

Diseases of Male Genital System

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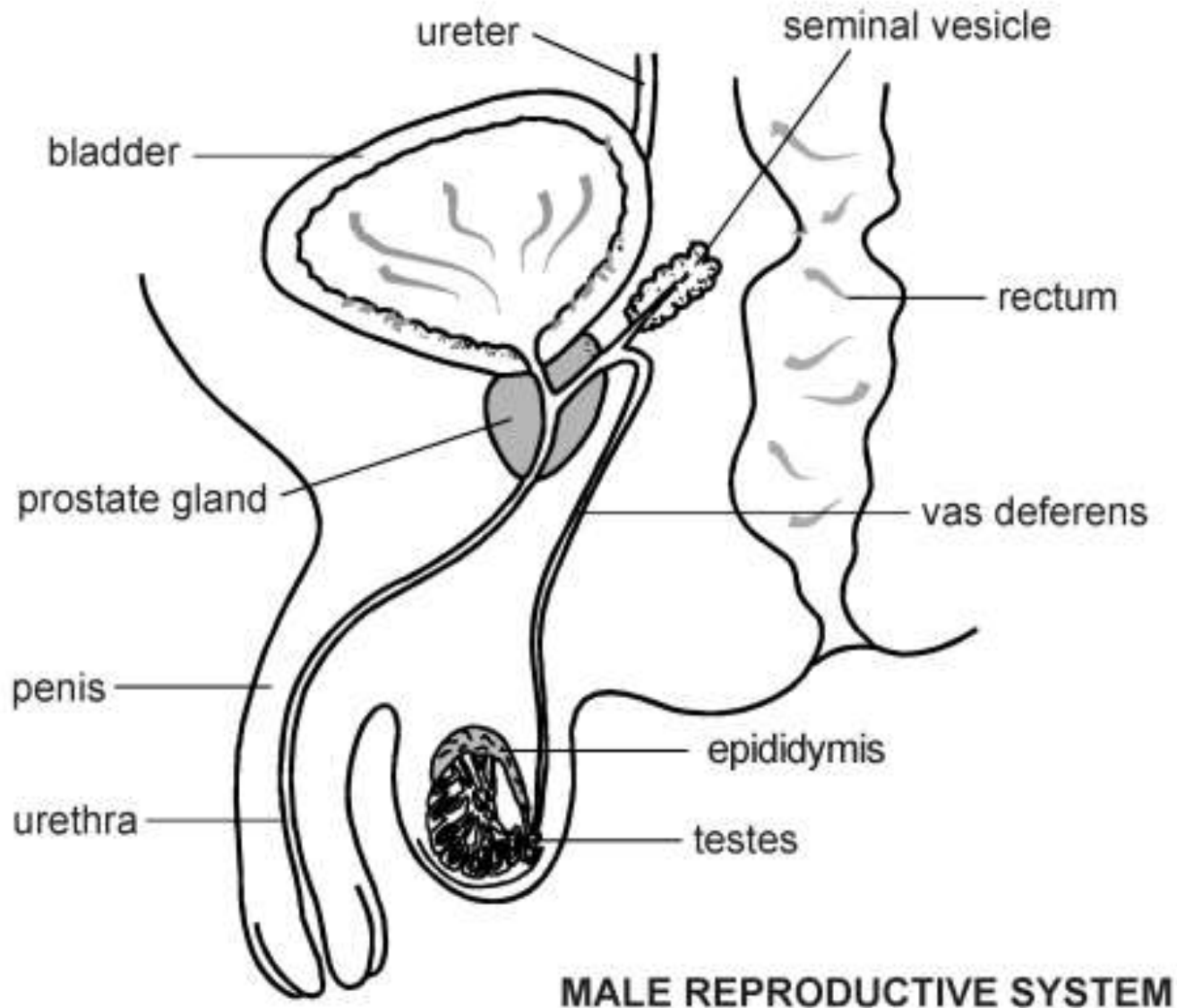
Introduction

Learning objectives

By the end of this lecture; you should know:

- The common terms that describe male genital diseases.
- The main congenital anomalies of male reproductive system and their clinical significance.
- Main infections of male genital tract and sexually transmitted diseases.
- Identify common growth disorders and tumors of male genital tract.

Introduction



Introduction

☐ **Developmental disorders**

- Cryptorchidism (undescended testis).
- Congenital phimosis

☐ **Inflammatory diseases**

- Orchitis
- Prostatitis
- Gonorrhea

☐ **Growth disorders**

- Testicular atrophy
- Benign prostatic hyperplasia (BPH).

☐ **Neoplastic lesions**

- Tumors of the testis
- Tumors of the prostate

DEVELOPMENTAL DISORDERS

Developmental disorders

Cryptorchidism (undescended testis).

- Definition: the testes fail to descend or migrate to scrotal sac.
- Incidence: Rare (about 1/400 males).
- May involve one or both testes.
- Clinical significance:
 - Usually associated with inguinal hernia.
 - The testis is subjected to atrophy.
 - Increased risk of testicular tumor

Developmental disorders

Congenital phimosis.

- Definition: too small opening of the prepuce over the glans.
- Usually congenital but may occur due to post-inflammation fibrosis
- Clinical significance:
 - Occasionally causes obstruction of urine flow.
 - Can be corrected by circumcision

Other congenital abnormalities

- Hypospadia or epispedia: urethral opening at abnormal sites
- Testicular germ cell aplasia leading to male infertility.
- Congenital atresia of the vas or male urethra.

INFLAMMATORY DISEASES

Inflammatory diseases

Orchitis and epididymo-orchitis

- Definition: inflammation of the testis.
- Commonly associated with epididymitis.
- Types:
 1. Acute non-suppurative orchitis:
 - Commonly viral.
 - Occurs as a complication of mumps
 - Usually bilateral.
 - May be complicated with infertility.
 2. Chronic orchitis:
 - Auto-immune
 - Tertiary syphilis

Inflammatory diseases

Prostatitis

- Definition: inflammation of the prostate.
- Types:
 1. Acute prostatitis:
 - Infection by a pyogenic organism as E.coli, chlamydia, klebsiella and gonococci.
 - Infection extends to prostate from urinary tract.
 2. Chronic prostatitis:
 - Non specific: follow acute prostatitis or auto-immune
 - Granulomatous: as TB or syphilis

Inflammatory diseases

Gonorrhea

- **Definition:** suppurative inflammation of the urethra caused by gonococci.
- **Mode of transmission:** a sexually transmitted disease
- **Presentation:**
 - Dysuria
 - Yellow purulent urethral discharge
- **Pathology:** a suppurative inflammation with dense neutrophils.
- **Complications** (rare as treatment is highly effective):
 1. Spread of infection to prostate, seminal vesicles, UB, ureters and kidneys.
 2. Bacteremia and septicemia leading to infective endocarditis, arthritis and isolated organ abscesses.
 3. Chronicity: leading to urethral stenosis.
 4. Infertility.

