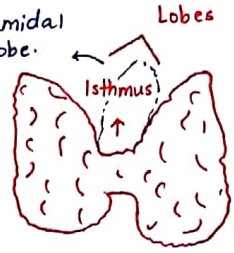
Thyroid Gland



- Isthmus might be absent in 10% & Pyramidal Lobe is Only found in 50%.

- Thyroid Gland is located in the center of the neck, at the Anterior neck triangles.
- It consist of 2 lobes & isthmus (opposit to 2nd & 3rd tracheal rings)
- Pyramidal Lobe (50%) considered an Embryological remnant of Thyroglossal Duct.

Embryology of Thyroid Gland:

- Median thyroid Primordium ⇒ Start from the Base of the tongue (foramen cecum) & descend Along the thyroglossal duct to its final location in the neck.
- Lateral thyroid Primordium + Superior parathyroids ⇒ From the 4th pharyngeal Pouch.
- Thymus + Inferior parathyroid glands ⇒ 3rd pharyngeal Pouch ⇒ Higher Risk to be Ectopic ⇒ search in thyrothymic ligament & thymus substance

Histology:

- 2 Types of Cells (Thyrocytes)
  - Follicular Cells ⇒ Synthesis & secrete thyroid Hormones. (T_4, T_3)
  - Para follicular cells ⇒ Called C-cells because they secretes the hormone calcitonin.
- Colloid Is the storage form of Thyroid Hormones.

- C-cells comes from neural crest so they are Neuroendocrine cells
- They present in superolateral part of Thyroid Lobes so cannot be found in:
  1- Pyramidal Lobes
  2- Isthmus
  3- Thyroglossal duct cyst.

↳ That's why Medullary Cell Ca. Can't develop in these sites.

Thyroglossal Duct Cyst

(70%) Most common cervical Anomaly ←
Most common developmental anomaly of thyroid Gland. ←

- Normally at Birth the Thyroglossal Duct has to Involute, If not Involuted (Occur in 7% of population), cystic degeneration might occur forming a cyst & in 1/3 of the cases this cyst will contains thyroid tissue.

* Most Common location of the cyst :-

1- Midline at or below hyoid bone
2- Suprahyoid (2nd most common)

* Characteristic Physical findings: (Clinical DX)

1- 50% present before Age of 20.
2- Midline cystic mass. (75%) or near midline (25%)
3- Mass move upwards when the Patient Protrudes his tongue. (Because its attached to foramen cecum) or swallowing.

DDx of thyroglossal fistula.

* What if I didn't see the mass moving up?
- Repeat with your hands on it because its not only seen but also felt.

* Next Step? Confirm Diagnosis:

① Ultrasound ⇒ Evaluate suspecious features & exclude malignancy, as:
  ① Psammoma Bodies (Microcalcification)
  ② Mural / solid components.
② FNAC (If there's suspecious features)

- The most common cancer in thyroglossal cyst is Papillary thyroid ca. & 2nd most common is SCC.

* Management:-

- In the past they only do cystectomy, with recurrance rate of 60% (Because cystic degeneration can recur in the duct).
- Nowadays we do Sistrunk Procedure: (Recurrance 10%)
  1- Removal of the cyst
  2- The whole tract from Pyramidal lobe to foramen cecum.
  3- Central part of hyoid Bone.

- Aims to ↓ Infections, Sinus formation - due to cyst rupture - Malignancy (< 2%)

Treatment if malignant:
1- sistrunk + Thyroidectomy + Radioactive ablation.
or 2- Thyroidectomy
(BRAF is a genetic marker to choose treatment option)

Lingual Thyroid

- Presence of thyroid tissue at the base of tounge due to failure of descend.
- Here the Goal of Ultrasound to make sure that there is normal thyroid tissue in thyroid Gland or this is the only thyroid tissue he has.
- Called Strawberry Thyroid -
- Treated only if: 1- Causing Obstructive symptoms
  2- Bleeding
  3- Suspecious of malignancy ①

Nodular Thyroid Disease

- Adults (5-15)% while in childrens its (25%).

