



# ***Reproduction Block***

## ***Pathology Practicals***

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# **1<sup>st</sup> Practical Session**

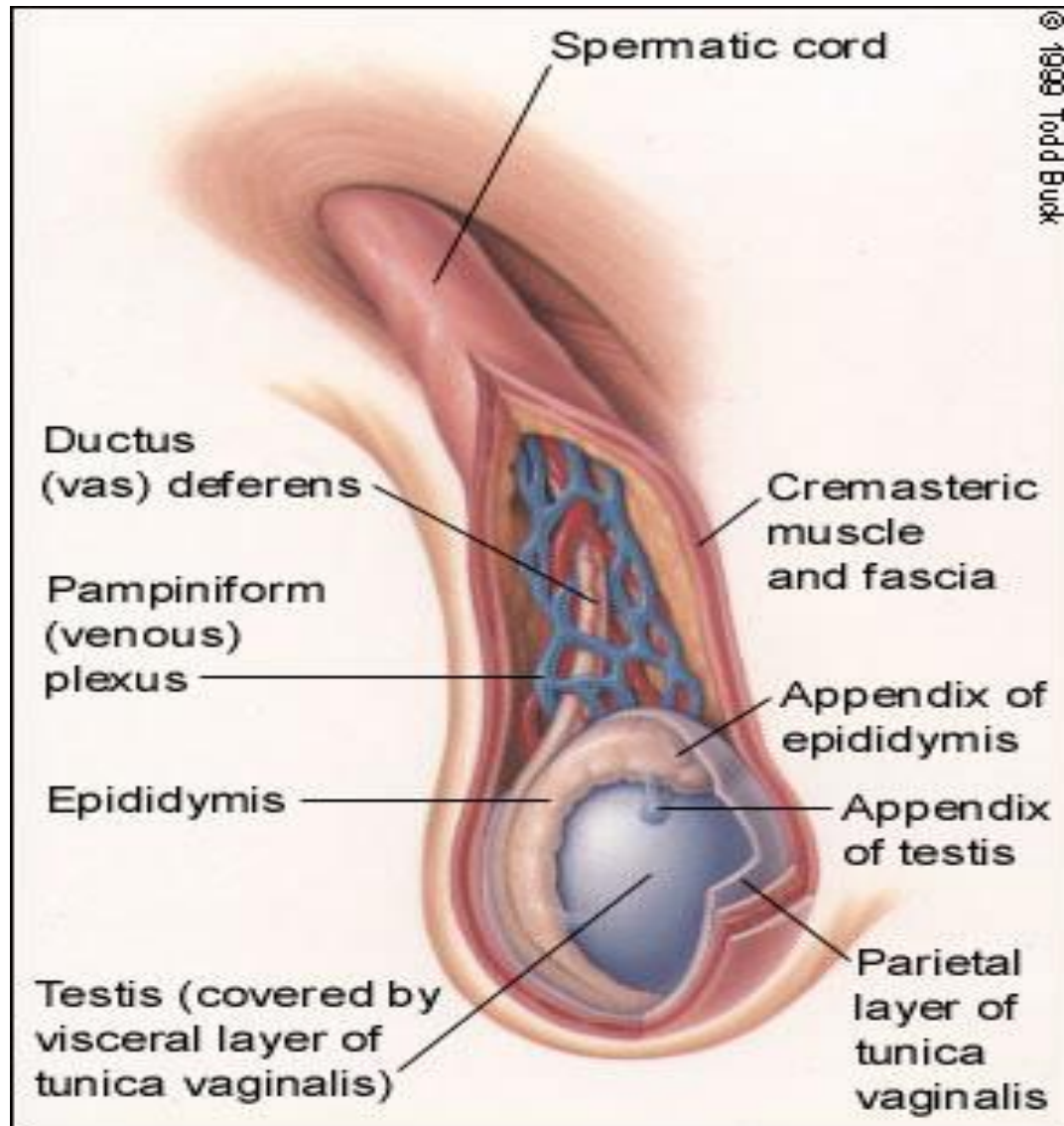
## **MALE GENITAL SYSTEM**



# ***TESTIS***

## ***Normal Anatomy and Histology***

# Diagram of Normal Testis

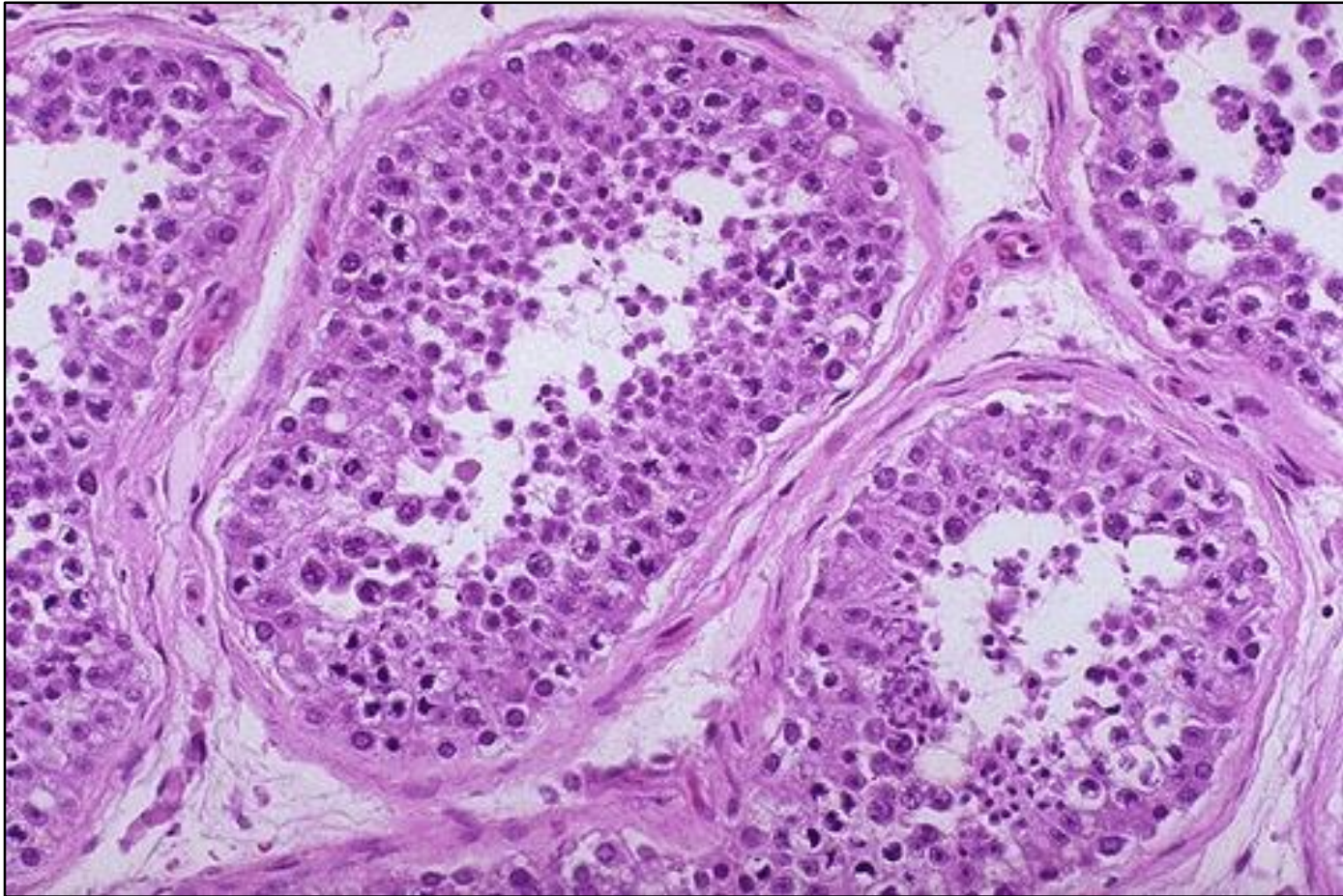


## *Anatomy of Normal Testis - Gross*



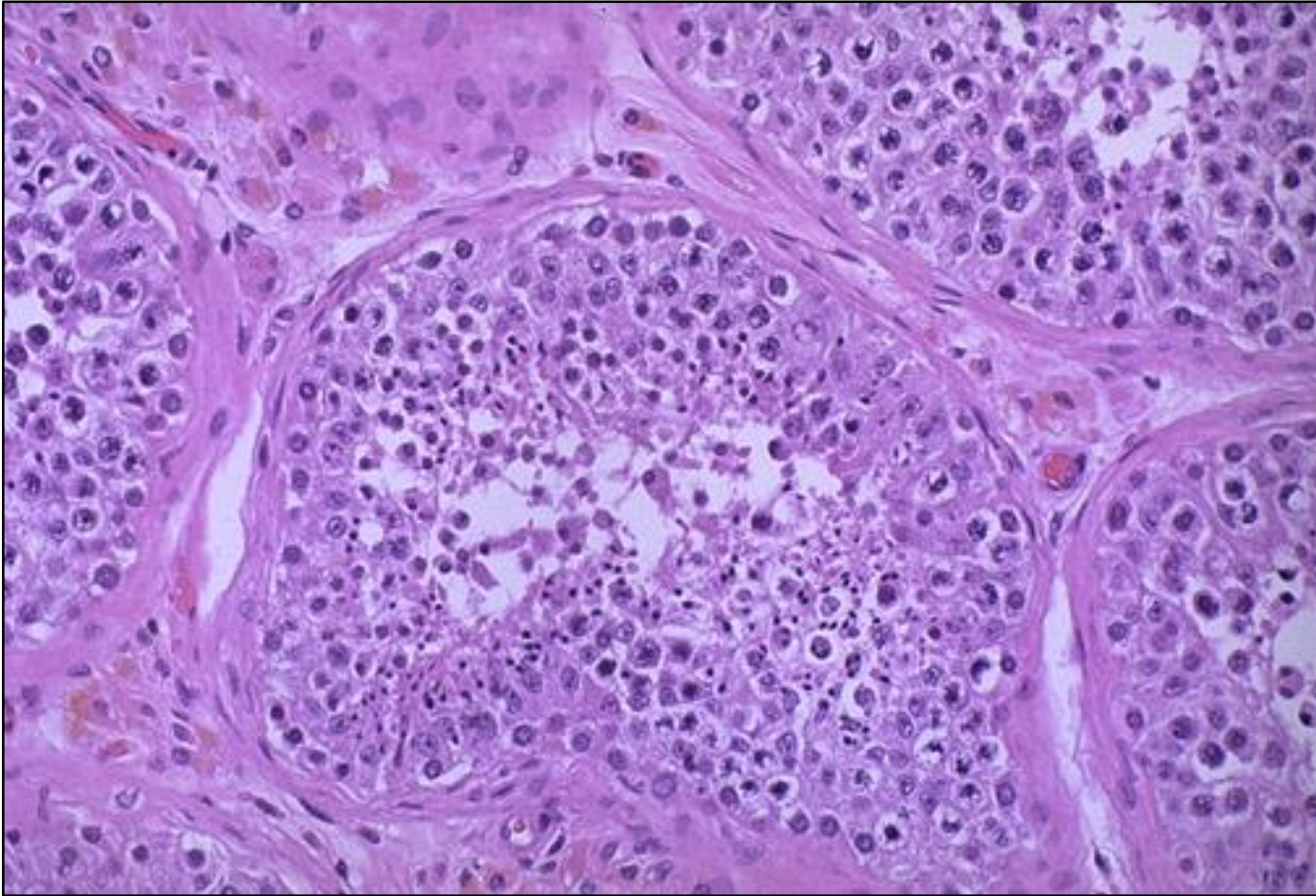
*Here is a normal testis and adjacent structures. Identify the body of the testis, epididymis, and spermatic cord. Note the presence of two vestigial structures, the appendix testis and the appendix epididymis.*

