

urogenital system.  
**Pathology of the Male Genital  
System- Testis.**

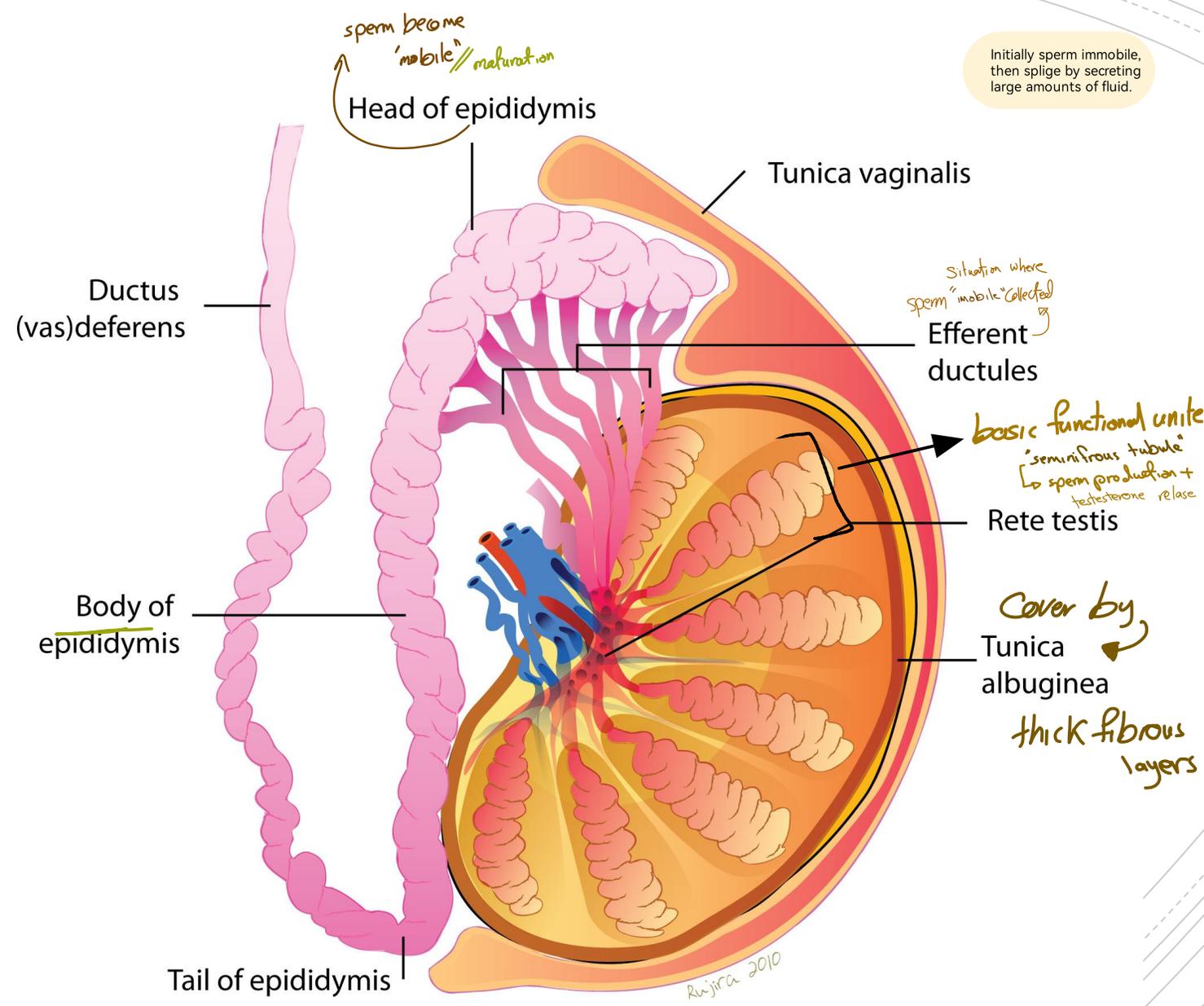
Dr.Eman Kreishan, M.D.

4-5-2025.