Thyroid Nodule: A descrete intra-thyroid lesion that radiologically distinct from its surrounding Parenchyma.

Case: Nodule in the center of the neck at the location of thyroid Gland, move with thyroid upon swallowing. DDx:

① Thyroid Nodule (Most common dx) ⇒ Differentials:
② Lymphadenopathy
③ Aneurysm.
④ Tracheal sarcoma
⑤ Parathyroid carcinoma (you can never see parathyroid Adenoma)

① Most common is prominant nodule in MNG.
② True Solitary Nodule (Has higher chance of malignancy than Dominant nodule in MNG)
- Most commonly Adenoma. (80%) → Mostly follicular Adenoma
- Carcinoma (10%)
- Benign conditions (10%) - cyst, Colloid nodule, fibrosis.

Prevelence of Palpable nodules (5%) < Non-Palpable (76%)

The Risk of malignancy is the same in palpable & non-Palpable.

Factors ↑ likelyhood of malignancy in Thyroid Nodule:

1. Male (Should do Total thyroidectomy)
2. Age <20 & >60
3. Family hx
4. Hashimoto thyroiditis
5. Obese
6. Hx of Ionizing RT
7. Cold nodule
8. True solitary nodule
9. Fixation (The only sign that indicate malignancy in physical exam)
10. Hoarsness
11. cervical LN
12. Rapid growing. (↑ in Anaplastic Ca.)

Approach to thyroid Nodule:

Thyroid Function Test (TSH, T_3, T_4) → To Assess Function status of thyroid Gland.

- Hyperthyroid (low TSH)
  - Normally thyroid Gland uptake is Homogenous.
  - To Assess the function status of Nodule itself.
  - Thyroid scan (I^{123} or Tc^{99})
    - * 99% of Nodules that are hyperfunctioning are Benign.
    - Toxic Solitary Adenoma → Lobectomy
      * Can't Give RA Iodine because it will destruct the normal tissue.
    - Multi-nodular Goiter (Plummer syndrome) → Total Thyroidectomy & Thyroxin replacement therapy
      ⇒ In multinodular Goiter, nodules have different sizes & uptake, so RA iodine uptake is not uniform → There'll be remnant nodules & higher recurrance rate.
    - Grave's Disease (Diffuse MNG)
      - The whole Gland take the Iodine uniformly.
      - Autoimmune disease with uniform thyrocyte hypertrophy & hyperplasia due to Auto. Antibodies that mimics TSH (TSH receptor Antibodies)

Why can't we give RA eventhough the whole Gland is affected?

- Eu/Hypothyroid (High or normal TSH)
  - Serum level of TG
  - Thyroglobulin - not routinely used (↑ in many thyroid disease)
  - Serum Calcitonin may be useful in medullary ca.
  - US & FNAC

Bethesda Diagnostic Category:

I	unsatisfactory	repeat FNA	1-4%
II	Benign	watchful wait.	0-3%
III	Atypia	Repeat FNA	5-15%
IV	Follicular neoplasm	lobectomy	15-30%
V	Suspecious for malignancy	lobectomy or Total thyroidectomy	60-75%
VI	Malignant	Total Thyroidectomy	97-99%

- All are 1st-line / Individualized:
  - Total Thyroidectomy → Best if pregnant.
    - Should take thyroxin for life.
  - Radioactive Iodine Ablation → CI in pregnant or if having Exophthalmus
  - Medical Treatment (↑ ophthalmic changes)
    - If unfit for surgery / elderly.
    - ① Propilthiouracil (PTU)
    - ② Carbimazole → Agranulocytosis (flu-like → ER & check CBC)
    - ③ Methimazole
    - } liver toxicity

Mechanism of Action:
- Inhibit the Enzyme in TH synthesis (thyroid peroxidase)
- PTU Also Inhibits conversion of T_4 to T_3 peripherally.

Thyrotoxicosis

- Clinical state results from ↑ circulating T_3/T_4.
- Seen in Hyperfunctioning Gland.
- Also in Thyroiditis (Gland damage result in spell of contents into the Blood)
  ↳ On thyroid scan show low uptake.