## *Histology of Normal Testis - LPF*



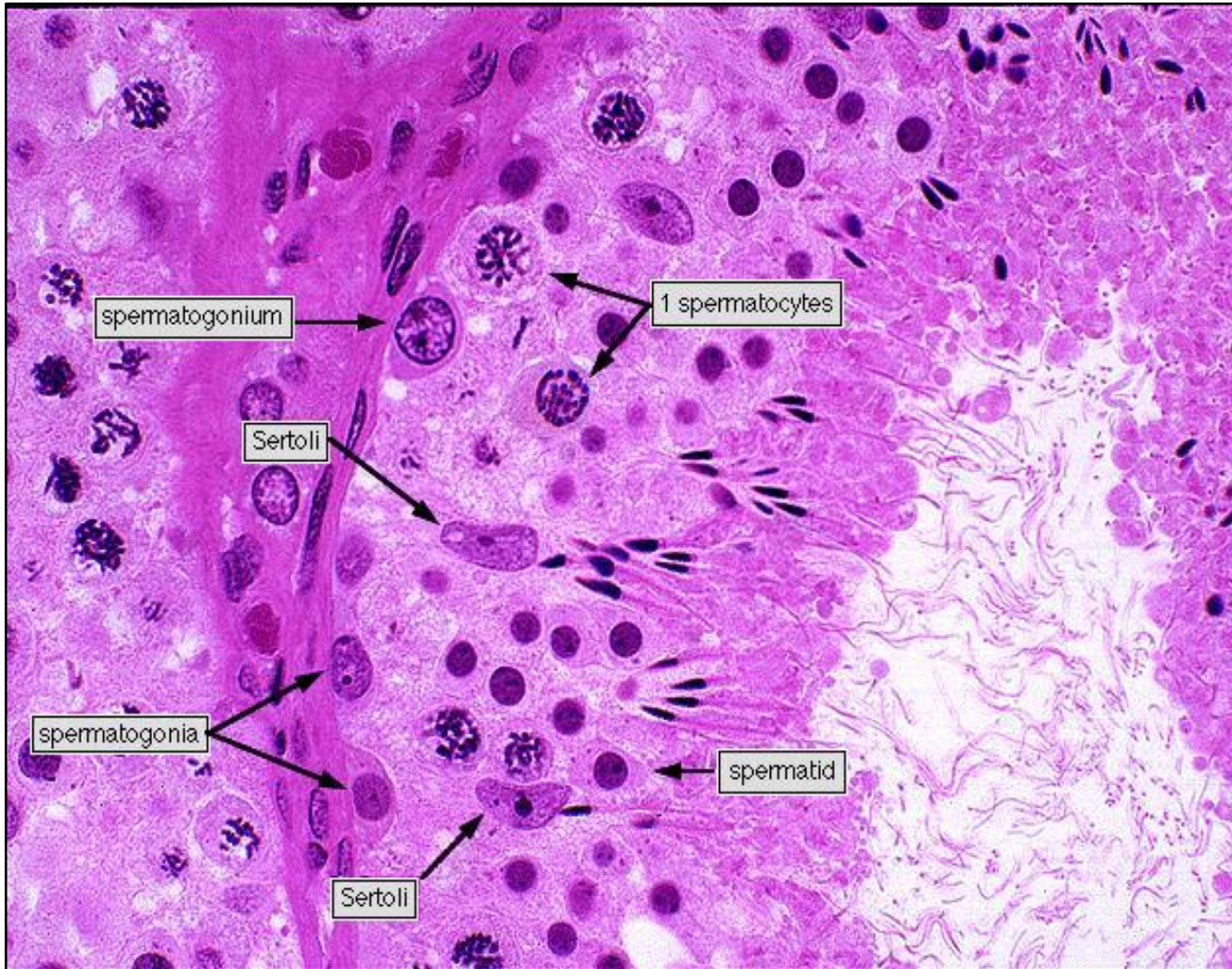
*The seminiferous tubules have numerous germ cells. Sertoli cells are inconspicuous. Small dark oblong spermatozoa are seen in the center of the tubules.*

## *Histology of Normal Testis - LPF*



*Pink Leyding cells are seen here in the interstitium. Note the pale golden brown pigment as well. There is active spermatogenesis.*

