

- **Endometritis** (Inflammation of Endometrium)
- Seminal fluid, bacterial infection/non pregnant animals, during pregnancy (placentitis and fetal infection), postpartum endometritis, lochia (excellent nutrient medium for bacterial growth).
- Mucosa swollen, rough surface
- Adherent shreds of fibrin and necrotic debris
- Neutrophils found in stroma and glands
- Desquamation of surface epithelial cells
- Mild lesion resolve completely with residual changes of cystic glands and periglandular fibrosis.
- **Chronic form**
- Replaced by granulation tissue devoid of glands and ultimately this mature to form fibrous tissue.
- Decrease production of PGF₂ α result in persistent CL

- **Pyometer** (Accumulation of pus in uterus)
- **Adenomyosis**(Presence of nests of Endometrium within the myometerium)
- **Endometrioiosis** (Presence of endometrial glands or stromal location outside the uterus such as ovary, mesometrium, perimetrium)
- **Prolapse of uterus**
- Endometrial polyps, endometerial hyperplasia, prolonged hyperestrogenism eating estrogen clover such as subterranean(*Trifolium subteraneum*)and red (*Trifolium protense*)
- Mycotoxin zearalenone

Tumors

Germ cell tumor

Benign, malignant, undifferentiated (Dysgerminoma), benign with somatic differentiation (Teratoma)

Dysgerminoma

- Rare, composed of cells resembling primitive germ cells
- Usually a solid lobulated mass with areas of hemorrhages and necrosis
- Mitotic rate is high but metastasis rare.

Teratoma

- Rare, usually well differentiated and benign
- Arises from totipotent primordial germ cells
- And have disorganized elements of at least 2-3 embryonic germ layers
- Skin is often a significant component.

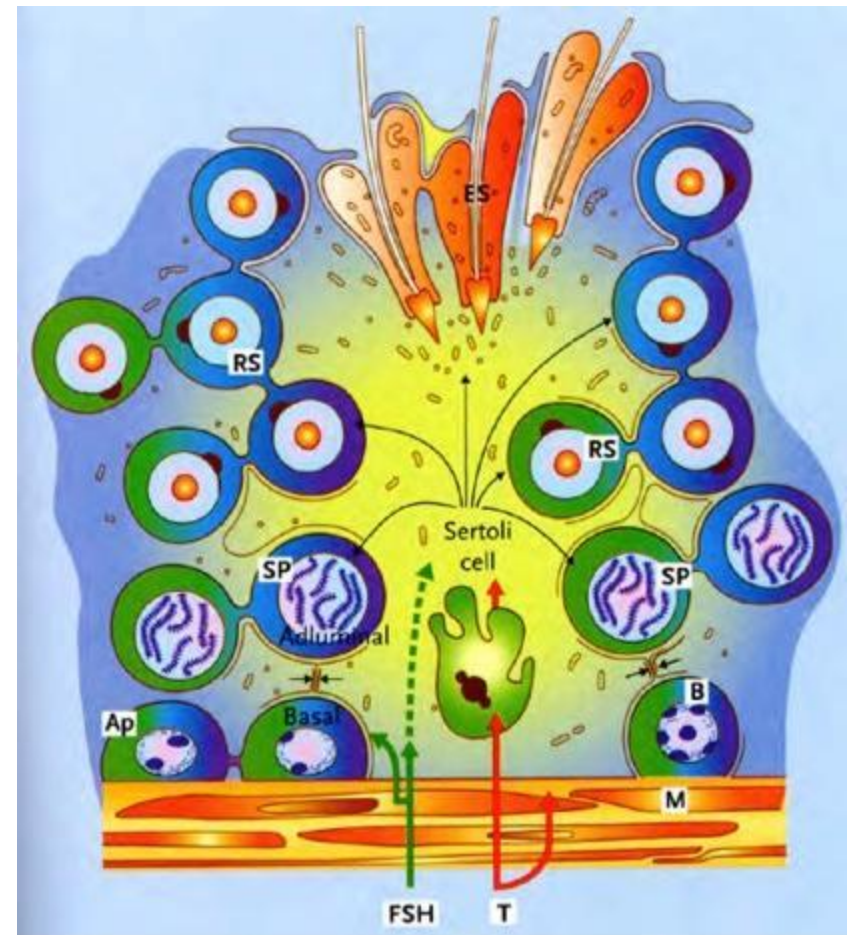
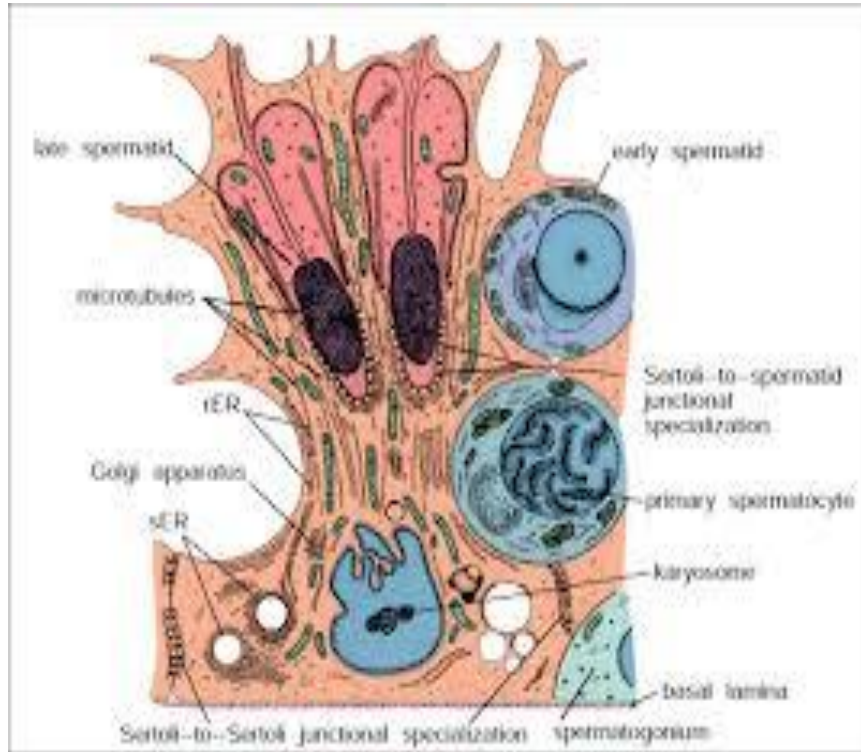
Gonadal/ Sex cord/ stromal tumors