Thyroid Cancer

Classified According to cell Origin :

① Follicular (95%) : (Papillary, follicular, Hurthle cell) ⇒ well differentiated
(Insular, large cell) Anaplastic ⇒ Undifferentiated.
poorly differentiated

② Parafollicular (5%) : Medullary Ca.

(The most common & least aggressive) Papillary Thyroid Ca. (Childrens > Adults)	Follicular Ca. (2nd most common thyroid Ca.)
- Age 30 - 40 yrs	- 50 yrs.
- Assoc. with : 1. Radiation Exposure 2. Iodine suffecient Area.	1. Iodine defecient Area 2. Multinodular Goiter 3. rarely with radiation exposure.
- Multicentric in 80% of cases (Don't Adversly effect Prognosis)	- Unifocal (solitary) & non functional (<1% Functional)
- Spread : - Mainly Lymphatic - Rarely Hematogenous (Lungs) * Childrens more common to be node +ve than Adults	- Mainly Hematogenous (Bone > Lung) - Lymphatics < 10%
# Diagnosis : Based on Nuclear features seen in FNAC (not Histopathology) : 1. Optically Clear Nuclei (Orphan Annie) 2. Nuclear Crowding / Overlap. 3. Intranuclear cytoplasmic Inclusions 4. Psammoma bodies. (seen Also in medullary Ca.) 5. Nuclear Envelope / Groove	# Diagnosis : The distinction between follicular adenoma & carcinoma (have Invasion of the capsule is made by Histopathology not cytology.
# Histological variants of PTC : 1. papillary growth pattern. 2. Follicular variant (Most common) 3. Oncocytic 4. Diffuse Sclerosing 5. Columnar cell 6. Tall cell (Most Aggressive) - Height of cells three times its width - .	# Treatment : - Either : 1- thyroid lobectomy → wait for pathology if follicular Ca. → complete Thyroidectomy within weeks to max. 3 months (after that scarring will occur) 2- Total thyroidectomy from the start.
# Papillary Microcarcinoma : - Its papillary Ca. ≤ 1 cm - Discovered Incidentally in US or specimen after lobectomy. - Don't have malignant Behavior (10 yrs survival is 100%) - Treatment : - The Lobectomy Is suffecient if no hx of radiation, single & low Risk. - Observation.	# Minimally Invasive follicular Ca : - Capsular Invasion without vascular invasion. - Don't Have malignant Behavior (10 yrs survival is 85%) - Treatment : - Lobectomy Is suffecient & no need for Total thyroidectomy, RA ablation.

Sonographic features Highly suggestive of malignancy

1. Microcalcification (Psammoma Bodies)
2. Irregular margins (Indicates aggressive nature of mass)
3. Taller than wider orientation (Centrifusion pattern of Growth of malignant cells)

If a nodule has these features or > 1cm → FNAC
If nodule < 1 cm → follow up.

Layers of the neck in Thyroidectomy :

1. Skin
2. Platysma
3. Anterior Jugular vein.
4. Strap. Muscle (thyrohyoid, Omohyoid, sternohyoid, sternothyroid)

Complications of Thyroidectomy

1. Infection
2. Hematoma ⇒ can cause Stridor not by compressing the trachea but compressing the lymphatics → lymphedema in the Larynx.
3. RLN Injury (2%) - most common injured nerve -
4. Seroma (if drain < 20ml per day remove it.)
5. Hypothyroidism.

↳ The most common Complication of thyroidectomy Is Hypoparathyroidism due to : 1- transient ischemia
2- Mechanical, thermal Trauma

Blood supply of Thyroid Gland: (2)

1. Superior Thyroid A. → Branch from External carotid A.
2. Inferior Thyroid A. → from Thyrocervical Trunk
3. Thyroid Ima A. (Anatomical variant 3%) → Directly from Aorta

Venous Drainage of Thyroid Gland: (3)

1. Superior thyroid vein.
2. Middle thyroid vein } > Drain into Internal Jugular
3. Inferior thyroid vein → Drain into Brachiocephalic Trunk.