# Histology of Normal Testis - HPF





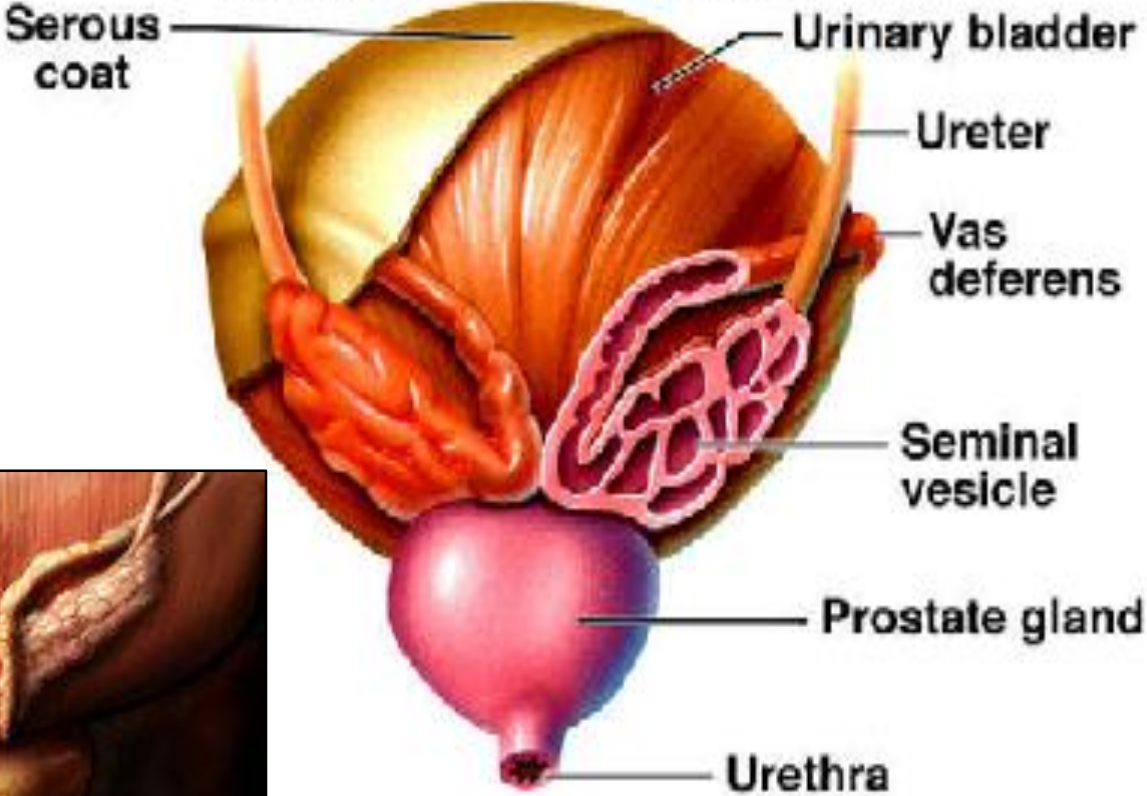


# ***PROSTATE***

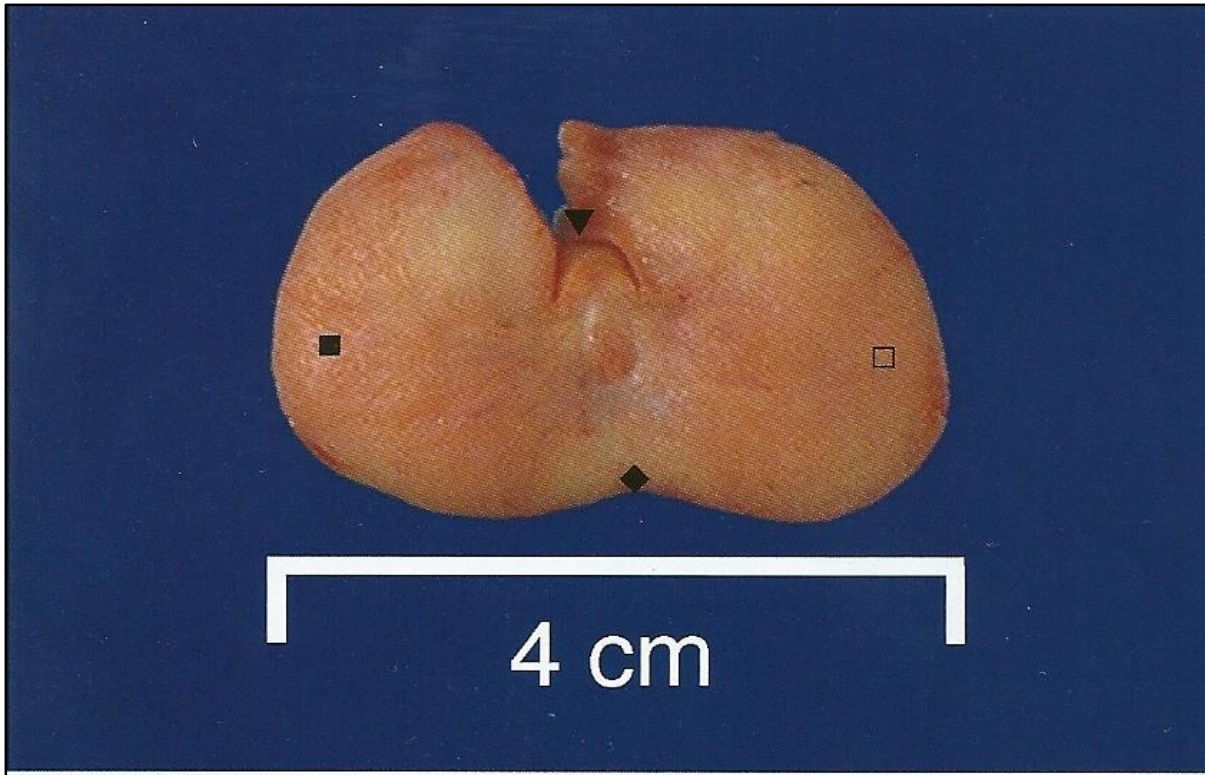
## ***Normal Anatomy and Histology***

# Diagram of Prostate and Seminal Vesicle

## Male Urinary Bladder — Posterior View

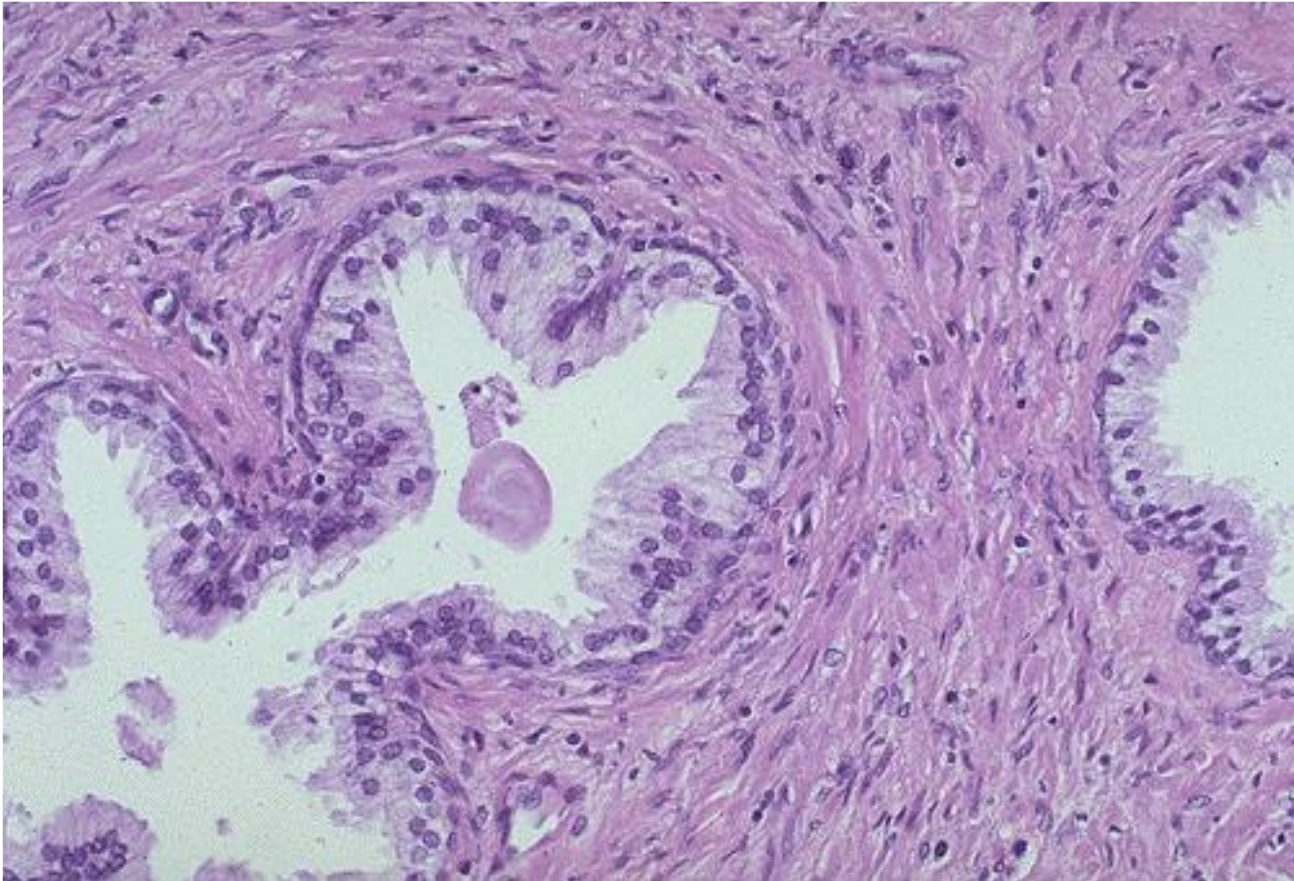


## Normal Prostate - Gross



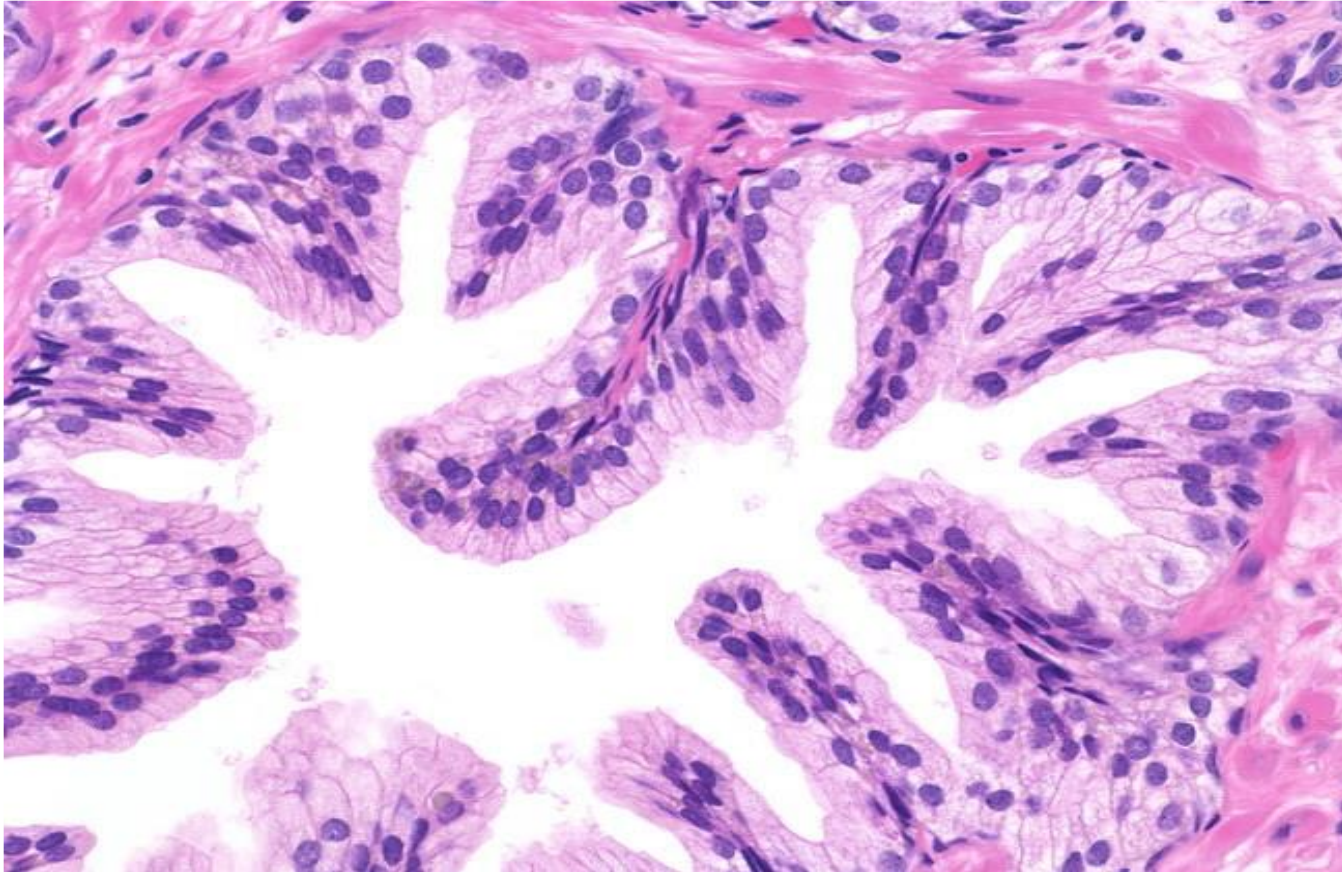
***A normal prostate gland is about 3 to 4 cm in diameter. This is an axial transverse section of a normal prostate. There is a central urethra(▼), at the depth of the cut made to open this prostate anteriorly at autopsy, with the left lateral lobe (■), the right lateral lobe (□), and the posterior lobe (◆). Consistency is uniform without nodularity.***