Granulosa cells neoplasm

- Most common
- Unilateral, smooth surface and round 20 to 30 cm in diameter
- Solid, cystic, polycystic fluid within cyst is red brown
- Single or multiple rows of round to columnar cells lining fluid filled spaces.
- Stroma can be sparse or plentiful

Epithelial

- Serous papillary cystadenoma
- Cystadenocarcinoma (originate from surface epithelium, frequently bilateral with a shaggy surface and up to 10cm in diameter)
- Malignant forms spread over the peritoneal surface by both lateral extension and seeding



Orchitis-Inflammation of scrotal content usually accompanied by epididymitis

- Hematogenous infection- *Brucella abortus* in bull, *brucella suis* in boars, *Corynebacterium pseudotuberculosis* in ram.

Types

Intratubular

- Poorly defined grossly
- 1cm yellow foci that become firm and white as lesion become chronic
- Affected tubules have acute inflammatory debris
- Lining of tubules is lost but tubular outlines are present for some times
- Spermatic granuloma can form
- Collagen is deposited at edge of lesion when lesion predominantly in interstitium it is called **interstitial orchitis**

Necrotizing orchitis

- Caused by *Brucella abortus* and *B. suis* most severe form of orchitis
- Affected area severely inflamed
- Necrosis is extensive that original structure have formed a caseous mass
- Gray brown initially soft and later firm, necrotic debris replaces an irregular but large portion of testis
- Sever cases fistula develops through scrotum

Granulomatous Orchitis

- Especially tuberculosis orchitis caused by *Mycobacterium tuberculosis*

Testicular degeneration

- Advancing age
- Chlorinated naphthalene
- Epididymitis
- Chemical- chemotherapy, halogenated compounds, nitrogen containing compounds (benzimidazoles)
- Heat
- Hormones
- Metal compound toxicosis
- Neoplastic
- Nutritional disorder: Negative energy balance, ↓ fatty acid
- Hypovitaminosis ABEC
- Zinc deficiency
- Plants – Locoweed, lysine seeds
- Radiation trauma, viral infection

Cryptorchism (Incomplete descent of testis)

- Small testicular size (hypoplastic)
- Often unilateral/caudal to kidney
- Common disorder of sexual development in dog and cat
- Testis small fibrotic has interstitial, ↑ collagen deposition, hyaline thickening of tubular basement membrane and degeneration of germinal epithelium
- Only few spermatogonia remain along with the normal component of sertoli cells.
- Interstitial endocrine cells appear relatively numerous
- Cryptorchoid testes are more prone to neoplasia than scrotally placed one
- Prone to torsion
- Sexually ambiguous or intersex individual commonly have Cryptorchoid testes.

Hypoplasia/ atrophy

- Common, poor nutrition , Zn deficiency
- Specific gene in Swedish red and white breed of cattle
- Endocrine and cytogenetic abnormalities,
- Endocrine disturbance ↓ LH, ↓ Testosterone.
- Cytogenetic abnormalities- from translocation and mosaics to non disjunctions causing polysomes of sex chromosomes
- XXY karyotypes of klinefelters syndrome
- ↓ no of length of somniferous tubule, no or insufficient germ cells
- Seminiferous tubules have only sertoli cells and spermatogonia
- Irregular progressive sclerosis
- Interstitial endocrine cells appear to be hyperplastic and clumped

Testicular Tumors

- **Seminoma** common in older dogs less frequent in horses rare in other species
- second most common canine testicular neoplasm and aged stallion
- Multicentre origin within testis in local invasiveness are characteristic but metastasis is rare.
- Homogenous, white or pink gray and firm budges when cut

Microscopically

- Fine fibrous trabaculae
- Either intratubular or diffuse
- Cells large polyhedral, discretely demarcated round cells with large nucleus, variable nuclear size and very little cytoplasm.
- Mitotic rate is usually high, giant cells within either a single nucleus or multiple nuclei are some time present.
- Lymphoid aggregates are often present around blood vessels

Teratoma

- Arises from totipotent primordial germ cells
- Uncommon but best known in young horses
- Large cystic and polycystic
- Can contain recognizable hair, mucus, bone or even teeth
- At least 2-3 embryonic germ layer (ectoderm, mesoderm
- Well differentiated and benign