Lymphatics of thyroid Gland:

- To prelaryngeal, Pretracheal & Paratracheal LN.
- Laterally ⇒ Superior & Inferior deep cervical LN.

* Name of LN group around Pyramidal lobe → Delphian LN.

* Before Giving Radioiodine Ablation → Starvation of the Gland (cut off iodine) → to ↑ Gland uptake.

* Amiodarone can cause MNG.

Nerve Supply of thyroid Gland:

Branches of vagus nerve <
1. Recurrent laryngeal nerve
2. Superior (External) laryngeal nerve.
↓
* Run with superior thyroid Artery so in thyroidectomy cut proximal to the Gland to Avoid Injury & if injured ⇒ Deeper Voice.

- Recurrent Laryngeal Nerve Injury - most common injured nerve -

↳ Partial ⇵ Unilateral → stridor on exertion
Bilateral → Asphyxia (need Tracheostomy)
↳ Complete ⇵ Unilateral → Hoarsness
Bilateral → Aphonia

The Only nodule that we don't do FNA is pure cystic, unless

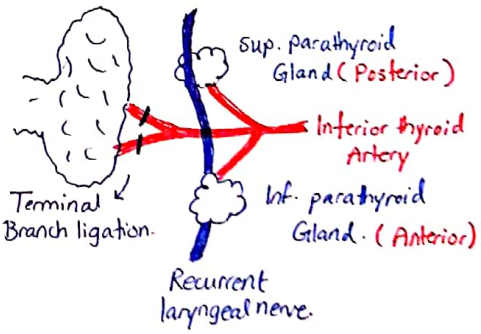
- Therapeutic: 1- Cosmetic
2- Compression effect.
- Modalities: phenol or ethanol injection then Aspiration.

Parathyroid Glands → PTH secreted from cheif cells

Blood Supply: Inferior thyroid Artery ⇒ That's why in Thyroidectomy we do Terminal Branch ligation to Avoid Ischemia of parathyroids.

Relation to Recurrent Laryngeal nerve:

- Superior parathyroids lie posterior to it, ⇒ so its called The Posterior Gland.
- Inferior parathyroids lie ventral to it. ⇒ so its called The Anterior Gland.



Hyperparathyroidism:

↳ Hyperfunctioning Parathyroid Gland, which ↑ levels of circulating Parathyroid Hormones.

- Etiology

↑Ca ↑PTH ↳ Primary Hyperparathyroidism: ⇒ [2] MC Adenoma (90% single Gland disease, 5-10% Two Glands Disease) - 85%
- Surgical treatment.
→ should do Sestamibi Scan to locate affected gland.
(10%) 1. Parathyroid Hyperplasia (4 Glands Disease seen in MEN syndrome)

↓Ca ↑PTH ↳ Secondary Hyperparathyroidism:-

1. Most common Cause is Renal failure, due to ↓ α1 hydroxylase. 2. Vit. D deficiency ⇒
3. Hyperphosphatemia (phosphate is Anion & Active form of Ca^{+} is cation, so phosphate will Binds Ca. & lead to Hypoca.)
- Management is medical, treat underlying cause.

Vitamin "D" Metabolism

- Skin (cholestrole) —UV→ Cholicalciferal
—Liver, 25α hydroxylase→ 25-hydroxycholicalciferal —Kidney, 1α hydroxylase→ Di-1,25 hydroxy cholicalciferal (Active form of D)
Stimulated By PTH
→ ↑ Absorption of Calcium from duodenum & Proximal Jejunum.