## Normal Prostate Histology - LPF



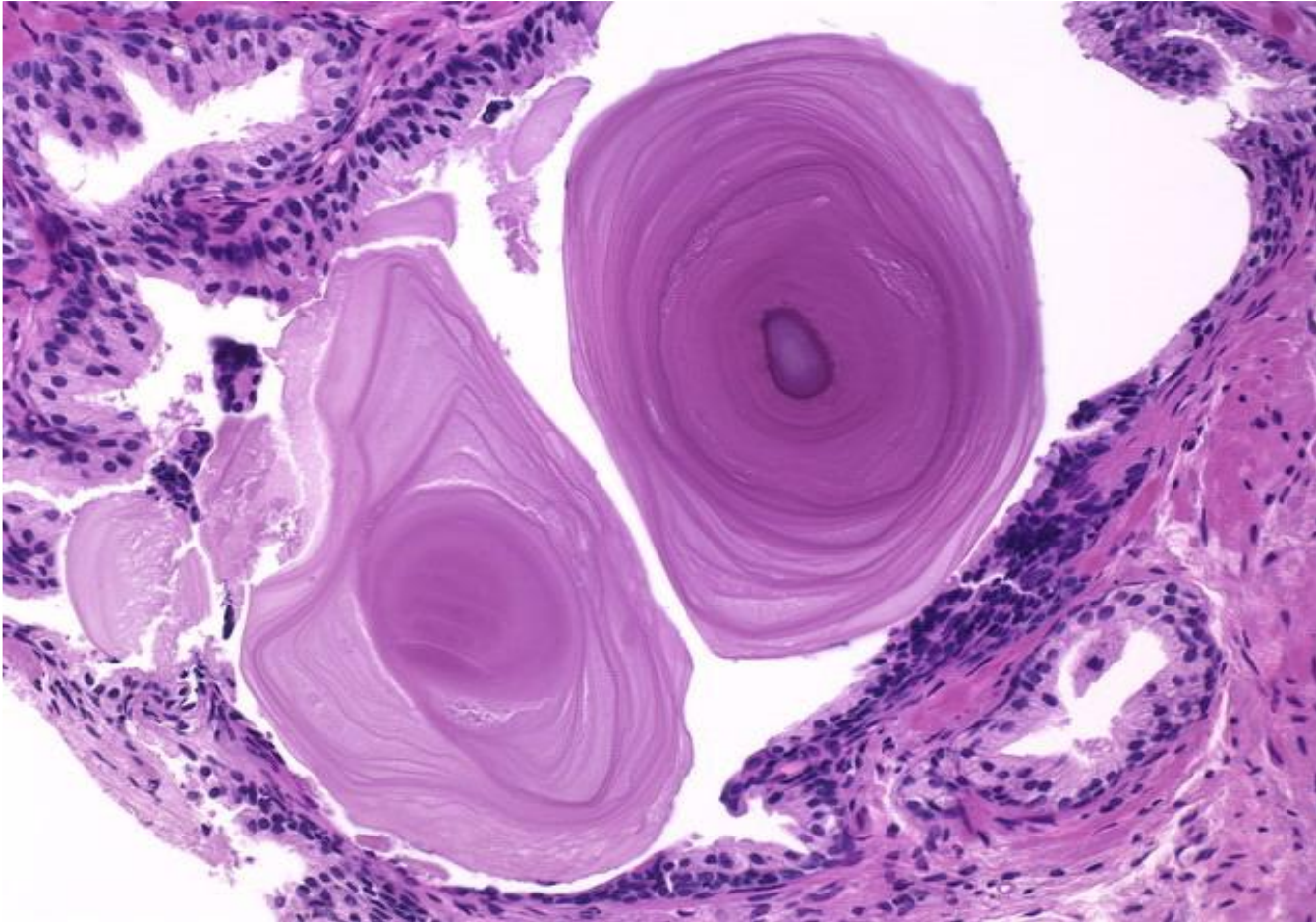
***A small pink concretion (typical of the corpora amylacea seen in benign prostatic glands) appears in the gland just to the left of center. Note the well-differentiated glands with tall columnar epithelial lining cells. These cells do not have prominent nucleoli.***

## Normal Prostate Histology - HPF



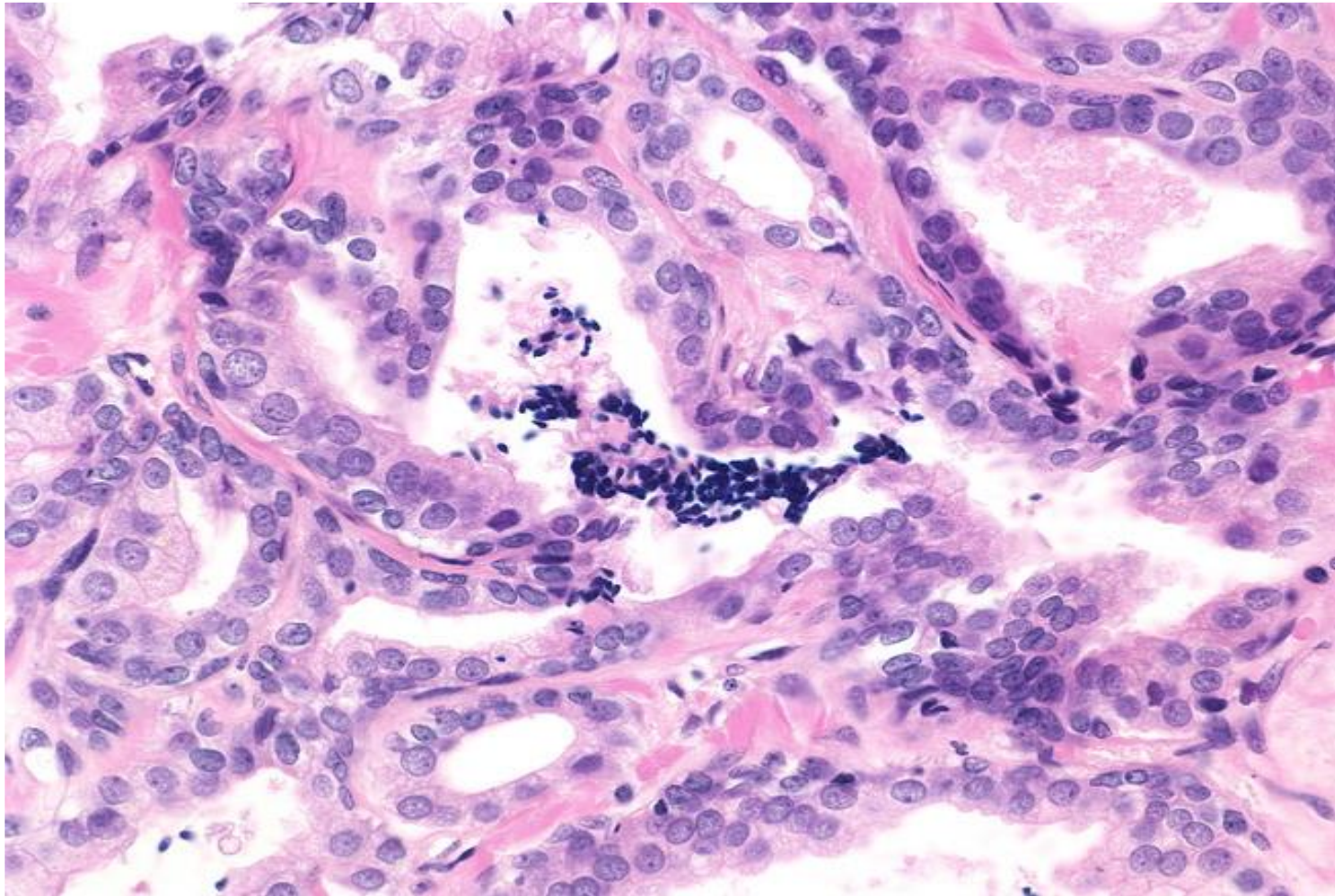
*In this benign gland, the luminal contour shows tufts and papillary infoldings. The tall secretory epithelial cells have pale clear cytoplasm and uniform round or oval nuclei. Prominent nucleoli are not seen. Many basal cells can be identified*

## *Corpora Amylacea in Prostate - HPF*



***Corpora amylacea are inspissated secretions that may have a lamellated appearance. Usually they are pink or purple in appearance. Sometimes they may be golden-brown***

## *Sperms in Normal Prostate Biopsy – HPF*



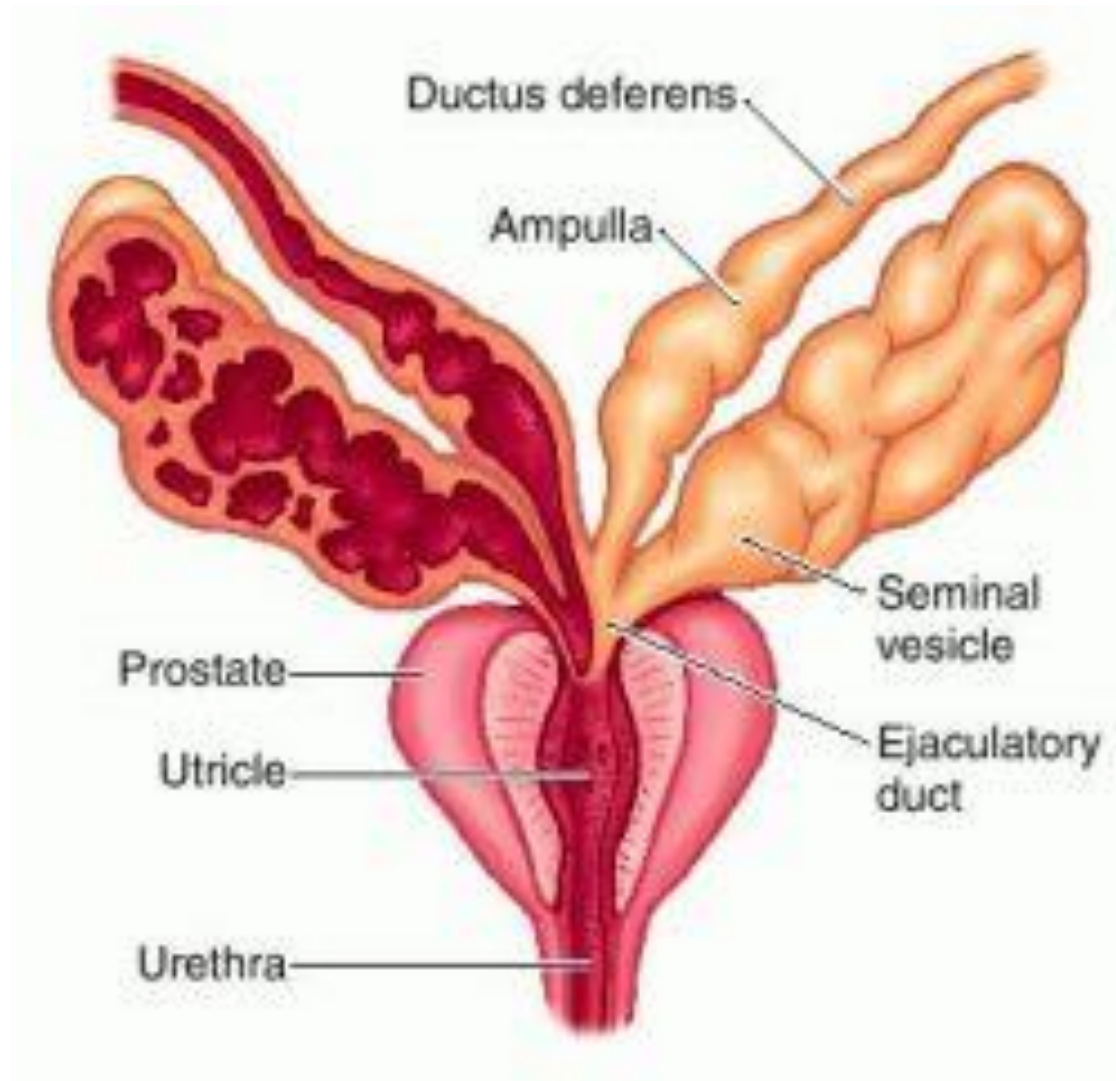
*Spermatozoa are seen in approximately 1% of prostate needle biopsies*