Inflammatory diseases

Sexually transmitted diseases:

- A group of infectious diseases involving both male and female partners.
- The common sexually transmitted infections are:
 - Gonorrhea
 - Chlamydial infections
 - Genital herpes.
 - Condyloma acuminata (Human Papilloma Virus).
 - AIDS.
 - Lymphogranuloma venereum.
 - Syphilis.

Growth Disorders

Growth disorders

Testicular atrophy

- **Definition:** regression of testicular size after full maturity.
- **Etiology:**
 - Cryptorchidism
 - Vascular: shortage of blood supply
 - Hormonal
 - Primary as in cases of intersex and Klinefelter syndrome.
- **Effect:**
 - Infertility

Growth disorders

Benign prostatic hyperplasia (BPH):

■ Definition:

Nodular enlargement of the prostate caused by hyperplasia of both glandular and stromal components

■ Incidence:

- Highly frequent among elderly.
- It involves <8% of men during the 4th decade, but it reaches 50% in the 6th decade and 75% in the 8th decade.
- It is **NOT** considered as a pre-neoplastic

■ Etiology (pathogenesis): The main hypothesis is exposure to excess testosterone:

Testosterone $\xrightarrow[\text{(increased in old age)}]{5\ \alpha\text{-reductase}}$ di-hydroxytestosterone

Growth disorders

Benign prostatic hyperplasia (BPH):

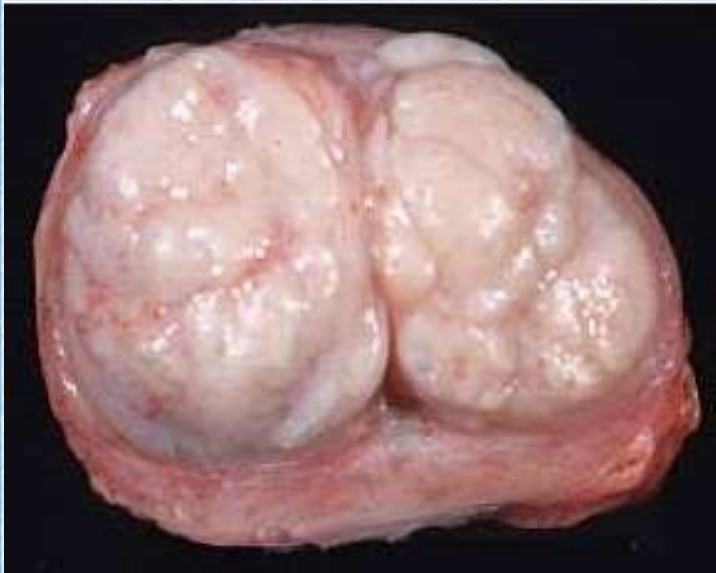
▪ Grossly

- Involves peri-urethral zone (lateral and middle prostatic lobes).
- Enlarged gland with increased weight.
- Nodular appearance.
- Rubbery consistency.
- Grayish pink colour with small cysts on cut section.
- May be huge in size and form mass at the bladder neck

Growth disorders

Benign prostatic hyperplasia (BPH):

- Grossly



Growth disorders

Benign prostatic hyperplasia (BPH):

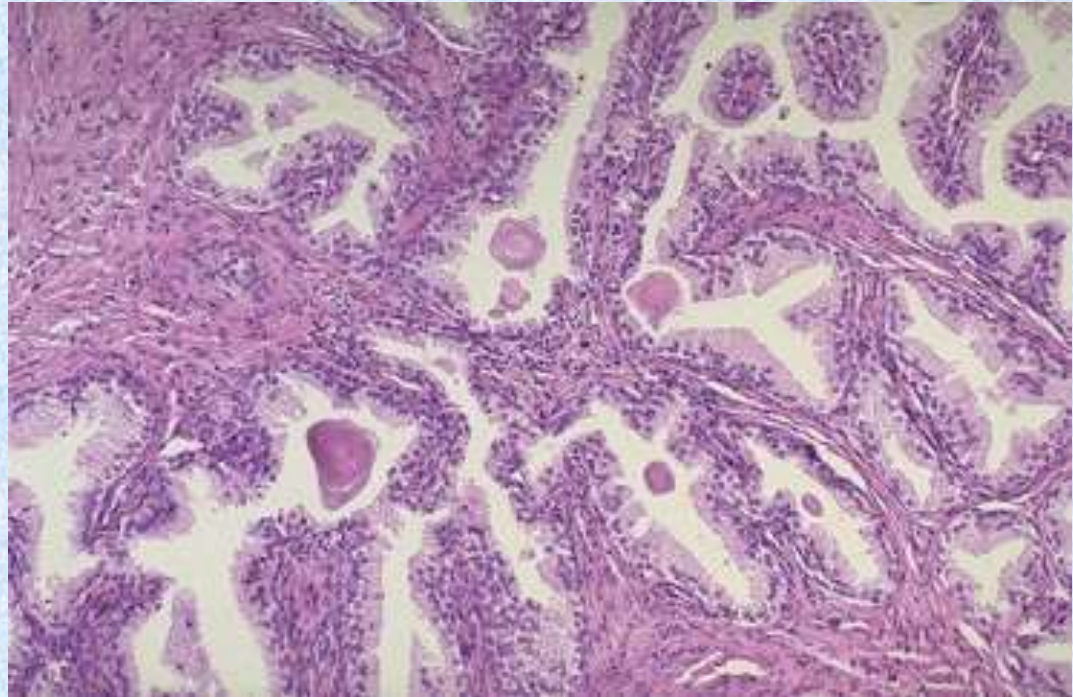
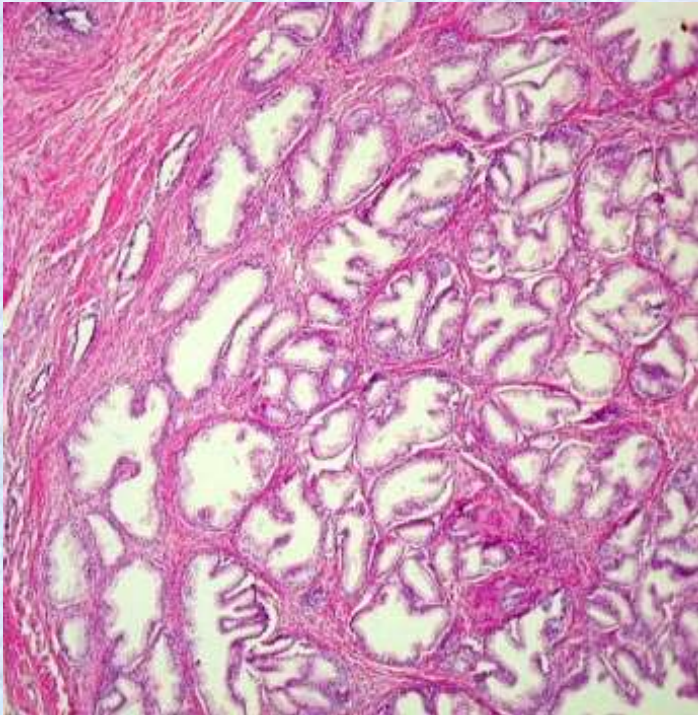
■ MP