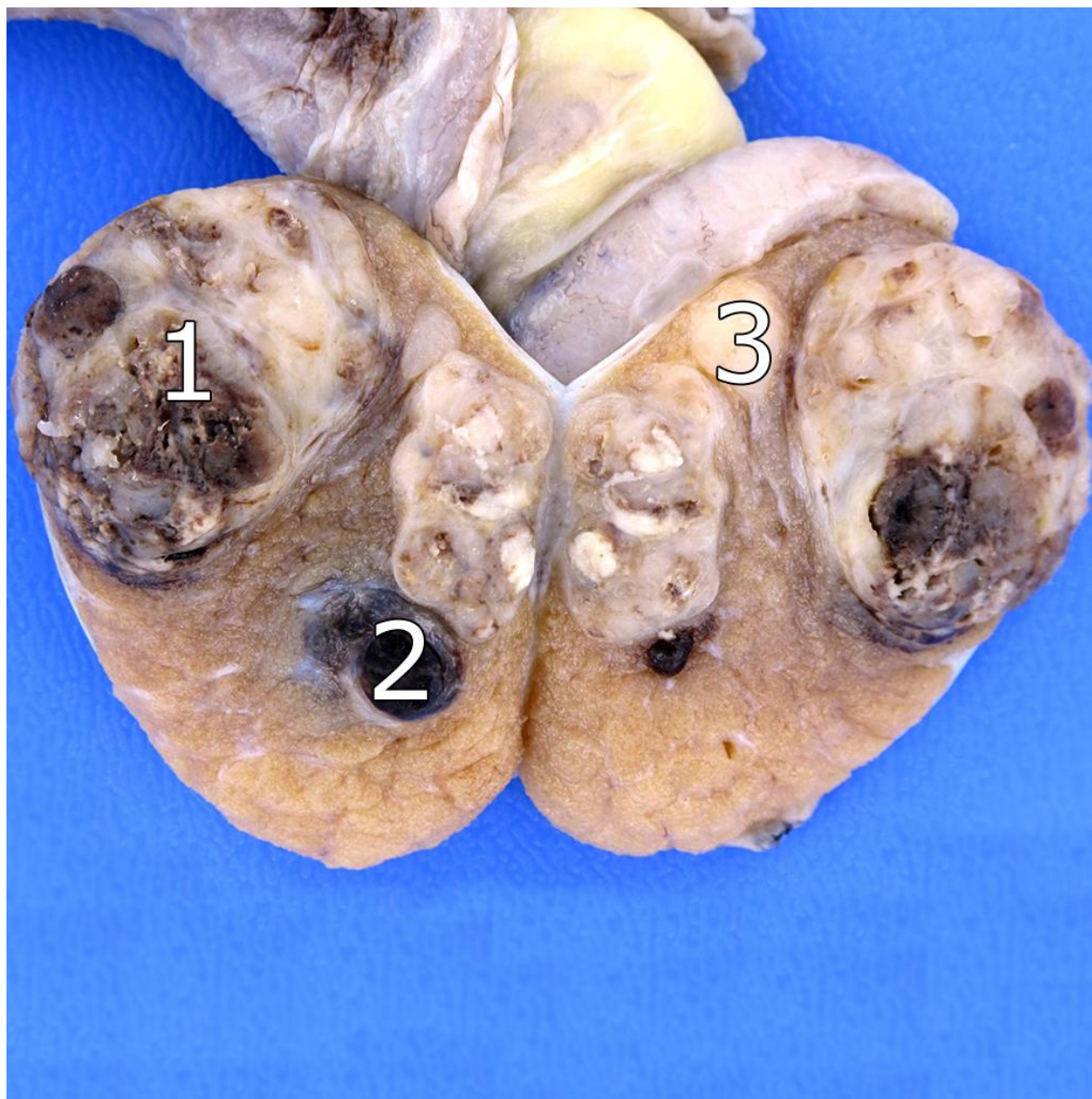
Interstitial cell tumor

- Most common in dog, cat and bull
- Tan to orange color often with hemorrhages
- Spherical and well demarcated always benign
- Cells round, polyhedral or spindle shaped
- Cells have abundant cytoplasm often finely vacuolated and has brown pigment
- Cells are arranged in solid sheets or packed into small groups by a fine fibro vascular stroma
- Noninvasive and finely encapsulated.