Indications for surgery:

1. Severe Hypercalcemia
2. progressive Bone Disease
3. Refractory Hyperparathyroid.
4. Pruritis that don't respond to dialysis or medical ttt.
5. Progressive calciphylaxis & Extra-skeletal calcifications

Symptoms of Hyperparathyroidism:

① Painful Bones (1st symptome) ⇒ Due to:
- ① Osteoperosis
- ② Osteopenia
- ③ Bone cysts
- ④ Osteitis Fibrosa Cystica
- ⑤ Pathological fractures
- ⑥ Calciphylaxis (Ca pecipitate in small Blood vessels)

② Renal Stones (The most common type is Ca. Oxalate)

③ Abdominal Groans ⇒ DDx of Abd. pain in Hypercalcemia:
1. Acute Pancreatitis
2. peptic Ulcer
3. Duodenitis
4. Constipation
5. Renal colick

④ psychic Moans

⑤ Fatigue Overtones

Management

- After doing Sestamibi Scan
→ Detect the affected Gland
→ Removal of Gland
⇒ Parathyroid Hormone Half-life is only 5 mins, so we repeat PTH level after surgery to check if it decreased, if not decreased repeat test up to four times, if not appropriately decreased search for second Adenoma.

↳ Tertiary Hyperparathyroidism

→ Result from persistant HPT after Correction of 2ndry HPT, result from Autonomous PTH secretion not responsive to normal -ve feedback due to ↑Ca levels.

Parathyroidectomy Complications:
1. Hypocalcemia
2. RLN injury
3. SLN injury
4. Hematoma

Post-surgical Resp. distress & Stridor:
↳ Immediate → RLN injury
→ Intubate or Tracheostomy
↳ After 6 hours → Hematoma (lymphedema)
↳ Next day → Hypocalcemia (laryngeal spasm)

Hypocalcemia

Clinical Signs:
- Hypocalcemia need 6-12 hours to manifest:

In order:
1. Circumoral numbness (1st sign)
2. Sacral numbness
3. Chvostek sign
4. Trousseau Sign ⇒ ↑ BP cuff above systolic Pressure will cause carpopedal spasm.
   Explanation: Na channles are Ca. Gated channels → ↓ Ca. from ↓ Blood by cuff → ↑ Na+ influx into the cell → Repititive Action Potentials
5. Laryngeal spasm.

Adrenal Glands

Anatomy:-

- Recieves Great Amount of Blood / Gram of tissue among all Endocrine Glands (2nd is thyroid)
- 2nd most common organ that recieve large Blood Supply after Carotid Body.
- Retroperitoneal Organ, covered by a capsule "Gerota's Capsule", 4 Grams.
- Right Adrenal lie between IVC & Right liver lobe , Left Adrenal lie medial to superior Pole of left Kidney & Covered with tail of pancreas & spleen.

Embryology:

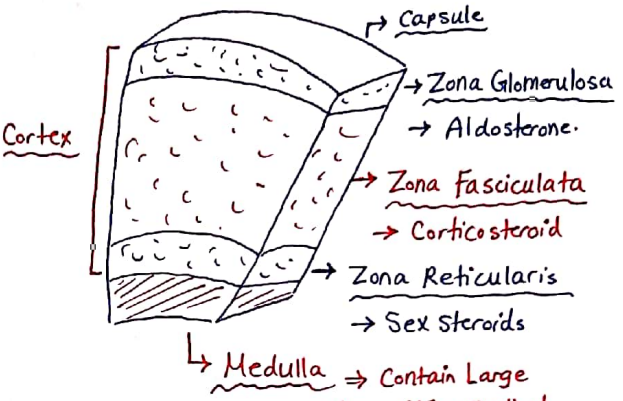
- Not related to the kidney.
- Cortex → Mesoderm
- Medulla → Ectoderm from Neural Crest cells

Blood supply: (3A)

1. Superior suprarenal Artery → Inferior phrenic A.
2. Middle suprarenal Artery → Abdominal Aorta
3. Inferior suprarenal Artery → Renal Artery

Venous Drainage: (1V)

(3mm) ← 1. Right Suprarenal vein → IVC (Posterior Aspect)
(longer) ← 2. Left suprarenal vein → Left renal vein.



⇒ Contain Large Chromaffin cells that synthesis & secrete Catecholamines (Epinephrin mainly but Also NE & D.)

Case:- Patient had flank pain & came to ER & wedid CT scan to look for Renal stones, the CT scan showed a suprarenal mass on Right Kidney.