# ***SEMINAL VESICLE***

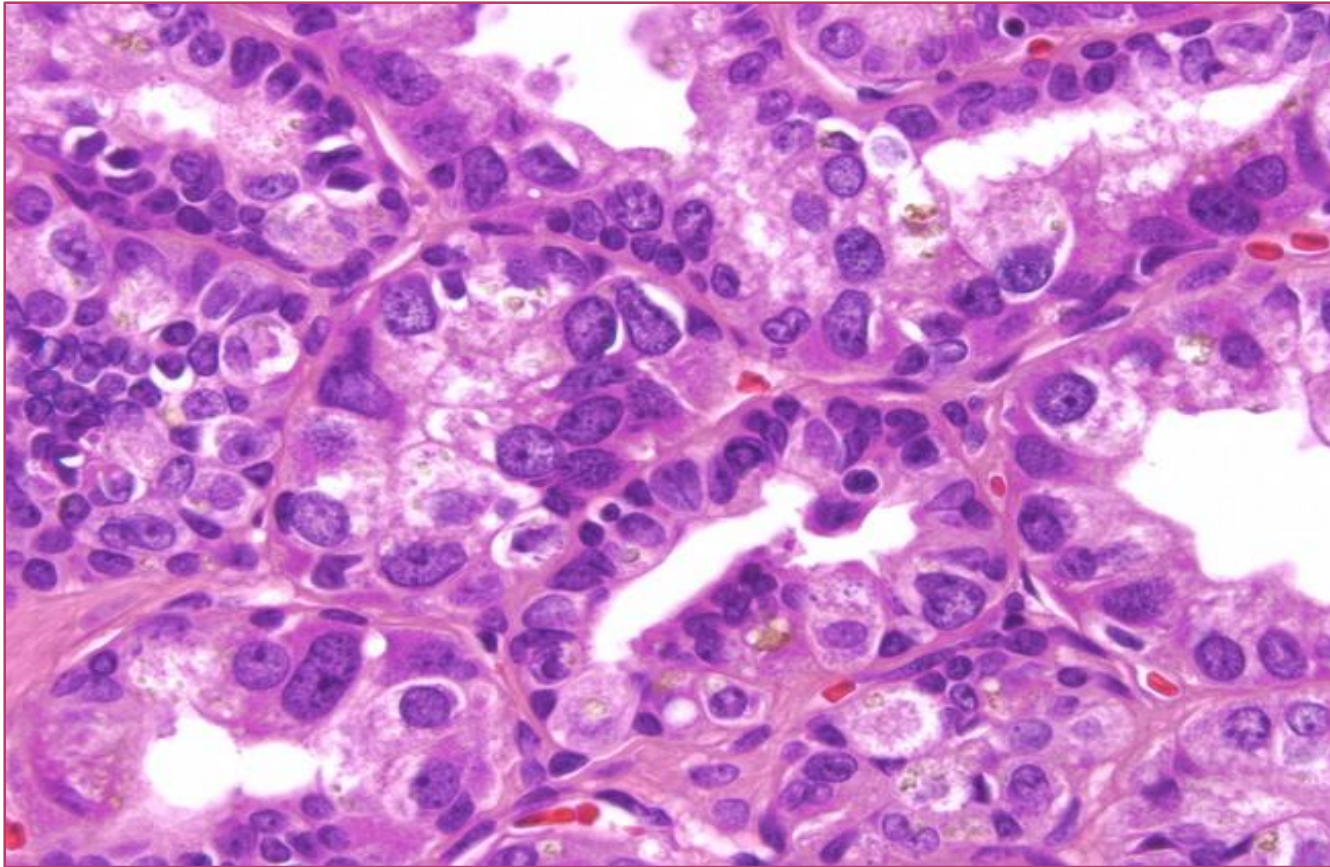
## ***Normal Anatomy and Histology***



## Diagram of Seminal Vesicle



## *Normal Seminal Vesicle – HPF*



*Highly atypical cells are a normal finding in the seminal vesicles of about 80% of older men. The nuclei are large, irregular, hyperchromatic & show prominent nucleoli. The atypia is degenerative and not observed in the seminal vesicles of young men*

# *HISTOPATHOLOGY OF THE TESTIS*

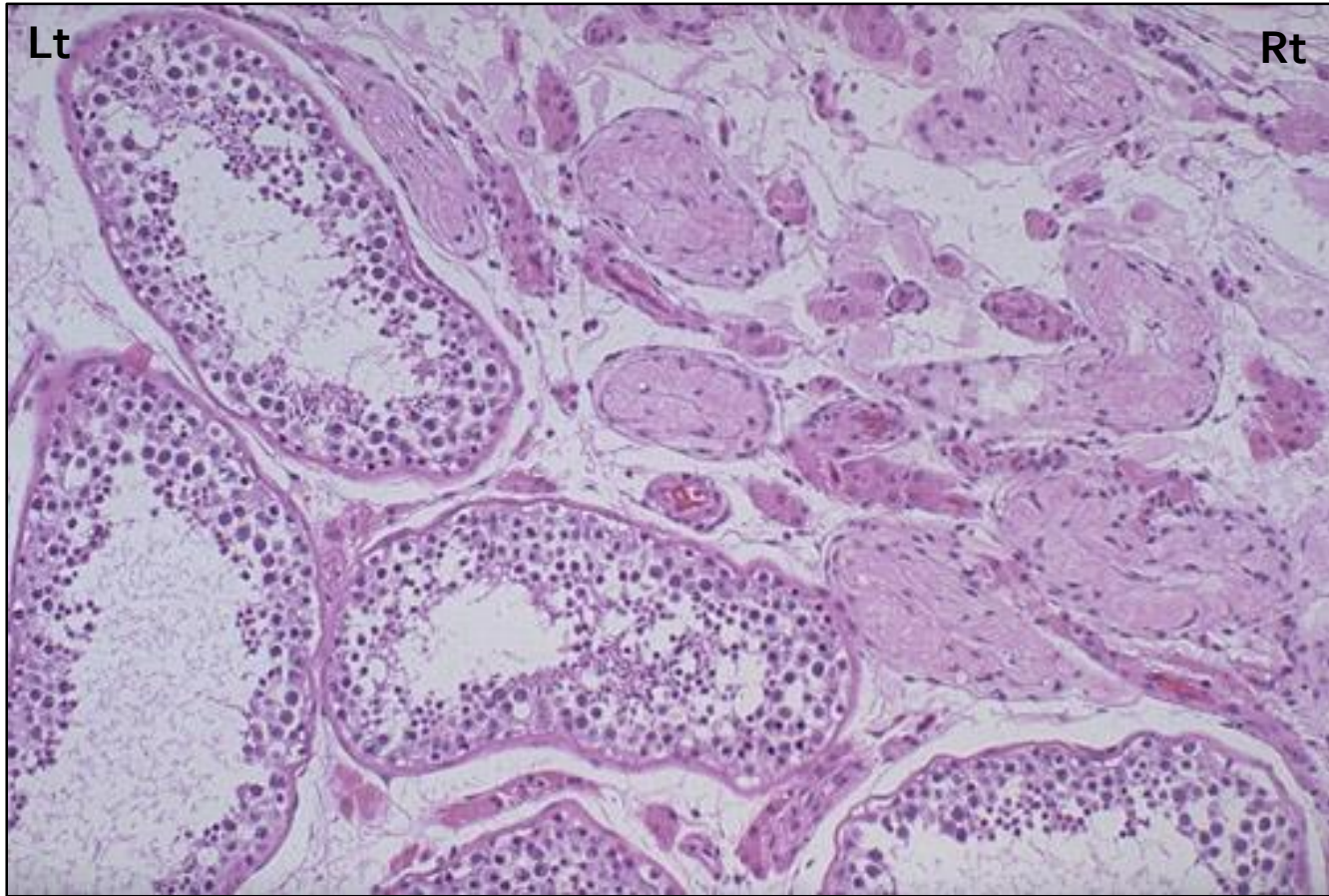
## *Testicular Atrophy*

## *Normal vs Atrophied Testis - Gross*



*On the left is a normal testis. On the right is a testis that has undergone atrophy. Bilateral atrophy may occur with a variety of conditions including chronic alcoholism, hypopituitarism, atherosclerosis, chemotherapy or radiation, and severe prolonged illness.*

## *Normal vs Atrophied Testis - Microscopic*



*There is focal atrophy of tubules seen here to the upper right. The most common reason for this is probably childhood infection with the mumps virus, which produces a patchy orchitis*



# ***Seminoma of the Testis***

## *Seminoma of the Testis - Gross*



*Normal testis appears to the left of the mass.  
Pale and lobulated testicular mass with bulging and potato like cut surface with attached and congested spermatic cord .  
Most important risk factor is cryptorchidism (undescended testicle) .*

