporadic or familial. <b>If older</b> likely <b>sporadic</b> , <b>younger</b> likely <b>familial</b> .	--	--

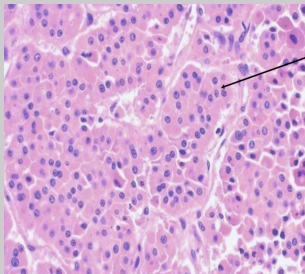
Mutation type	<b>1- Driver</b> mutation in TSH stimulation. <b>2- Rarely, RAS</b> mutation.	<b>RAS</b>	RET/PTC	Familial cases: MEN-2A/2B <b>Associated with mutations in RET</b>	<b>RAS</b>	--
Mortality/Prognosis	--	-- More aggressive than papillary carcinoma. -- 50% of patients die within 10 years.	-- Relatively indolent. -- <b>Not Aggressive.</b> -- 10-year survival > 95% EVEN with lymph node metastasis.	--	-- <b>VERY AGGRESSIVE</b> 100% mortality rate in less than a year! <b>VERY BAD PROGNOSIS</b>	--

Malignancy Type	Follicular Adenoma	Follicular Carcinoma	Papillary Carcinoma	Medullary Carcinoma	Anaplastic Carcinoma	Lymphoma
Defining features (ONLY HISTOLOGY )	<p>-- <b>Solitary, well-circumscribed</b> with -----<b>1- Intact Capsule</b> (No vascular of capsular invasions, thus, differing them from Follicular carcinoma)</p> <p><b>2- Thickened capsule.</b> (Thus, differing them from hyperplastic nodules.)</p>  <p>-- <b>Micro follicles</b> (Characteristic of benign adenoma)</p> 	<p>Similar to follicular adenoma <b>EXCEPT:</b></p> <p><b>1-</b> The tumor is <b>mushrooming</b> or have a mushroom-like capsular invasion.</p>  <p><b>2-</b> The tumor is too close to the vascular wall indication a <b>vascular invasion. (Inside the capsule or outside of it.)</b></p> 	<p>--Compromised of <b>papillae</b> lined by (crowding of) cells with:</p>  <p><b>1-</b> Empty-appearing nuclei with central clearing and white "<b>Orphan Annie eye</b>" nuclei.</p>  <p><b>2- Psammoma bodies</b> (Spherical calcified foci with <b>concentric laminations</b> – <b>Very specific for PTC, almost a</b></p>	<p>-- Calcitonin often deposits within the tumor as <b>amyloid</b> appearing in <b>light pinkish</b> And the cancer's cells look <b>dark blue</b> are called Small cell carcinoma-like.</p>  <p>--Multicentric</p>	<p>-- Have very <b>ugly bizarre looking anaplastic cells.</b> ----- <b>No amyloid, no papillae no follicles, no meaningful structures.</b></p>  <p>-- Cells can be big, small, large, abnormal mitosis, <b>necrosis, hemorrhage.</b></p> <p>-- Often mistook for an abscess for the heavy presence of</p>	--

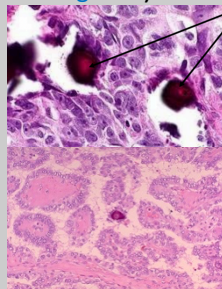
-- Eosinophilic metaplasia of cells that line follicles → **Hurthle cells** (Also seen in Hashimoto thyroiditis).

---- Remember:

**PINKISH & Granular.**

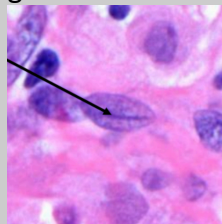


**characteristic, it can be seen in other diseases like meningioma)**

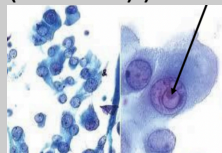


---- psammoma bodies (Moma and Papi adopted orphan annie)

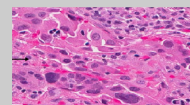
**3- Nuclear grooves**



**4- Pseudo nuclear inclusions** (The invagination of cytoplasm often gives the appearance of intranuclear inclusions (PSEUDO) )



**neutrophils, coming from severe necrosis.**



**FNA? (Fine needle aspiration Dx)**

<b>Yes</b>	<b>No</b> (It only sees the follicular cells, and not the capsule.)	<b>Yes – Easily &amp; Accurately (Preoperatively)</b>	Yes	Yes	Yes
<b>Histological examinations (Tissue biopsy)</b> Cytologic examination is inaccurate.	<b>-- Histological examinations (Tissue biopsy)</b>	<b>#+Nuclear features are of utmost importance. Here, we don't</b>	<b>1- Immunostaining using different stains for</b>	<b>#+Detected in histology and cytology.</b>	<b>#</b>

		<p>Cytologic examination is inaccurate.</p> <p>-- It's still difficult to reach a definitive Dx and such cases are termed <b><i>minimal deviation follicular</i></b></p>	aim for a capsule.	<p>1-<b>Calcitonin</b></p> <p>2- TTF-1 (Stains both lungs and thyroid.)</p> <p>3- Thyroglobulin (Specific for thyroid)</p> <p>4- Amyloid (Congo red stain, under <b>polarizing</b> microscope, the amyloid looks green)</p>		
<b>Tx</b>	--	<b>Thyroidectomy or a lobectomy.</b>	--	RET +ve family members require <b><u>prophylactic thyroidectomy.</u></b>	--	--