- What's the first thing to do ? Exclude Functional Disease

⇒ So we do Biochemical Profile :

Rule out
1. Hyperaldosteronism " Conn's " → Aldosterone & plasma renin, serum Na, K+
2. Hypercortisolism " Cushing's " → Morning Plasma Cortisol, 1mg dexa. suppression Test
3. pheochromocytoma → plasma metanephrin & NE
4. Bilateral Hyperplasia

⇒ If the mass Is not functioning & Biochemical Profile is normal
This is An Incidenteloma . (↑ Incidence with Age)

Adrenal Tumors

1. Incidenteloma (73%)
2. Cushing Adenoma (7%)
3. Adrenocortical Ca (4%)
4. pheochromocytoma (4%)
5. Myelolipoma (fat (2%) Globules)
6. Conn's Adenoma (1%)

Approach to patients with Incidenteloma:

- Next step Is ⇒ ① Check the size
  - < 4cm ⇒ Follow up after 6 months then 1year, then another year By MRI, Hormonal Evaluation.
    ⇒ Observe the rate of Growth if > 1cm in 6 months (Rapid Growth) → Indicate surgery.
  - ≥ 4cm ⇒ There's chance 25% of malignancy so we should remove it.

② Also Features in CT scan: (Indications for surgery)
1. Heterogenicity
2. Areas of Necrosis
3. Margin Irregularity
4. Venous emboli in proximal veins to the mass.

Other Surgical Indications in Adrenal masses

1. Functional mass
2. Symptomatic Myelolipoma

Functional Tumors:

Conn's Syndrome

 # Primary Hyperaldosteronism: Adrenal Hypersecretion of Aldosterone

⇒ Cause of Hypertension (from ↑ Na & water reabsorption in kidney) & Hypokalemia (↑ Renal excretion of K^+ & H^+) - Adenoma > Hyperplasia > Cancer

- Plasma Renin Activity is suppressed ⇒ from -ve feedback inhibition on Renin-Angiotensin-Aldosterone System.

 # Secondary Hyperaldosteronism:

⇒ Cause is not the Adrenal it could be: 1) Renovascular HTN
2) Juxtaglomerular cell Tumor

- Plasma renin Activity is elevated.

 # Cases:

1- If no mass is seen on CT with Contrast:

- Differential Dx: 1- Conn's but still small 2- Bilateral Hyperplasia
- How to differentiate? Do Selective Adrenal Venous Sampling (Intervention Radiology) ⇒ from femoral vein to Adrenal vein → sample → Measure Aldosterone difference on Both sides ⇒ - If High on Both sides → Bilateral Hyperplasia
  - If significant difference → Lateralized on one side
- What is the Management? - If Bilateral Hyperplasia 1st line treatment is Medical ⇒ Spironolactone (Aldosterone Antagonist) - SE: Gynecomastia, Hyperkalemia
  - If Conn's Syndrome ⇒ Adrenalectomy.

2- Mass on left Adrenal:

- Differential: Presence of a mass doesn't mean Conn's:
  ① Incidentaloma on left side & Conn's on Right side
  ② Bilateral Hyperplasia
  ⇒ So we should Also do Adrenal venous sampling.

Cushing Syndrome

 # Hypersecretion of Cortisol → **ACTH dependant** (2nd most common cause) ⇒ Pituitary Adenoma (Cushing Disease) or ⇒ Transphenoid Excision
Ectopic ACTH in SCLC & CRH producing Tumors such as medullary thyroid Ca.

→ **Non-ACTH dependant** ⇒ - Exogenous steroid intake - Most Common Cause.
- Adenoma (15%) ⇒ Adrenalectomy
- Carcinoma ⇒ Adrenalectomy.

Pheochromocytoma

 # Tumor Arise from Chromaffin cells & secretes catecholamines.

 # Most Common location: Adrenal medulla.

 # 2nd most common location is Organ of Zuckerkandl (where inferior mesenteric Artery leave Abdominal Aorta)

- Clinically: Catecholamines secreted in surges so there's episodic HTN, & palpitations & sweatings.
- Investigations: 1- Most Sensitive is Plasma metanephrin & NE
  2- Urinary metanephrin & VMA.