Sertoli cell tumors

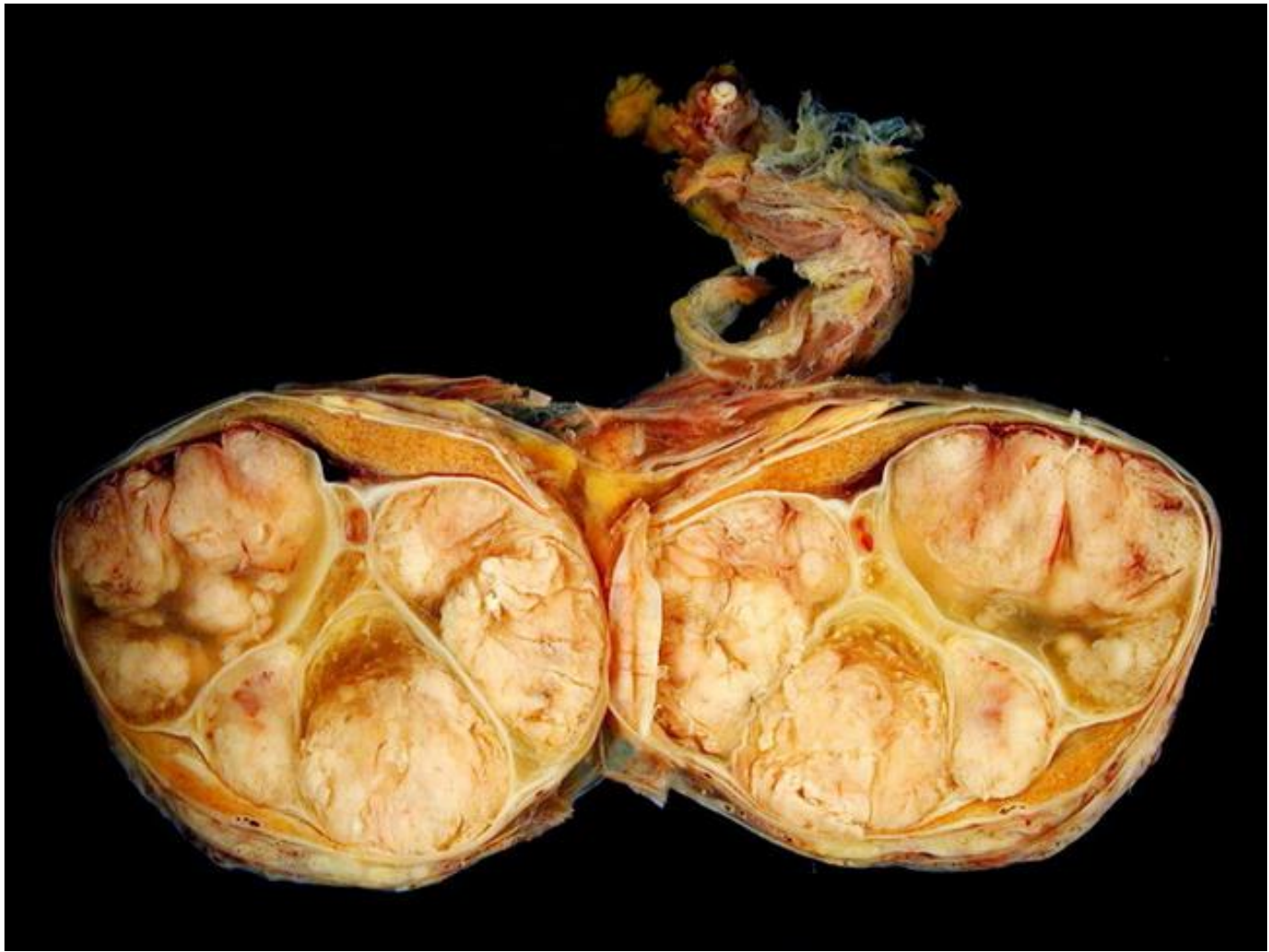
- Third most common testicular neoplasm of dog rare in other species
- 50% are located in undescended testes
- Firm, white lobulated by fibrous band and can cause enlargement of affected testis
- Can invade spermatic cord and occasional metastasize to regional lymph node
- Cells more pleomorphic has intratubular or a diffuse arrangement.
- Abundant fibrous CT
- Neoplastic cells tend to palisade along the fibrous stroma or form tubular structure.