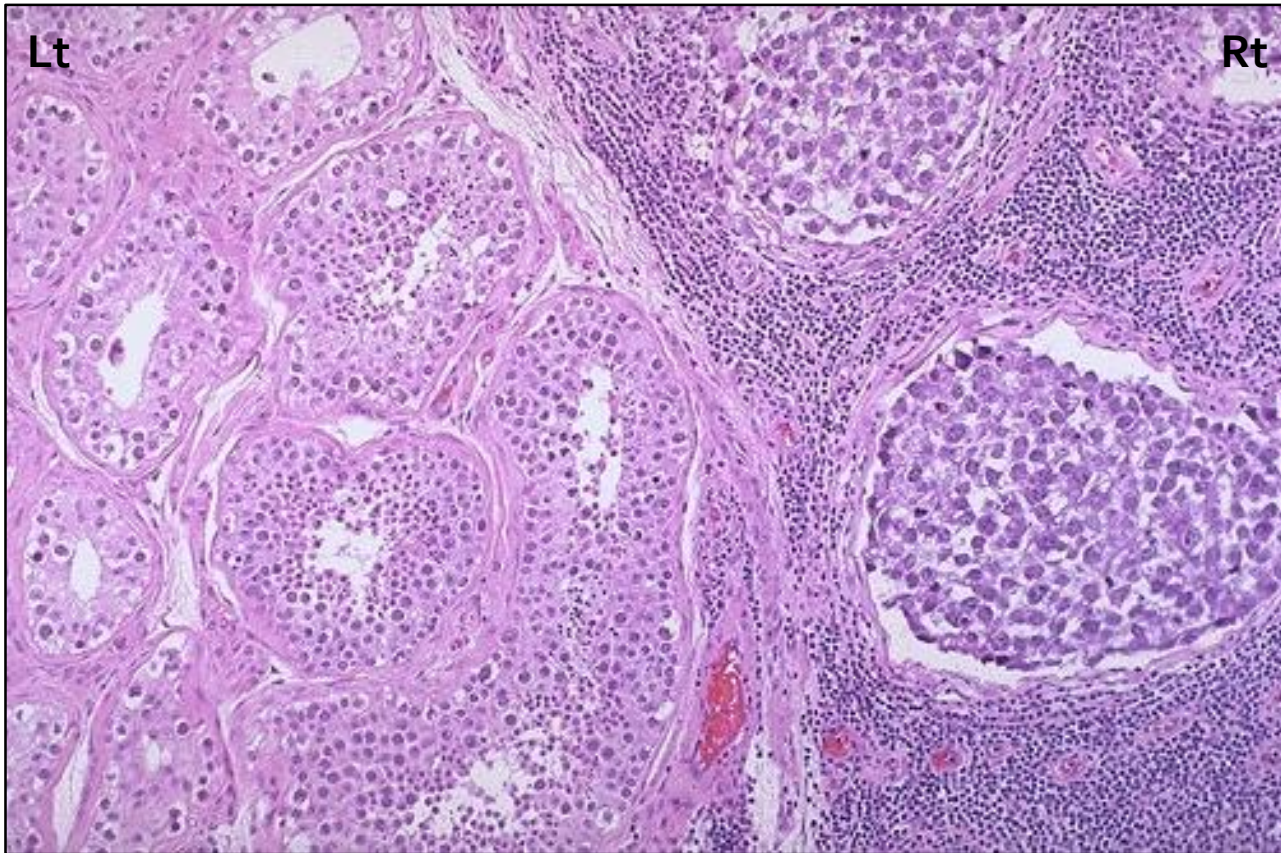
## *Seminoma of the Testis - Gross*



***Seminoma: Germ cell neoplasms are the most common types of testicular neoplasm. They are most common in the 15 to 34 age group. They often have several histologic components: seminoma, embryonal carcinoma, teratoma & choriocarcinoma.***

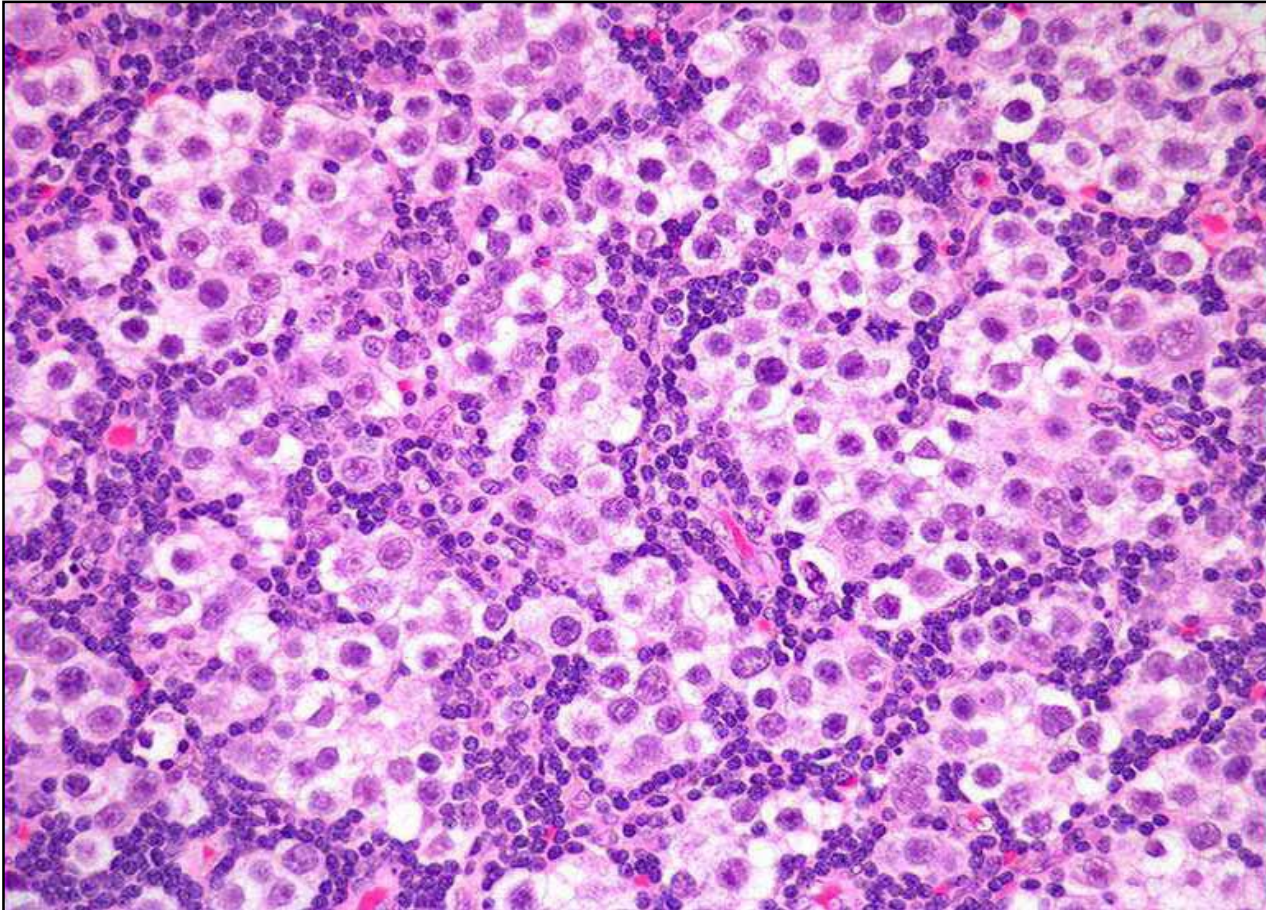


## *Seminoma vs Normal Testis - LPF*



***Normal testis appears at the left, and seminoma is present at the right.  
Note the lymphoid stroma between the nests of seminoma.***

## *Seminoma of the Testis - HPF*



***Malignant pale germ cells showing***

- ***large vesicular nuclei and prominent nucleoli and***
- ***lymphocytes***



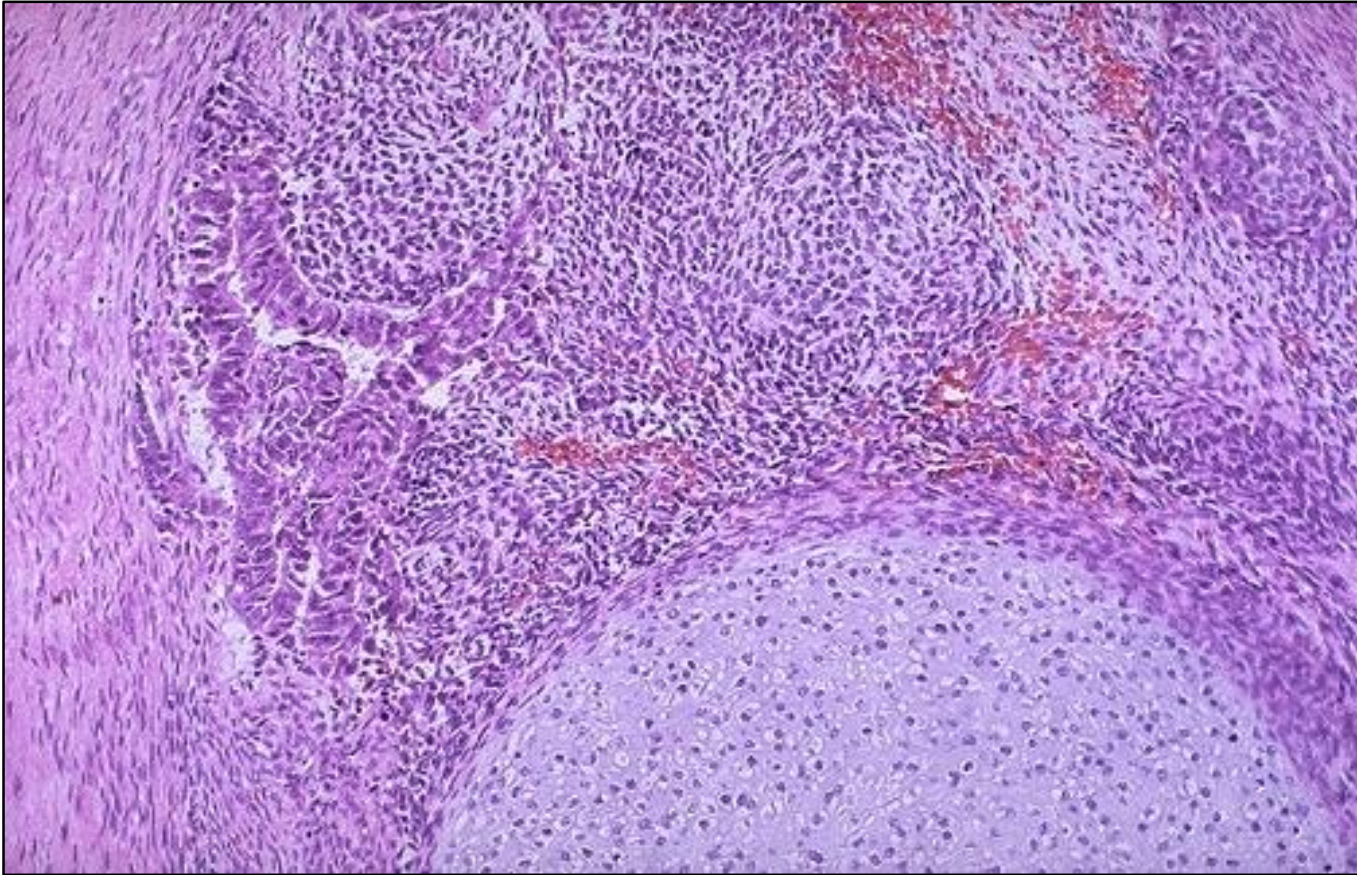
# ***Embryonal Carcinoma & Teratoma of the Testis***