- Hyperplasia of both glandular and fibro-muscular stroma
- Acini are variable in size and shape with cyst formation.
- Lined by single layer of tall columnar cells with papillae formation (saw tooth appearance)
- Abundant pale cytoplasm and basal benign nuclei.
- Degenerated luminal material with calcification (Corpora amylacea)

Growth disorders

Benign prostatic hyperplasia (BPH):

- MP



Growth disorders

Benign prostatic hyperplasia (BPH):

■ Complications (compression & obstruction of urine outflow):

Urethral

- Dysuria
- Hematuria
- Urine retention

Ureters and renal

- Hydro-ureter
- Hydro-nephrosis
- Ascending infection
- Renal failure

Urinary bladder

- Dilatation and hypertrophy of UB wall
- Residual urine → frequency
- Urine incontinence
- Cystitis and UB stones

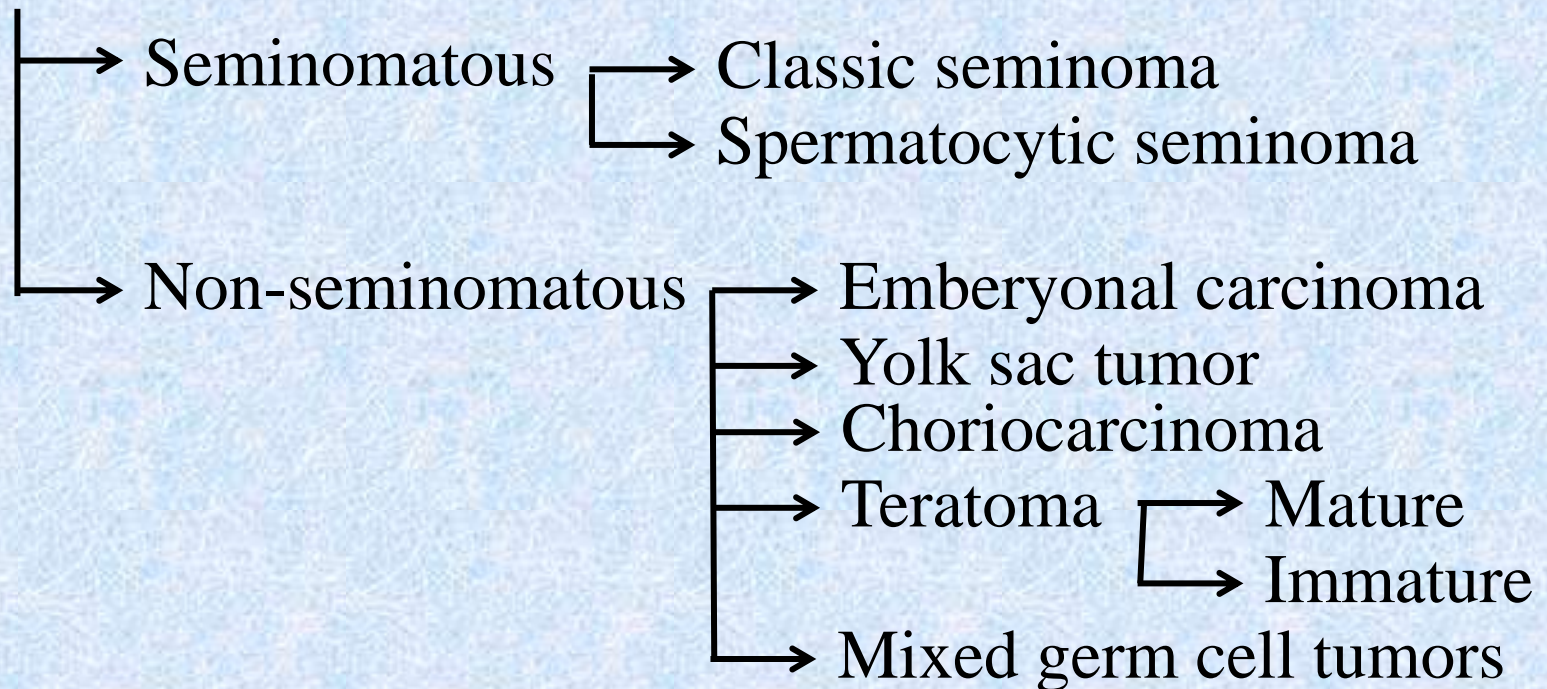
Neoplastic Lesion

Neoplastic lesions

Tumors of the testis:

■ Classification

A- Germ cell tumors



B- Sex cord stromal tumors → Sertoli leydig cell tumors

C- Others → Lymphoma and mesenchymal tumors

Neoplastic lesions

Tumors of the testis:

■ **Seminoma**

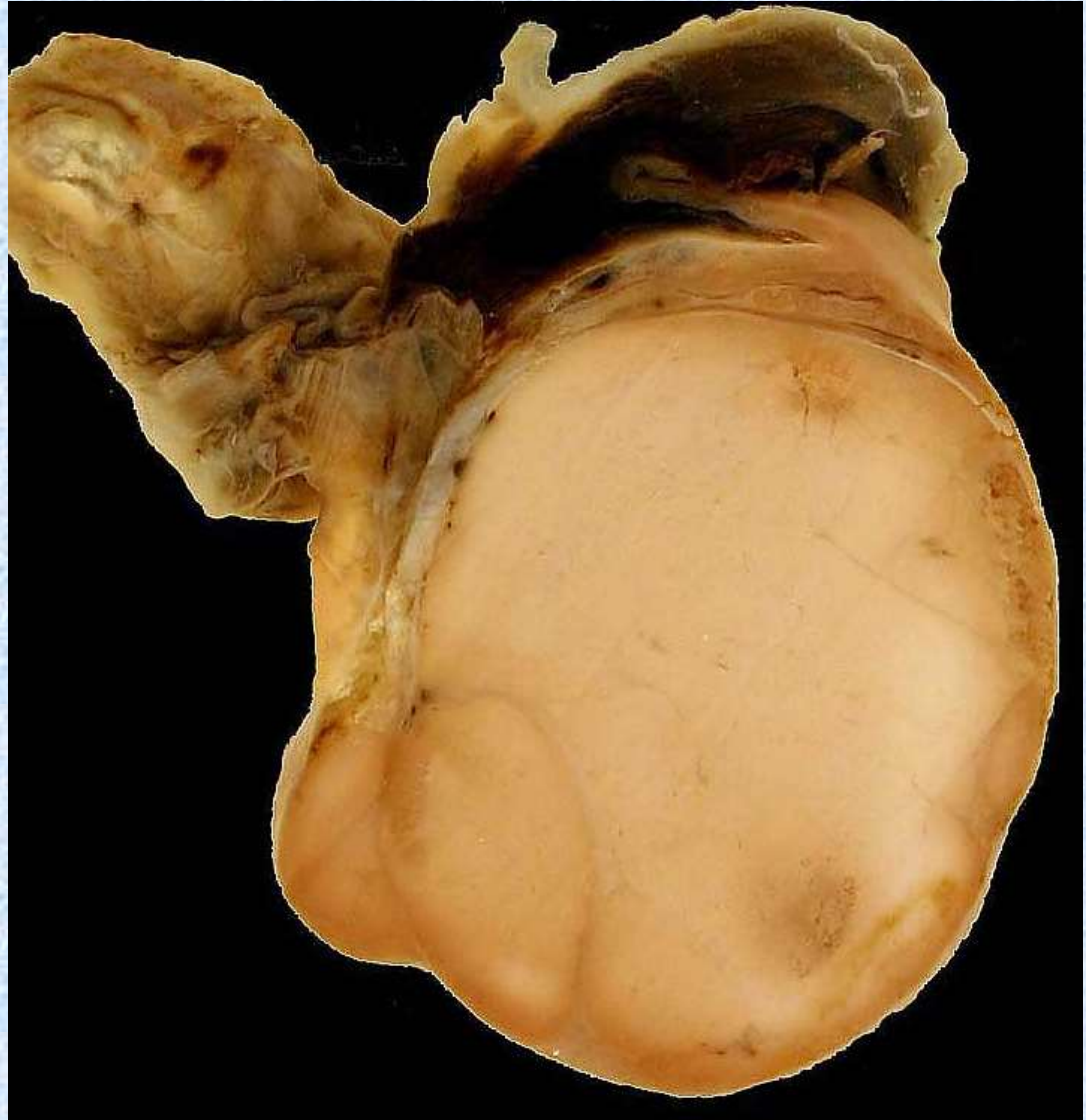
- The commonest (50%) of germ cell tumors.
- Commonly involves middle age (around 40 years).
- Has a very good outcome as the tumor is strongly radiosensitive
- **Grossly:**
 - Partial or complete replacement of testicular tissue.
 - Well-defined oval or round mass.
 - Firm to hard
 - Solid homogenous or nodular cut section
 - Grayish yellow
 - Hemorrhage or necrosis

Neoplastic lesions

Tumors of the testis:

■ Seminoma

➤ *Grossly*



Neoplastic lesions

Tumors of the testis:

■ Seminoma

➤ *MP:*

1. Classic seminoma:

- Sheets of nests of tumor cells with scanty thin stroma.
- Large polyhedral or rounded cells.
- Abundant pale or clear cytoplasm and central hyperchromatic nuclei.
- Stromal infiltration by lymphocytes forming aggregates.

