Diseases of Male Genetalia

Prostate
- Non-Neoplastic Changes
  - Benign Prostatic Hyperplasia
  - Prostate Carcinoma
    - Glandular Hyperplasia
    - Transition Cell Carcinoma
      - Squamous Cell Carcinoma
    - Undifferentiated Carcinoma
    - Fibromuscular Hyperplasia
    - Hydroceles and Haematoceles

Testis and Epididymis
- Non-Neoplastic
  - Non-Inflammatory
    - Cryptorchidism
    - Testicular Torsion
    - Varicoceles
  - Inflammatory
    - Granulomatous Orchitis
    - Tuberculous Epididymo-Orchitis

- Neoplasm
  - Germ Cell Tumor
    - Seminoma
    - Embryonal Carcinoma
    - Teratocarcinoma
    - Choriocarcinoma
    - Mixed Germ Cells Tumors
      - Yolk Sac Tumors
      - Embryonal Carcinoma
    - Teratomas
  - Mixed Germ Cells Tumors
    - Seminoma
    - Embryonal Carcinoma
    - Teratocarcinoma
    - Choriocarcinoma
    - Mixed Germ Cells Tumors
  - Sex Cord Stromal Tumor
    - Sertoli Cells Tumor
    - Leydig Cells Tumor
  - Carcinoma In Situ
  - Squamous Cells Carcinoma
  - Carcinoma In Situ
  - Squamous Cells Carcinoma
  - Bowens Disease
  - Erythroplasia of Queyrat
  - Bowenoid Papulosis

Penis
- Carcinoma In Situ
  - Squamous Cells Carcinoma
  - Carcinoma In Situ
  - Squamous Cells Carcinoma
  - Bowens Disease
  - Erythroplasia of Queyrat
  - Bowenoid Papulosis
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<thead>
<tr>
<th>Disease</th>
<th>Etiology and Epidemiology</th>
<th>Morphology</th>
</tr>
</thead>
</table>
| **Benign Prostatic Hyperplasia** | • Very common, part of aging process  
• Frequently affecting men above 50 years old  
  o 75-80% incidence in men more than 80 years old  
• NOT associated with Adenocarcinoma  
  
**Etiology**  
• Endocrinologic  
• Inflammation  
• Artherosclerosis | **Gross**  
• Prostate is  
  o Nodular  
  o Enlarged  
  o Smooth  
  o Firm  
  o 2-4 times its normal weight  
• Often occurs in the median lobe  

Hyperplasia of three major components of prostate which are glands, fibrous and muscle tissue  

**Glandular Hyperplasia**  
• The most common  
• Acinar glandular structure with delicate Fibrovascular core  
  o Lined by tall columnar epithelium  
  o Peripheral layer of flattened basal cells  

**Fibromuscular Hyperplasia**  
• Aggregates of spindle shape cells  
• Similar to that of Fibromyoma of Uterus | **Microscopic**  

Clinical Features  
• Frequency  
• Nocturia  
• Difficulty in Micturition  
• Pain  
• Hematuria  

Complications  
• Urinary bladder hypertrophy  
• Cystitis  
• Hydroureter  
• Hydronephrosis
### Prostate Gland Neoplasm

#### Disease

<table>
<thead>
<tr>
<th>Prostate Carcinoma</th>
<th>Etiology and Epidemiology</th>
<th>Morphology</th>
<th>Microscopic</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Adenocarcinoma (most common)</td>
<td>• 2nd most common cancer in men after lung cancer</td>
<td>• Architectural disturbances</td>
<td>o Loss of intraacinar papillary pattern</td>
</tr>
<tr>
<td>• Transitional Cell Carcinoma</td>
<td>• Happen in men after the age of 50</td>
<td>o The acini can be</td>
<td>• Back to back</td>
</tr>
<tr>
<td>• Squamous Cell Carcinoma</td>
<td>• More incidence (50%) after the age of 80</td>
<td>• Haphazardly</td>
<td></td>
</tr>
<tr>
<td>• Undifferentiated Carcinoma</td>
<td>• Often asymptomatic</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Clinical Features
- Detected upon rectal examination
  - Hard
  - Nodular gland fixed to surrounding tissue

