

Pathology of Prostate Gland

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Lecturer

Anatomical Pathology Discipline



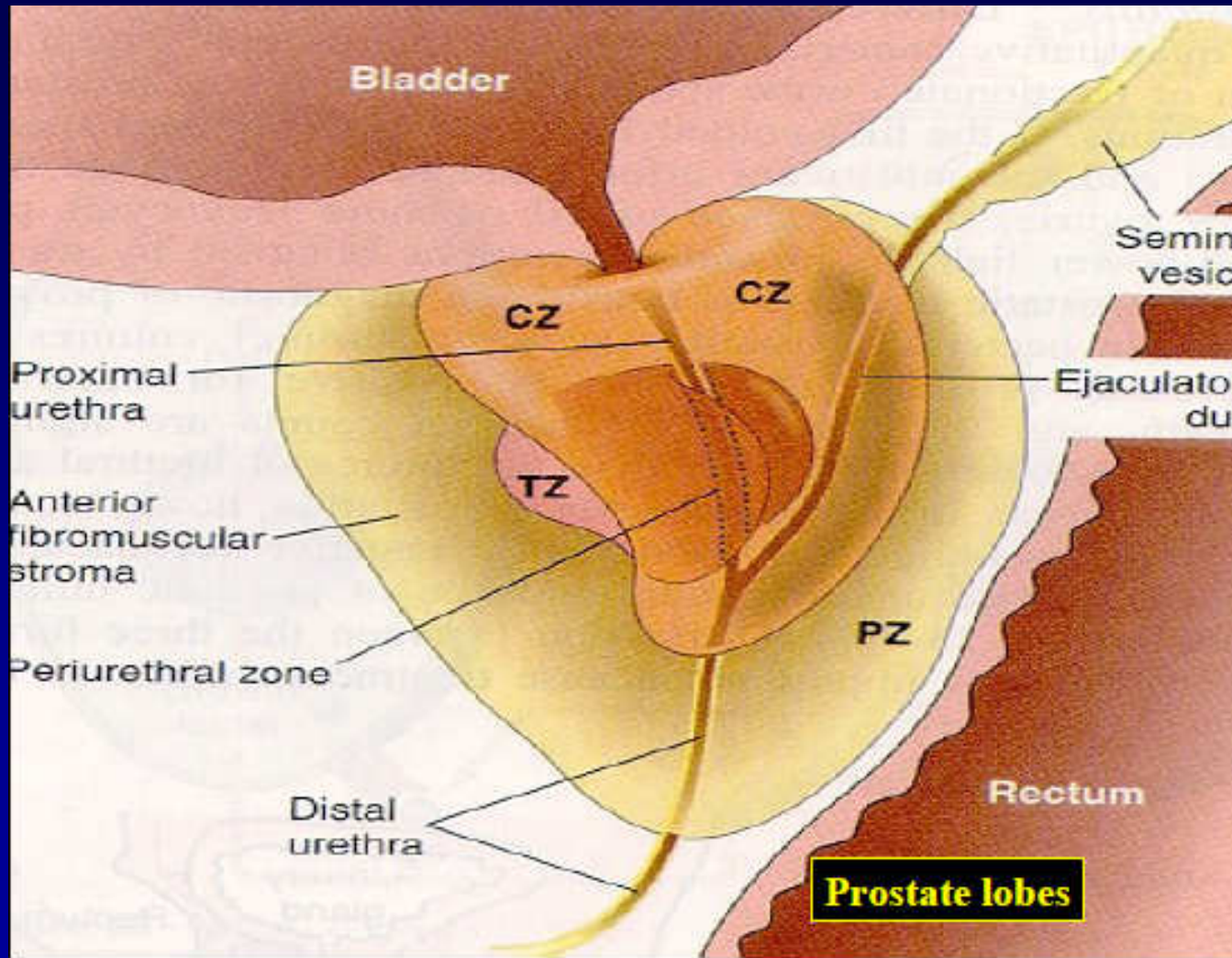
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Anatomy Review

Normal prostate

- The prostate is a retroperitoneal organ encircling the neck of the bladder and urethra and is devoid of a distinct capsule.
- In the normal adult, the prostate weighs approximately 20 gm.
- In the adult, prostatic parenchyma can be divided into four biologically and anatomical distinct zones or regions: the peripheral, central, transitional, and periurethral zones.

Regions of prostate gland



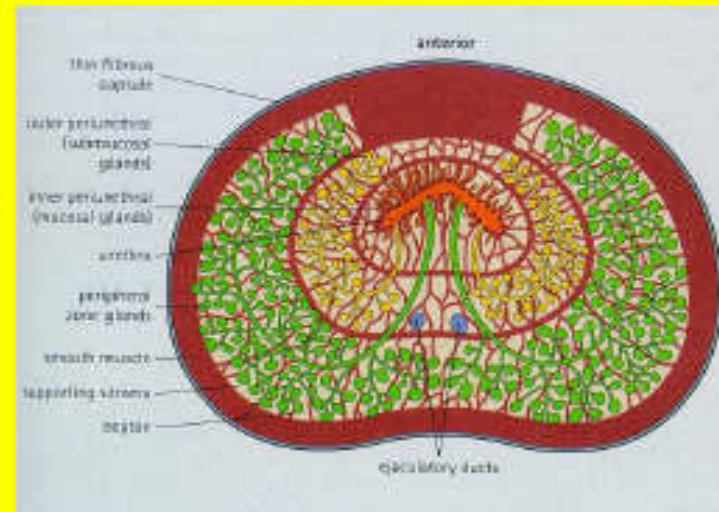
Ref: Robins Pathological Basis of Diseases, 6th Ed.

Zones – Prostate Gland

Anatomy of...