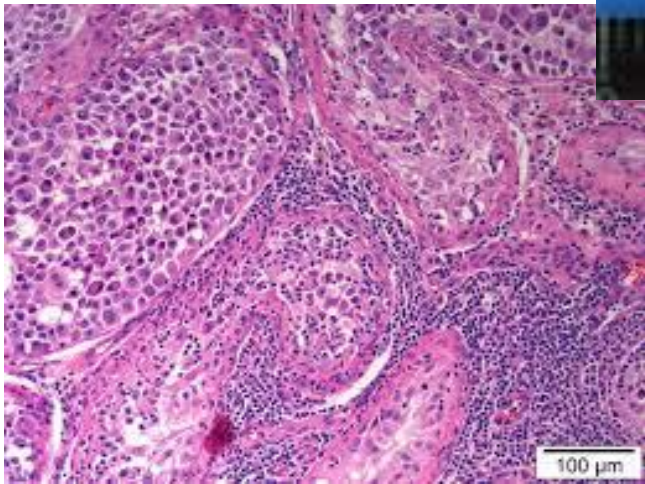




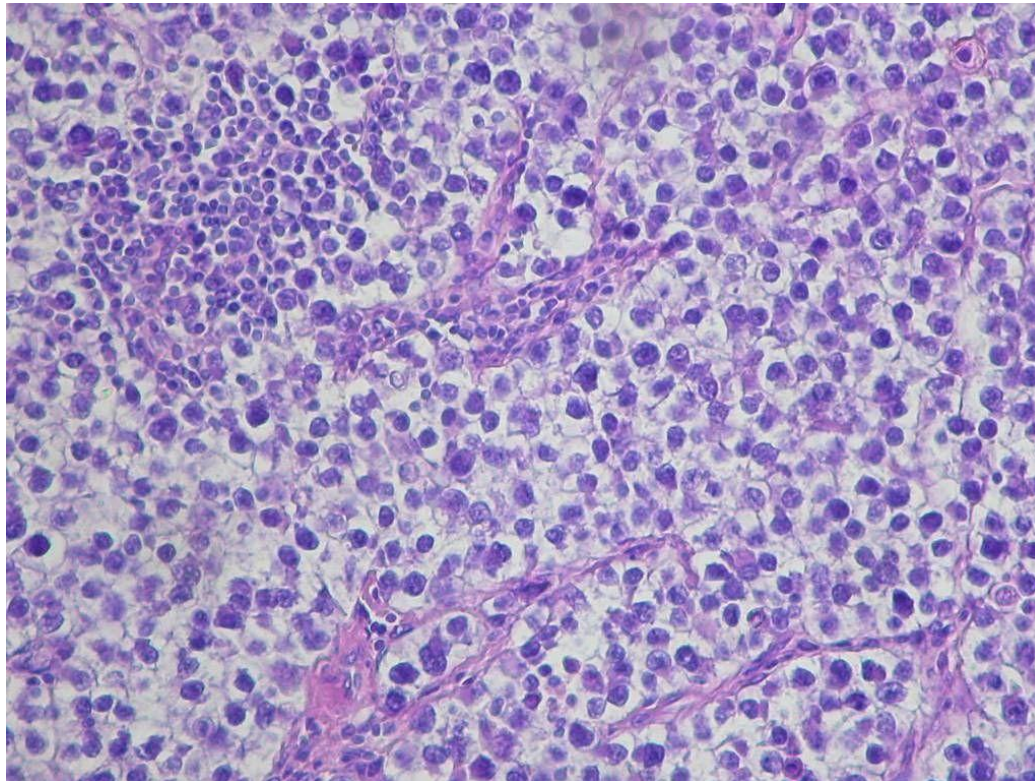
Gross specimen of a classic seminoma showing a sharply demarcated, pink-tan tumor.



Seminoma. No sarcomatous component was present. There is very little normal testicular tissue remaining

