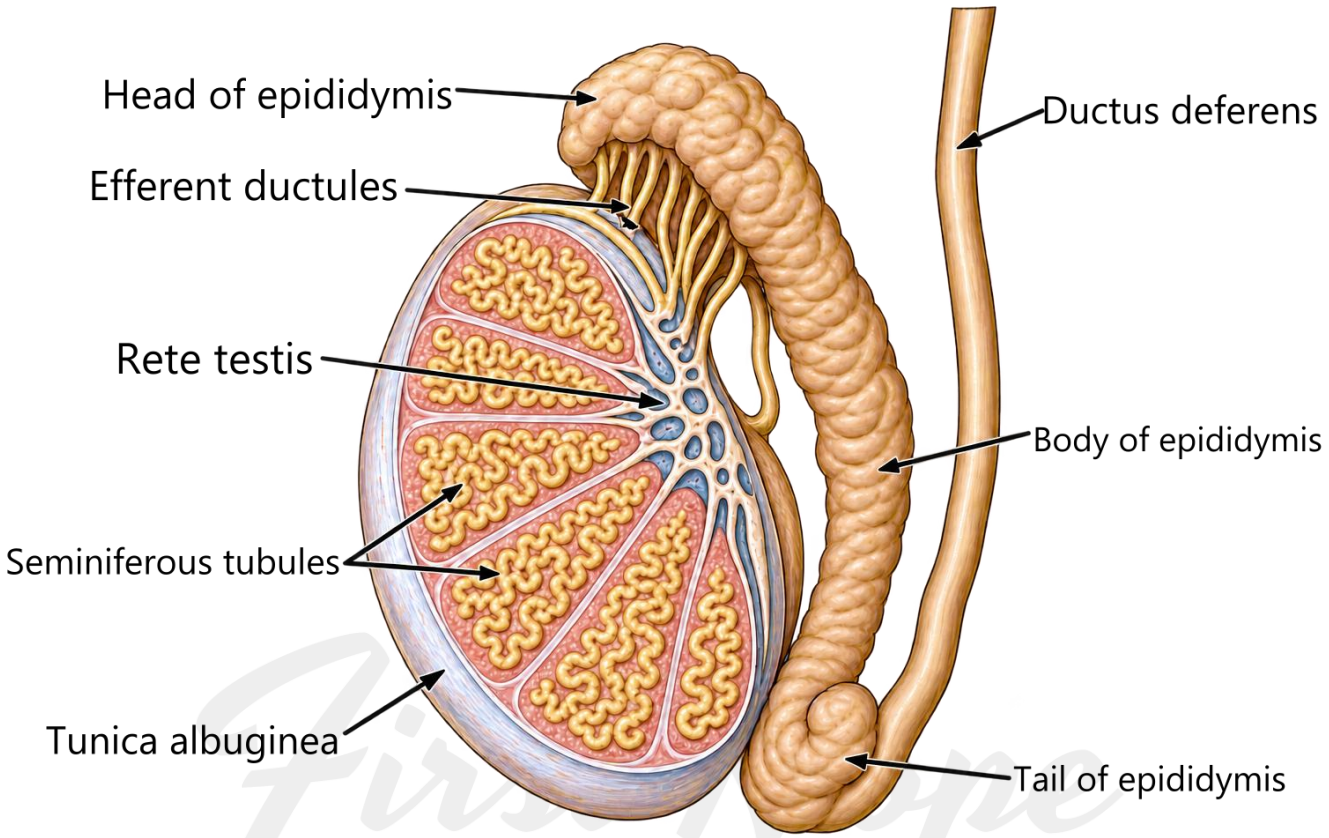
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General Surgery - Topic 30 - Penis, Testis and scrotum

Penis, Testis and Scrotum

Applied Anatomy and Clinical Assessment



The testis, epididymis and ductus deferens form a continuous route for sperm transport

Testicular Function and Ducts

- The testis contains seminiferous tubules that produce sperm and interstitial cells that produce testosterone.
- Sperm passes through the rete testis and efferent ductules into the epididymis before entering the ductus deferens.

