Testicular cancer

- The testis developed in the retroperitoneum , around the T10… Reach the scrotum in the ninth month
- Supplied by collateral from **cremastric artery** and **artery to ductus deferens**.
- Venous drainage ; from the right testis to **IVC**, from the left testis to **left renal vein**.
- Lymphatic drainage to **para-aortic LN**, epididymis, spermatic cord, and scrotum to **Inguinal LN .**

→ RFs :- **15- 35** yrs , **Family history**, white, **Cryptorchidism**, CA in one testis, Intersex syndromes, Trauma, HIV, recurrent infections, Maternal estrogen ingestion.

→ Presentation : painless, painful if with necrosis or hemorrhage, Unilateral , more in Rt one

→ Physical examination :- enlarged testis, nodularity, firm to hard consistency, Secondary hydrocele, flat and difficult to feel epididymis , Examination for mets, gynecomastia?

Non-Germinal cell ca

Leydig cell ca
- MC
- Not with cryptorchidism.
- Produce **androgens**

Precocious puberty, Gynecomastia, low libido
- **Painless**
- **bilateral orchiectomy + RPLND**

Sertoli cell ca
- Any age,
- Not with cryptorchidism
- Excess **estrogen**
- large cell calcifying / sclerosing
- **10% malignant**
- **bilateral orchiectomy + RPLND**

Gonadoblastoma ca
- Mixed germ cell, sex cord, stromal ca.
- within dysgenetic gonads.
- **IS malignant >> GCT**
- **Bilateral orchidectomy ~ radical to the affected one**

Germinal cell ca 90%.. more Malignant

Seminoma ~ 48%

- MC GCT
- 25-35 y/o
- Unilateral , Right > left
- Rare in prepubertal
- progressive painless enlargement of the testis, histologically identical to ovarian dysgerminomas —> **Pale** and **homogenous** , **Soft**, **well-demarcated**, without hemorrhage / unlike NSGCTs
- Secrete **B-hcg** , never secrete AFP
- types; classic, anaplastic, spermatocytic

- Treatment: **radical inguinal orchiectomy** + **RTX** / sensitive

o Stage***1:*** bilateral inguinal orchiectomy+RPLND +/-RTX
o Stage**2a/2b**: bilateral inguinal orchiectomy +RPLND+/-CTX
o Stage**2c/3:** bilateral inguinal orchiectomy +high doseCTX

Non Seminoma *42%*

Embryonal	Yolk sac	Teratoma	Choriocarcinoma
25-35	Infants and children	25-35	20-30
Secretes AFP and β-hCG	Secretes AFP and β-hCG	Does not secrete AFP nor β-hCG	Always secretes β-hCG and never secretes AFP
	Hematogeneous spread		Hematogeneous spread, especially to lungs and liver. No LN involvement (the only one)
Poor response to CTX and RTX	Most common tumor in infants and children		WORST PROGNOSIS

- Higher metastasis
- ill-defined, invasive masses. containing foci of H & N

- AFP level correlates with disease extent.
- **Schiller-Duvall bodies "glomeruloid"**

-poor response to Cx / Rx

- Rare & the worst
- small, no testicular enlargement.

→ Mets

- abdominal and lumbar pain.(GI) chest pain, hemoptysis, dyspnea .(lungs)
- jaundice (liver) hydronephrosis.(kidneys)
- troiser's sign.(palpable left supraclavicular LN)

→ Ddx : Hydrocele, Spermatocele , Hematoma, Hernia, Torsion, Epididymitis, TB

→ Investigations:-

- Labs: CBC, LFT, KFT, LDH
- Serum assay: **AFP, B-HCG** .... & for follow up after surgery
- Radiology: chest x-ray, CT for abdomen and pelvis, ultrasound for contralateral testis.
- Histopathology always should be done.

α-fetoprotein	B-hCG	LDH
Normally expressed by early embryo, liver and GIT	Normally produced by placenta	Normally present in smooth muscle cells, cardia, SKM, liver and bones
Expressed by embryonal and yolk sac tumors	Expressed by 100% of choriocarcinomas, 40% of teratomas, and 10% of seminomas	Expressed in seminomas
Elevated AFP suggests non-seminomatous element		Mainly used to determine tumor burden (size). High tumor burden is usually associated with high levels of LDH.
Other causes of increased AFP: liver dysfunction, viral hepatitis, alcohol	Other causes of increased B-hCG: hypogonadism and marijuana	Elevated in serum due to various reasons, so not specific and carries high risk of false positive

- Any solid testicular mass should be managed as malignancy until proven otherwise and histopathology should always be done. → After Resection to determine T-Stage

Radical orchiectomy : testis, epididymis and spermatic cord, with Sperm cryopreservation

pTX	**Primary tumor cannot be assessed.**
pT0	No evidence of primary tumor (e.g., histologic scar in testis).
pTis	Intratubular germ cell neoplasia (carcinoma *in situ*).
pT1	Tumor limited to the testis and epididymis without vascular/lymphatic invasion; tumor may invade into the tunica albuginea but not the tunica vaginalis.
pT2	Tumor limited to the testis and epididymis with vascular/lymphatic invasion, or tumor extending through the tunica albuginea with involvement of the tunica vaginalis.
pT3	Tumor invades the spermatic cord with or without vascular/lymphatic invasion.
pT4	Tumor invades the scrotum with or without vascular/lymphatic invasion.
NX	**Regional lymph nodes cannot be assessed.**
N0	No regional lymph node metastasis.
N1	Metastasis with a lymph node mass ≤2 cm ; or multiple lymph nodes, none >2 cm in greatest dimension.
N2	Metastasis with a lymph node mass >2 cm but not >5 cm ; or multiple lymph nodes, any one mass >2 cm but not >5 cm in greatest dimension.
N3	Metastasis with a lymph node mass >5 cm in greatest dimension.

M0	**No distant metastasis.**
M1	Distant metastasis.
M1a	Nonregional nodal or pulmonary metastasis.
M1b	Distant metastasis other than to nonregional lymph nodes and lung.

Respond for All ... LN & Soft tissue
Surgical OR chemo --- No Radio

Stage	Histology	Treatment	5 Year Survival Rate
I	Seminoma	Orchiectomy, radiation therapy	97%
I	Nonseminoma	Orchiectomy, RPLND, surveillance 1 year	95%
II (as I + Chx)	Seminoma	*Nonbulky Tumor*: Orchiectomy and radiation therapy *Bulky Tumor*: Orchiectomy and combination chemotherapy (cisplatin-based regimen) or by radiation therapy	90% 70%
II	Nonseminoma	Orchiectomy and RPLND, followed by combination chemotherapy (cisplatin, bleomycin, etoposide)	95%
III (orchiect & M. chx)	Seminoma	Orchiectomy and multidrug chemotherapy (cisplatin, bleomycin, etoposide)	95%
III	Nonseminoma	Orchiectomy and multidrug chemotherapy (cisplatin, bleomycin, etoposide)	70%