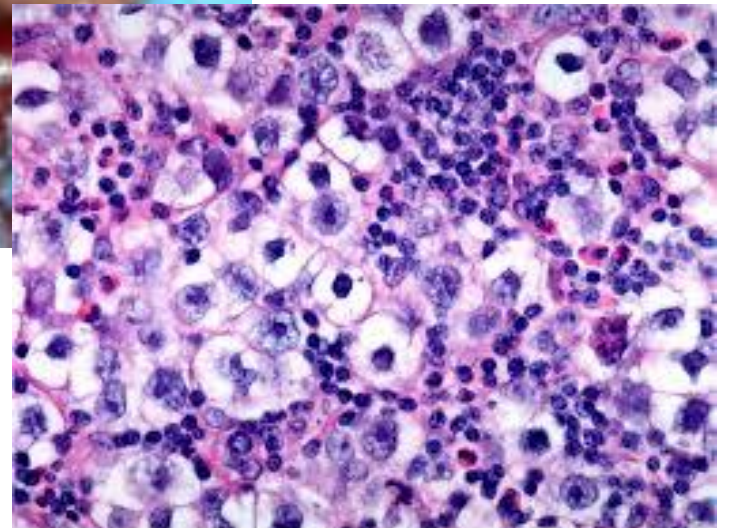


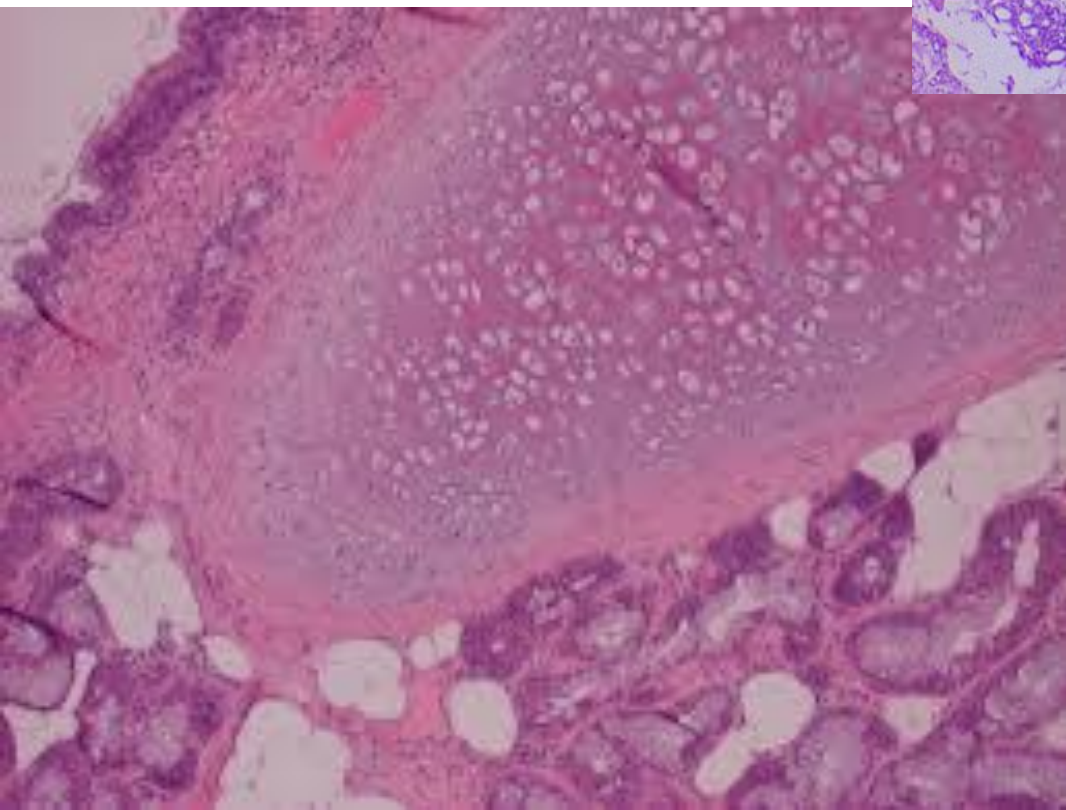
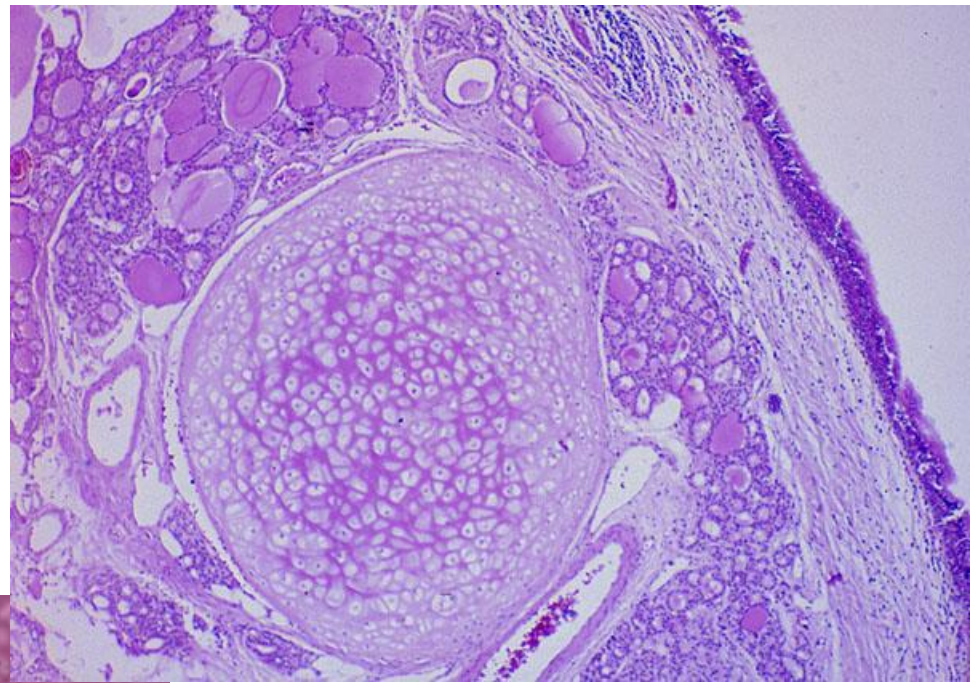
histology of a testicle... lymphocytic
foci of a seminoma

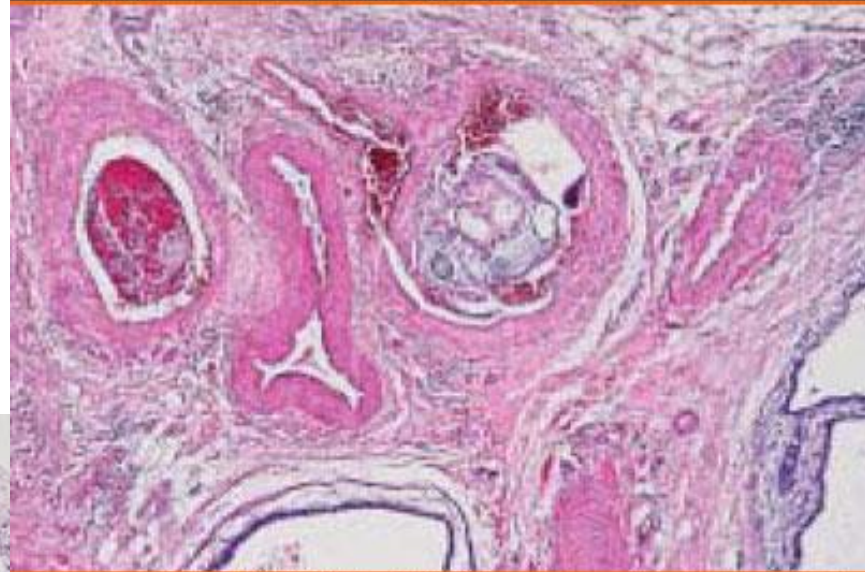


Seminoma reveals histologically solid growth pattern. It is composed of round polygonal cells with slightly anisomorphic nuclei and clear cytoplasm

