

What are the organs of male reproductive system ?

Mention the location of the testes?

Objective : To identify the histological structure of the different parts of the system as the testes, genital ducts ( epididymis , vas deferens, ejaculatory duct & urethra ) , accessory glands ( seminal vesicles , bulbourethral & prostate glands ) and penis .

Testes/are paired organs located outside the body cavity in the scrotum

Each testis is surrounded by dense connective tissue is known as tunica albuginea, is thickened on the posterior side of the testis to form\*\* mediastinum testis \*\* from which fibrous septa divide it incompletely into about 250 pyramidal compartments \*\*testicular lobules\*\* .

\*Because of the migration from the abdominal cavity, each testis carries with its serous sac , Tunica vaginalis , derived from ----- ?

Seminiferous tubules

Each testis has 250-1000 seminiferous tubules in its lobules.

Seminiferous tubule is 30-70 cm in length. Each tubule is a convoluted loop linked via a short narrower segment, straight tubule to rete testis which is a labyrinth of epithelium-lined channels embedded in mediastinum testis. 10-20 efferent ductules connect rete testis to the head of epididymis.

What is the lining epithelium of seminiferous tubules ?

What is meant by testicular interstitial tissue ?

Each seminiferous tubule is lined with complex, specialized, stratified epithelium

Two type of cells, one type is dividing (spermatogenic cells), other one is supporting (sertoli cells).

Smooth muscle like myoid cells allow weak contraction of the tubule .

Interstitial cells are located between the seminiferous tubules in the interstitial connective tissue.

When does spermatogenesis begin?

Spermatogonia are located in the basal layer that line the seminiferous tubule.

By several mitotic divisions type A formed then result in formation of type B. Final division , type B gives rise to primary spermatocytes. By 1st & 2nd meiotic , secondary spermatocytes & spermatids formed .

\* Why are the outlines of sertoli cells poorly defined in light microscopy?

Sertoli cells

They are columnar or pyramidal cells ,envelope spermatogenic cells . Base of sertoli cell adheres to basal lamina & its apical part extends to the lumen of seminiferous tubules.

In Light microscopy , the outlines of these cells are poorly defined because of the numerous lateral processes that surround spermatogenic cells.

Interstitial tissue

Connective tissue is located in between the seminiferous tubules . It contains fibroblast, collagen fibers , mast cells , macrophages , nerves , lymphatics , blood vessels including the fenestrated capillaries.

During puberty , Leydig cells ( interstitial cells) become apparent either rounded or polygonal cells with central nuclei & eosinophilic cytoplasm rich in small lipid droplets. It produces testosterone .

## **Intra testicular ducts**

Straight tubules

Rete testis

Efferent ductules

These ducts carry spermatozoa & fluids from seminiferous tubules to epididymis.

Straight tubules lined by cuboidal epithelium supported by dense connective tissue.

\* Compare the lining epithelium between rete testis , efferent ductules & epididymis ?

Rete testis are interconnected network of channels lined by cuboidal epithelium. The channels are embedded in connective tissue of mediastinum.

Rete testis drains into about 20 efferent ductules which lined by unusual epithelium with groups of non ciliated cuboidal & groups of ciliated columnar epithelium, surrounded by smooth muscle fibers .

**Extra testicular genital ducts** epididymis, vas deferens , & urethra

Epididymis is single coiled tube about 4-5 m in length , arranged as a head, body & tail. It lies along the superior & posterior sides of each testis.

Site of sperm storage and maturation including motility, membrane receptors for zona pellucida protein , acrosome maturation and ability of fertilization .

Epididymis is lined tall columnar to pseudo stratified columnar epithelium with long branched irregular microvilli called stereocilia.

Epithelium is supported by basal lamina & surrounded by smooth muscle fibers & loose connective tissue rich in blood capillaries.

Movement of spermatozoa along the duct is aided by muscular contraction .

## **Vas deferens ( ductus deferens )**

Long , straight muscular tube, transports spermatozoa from the tail of ----- to ejaculatory duct. It is contained within -----and continues toward the prostatic urethra. It has narrow lumen , folded mucosa , lined by pseudo stratified columnar epithelium with few stereocilia & fibro elastic lamina propria.

How many muscular layer you see in the figure?

Outer layer is adventitia.

## **Accessory glands**

Secretions of these glands are added to spermatozoa during ejaculation to produce semen, which are essential for reproduction.

\* paired seminal vesicles \* single prostate gland \* paired bulbo urethral glands.

## **Seminal vesicles**

Highly tortuous tubes . Mucosa is folded , lined by simple or pseudost.col.ep. rich in secretory granules . Lamina propria is fibroelastic connective tissue & surrounded by inner circular and outer longitudinal sm.m.fs.

\*produce viscid , yellowish secretion ( lipochrome pigment) containing fructose, citrate, fibrinogen& enzymes

## **Prostate glands/ largest accessory gland**

\* dense organ surrounding urethra below the bladder.

\* collection of 30-50 branched tubulo alveolar glands surrounded by fibro muscular stroma, covered by fibro elastic capsule.

\*arranged in concentric layers. Inner layer mucosal, intermediate submucosal & peripheral layer of main glands.(ducts empty in ----- )

\*simple or pseudo stratified columnar epithelium? Lining the prostatic alveoli.

- \* produce prostatic fluid containing various glycoproteins & enzymes( acid phosphatase) , store this fluid for expulsion during ejaculation.

- \*structure & function is affected with the level of testosterone as seminal vesicles.

Corpora amylacea seen as spherical structure, often calcified inside the alveoli , increase with age .

### **Bulbourethral glands/ Cowper's glands**

- \*Tubulo alveolar ,lined by mucus secreting simple cuboidal to simple columnar epi. dependent on testosterone .

It is located at the root of penis.

It secretes a lubricating solution directly to urethra.

### **Penis**

- \*3 cylindrical masses of erectile tissues plus penile urethra , surrounded by skin .

- \* 2 of the masses corpora cavernosa are placed dorsally,

The other is corpus spongiosum located ventrally & surrounded by urethra .At its end , the corpus spongiosum expands forming glans penis . Most of penile urethra is lined by pseudo stratified columnar epithelium. In glans it becomes stratified squamous continuous with that of thin epidermis covering the glans.

Small mucus secreting urethral glands are found along the length of penile urethra .

Corpora cavernosa are covered by dense c.t. called tunica albuginea .

Presence of large number of venous cavernous spaces lined with endothelial cells and separated by trabeculae of connective tissue fibers and smooth muscle fibers , is erectile tissue .