Spermatic Cord and Blood Vessels

- The spermatic cord contains the ductus deferens, vessels, nerves and associated coverings.
- The testicular artery arises from the abdominal aorta, reflecting the abdominal origin of the testis.
- The right testicular vein drains into the inferior vena cava, while the left usually drains into the left renal vein.

Lymphatic Drainage

- Testicular lymph drains mainly to retroperitoneal nodes, while scrotal skin drains mainly to superficial inguinal nodes.

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Examination Principles

Permission, Privacy and History

- Explain the examination, obtain consent and arrange privacy and a chaperone as appropriate.
- Ask about onset, pain, fever, trauma, urinary symptoms, sexual history and fertility concerns without making assumptions.

Anatomical Examination and Ultrasound

- Inspect the skin and palpate each testis, epididymis and spermatic cord separately.
- Decide whether a swelling arises within the testis or outside it.
- Examine standing and lying when assessing a varicocele or a possible hernia.
- Transillumination can support a fluid-filled diagnosis, but it does not exclude an underlying testicular lesion.
- Ultrasound with Doppler helps assess a mass or vascular concern when it will not delay treatment of likely torsion.

Phimosis

- Phimosis means that the foreskin cannot be retracted over the glans.

Physiological and Scar-related Tightness

- Non-retractability in a young child is often physiological and does not require forced retraction.
- Pathological phimosis has scarring or another disease process, such as lichen sclerosus.
- Symptoms may include recurrent inflammation, pain, fissuring or difficulty with urination.

Conservative and Procedural Care

- Teach gentle hygiene and avoid forceful manipulation that creates tears and later scarring.
- A topical corticosteroid with a supervised gentle-retraction programme can help suitable symptomatic cases.
- Circumcision or another procedure is selected for persistent pathological disease or other clear indications.
- An acquired scarred foreskin needs assessment for the cause rather than treatment based only on its tightness.

Paraphimosis

Recognition and Urgent Treatment

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- Paraphimosis occurs when a retracted foreskin remains trapped behind the glans and forms a constricting band.
- Venous congestion causes swelling and pain, and prolonged constriction can threaten tissue perfusion.
- It requires urgent reduction with analgesia and an appropriate technique by trained staff.
- If gentle reduction fails or tissue is threatened, a surgical release may be required.
- After reduction, arrange treatment of the underlying problem and teach the patient to return the foreskin after retraction.
- Always replace the foreskin after catheterisation or examination in an uncircumcised patient.

Carcinoma of the Penis

- Most penile cancers are squamous carcinomas.

Risk Factors and Presentation

- HPV infection, smoking, chronic inflammatory disease and phimosis are important associations.
- A persistent ulcer, indurated plaque, growth, bleeding or offensive discharge requires assessment.
- A lesion can be hidden beneath a tight foreskin.
- Examine the entire penile surface and both groins because local extent and nodal disease guide treatment.

Erythroplasia of Queyrat

- **Erythroplasia of Queyrat** is the traditional clinical term for squamous carcinoma in situ on the glans penis or inner preputial mucosa.
- It commonly appears as a persistent, well-defined, velvety red plaque and is now included within penile intraepithelial neoplasia.
- The atypical cells remain within the epithelium in an in-situ lesion, but progression to invasive carcinoma is possible.

Confirmation and Treatment

- Biopsy distinguishes it from balanitis and other red lesions and checks for invasion.
- Treatment is selected by specialists and may include circumcision for preputial disease, topical 5-fluorouracil or imiquimod, laser treatment or local excision.
- Persistent, recurrent or extensive disease requires reassessment and sometimes further excision, with continued follow-up.

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Diagnosis and Staging

- Obtain an appropriate biopsy before planning definitive treatment.
- Assess lesion size, site, depth and relation to the urethra and corporal structures.
- Use selected MRI, ultrasound or staging imaging when it will clarify local or nodal disease.
- Palpable inguinal nodes may be reactive or metastatic, so they require a planned diagnostic pathway.
- Clinically normal groins do not exclude microscopic metastases in a higher-risk primary tumour.
- Sentinel-node assessment or inguinal-node surgery is selected according to tumour risk and specialist expertise.