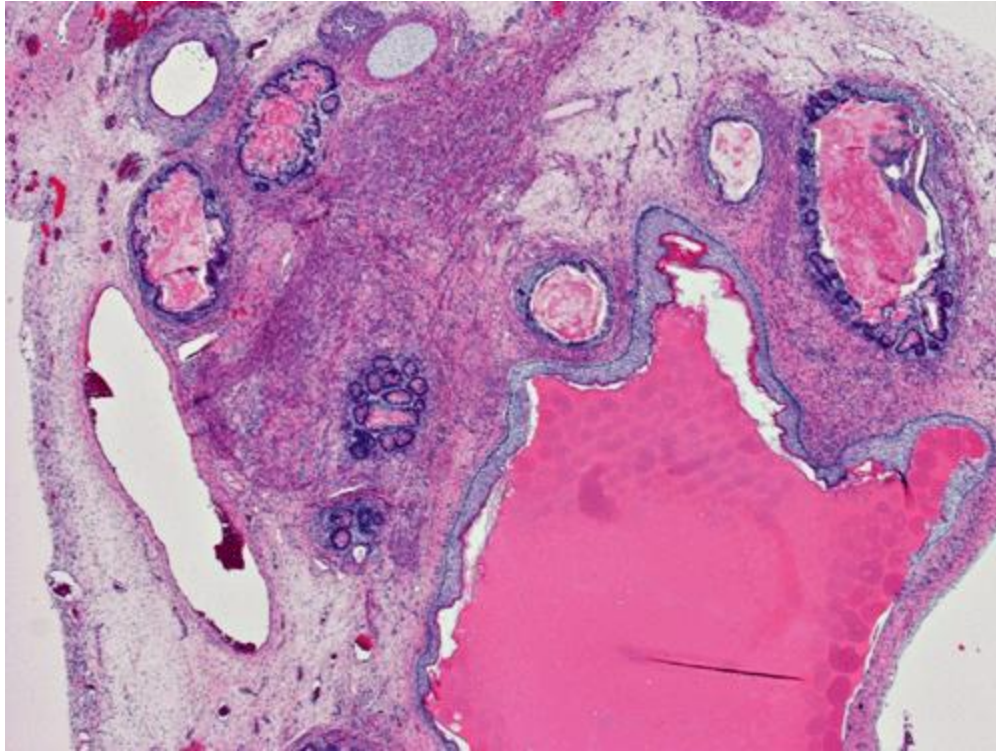
Seminoma/horse

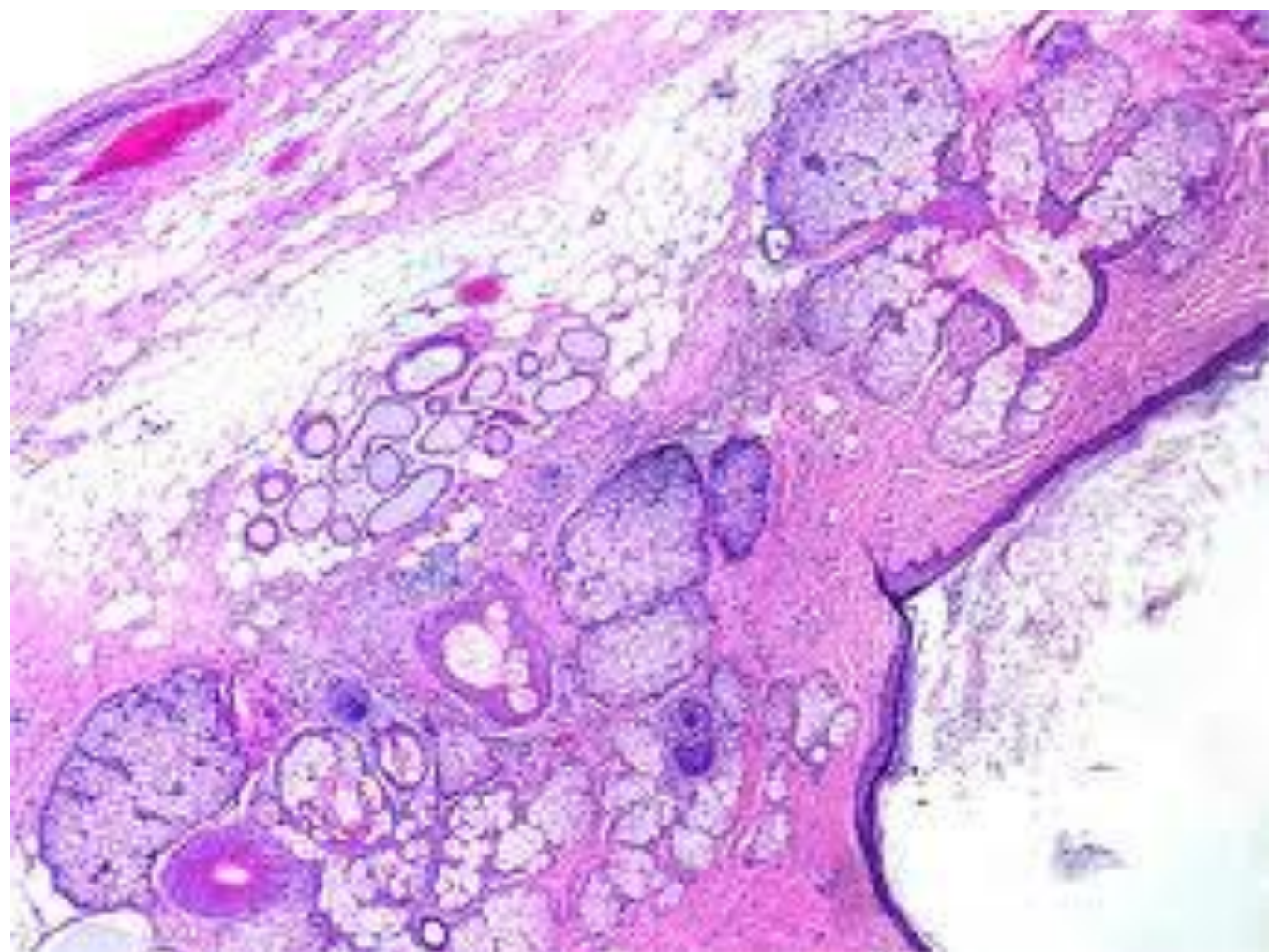






Source: Cancer Control © 2004 H. Lee Moffitt Cancer Center and Research Institute, Inc.