# Testis. Anatomy.

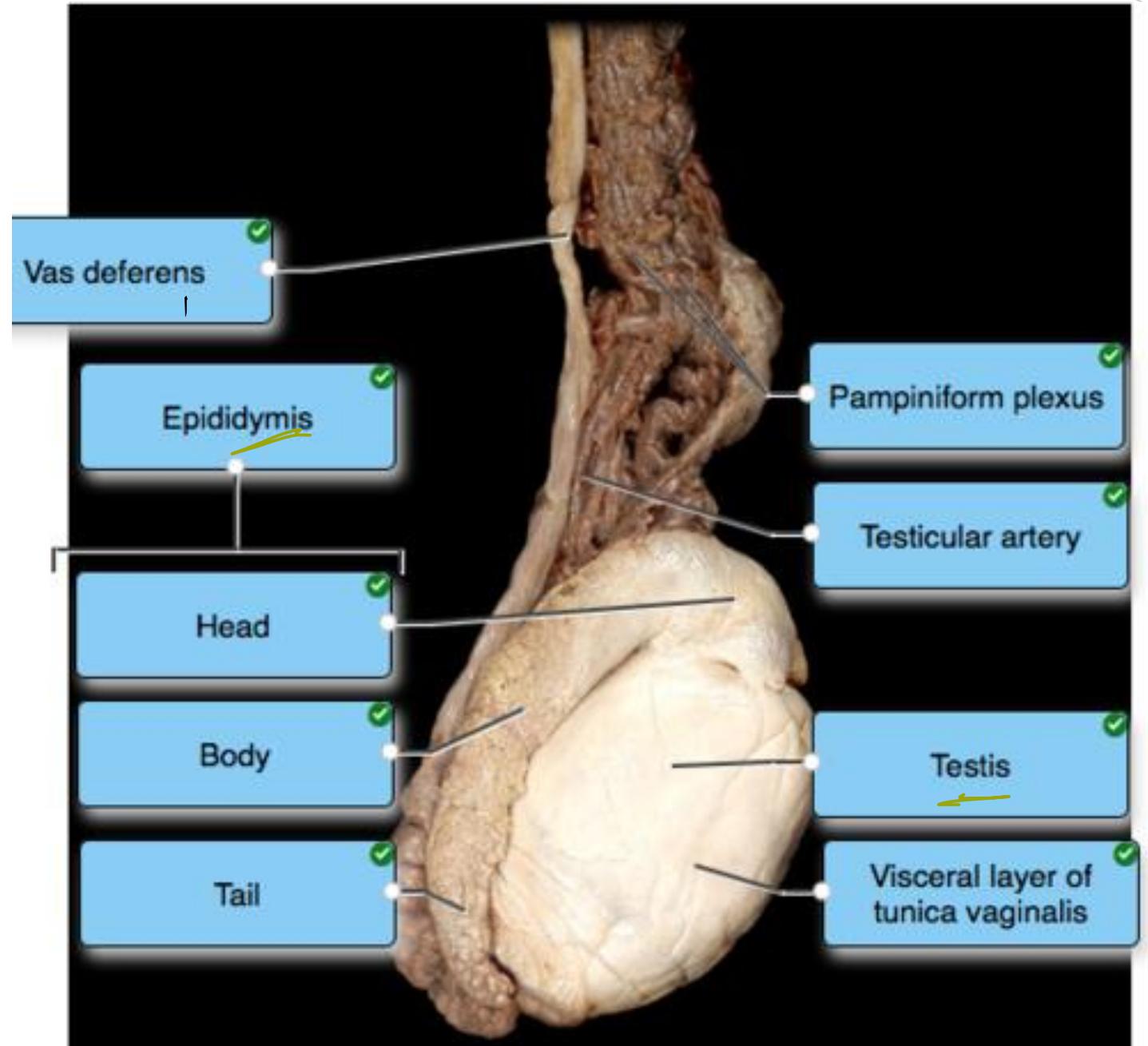
gonada reproductive system in male

Situation within scrotum

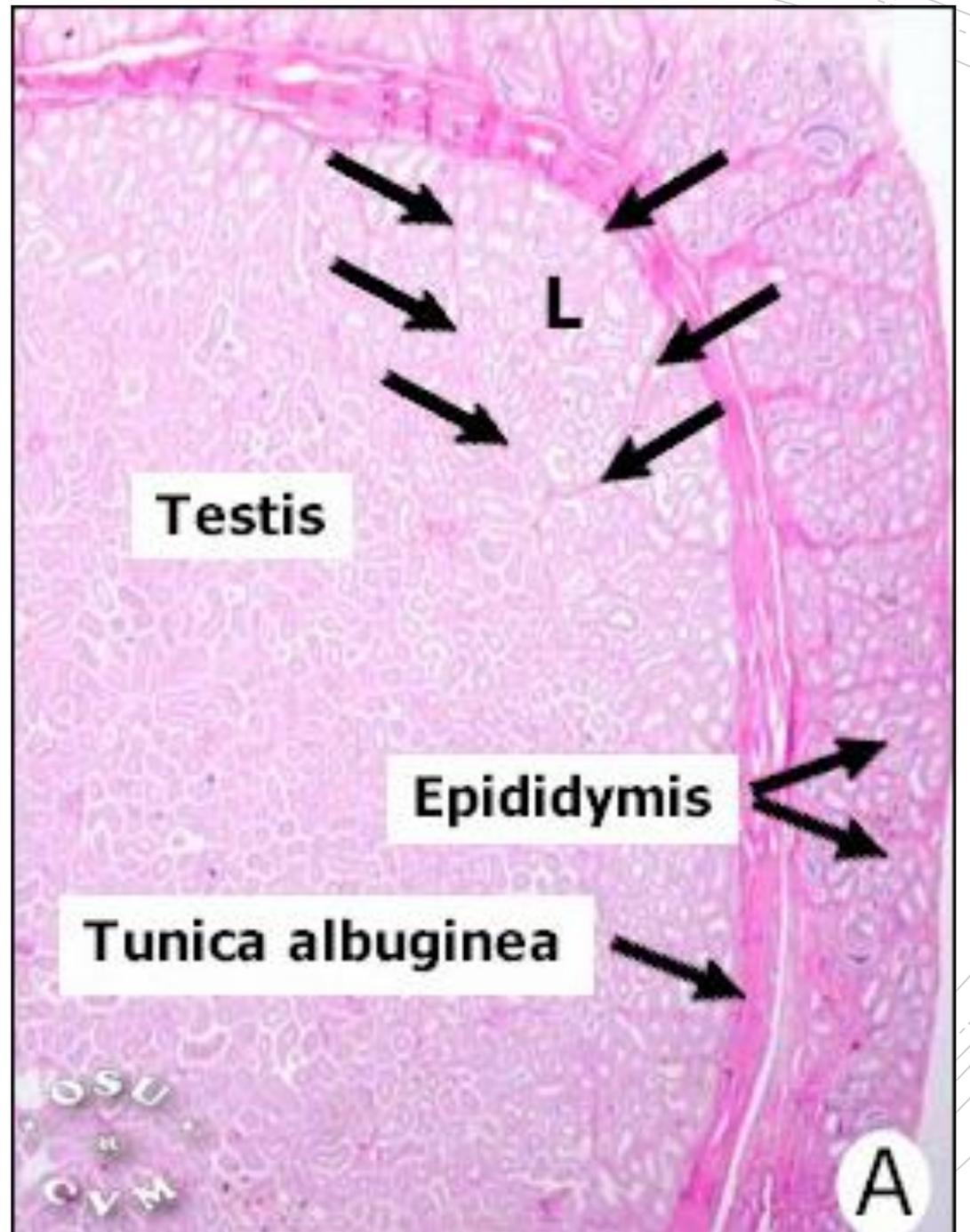


with in scrotum

Grossly



# Testis..histology



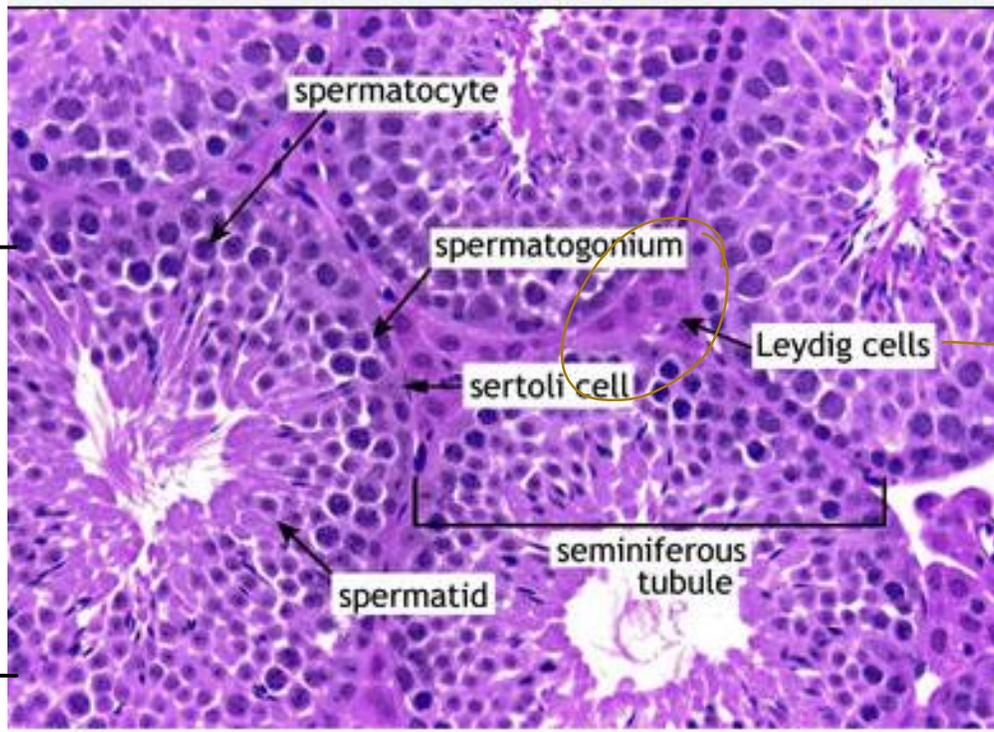
one seminiferous has  
 2 Component :-  
 1- epithelium cell → Sertoli cell "line base of seminiferous"  
 2- germinal cell "sperm production"

- first spermatogonium is basal immature

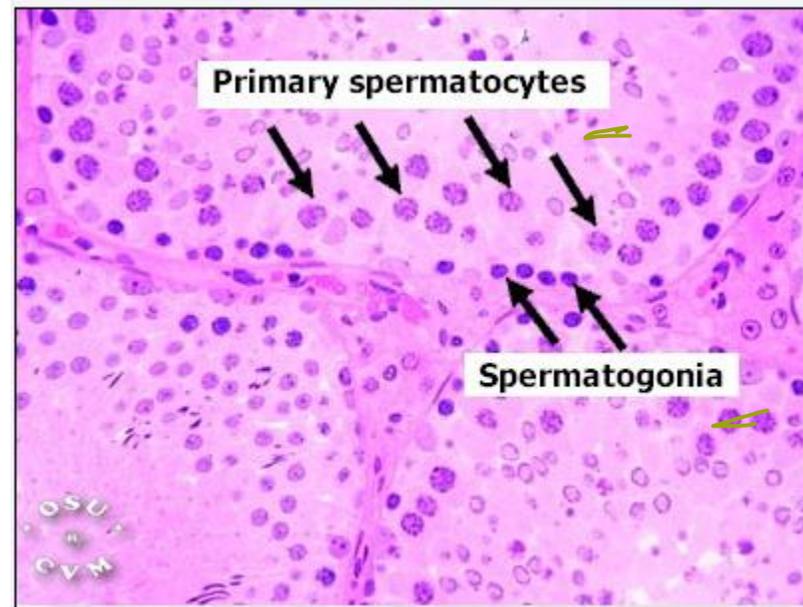
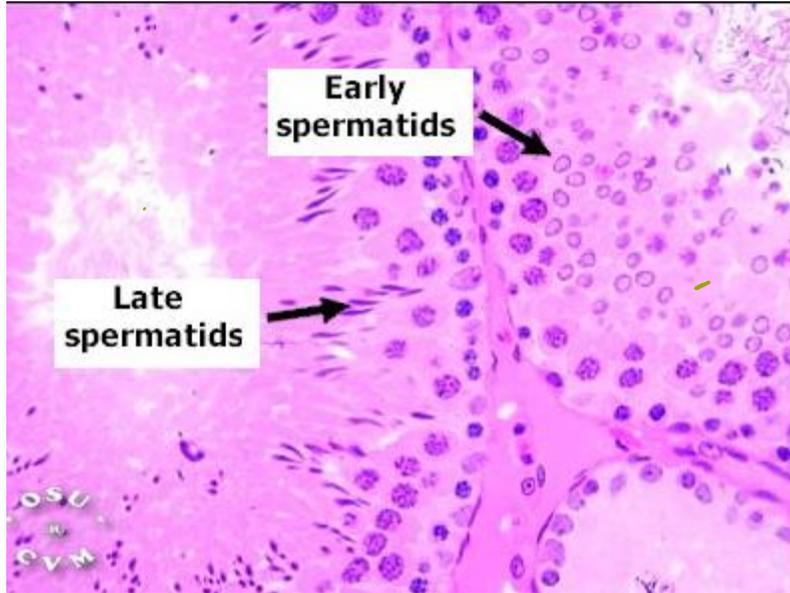
spermatocyte in center

spermatid "had functional"

→ inobol move to epididym through fluid.