2. Spermatocytic seminoma

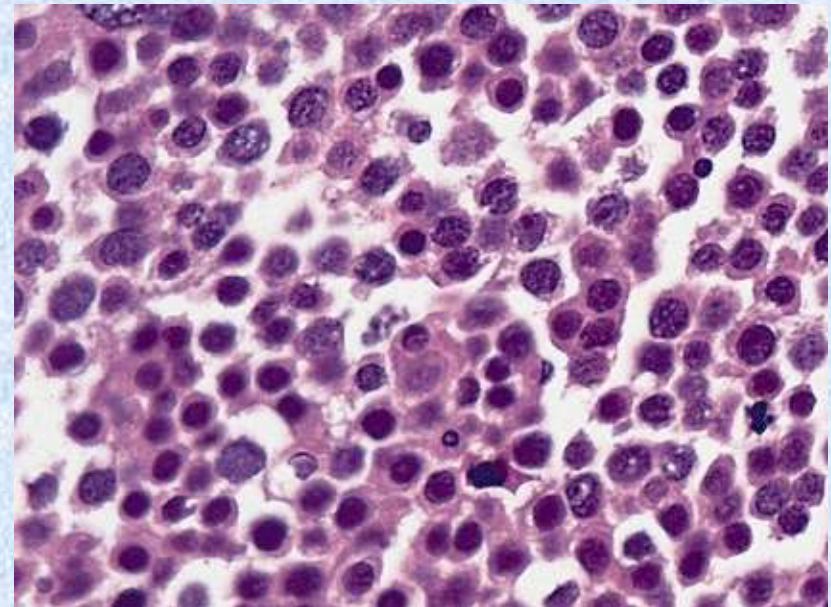
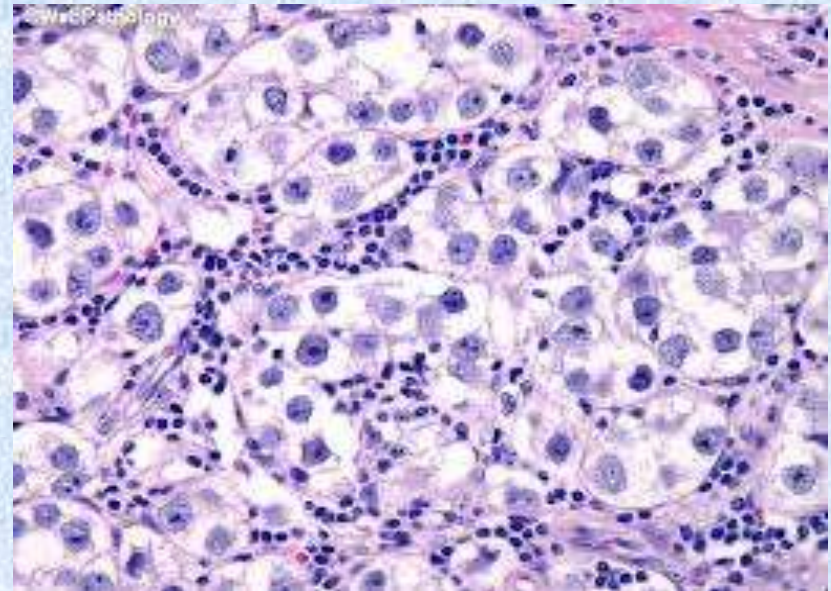
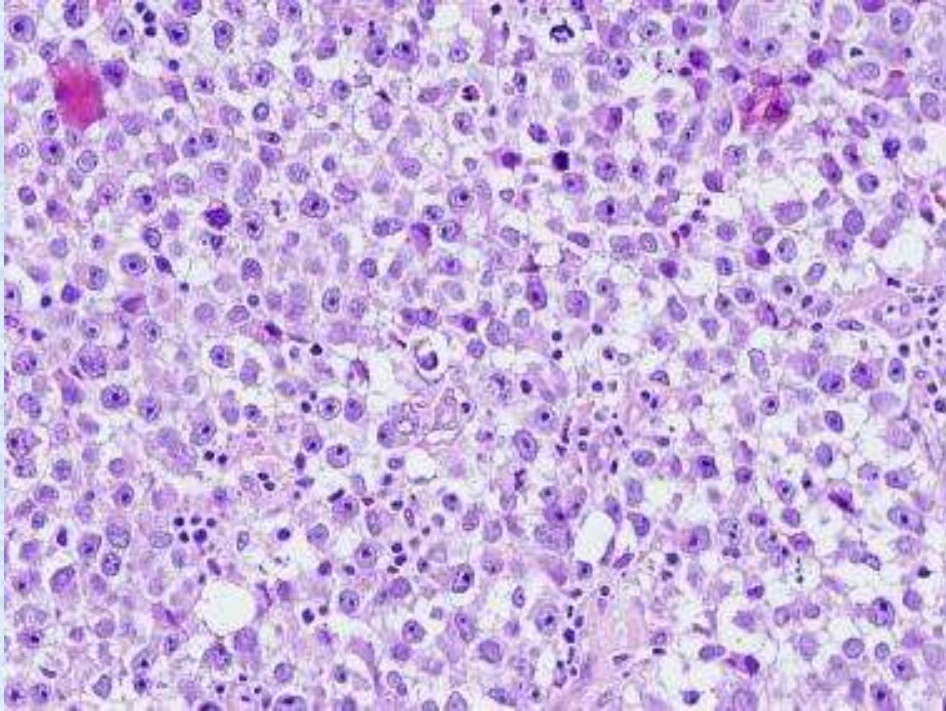
- Small neoplastic cells resemble secondary spermatocytes
- Monotonous rounded cells with eosinophilic cytoplasm
- Less frequent metastasis and have better prognosis

Neoplastic lesions

Tumors of the testis:

■ Seminoma

➤ *MP:*



Neoplastic lesions

Tumors of the testis: **Tumors other than seminoma**

Tumor	Rate	Peak age	Morphology	Tumor marker
Embryonal carcinoma	2-3%	20-30 yrs	Large pleomorphic tumor cells arranged in solid sheets tubules, glands	
Yolk sac tumor	Rare	±3 yrs	Mixed structures with presence of Schiller Duvall bodies; small tubule like structure with central eosinophilic material	AFP
Choriocarcinoma	Rare	20-30 yrs	Malignant cyto and syn-cytotrophoblasts	hHCG
Teratoma	5-10%	Any age	Mixed germ lines tumor. Teratomas of young children are usually benign while those of old age are malignant.	
Mixed germ cell tumor	40%	15-30 yrs	Combinations of seminoma and different types of germ cell tumors	AFP and hHCG
Lymphoma	7%	>60 yrs	Usually diffuse large cell lymphoma	

Neoplastic lesions

Tumors of the testis:

▪ **Spread of testicular tumors:**

- ❑ Direct: replacement of testicular tissue and extension to nearby structures as epididymis and scrotum
- ❑ Lymphatic: para-iliac and para-aortic and less frequently to inguinal LNs
- ❑ Blood spread: to lung, liver, bone and brain.

Neoplastic lesions

Cancer prostate

■ **Definition:**

- Malignant tumor of prostatic epithelium

■ **Incidence**

- One of the commonest malignant tumors of men.
- Involves mainly old patients (\pm 60 years).
- Early detection by screening by serum PSA level for elderly.

■ **Predisposing factors:**

- Exposure to excess hormones (androgen)
- **BPH** is **NOT** a predisposing factor.