The prostate has 3 distinct zones:

- **central zone** which occupies 25% of the gland's volume. This zone consists of mucosal glands which open directly into the urethra.
- **peripheral zone** which is 70%, and also the major site of prostatic cancer. The glands of this zone open into the urethra via long ducts.
- **transition zone** which is of medical importance because it is the site where most benign prostatic hyperplasia originates. Glands of this zone are submucosal, and they open into the urethra via short ducts.



Prostate Pathology

- Inflammations
- Benign Enlargement (BPH)
- Carcinoma

Inflammations of Prostate Gland

- Acute or chronic postatitis
- Acute or chronic bacterial prostatitis
 - Culture of Urine or expressed prostatic sections positive
- Chronic abacterial prostatitis
 - Negative growth

Pathophysiology of Prostatitis

- Acute bacterial prostatitis – suppurative inflammation of prostate gland
- E.coli common cause. Other gram negative rods, enterococci and staphylococci.
- Bacteria implanted in prostate via:
 - intra-prostatic reflux of urine from posterior urethra or bladder
 - Lymphatic from distant site
 - Following surgical procedures

Clinical Presentation & Dx

- Fever
- Chills
- Dysuria
- PR – tender boggy prostate gland
- Diagnosis confirmed by urine culture or expressed prostate secretions culture
- Good prognosis if treated quickly

Chronic bacterial prostatitis

- Chronic bacterial prostatitis – difficult to diagnose
- Clinically presentation:
 - Asymptomatic
 - Low back pain, dysuria, perineal and suprapubic discomfort
- Diagnosis confirmed by documentation of leucocytosis in expressed prostatic secretions with positive bacterial growth

Chronic abacterial prostatitis

- Common form of prostatitis
- Clinically indistinguishable from chronic bacterial prostatitis.
- No history of recurrent UTI
- Common in sexually active men. ?STI
- Diagnosis confirmed by documentation of leucocytes in expressed prostatic secretions with negative bacterial growth

Benign Prostatic Hyperplasia

- Common in men over age 50. ? Normal aging
- Incidence - 20% in men over 40, 70% in men by 60 & 90% by 70 years of age.
- Characterized by:
 - Hyperplasia of prostatic stromal, and epithelial cells (transitional zone)
 - Form large discrete nodules in the periurethral region
 - Enlarge to compress urethral canal causing partial or complete obstruction

Pathogenesis of BPH

- Dihydrotestosterone (DHT) has major role in hyperplasia
- DHT is a metabolite of testosterone
- Synthesized in prostate from circulating testosterone by 5 alpha reductase enzyme (located in stromal cells)
- DHT act in an autocrine fashion on stromal cells and paracrine fashion on epithelial cells and induce cell growth.

Pathogenesis of BPH

- Clinical observation – 5 alpha reductase inhibitors reduce prostatic hyperplasia
- However, not all patients with BPH respond to this treatment. ? Other hormones involved.
- Diagnosed clinically – symptoms, history and PR examination.
- Clinically present with:
 - Urinary frequency
 - Nocturia
 - Difficulty starting & stopping stream of urine
 - Acute retention – surgical emergency

Carcinoma

- Prostate carcinoma is most common form of cancer in men worldwide (followed by lung cancer)
- Common over age 50
- Adenocarcinoma is the common type

Carcinoma Risk Factors

- Direct causes unknown.
- 70% arise in peripheral zone
- Age – common after 50
- Race – common among some race but not in others.
- Family history – positive history more risk
- Hormone levels – various. ? DHT ? Estrogen ?
Testosterone
- Environmental factors – smoking = high risk

Grading & Staging

- Gleason system is widely used to grade prostate carcinoma
- Gleason grading system based on histological features (glandular pattern & degree of differentiation).
- 5 Grades: Grade I – IV. Read up.
- Grading determines prognosis.
- Staging – TNM classification.
- 4 stages . Stage 1-4. Read up.

Carcinoma – Clinical Presentation

- Depends of stage
- Early stage – asymptomatic.
- PR examination:
 - Palpable in rectal exam
 - Gritty and firm
- Metastasis: Spread by direct local invasion and through blood stream and lymph
- Local extension most commonly involves the seminal vesicles and the base of the urinary bladder

Prostate Carcinoma - Metastasis

- Lymph node metastasis
 - obturator nodes, perivesical nodes, hypogastric, iliac, presacral & para-aortic nodes.
 - Lymph node spread precedes bony metastasis.
- Hematogenous extension occurs chiefly to the bones (axial bones)
- The bony metastasis are typically osteoblastic .
- In descending order: lumba spine, proximal femur, pelvis, thoracic & ribs.

Carcinoma - diagnosis

- Careful digital exam may detect some early cancers ? Screening programs
- PSA (Prostate Specific Antigen) has been used in the diagnosis and management of prostate cancer
- PSA is organ specific but not cancer specific
- Could be increased in BPH
- 20% - 40% of prostate confined (i.e. not metastasized) cancers have low or normal PSA

Laboratory Diagnosis

- Urine – microscopy and culture
- Expressed prostatic secretions – microscopy and culture.
- Prostate Specific Antigen – organ specific but not cancer specific (Collect blood sample before PR exam).
Good for monitoring Rx.
- ? Screening programs
- Biopsy for tissue diagnosis and grading (Gleason grading system)
- Other tests e.g. transrectal ultrasonography, x-ray for clinical staging (TNM classification)

End

Main Reference: Robins Pathological
Basis of Diseases, 6th Ed. Chapter 23
on The male genital tract.

Download seminar notes on:

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File in PDF and PPT format

Feedback

What was presented well and you understood concepts?

What was not presented well and not understood well?

How can seminar be improved?

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