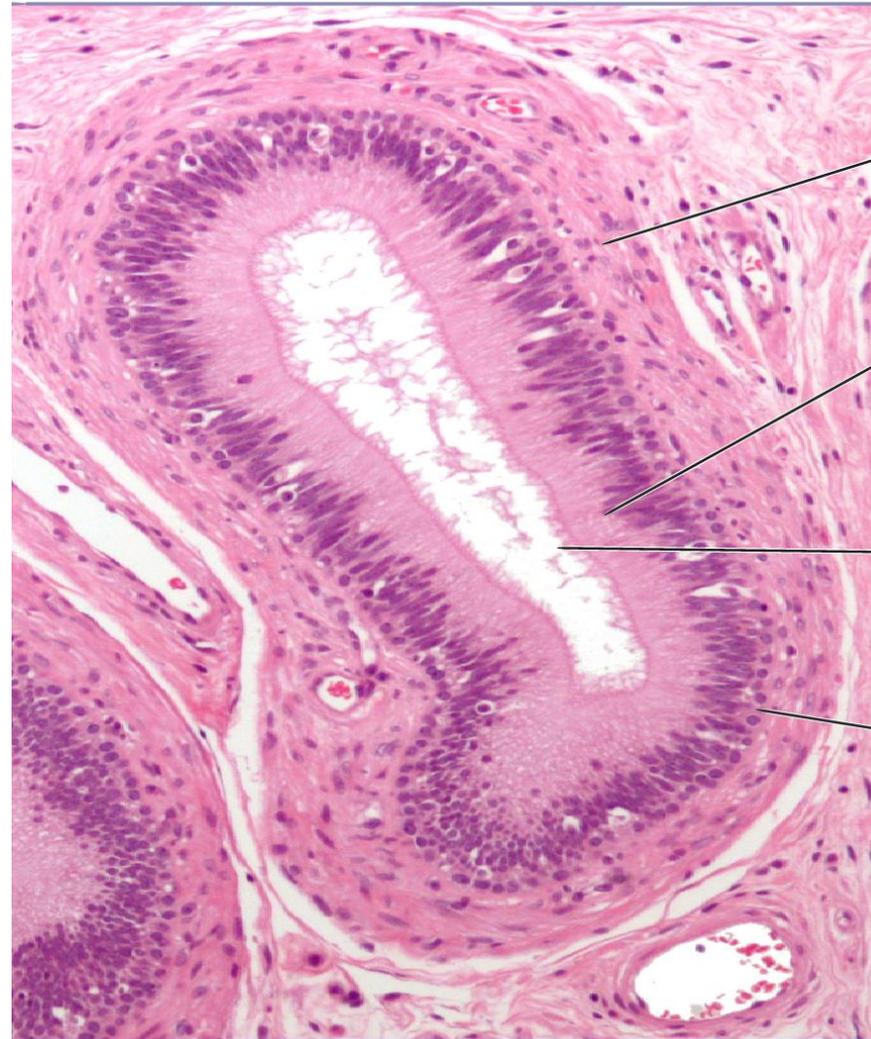


Supporting cell



# Epididymis

Epididymis  
..histology.



Smooth muscle

→ Contraction

Columnar cells

Stereocilia

→ movement  
تقليل الاحتكاك  
حركة

Basal cells

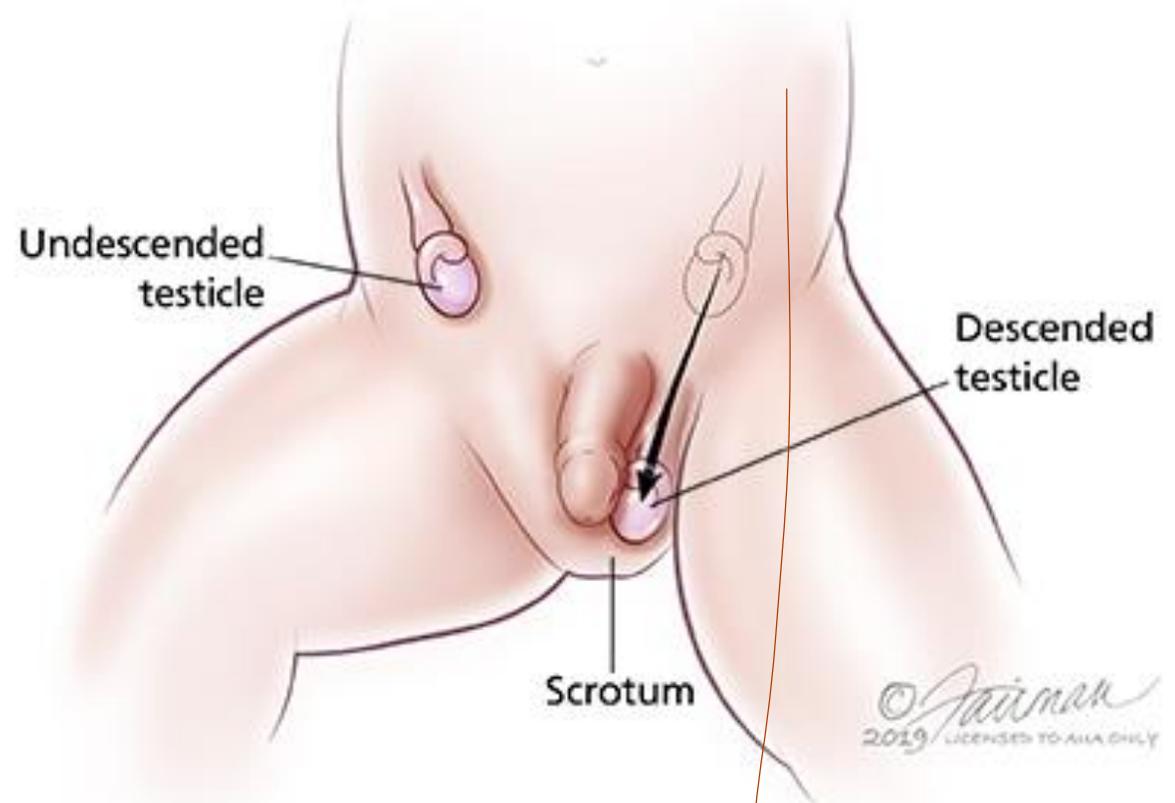
## Testicular disorders

- **Cryptorchidism.**
- **Vascular Disturbances.**
- **Neoplasms.**

# 1. Cryptorchidism

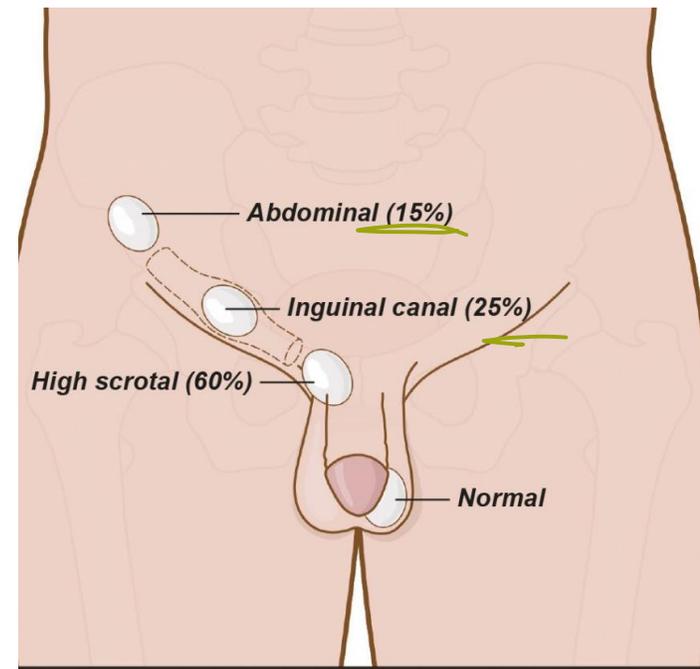
\*abnormal site

\*may convert to neoplastic change



# 1. Cryptorchidism

- It is a failure of testicular descent into the scrotum.
- Normally, the testes descend from the abdominal cavity into the pelvis (3rd month of gestation) → then through the inguinal canals into the scrotum (last 2 months of intrauterine life).