## *Embryonal Carcinoma & Teratoma - Gross*



*Here is an embryonal carcinoma mixed with teratoma in which islands of bluish white cartilage from the teratoma component are more prominent. A rim of normal brown testis appears at the left.*

## *Embryonal Carcinoma & Teratoma - HPF*



*At the bottom is a focus of cartilage. Above this is a primitive mesenchymal stroma and to the left a focus of primitive cells most characteristic for embryonal carcinoma. This is embryonal carcinoma mixed with teratoma.*

# ***PROSTATE***



# ***Prostatic Hyperplasia***

## *Prostatic Hyperplasia - Gross*



***Enlarged lateral lobes, and median lobe that obstructs the prostatic urethra that led to obstruction with bladder hypertrophy, as evidenced by the prominent trabeculation of the bladder mucosa. Obstruction with stasis also led to the formation of the yellow-brown calculus (stone).***



## *Prostatic Hyperplasia - Gross*



*Central part and lateral peri-urethral lobes of prostate are commonly affected*

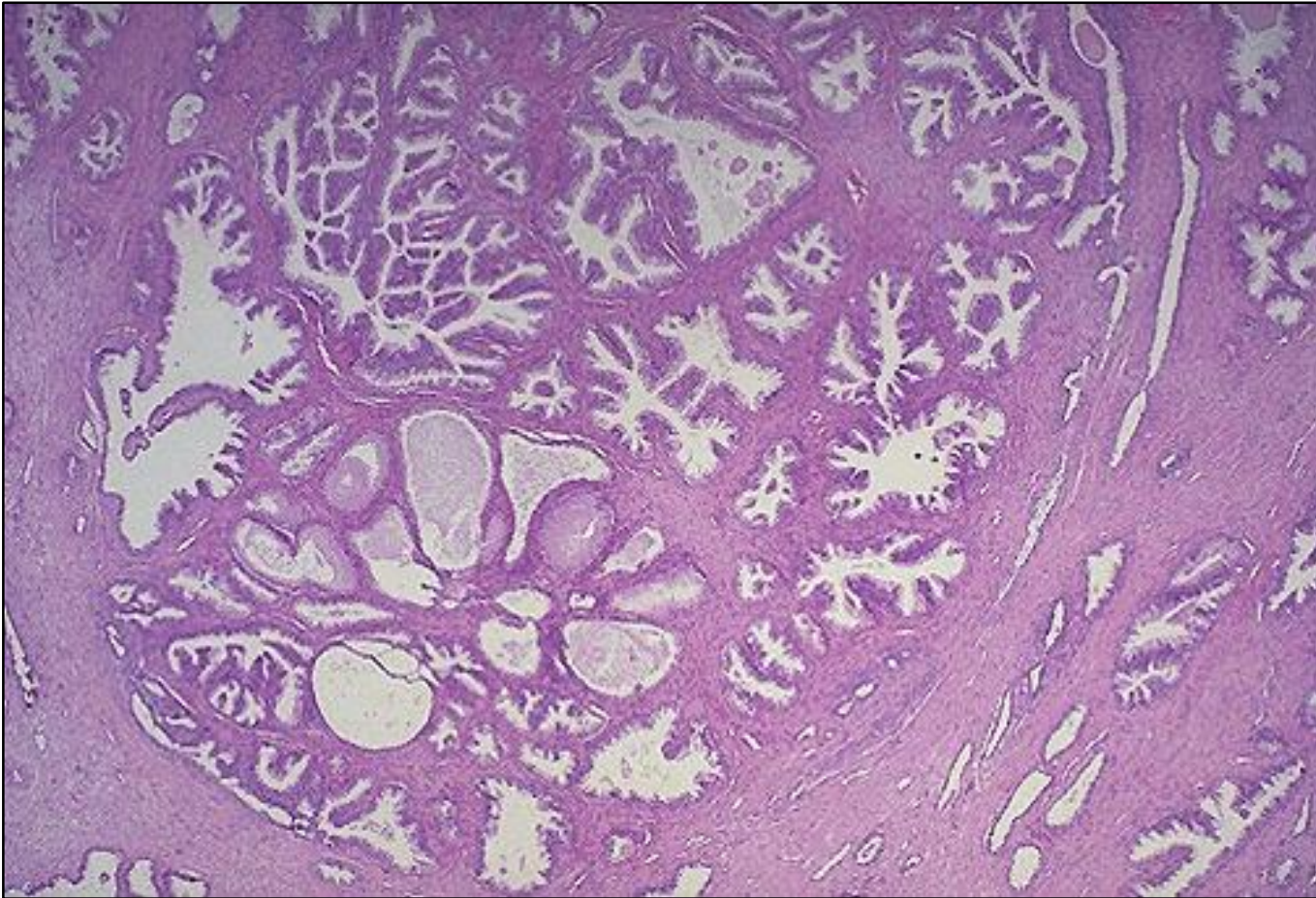
*a- Nodules formation.*

*b- Narrowing of prostatic urethra.*

*Such an enlarged prostate can obstruct urinary outflow from the bladder and lead to an obstructive uropathy*

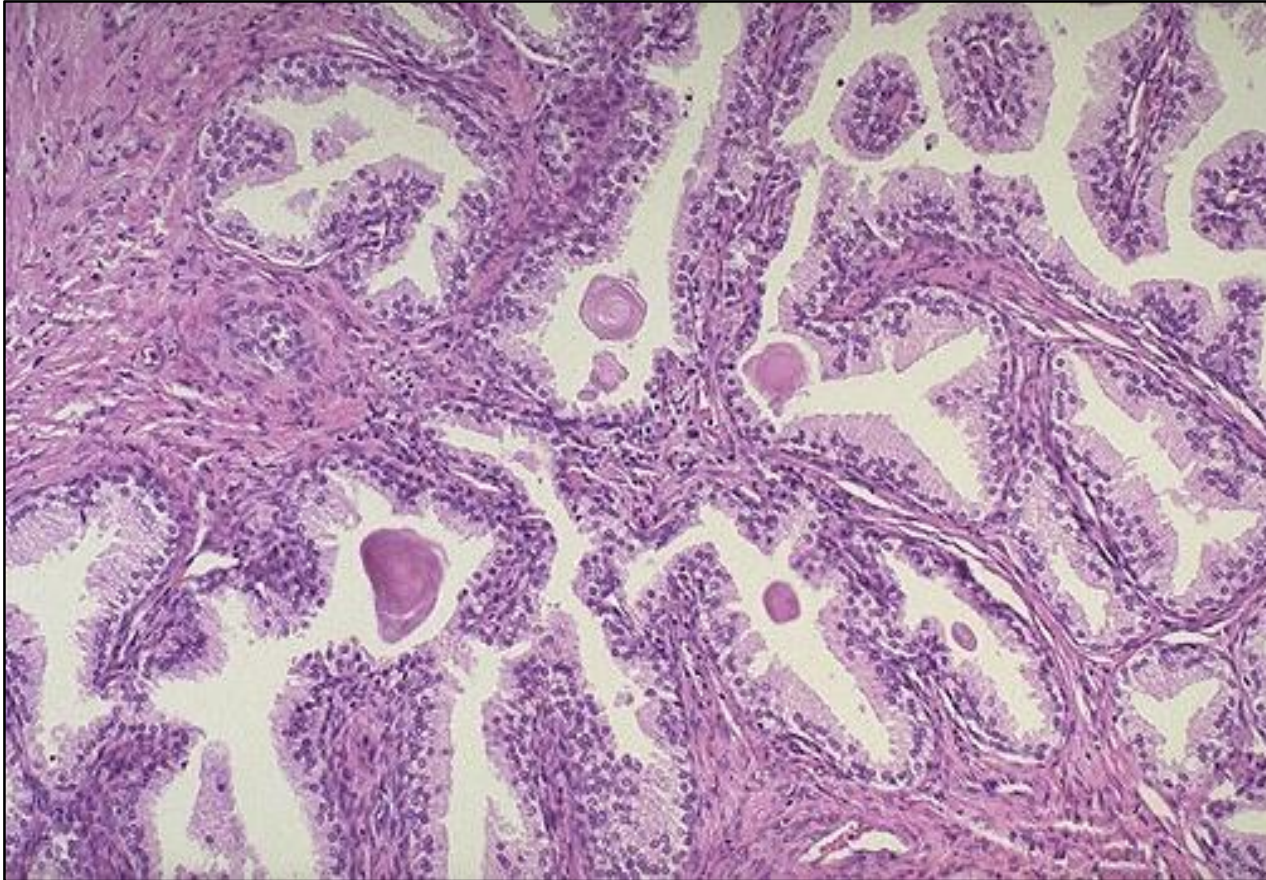
*So the patient complains of Frequency, difficulties of micturition, hesitancy, poor urinary stream and nocturia*