#### Symptoms
- Dysuria
- Frequency
- Retention of urine
- Haematuria
- Back pain due to skeletal metastases

#### Tumor Markers
- Prostatic Acid Phosphatase (PAP)
- Prostate-Specific Antigen (PSA)

#### Etiology
- **Endocrinologic factor**
  - Androgen is the main culprit
  - The starts of carcinogenesis when the Androgen level is high
  - Remain latent after the Androgen level drops upon age

- **Racial and Geographic influences**
  - Rare in Asians
  - Common in Scandinavians
  - All have the same incidence of latent carcinoma

- **Genetic factors**
  - Family clustering
  - Cancer in first degree relative

#### Metastases
- **Direct spread**
  - Prostatic capsule and beyond
- **Lymphatic**
  - Lymph nodes
    - Obturator (the earliest)
    - Sacral
    - Iliac
    - Para-aortic
- **Haematogenous**
  - Bone
  - Lumbar spine
  - Lungs
  - Kidneys
  - Brain
  - Breast

#### Gross
- Enlarged, normal or smaller size prostate
- 95% happens at the Posterior lobe
- Malignancy is firm and fibrous
- Cut surface
  - Homogenous
  - Irregular yellowish areas

#### Staging and Grading
- **Staging**
  - **Stage A**
    - Accidental finding
  - **Stage B**
    - Palpable upon rectal exam
    - But confined to the prostate
  - **Stage C**
    - Extended into surrounding tissue
  - **Stage D**
    - Metastases into distant organs

- **Grading**
  - **WHO**
    - Grade 1 – well-differentiated
    - Grade 2 – moderately differentiated
    - Grade 3 – poorly differentiated