# 1. Cryptorchidism

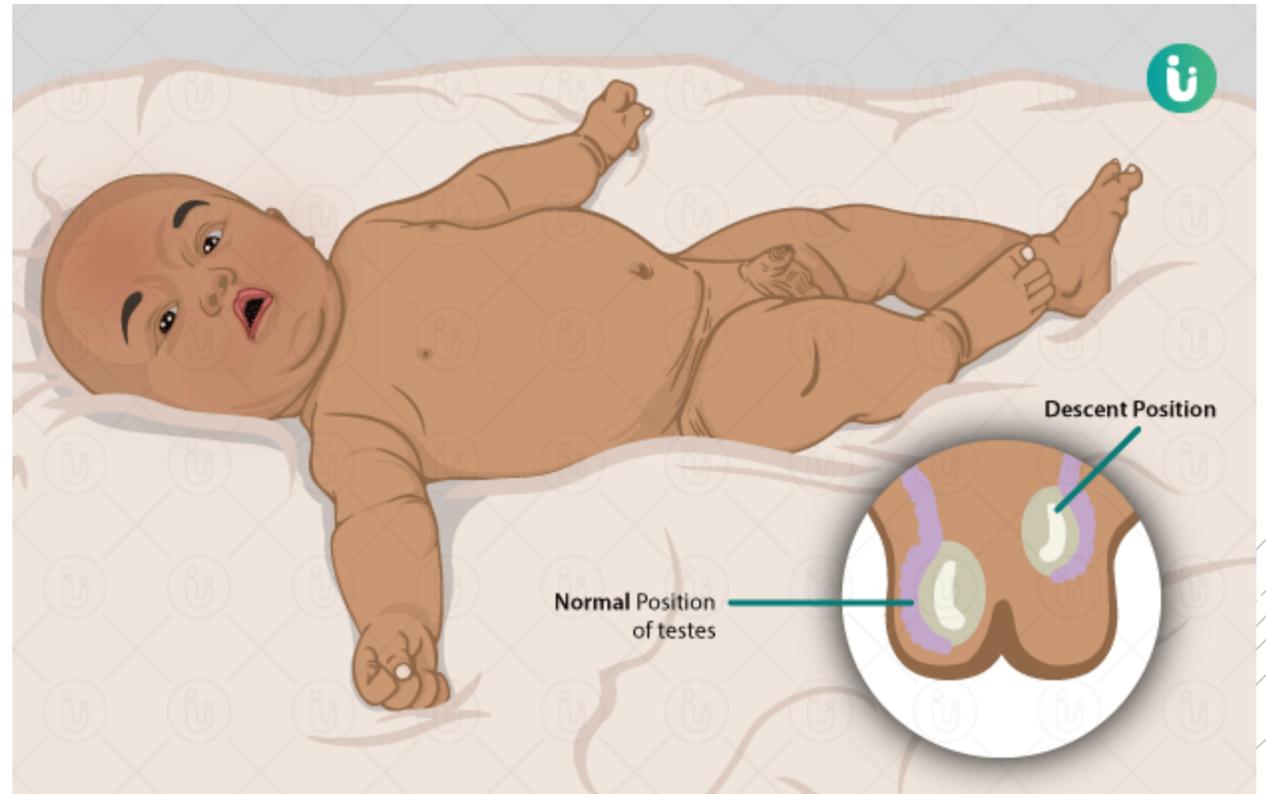
- Cryptorchidism affects 1% of the male population.
- Mostly the cause is unknown.
- Bilateral in ~ 10% of affected patients
- Undescended testes may become atrophic → if bilateral → sterility.
- Associated with a 3-5 fold increased risk for testicular cancer → in **both** testes, (including normally descended testis) suggesting that some intrinsic abnormality)

if patient have unilateral undescending and we need to make introduction, the risk of malignant tumor equal on both side "bilateral side secrening "

Diagnosis:

- only established with certainty after 1 year of age, particularly in premature infants, because testicular descent into the scrotum is not always complete at birth.

retractile testis

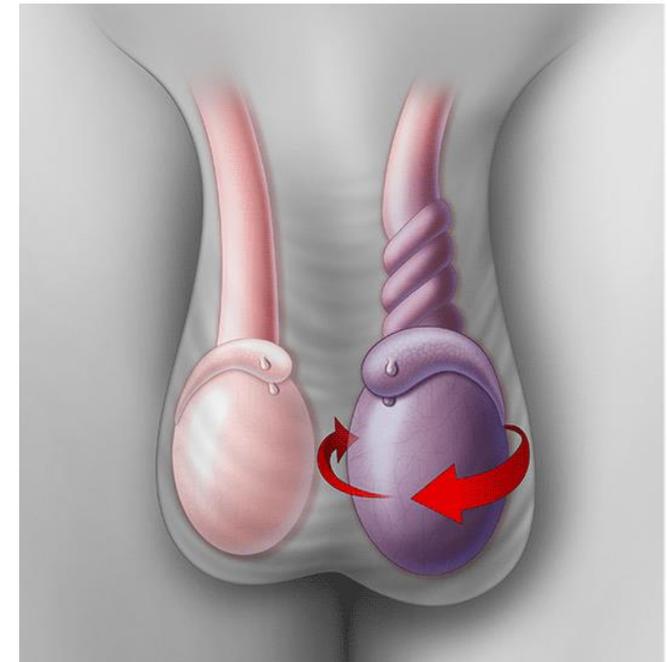


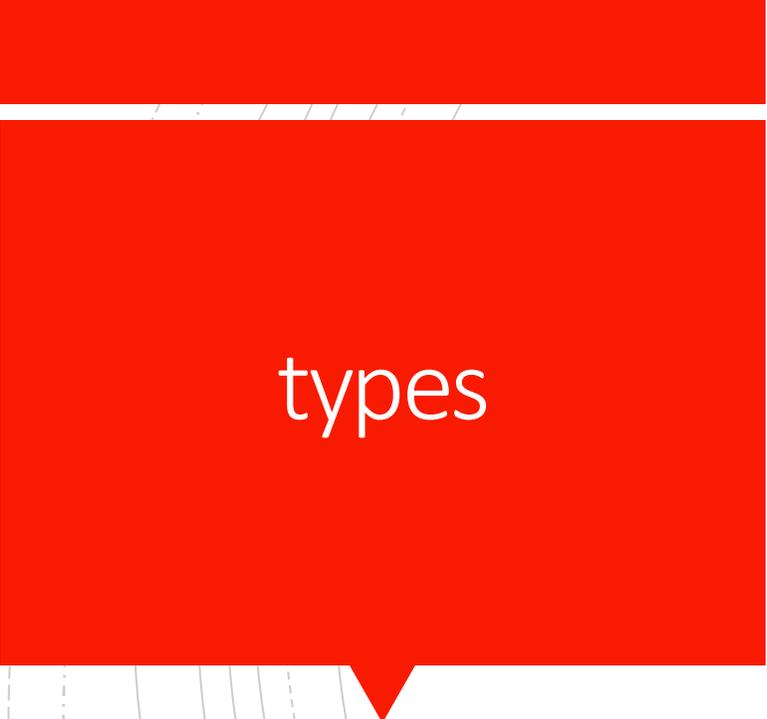
## 2. Vascular Disturbances. Torsion

After trauma

- Torsion or twisting of the spermatic cord → results in obstruction of testicular venous drainage (thick-walled & more resilient arteries are left patent)
- Leads to intense vascular engorgement & infarction if not relieved.

Content artery + vein → <sup>most effect</sup> so blood come from artery but doesn't flow out through vein





types

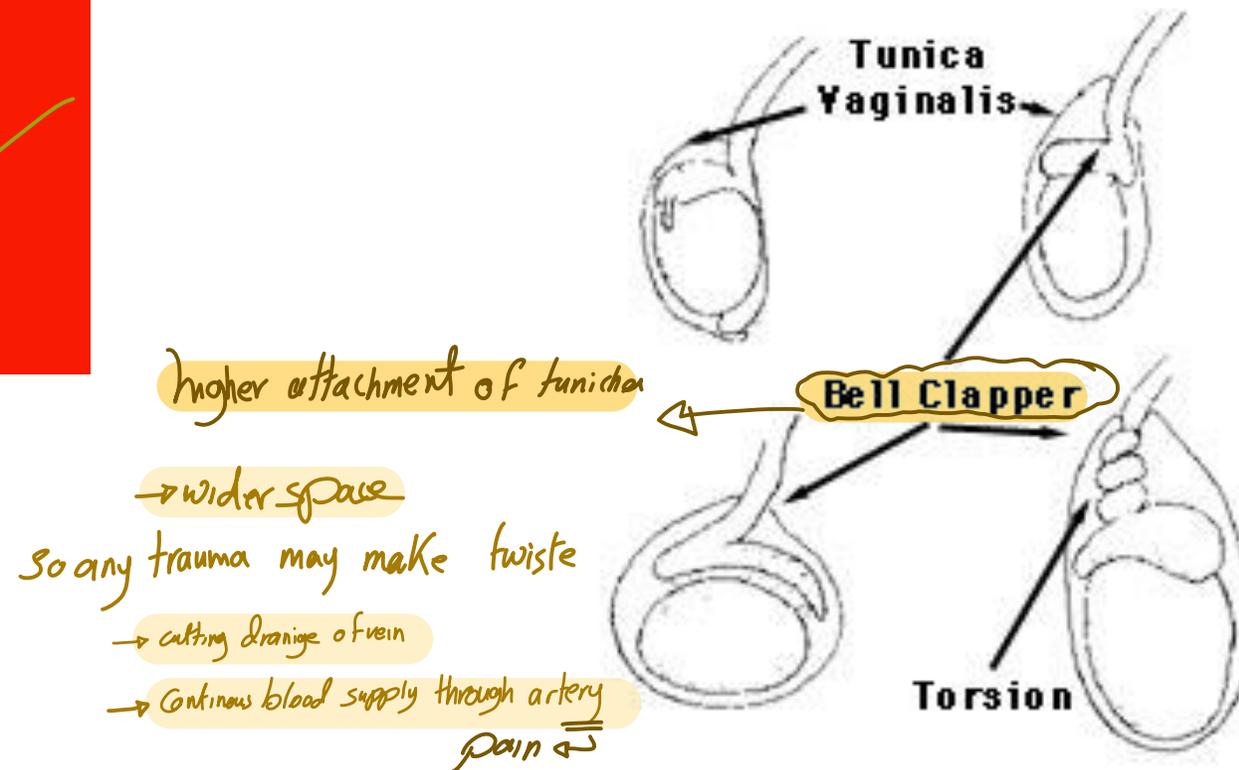
- Two types:
- Neonatal torsion :
  - occurs in utero or shortly after birth. No associated anatomic defect is present.
- Adult torsion.