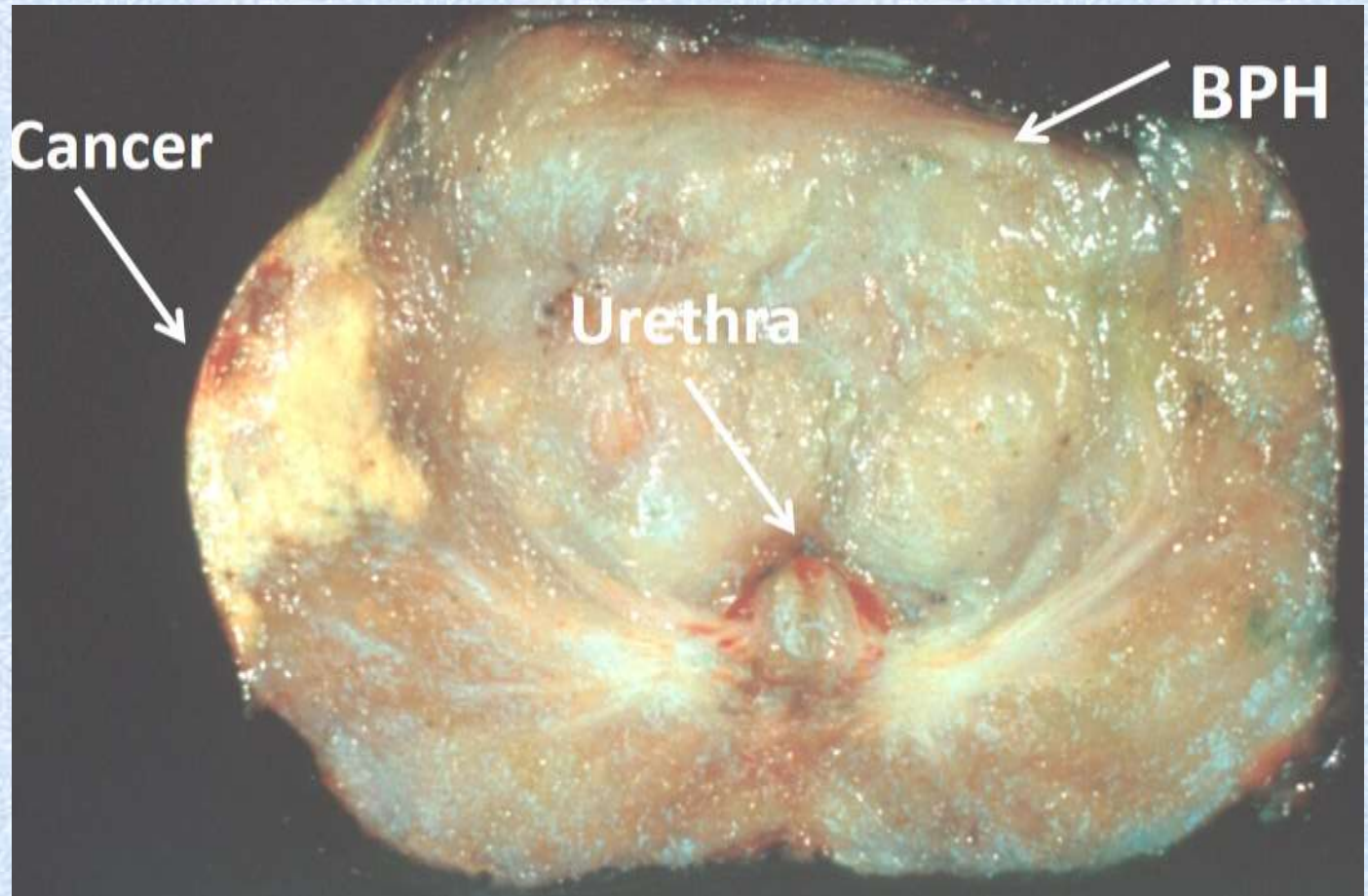
■ **Grossly:**

- Mainly arise from the peripheral zone
- Ill-defined nodule or mass of varying size with grayish white

Neoplastic lesions

Cancer prostate:

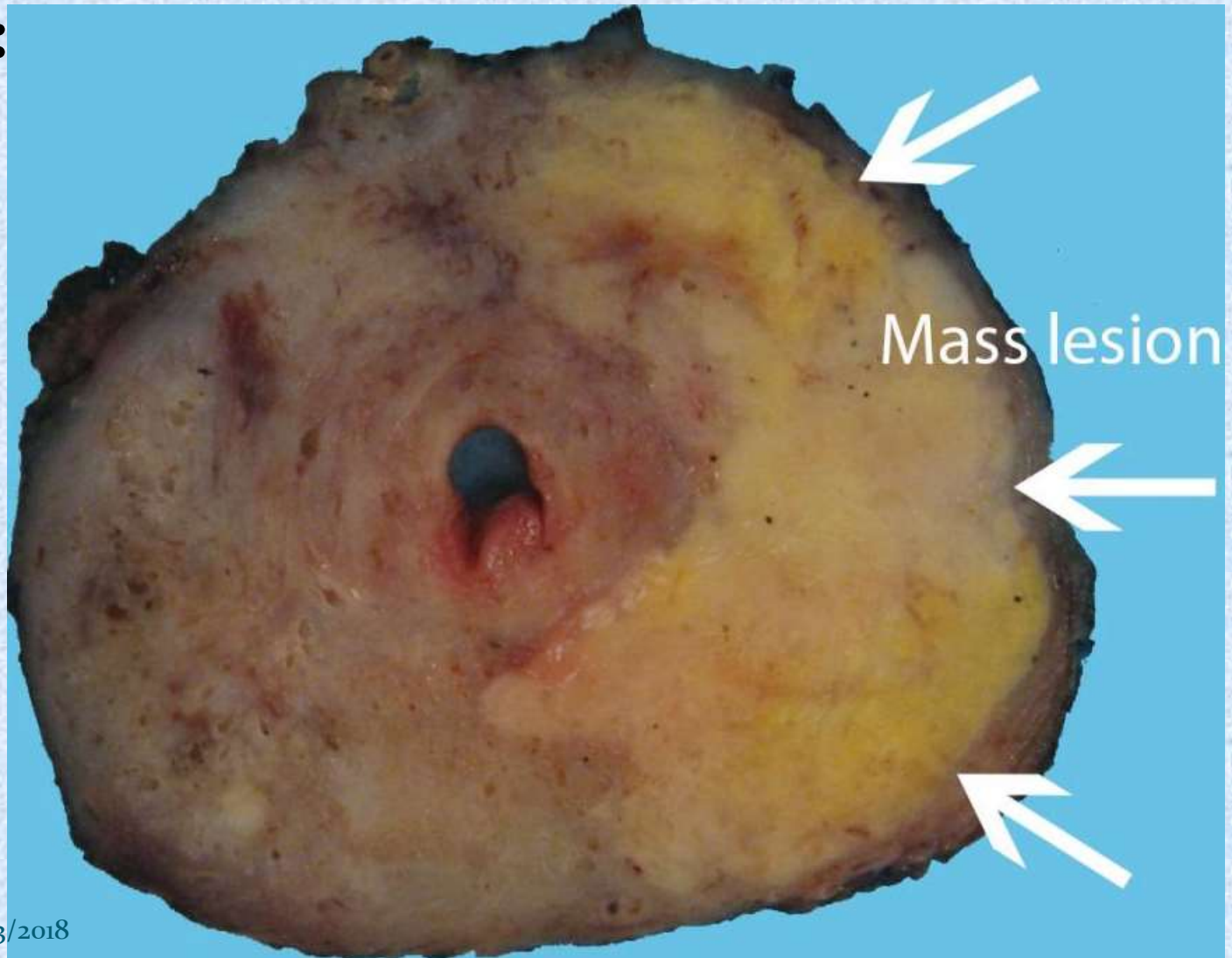
■ Grossly:



Neoplastic lesions

Cancer prostate:

■ Grossly:



Neoplastic lesions

Cancer prostate:

■ MP:

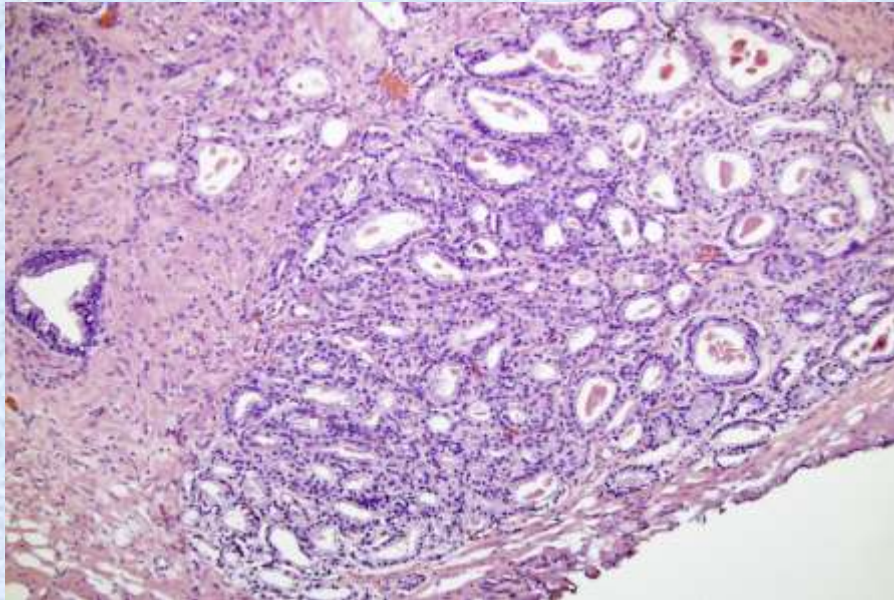
- Proliferated small closely packed prostatic acini.
- Lined by a single layer of atypical cuboidal cells.
- Monotonous cells with high N/C ratio and prominent nucleoli.
- NO myoepithelial cells
- Desmoplastic stroma
- In less differentiated tumors; the acini are irregular with cribriforming and the cells are pleomorphic.
- In poorly differentiated tumors: the cells arrange in cords or nests with rare acini and the cells are highly pleomorphic

Neoplastic lesions

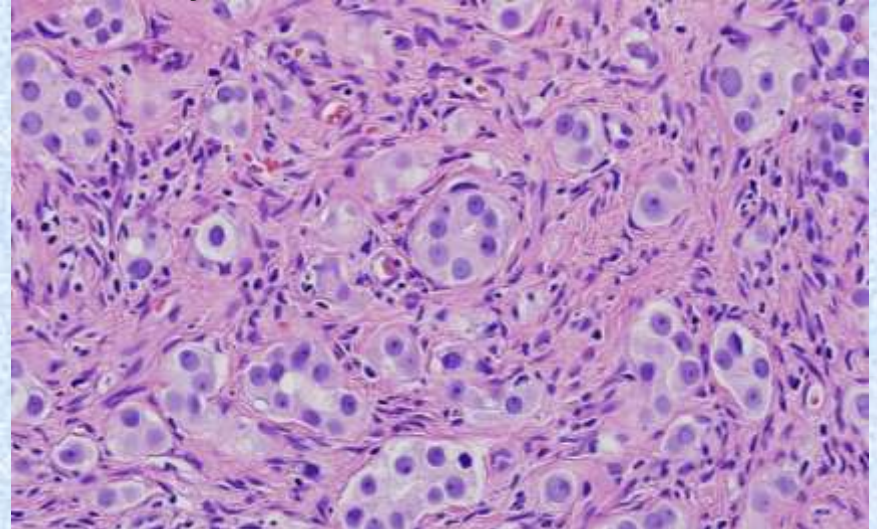
Cancer prostate:

■ MP:

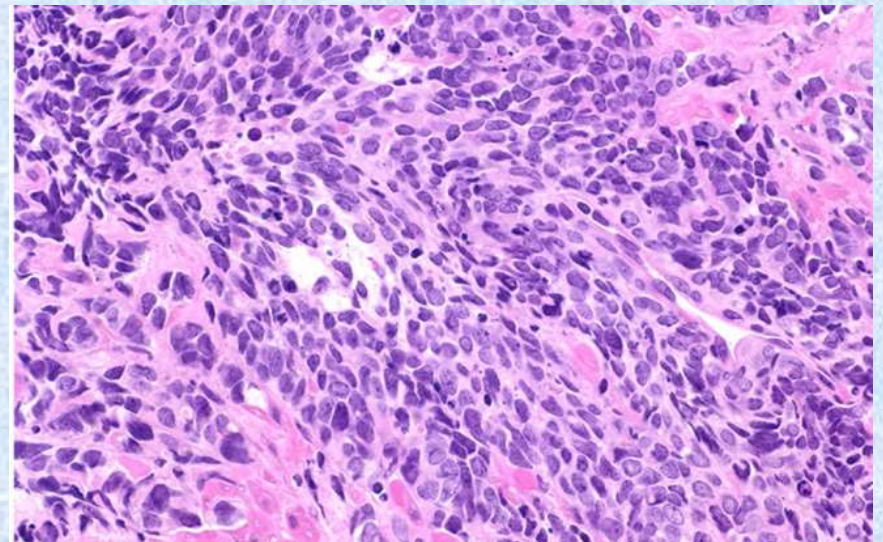
Well-differentiated



Poorly differentiated



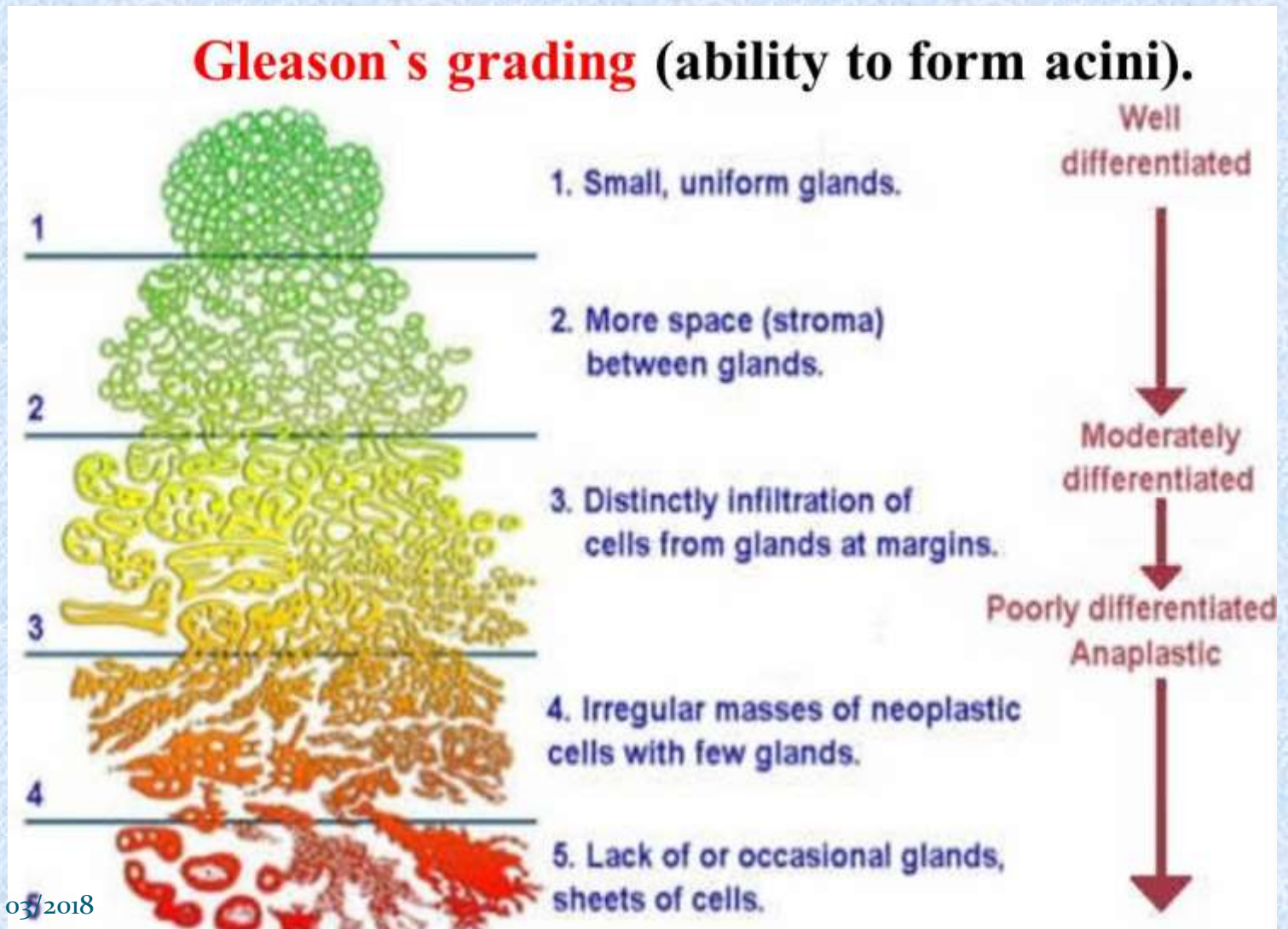
Un-differentiated



Neoplastic lesions

Cancer prostate:

■ MP:



Neoplastic lesions

Cancer prostate:

▪ **Spread of cancer prostate:**

- ❑ Direct: urethra (obstruction and urine retention), UB and seminal vesicles.
- ❑ Lymphatic: para-iliac and para-aortic and less frequently to inguinal LNs.
- ❑ Peri-neural invasion: very frequent leading to severe pain
- ❑ Blood spread: to lung, liver, bone and brain. Metastatic to bone (vertebral bodies) is frequent and usually osteosclerotic.

Neoplastic lesions

Cancer prostate:

■ **Diagnosis of cancer prostate:**

- Early detection: by screening of serum prostatic specific antigen (PSA) level.
- Rectal examination (PR) for clinical assessment.
- Trans-rectal ultrasound guided (TRUS) biopsy.
- Follow up of patients by serum PSA and serum prostatic acid phosphatase.

Common terms

- **Hydrocele**

- Pathological accumulation of serous fluid around testicles.
- Manifested by enlargement of the scrotum.

- **Varicocele**

- Dilation of scrotal veins causing obstruction and malfunction of circulation
- Manifested by engorgement and elongation of vessels with dull aching pain of the scrotum

Thank you