- **Gleason’s grading**
  - Degree of glandular formation
  - Growth of tumor in relation to the stroma
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<th>Morphology</th>
</tr>
</thead>
<tbody>
<tr>
<td>°Cryptorchidism</td>
<td>• 0.2% of male adults</td>
<td>• Testis is</td>
</tr>
<tr>
<td></td>
<td>• Etiology</td>
<td>• Massively atrophy begins at about 2 years of life</td>
</tr>
<tr>
<td></td>
<td>• Mechanical</td>
<td>• Small</td>
</tr>
<tr>
<td></td>
<td>• Short Spermatic Cord</td>
<td>• Firm</td>
</tr>
<tr>
<td></td>
<td>• Narrow Inguinal canal</td>
<td>• Fibrotic</td>
</tr>
<tr>
<td></td>
<td>• Adhesion to the Peritoneum</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Genetic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Trisomy 13 (Patau syndrome)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Hormonal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Deficient Androgens secretion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Clinical Features</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Completely asymptomatic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Found accidentally upon physical exam</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Orchiopexy should be done before the age of 2-3 to reduce the risk of having</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Embryonal Carcinoma</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Seminoma</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Mostly Unilateral</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 25% bilateral</td>
<td></td>
</tr>
<tr>
<td>°Testicular Torsion</td>
<td>• May occur in either</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Descended Testis (more common and severe)</td>
<td>• Massive haemorrhage</td>
</tr>
<tr>
<td></td>
<td>• Undescended Testis</td>
<td>• Coagulative necrosis</td>
</tr>
<tr>
<td></td>
<td>• Sterility and infertility</td>
<td>• Haemorrhagic infarct due to sudden blockade of venous drainage</td>
</tr>
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<td>---------------------------------------</td>
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<td>---------------------------------</td>
</tr>
</tbody>
</table>
| **Nonspecific Epididymitis and Orchitis** | Can be either  
|                                        | o Acute  
|                                        | o Chronic  
|                                        | o Spread of infections from  
|                                        | o Vas deferens  
|                                        | o Lymphatic  
|                                        | o Haematogenous  
|                                        | o Infection caused by  
|                                        | o Urethritis  
|                                        | o Cystitis  
|                                        | o Prostatitis  
|                                        | o Seminal vesiculitis  
|                                        | o Etiological factor  
|                                        | o Virus  
|                                        | ▪ Mumps  
|                                        | ▪ Small pox  
|                                        | ▪ Dengue  
|                                        | ▪ Influenza  
|                                        | o Pneumonia  
|                                        | o Filariasis  
|                                        | In acute stage  
|                                        | ▪ Testis becomes  
|                                        | o Firm  
|                                        | o Tense  
|                                        | o Swollen  
|                                        | o Congested  
|                                        | ▪ Multiple abscess especially in Gonorrhoea  
|                                        | Acute stage  
|                                        | ▪ Congestion  
|                                        | ▪ Edema  
|                                        | ▪ Infiltration of Neutrophils  
|                                        | ▪ Abscess  
|                                        | Chronic stage  
|                                        | ▪ Focal/ diffuse chronic inflammatory response  
|                                        | ▪ Loss of seminiferous tubule  
|                                        | ▪ Scarring  
|                                        | ▪ Destruction of Leydig cells  
| **Granulomatous Orchitis**             | Rare, tender testicular enlargement of middle age men  
|                                        | May be due to  
|                                        | o Acid fast products of disintegrated sperms  
|                                        | o Post infection  
|                                        | o Trauma  
|                                        | o Sarcoidosis  
|                                        | Solid  
|                                        | Unilateral  
|                                        | Nodular enlargement of Testis  
|                                        | Lymphocytes and plasma cells infiltrate  
|                                        | Giant cells formation  
|                                        | Histiocytes  
| **Tuberculous Epididymo-Orchitis**     | Secondary TB, results from dissemination of infections  
|                                        | Begins from the Epididymis to the Testis  
|                                        | Discrete  
|                                        | Yellowish  
|                                        | Caseating necrosis area  
|                                        | Numerous tubercles  
|                                        | Coalesce of tubercles forming large caseous necrosis  
|                                        | Numerous acid fast bacilli |
**Testis and Epididymis**

### Neoplasm

- **Etiological factors**
  - Cryptorchidism
  - Developmental disorder
  - Genetic factor
  - Other
    - Orchitis
    - Trauma
    - Carcinogens

- **Tumor markers**
  - Alpha 1 Fetoprotein
  - Beta Human Chorionic Gonadotrophin
  - Lactate Dehydrogenase

- **Staging**
  - Stage 1 – confined to Testis
  - Stage 2 – distant spread but confined to Retroperitoneum below the Diaphragm
  - Stage 3 – distant metastases beyond Retroperitoneum
  - Stage 1 – radiosensitive (good prognosis)
  - Stage 2 and 3 – radioinsensitive (poor prognosis)

### Germ Cell Tumors (GCT)

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</table>
| Classical Seminoma | - The most common carcinoma of the Testis  
|                   | - 40 years old men  
|                   |   - In women called as Dysgerminoma  
|                   |   - Also present in  
|                   |     - Mediasternum  
|                   |     - Pineal gland  
|                   |     - Retroperitoneum  
|                   |   - Undescended testis harbour more Seminoma  
|                   | - The best prognosis compared to GCT  
|                   |   - Radiosensitive  
|                   | - Bulky  
|                   | - Cut surface  
|                   |   - Well demarcated (not invade Tunica Albuginia)  
|                   |   - Homogenous  
|                   |   - Lobulated  
|                   | - Doesn’t replace the whole testis  
|                   | - Variegated  
|                   | - Poorly demarcated with haemorrhage and necrosis  
|                   | - Invade the Tunica Albuginia  
|                   | - Pattern  
|                   |   - Tubular  
|                   |   - Papillary  
|                   |   - Solid  
|                   | - Cells are  
|                   |   - Large  
|                   |   - Primitive looking  
|                   |   - Basophilic cytoplasm  
|                   |   - Indistinct border  
|                   |   - Large nuclei with prominent nucleoli  