## Adult Torsion

- Surgical emergency due to twisting of the testicle around the spermatic cord or vascular pedicle attachments .
- Mostly under 18 years old.
- Usually patient presented with Unilateral scrotal pain, nausea and vomiting.

# pathogenesis

- In contrast with neonatal torsion, it results from a bilateral congenital anomaly; testis is abnormally anchored in the scrotal sac, leading to ↑ mobility (bell clapper abnormality).



# Testicular torsion



اللمة تلتوي  
في ماله  
→ very sever pain

# Microscopic

- ❖ Damaged blood vessels with coagulative necrosis

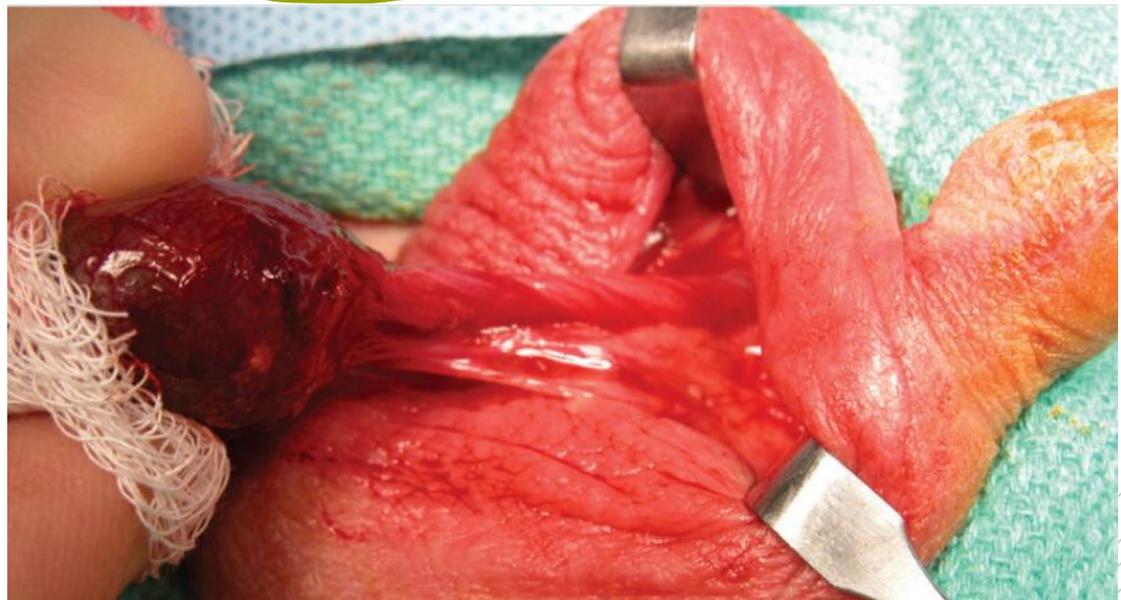
distribution  
blood supply



Arteriole

## Treatment

- If explored surgically & the cord is manually untwisted within ~ 6 hours, the testis will likely remain viable.
- To prevent the catastrophic occurrence of another torsion in contralateral testis, unaffected testis is surgically fixed within the scrotum (orchiopexy).



### 3. Neoplasms

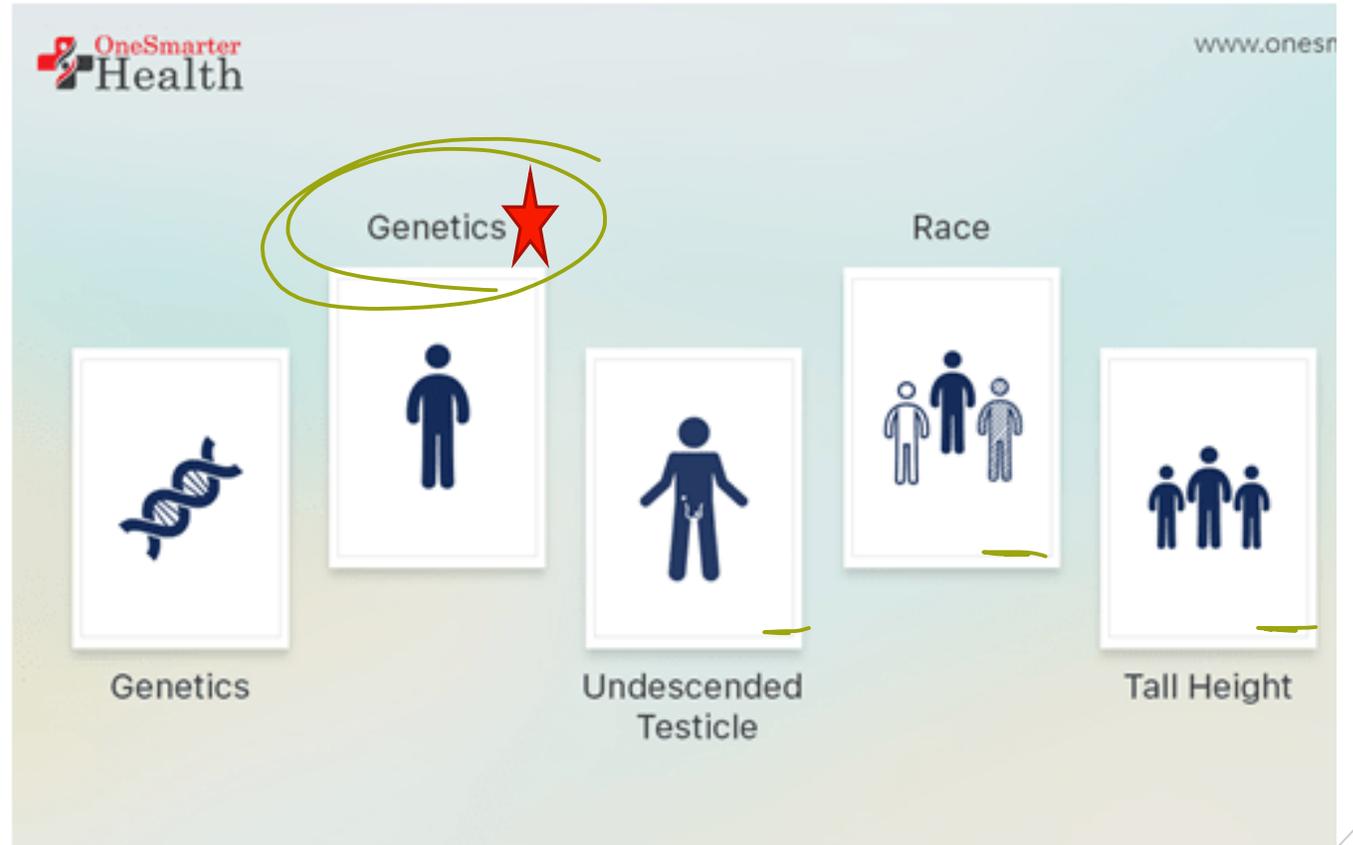
- In the 15-34-year-old age group, they are the most common tumors in men (peak in incidence).
- Heterogeneous groups include:
  - ✓ Germ cell tumors: 95%, all are malignant.
  - ✓ Sex cord-stromal tumors: uncommon, usually benign, & derived from Sertoli or Leydig cells.
- The cause of testicular neoplasms is poorly understood.