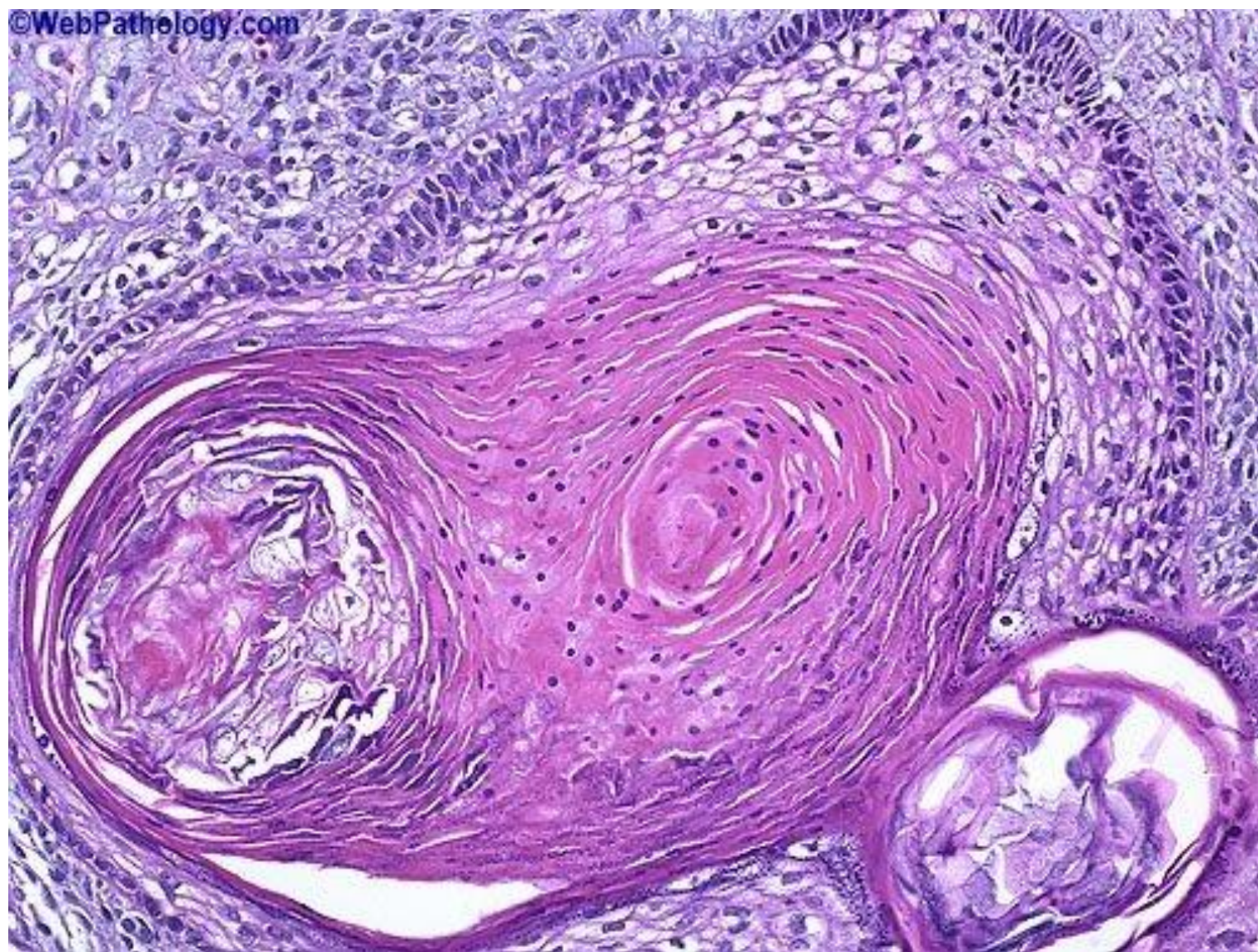












- Inflammation of penis- Phalitis
- Glans- balanitis
- Prepuce- posthitis
- Penis and prepuce-phaloposthitis/balenoposthitis.

TVT (Transmissible Venereal Tumor) dog

- Round cell neoplasm present on penis
- Single or multiple, a few millimeter to 10 cm in diameter
- With inflamed, ulcerated cauliflower like surface
- Composed of sheets of round cells and minimal stroma
- Cell large and uniform with a large nucleus and nucleolus, distinct cell outline and numerous mitotic figure

Squamous cell carcinoma

Papilloma











- **Varicocele**- local dilatation of spermatic vein in pampiniform plexes (older ram)
- Inflammation of spermatic cord (funisitis, scirrhous cord) occur often the contamination of a castrated wound.
- **Hypospadia** (malformation of urethral canal that create abnormal opening of urethra on ventral surface of penis)
- **Epispadia** (on dorsal surface)
- Penile hematoma.