- Embryonal Carcinoma
  - Usually affect men at the age of
    - 20
    - 30
  - Pure GCT – 2%
  - Mostly NSGCT having Embryonal Carcinoma
  - 65% metastases to distant area upon diagnosis
  - Large uniform cells
  - Distinct cell membrane
  - Abundant clear cytoplasm
  - Large central nuclei
  - 1-2 prominent Nucleoli
  - Tumors divided into lobules by delicate fibrous septa
  - T cells and plasma cells infiltrate
  - Granulomatous reaction in 20% of cases

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| Yolk Sac Tumor   | • Common at the age of 3 or less                                                        | • Large noncapsulated | • Pathognomonic  
• Scillier Duvall bodies  
• Primitive glomeruli  
• Cuboidal epithelial cells arranged in  
• Sheets  
• Glands  
• Papillae  
• Eosinophillic hyaline globules |
|                  | • In adults, often mixed with Embryonal Carcinoma                                          | • Homogenous  
• Yellow-white  
• Multicystic  
• In adult  
• Haemorrhage  
• Necrosis |
|                  | • Unilateral  
• Tumor marker  
  o Alpha 1 Fetoprotein |
| Choriocarcinoma  | • Extremely rare  
• Serum level of hCG is markedly high                                                      | • Small  
• Soft  
• Haemorrhagic  
• Necrotic mass |
| Teratomas        | • Contain cellular components derived from either 2 or 3  
  o Ectoderm  
  o Mesoderm  
  o Endoderm  
• Children  
  o 2nd after yolk sac tumor  
  o Often BENIGN  
• Adult  
  o Rare  
  o Often considered MALIGNANT |
|                  | • Large  
• Multinodular  
• Heterogenous  
• In adult  
  o Solid  
  o Cartilaginous  
  o Cystic |
|                  | • Mature Teratoma  
  o Differentiated cells (organoid)  
    ▪ Cartilaginous  
    ▪ Nerve  
    ▪ Epithelium  
  o Immature Teratoma  
    o Primitive/embryonic tissue  
    o Poorly formed  
    ▪ Cartilage  
    ▪ Mesenchyme  
    ▪ Nerve  
  o Teratoma with Malignant transformation  
    o Extremely rare  
    o One or more tissue shows malignant transformation  
    o Usually  
      ▪ Squamous cell carcinoma  
      ▪ Adenocarcinoma |
## Penis
### Neoplasms

#### Premalignant lesions
- Bowen’s Disease
- Erythroplasia of Queyrat
- Bowenoid Papulosis

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<tr>
<td>Squamous Carcinoma of the Penis</td>
<td>- Happens in uncircumcised men at the age of 40</td>
<td>- Located at (in decreasing freq)</td>
</tr>
<tr>
<td></td>
<td>- Risk factor</td>
<td>- Fenum</td>
</tr>
<tr>
<td></td>
<td>- Poor hygiene</td>
<td>- Prepuce</td>
</tr>
<tr>
<td></td>
<td>- HPV type 16-18</td>
<td>- Glans</td>
</tr>
<tr>
<td></td>
<td>- Penile</td>
<td>- Coronal sulcus</td>
</tr>
<tr>
<td></td>
<td>- Injury</td>
<td>- May be</td>
</tr>
<tr>
<td></td>
<td>- Tear</td>
<td>- Cauliflower like</td>
</tr>
<tr>
<td></td>
<td>- Chronic balanitis</td>
<td>- Papillary</td>
</tr>
<tr>
<td></td>
<td>- Genital warts</td>
<td>- Flat</td>
</tr>
<tr>
<td></td>
<td>- Smoking</td>
<td>- Ulcerating</td>
</tr>
<tr>
<td></td>
<td>- Immunocompromised</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Radiation therapy</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Fungating and ulcerating type often well differentiated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Keratin pearl formation</td>
</tr>
</tbody>
</table>