Risk factors

**isochromosome 12 i(12p)**

**Intersex syndromes**



# Testicular tumor

Germ cell tumor (95%)

Non germ cell tumor (5%)

Seminoma

Non Seminomatous

Sex cord- stromal

Others

- Classical (85%)
- Spermatocytic (5%)
- Anaplastic (10%)

- Embryonal carcinoma
- Yolk-sac tumor  
(endodermal sinus tumor)
- Teratoma
- Choriocarcinoma

- Sertoli's cell tumor
- Leydig's cell tumor

- Metastases
- Lymphoma

*systematic*

## Clinical features

- Presentation: mostly as a painless testicular mass.
- Biopsy of a testicular neoplasm is associated with a risk of tumor spillage (contraindicated).
- Standard management of a solid testicular mass is radical orchiectomy, based on the presumption of malignancy.

# 1. Seminoma

- Third decade of life – never in infants.
- Histologically identical tumors called dysgerminomas in the ovary, and germinomas of the CNS.
- Presentation: progressive painless enlargement of the testis.

morphology

**Gross:** soft, well-demarcated gray-white, usually w/o hemorrhage



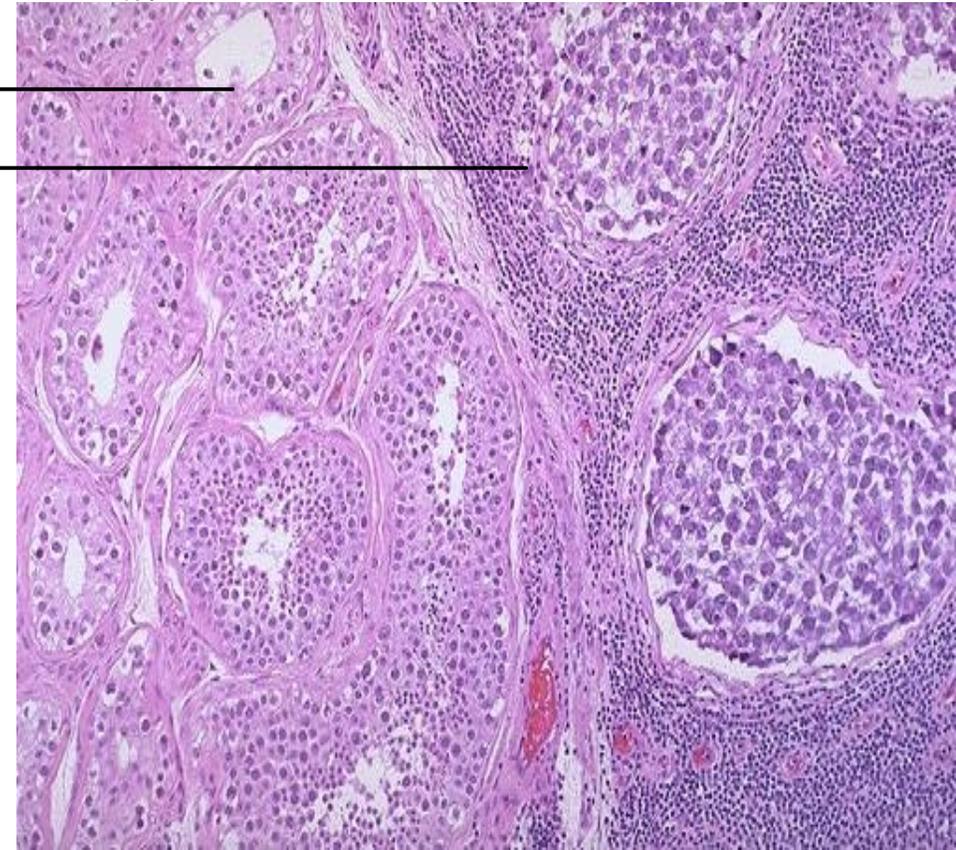
# Microscopic

- Large, uniform cells with clear, glycogen-rich cytoplasm, round nuclei, and conspicuous nucleoli.
- Intervening fibrous septa with dense lymphocytic infiltrate.
- Granulomatous reaction & syncytiotrophoblasts (15%).

*multinucleated cell → ↑hCG*

*Abnormal* ← *normal*

- high cellularity
- hyperchromatic cell
- space filled with lymphocyte
- large cell



## 2. Embryonal carcinoma

- malignant germ cell tumor (GCT) resembling undifferentiated stem cells during embryonic development.
- Second most common type of testicular pure GCT
- Average age of presentation 25 - 35 years old, ~10 years younger than seminoma
- Can occur in Anterior mediastinum and retroperitoneum

## Morphology

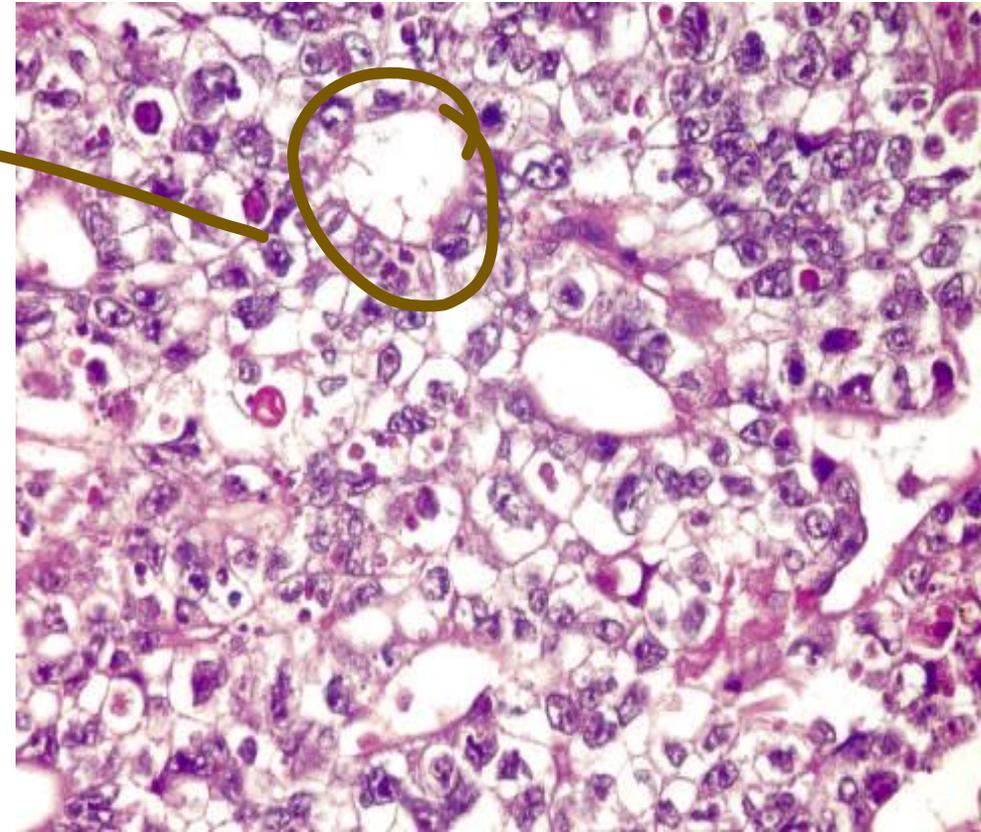
- **Gross:** ill-defined, invasive masses containing foci of hemorrhage and necrosis.



# Microscopic

- large cells with basophilic cytoplasm, they are undifferentiated & may form primitive glands.

*see on slide // Polymorphism*



*Poorly diagnosis*

- .

### 3. Yolk sac tumor

- The most common primary testicular neoplasm in children younger than 3 years old.
- In this age group, it has a very good prognosis. *+ pure tumor*
- In adults, yolk sac tumors most often are seen admixed with embryonal carcinoma (incidence of yolk sac elements is 80% in mixed). *+ poor diagnosis*