- Rule of 10:

1. 10% Bilateral
2. 10% Malignant
3. 10% in Childrens
4. 10% Extradrenal
5. 10% Inherited ⇒ NF1, MEN2a
6. 10% Multiple VHL, Para-ganglionoma.

 # Note: In MEN2a treat HTN (Pheochromocytoma) before anything else Because patients die from malignant HTN in ER.

 # Preperation for Surgery:

① ↓ BP By Phenoxybenzamine (Reversible α Blocker)
⇒ In Surgery if we remove the adrenal → No Catecholamines (NE act on α1 to cause → VC) vasodilation → Hypovolemic shock ⇒ That's why we use Reversible α Blocker (not phentolamine) → Give Nitroprusside

② Give IV fluids 10 days before surgery & monitor weight Gain.

③ Give Propranolol (β-Blocker) after effect of α Blocker has Acheived. ⇒ After Because of its SE & Tachy-arrhythmias.

Salivary Gland

- ↓ Incidence of Tumors
- ↑ Malignancy Rates →

Salivary Glands

- 80% of all salivary Neoplasms are Benign.
- < 2% of all head & Neck T.

→ **Major salivary Glands** ⇒ 1. Parotid Gland (80% of neoplasms) 2. Submandibular 3. Sublingual (70% of malignancies)

→ **Minor salivary Glands** ⇒ At the junction of soft & hard palate. (2nd most common salivary neoplasm)
↳ Mucous (Palate), Serous (Back of tongue) or Mixed (tip of tongue)

Salivary Gland Tumors

Benign

- Pleomorphic Adenoma (Most Common Benign)
- Warthin Tumor (Papillary Cystadenoma lymphomatosum) (2nd most common Benign)

Malignant

- Mucoepidermoid ca. (Most Common Overall)
- Adenocystic ca. (2nd most common in Adults)
- Acinic cell ca. (2nd most common in peds.)

	Pleomorphic Adenoma	Warthin Tumor
Location	- Mostly Occur in Parotid Gland (In the lower Border of mandible)	- Exclusively occur in Parotid Gland (Mostly in Inferior pole of superficial lobe – Parotid tail-)
Epidemology	- young, middle aged Adults - Male Predominance.	- Age > 50 yrs - ↑ Incidence in females due to smoking.
Grossly	- Asymptomatic, well-circumscribed, slowly Growing, Hard-Rubbery, limited mobility & painless, not fluctuated.	- Soft & fluctuant, Painless - Large cystic spaces. - Could be Multifocal
Bilateral?	–	10% !
Histologically	- Mixture of epithelial cells (Nests/sheets) & myoepithelial cells with stroma (myxoid, chondroid) - No True capsule. / Have Pseudopods.	- Mixture of epithelial cells & lymphoid tissue. - Surrounded by fibrous Capsule.
Management	- If Tumor In superficial Lobe: (superficial to plane of facial n.) → Superficial Parotidectomy (Patey's Procedure) - If Tumor In Deep Lobe: → Conservative Parotidectomy "Preserve all the Branches of facial nerve" * Avoid Enucleation & Biopsy ⇒ ↑ Recurrance rate 80%, Nerve Damage.	- Approach: 1. MRI (Imaging of choice) ↔ Nerve Invasion, Bilateral 2. US (operator dependant) 3. FNA (cytology) * True cut Biopsy & wedge Biopsy CI (↑ Recurrance & implantation) - Enucleation Is Accepted (↑ Recurrance) - No Agreement on Treatment → Patey's (if sup. lobe Involved) / Total conservative Parotidectomy (if Both lobes involved) - Tumor Is Radioresistant.
Complications	1- Transient facial nerve Palsy (40%) - Stretch injury - 2- Nerve injury: 1- Great Auricular n. (MC) 2- Facial nerve. 3- Frey's Syndrome (Auriculotemporal syndrome) → Reinnervation Injury → Gaustatory sweating & flushing	
Risk of malignancy	< 5%	~3%