Pathology, Precursor Lesions and Biopsy

- Most penile cancers are squamous carcinomas, with HPV-associated and HPV-independent pathways.
- Penile intraepithelial neoplasia includes lesions historically termed erythroplasia of Queyrat or Bowen disease; lichen sclerosus is an important associated risk condition.
- Biopsy confirms a suspicious persistent ulcer, growth or indurated lesion and establishes grade and invasion.

TNM and Stage Groups

- Tis is intraepithelial disease; T1 invades subepithelial connective tissue, with T1b indicating lymphovascular or perineural invasion or high-grade disease.
- T2 invades corpus spongiosum, T3 corpus cavernosum and T4 adjacent structures.
- Clinically, N1 is a mobile unilateral inguinal node, N2 multiple or bilateral mobile inguinal nodes and N3 a fixed nodal mass or pelvic adenopathy; pathological categories additionally use node counts and extranodal extension.
- Stage I is T1aN0, IIA T1b or T2N0, IIB T3N0, IIIA T1–3N1, IIIB T1–3N2 and IV T4, N3 or distant metastasis.

Management and Counselling

Primary-Site and Nodal Treatment

- Organ-preserving treatment is preferred when oncologically safe and may include local excision, glans surgery or other selected modalities.
- More extensive invasion may require partial or total penectomy with appropriate urinary reconstruction.
- Nodal treatment is a major determinant of outcome and should not be overlooked after treating the primary lesion.

Advanced Disease and Counselling

- Selected advanced disease requires systemic treatment, radiotherapy or combined care.

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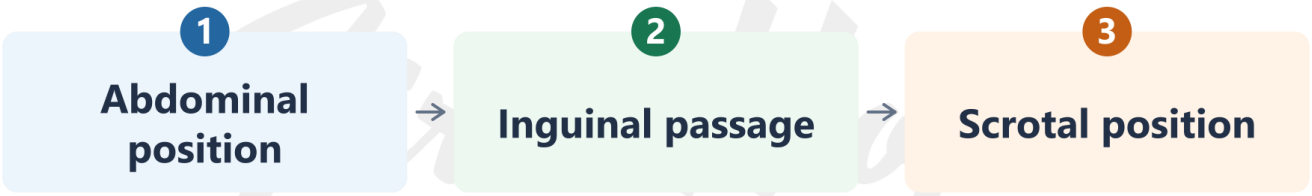
- Discuss urinary function, sexual function, body image, reconstruction and follow-up clearly.
- Offer HPV prevention advice and tobacco-cessation support without blaming the patient.

Penile Cancer: Stage-Directed Management

- Selected superficial or small localised lesions permit organ-preserving treatment, while deeper or extensive disease may require partial or total penectomy.
- Assess inguinal nodes according to clinical findings and primary-tumour risk; a clinically normal groin does not exclude microscopic metastases.
- Node-positive disease may need lymph-node surgery and systemic treatment, while advanced disease requires combined oncology and supportive care.
- Discuss urinary, sexual and psychological consequences and ensure long-term follow-up.

Undescended Testis

Development and Classification



- The testis normally descends from the abdomen through the inguinal canal into the scrotum.

1. Undescended and Ectopic Testes

- An undescended testis stops along this normal route, while an ectopic testis deviates from the route.

2. Retractile Testis

- A retractile testis can be brought into the scrotum without tension and remains there temporarily after the cremaster relaxes.
- This differs from a true undescended testis that cannot remain in the scrotum without tension.

3. Ascending Testis

- An ascending testis was previously scrotal but later remains in a higher position.
- A previously documented scrotal position is therefore important in the history and subsequent examination records.

Palpable and Non-Palpable Testes

- Undescended testes are described as palpable or non-palpable because this guides the next assessment.

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