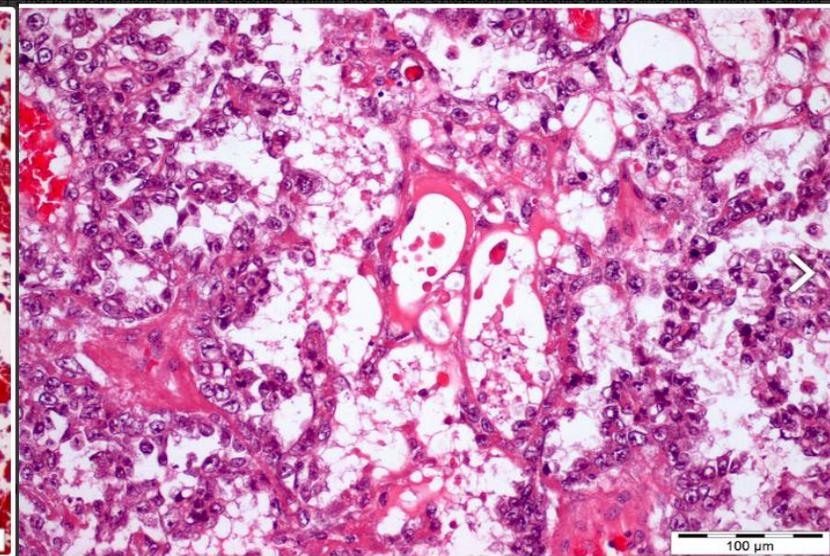
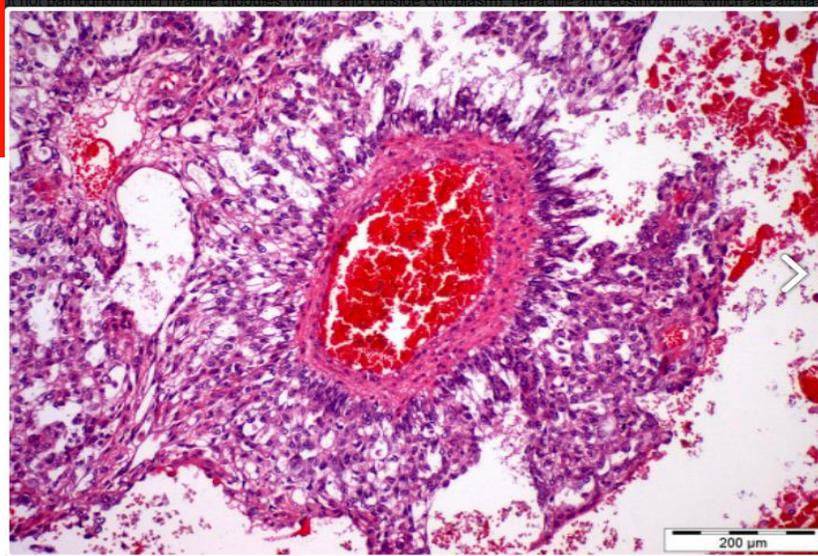
## Morphology

- Poorly circumscribed, nonencapsulated, predominantly solid. Gray to white to yellow to tan, gelatinous surface



## Microscopic

- ❑ tumor composed of low cuboidal to columnar epithelial cells that form microcysts, lacelike (reticular) patterns.
- ❑ A distinctive feature is the presence of structures resembling primitive glomeruli, the so-called **Schiller-Duval** bodies.  
*central BV surrounded by tumor cell*
- ❑ Tumors have eosinophilic globules containing  $\alpha$ 1-antitrypsin and alpha fetoprotein (AFP – can be detected in the serum)



## 4. Choriocarcinoma

turner marker  
βCG

- Malignant germ cell tumor composed of syncytiotrophoblast, cytotrophoblast and intermediate trophoblast cells,
- May present initially with metastases (liver, lung, mediastinum, retroperitoneum) with normal testis or small tumor but with increased serum hCG.

# Morphology

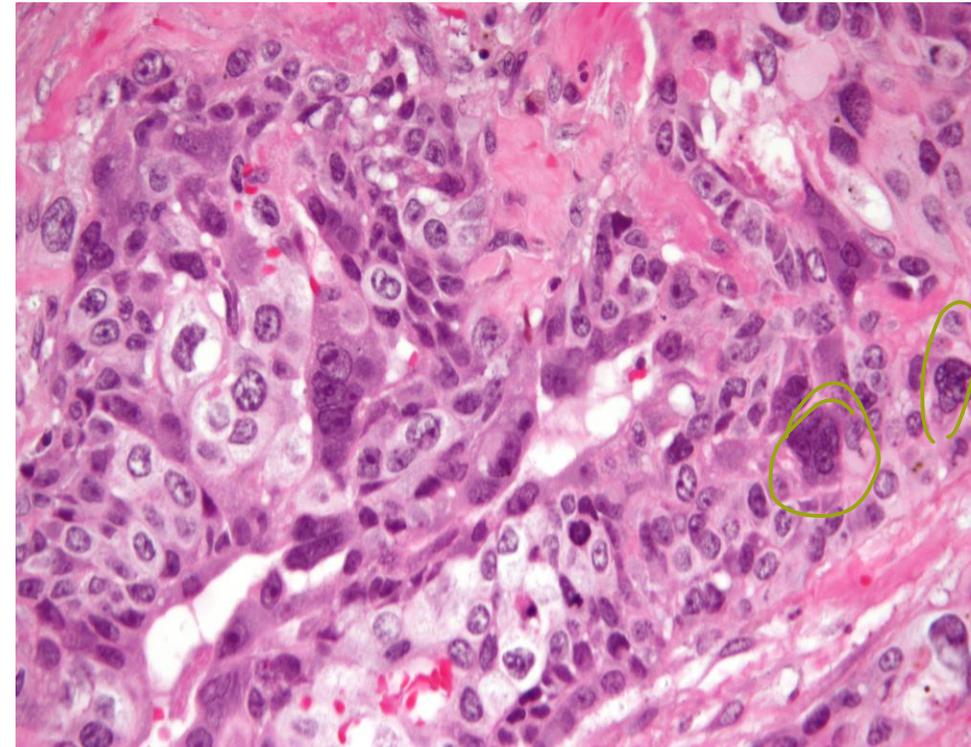
## ❖ Gross:

- may be small lesions, even those with extensive systemic metastases
- May show total necrosis & extensive hemorrhage



## Microscopic

- (1) Cytotrophoblast: Sheets of small cuboidal cells, irregularly intermingled with
- (2) Syncytiotrophoblast: large, eosinophilic cells with multiple dark, pleomorphic nuclei.



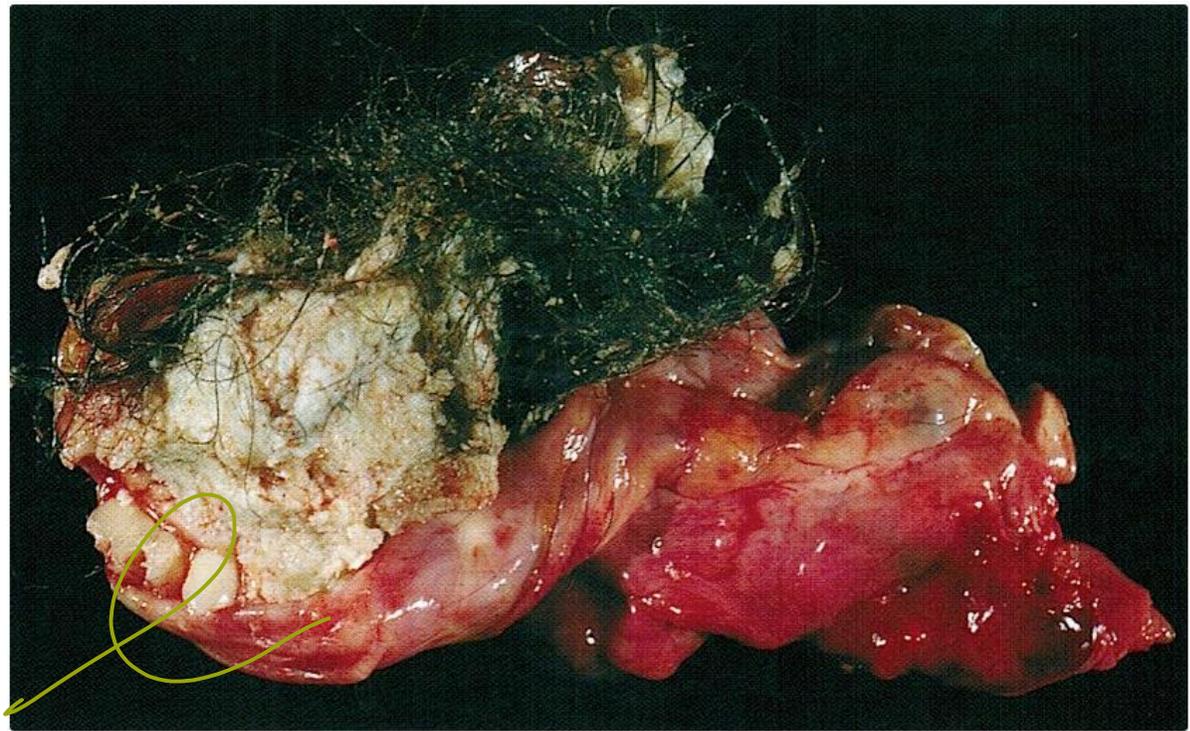
## 5. Teratoma

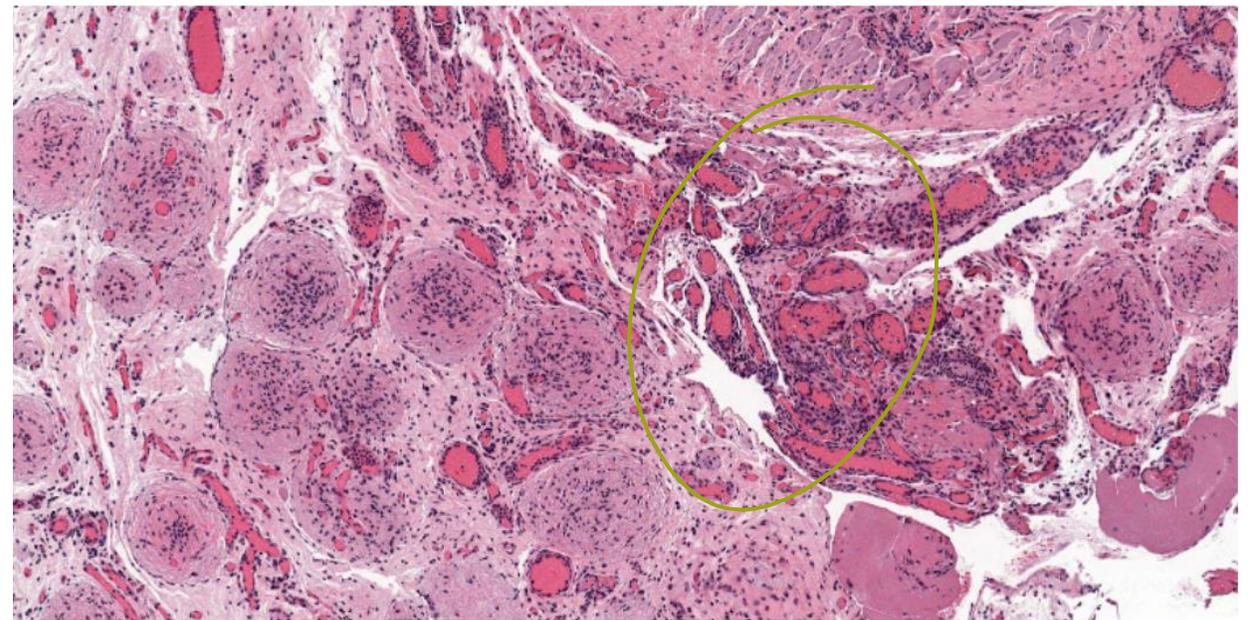
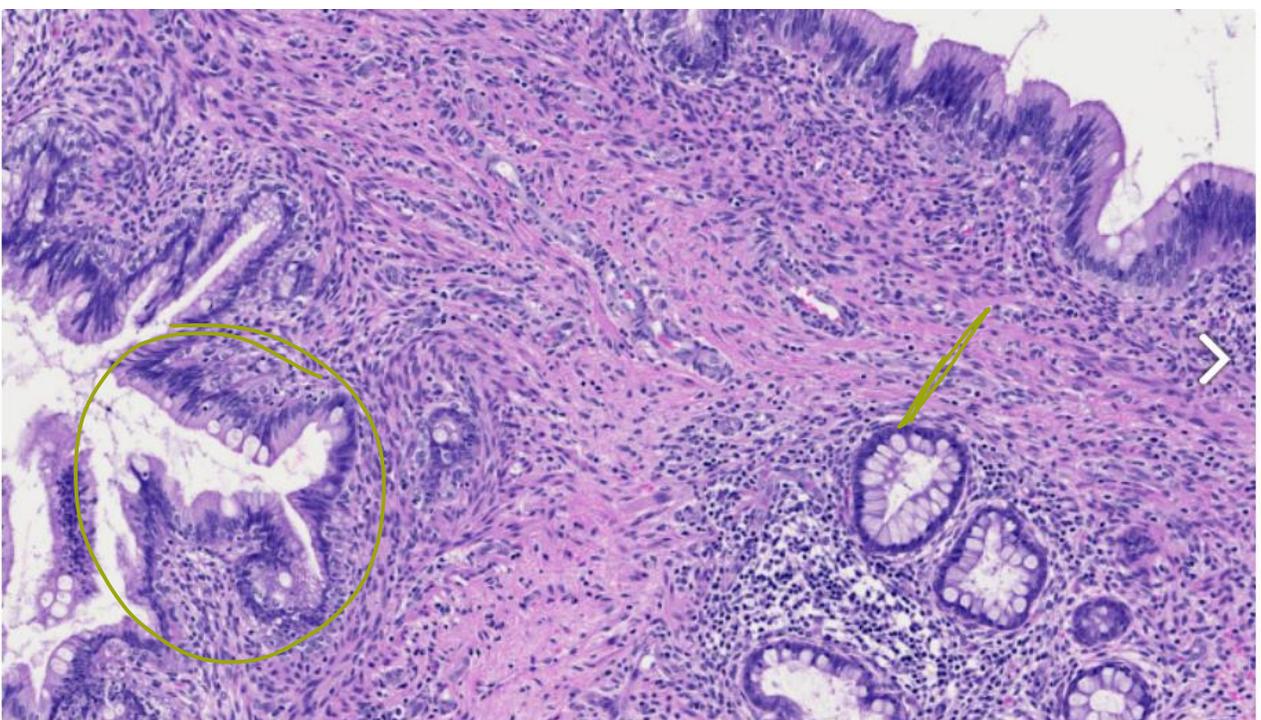
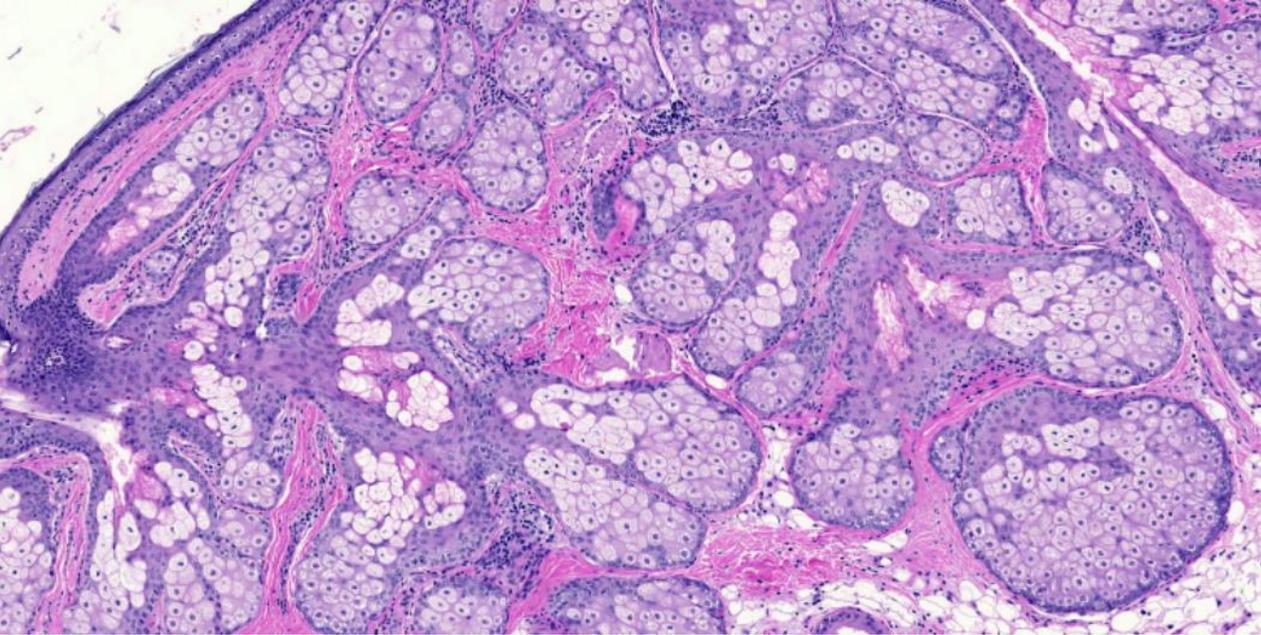
- Neoplastic germ cells differentiate along multiple somatic cell lineages. *ecto  
meso  
endo*
- Pure forms of teratoma are common in infants and children, 2nd in frequency only to yolk sac tumors.
- In adults it is seen in combination with other histologic types (mixed), pure forms are rare.

## Morphology

- Elements may be:
  - ❖ mature (resembling various tissues within the adult)
  - ❖ immature (sharing features with fetal or embryonal tissues).
- In prepubertal males, teratomas are benign.
- The majority of teratomas in postpubertal males are malignant whether they have mature or immature elements.

Gross





# Tumor markers

- Serum tumor markers secreted by germ cell tumors is important in two ways; diagnostically & in following the response to therapy after the diagnosis:
- ✓ Human chorionic gonadotropin (hCG): always elevated in Choriocarcinoma *+ ass//with syncytiotrophoblastic*
- ✓ Alpha fetoprotein (AFP): when elevated in testicular neoplasm, indicates a yolk sac tumor component.
- ✓ Lactate dehydrogenase (LDH): correlate with the tumor burden.

Refers to the number of cancer cells, the size of a tumor, or the amount of cancer in the body. Also called tumor load.

تعداد سرطان  
سایز تومور  
مقدار سرطان در بدن

GOOD LUCK!