## *Prostatic Hyperplasia - LPF*



*Microscopically, benign prostatic hyperplasia can involve both glands and stroma, though the former is usually more prominent. Here, a large hyperplastic nodule of glands is seen*

## *Prostatic Hyperplasia - HPF*



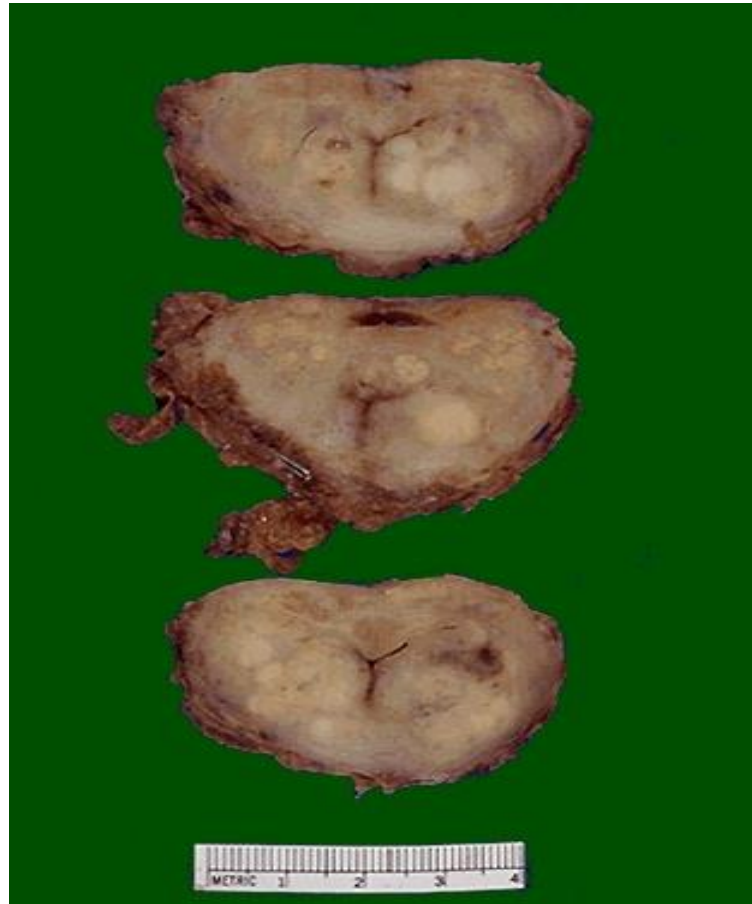
*The enlarged prostate with:*

- *Glandular hyperplasia.*
- *Stromal or muscular intervening stroma.*
- *Corpora amylacea.*



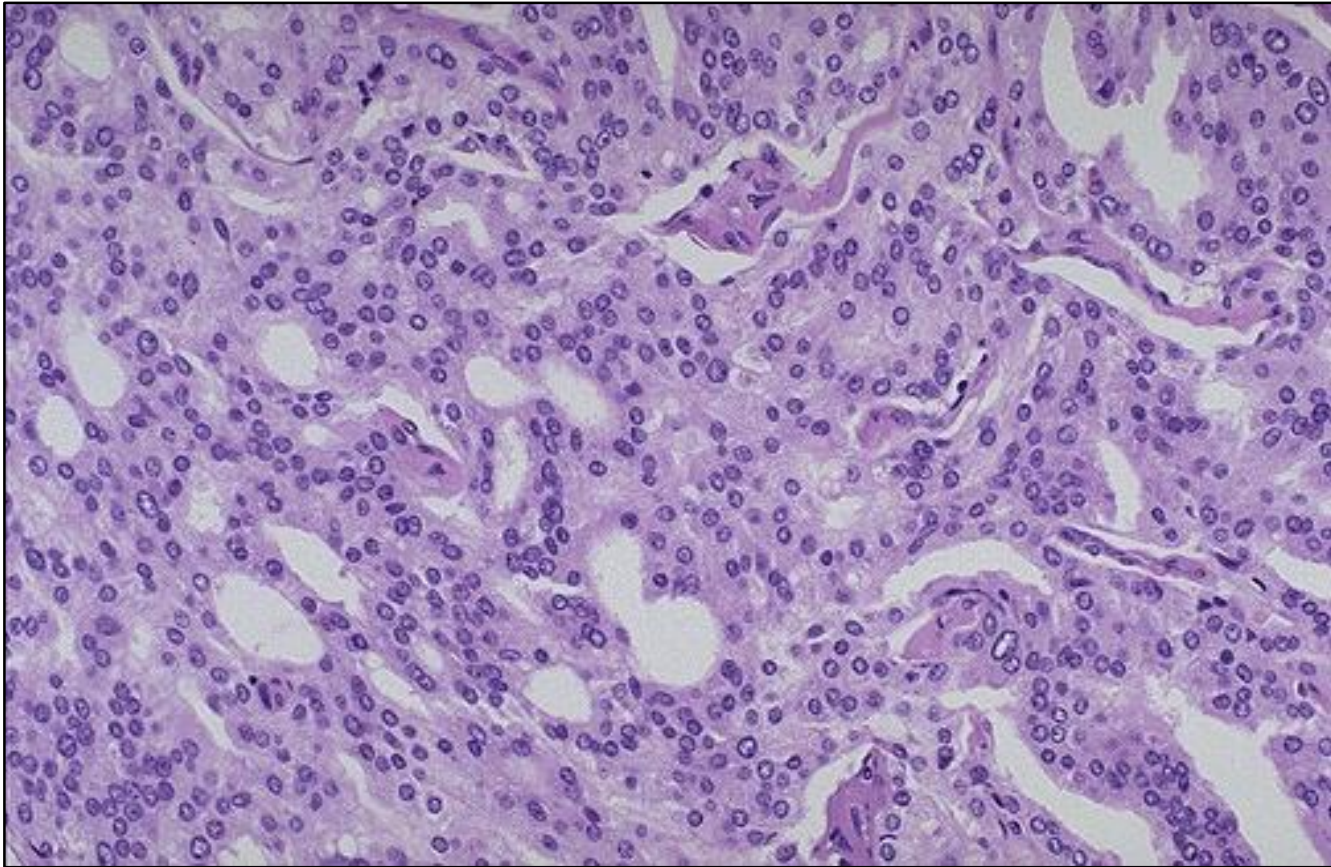
# ***Adenocarcinoma of Prostate***

## *Adenocarcinoma of the Prostate - Gross*



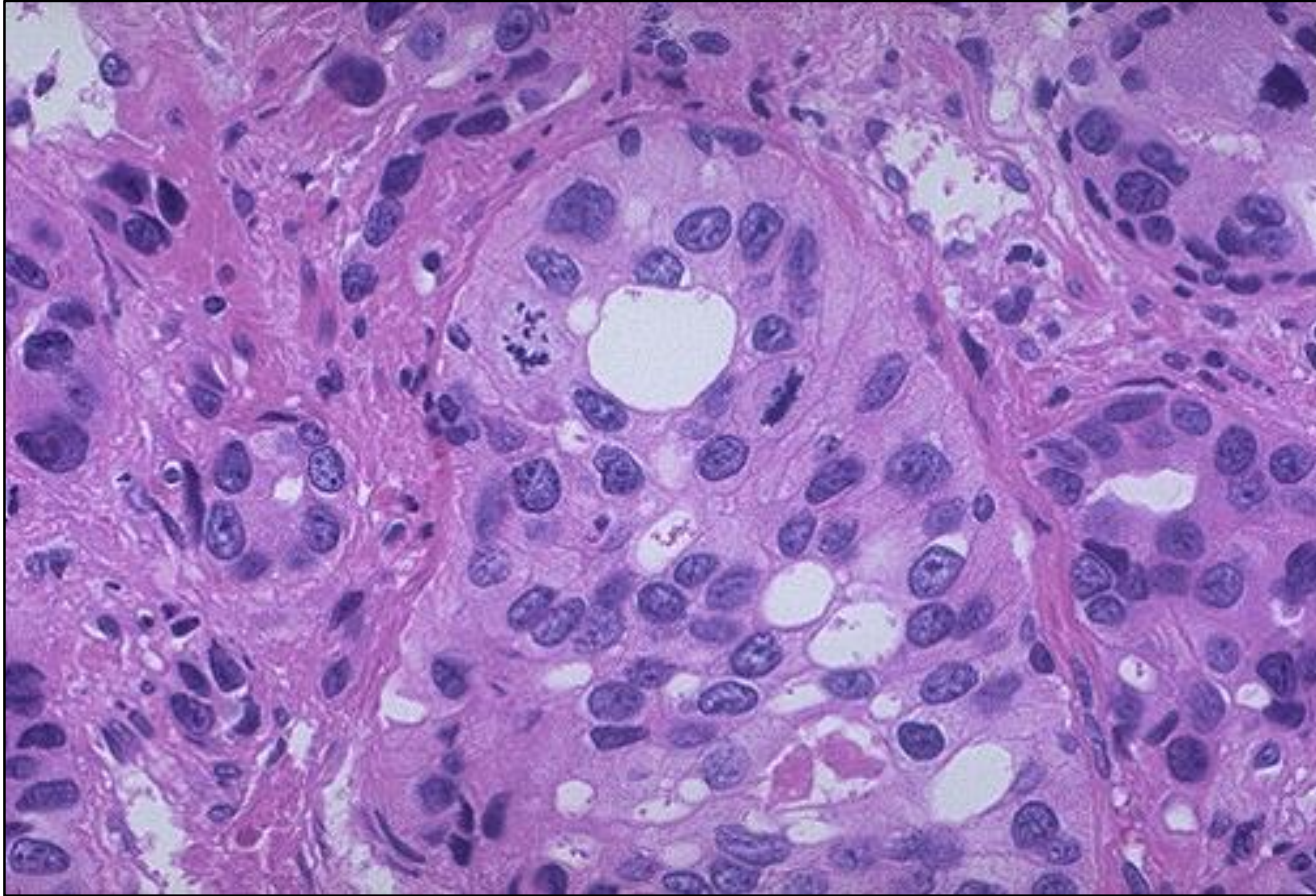
*These sections through a prostate removed via radical prostatectomy reveal irregular yellowish nodules, mostly in the posterior portion (seen here superiorly). This proved to be prostatic adenocarcinoma*

## *Adenocarcinoma of the Prostate - MPF*



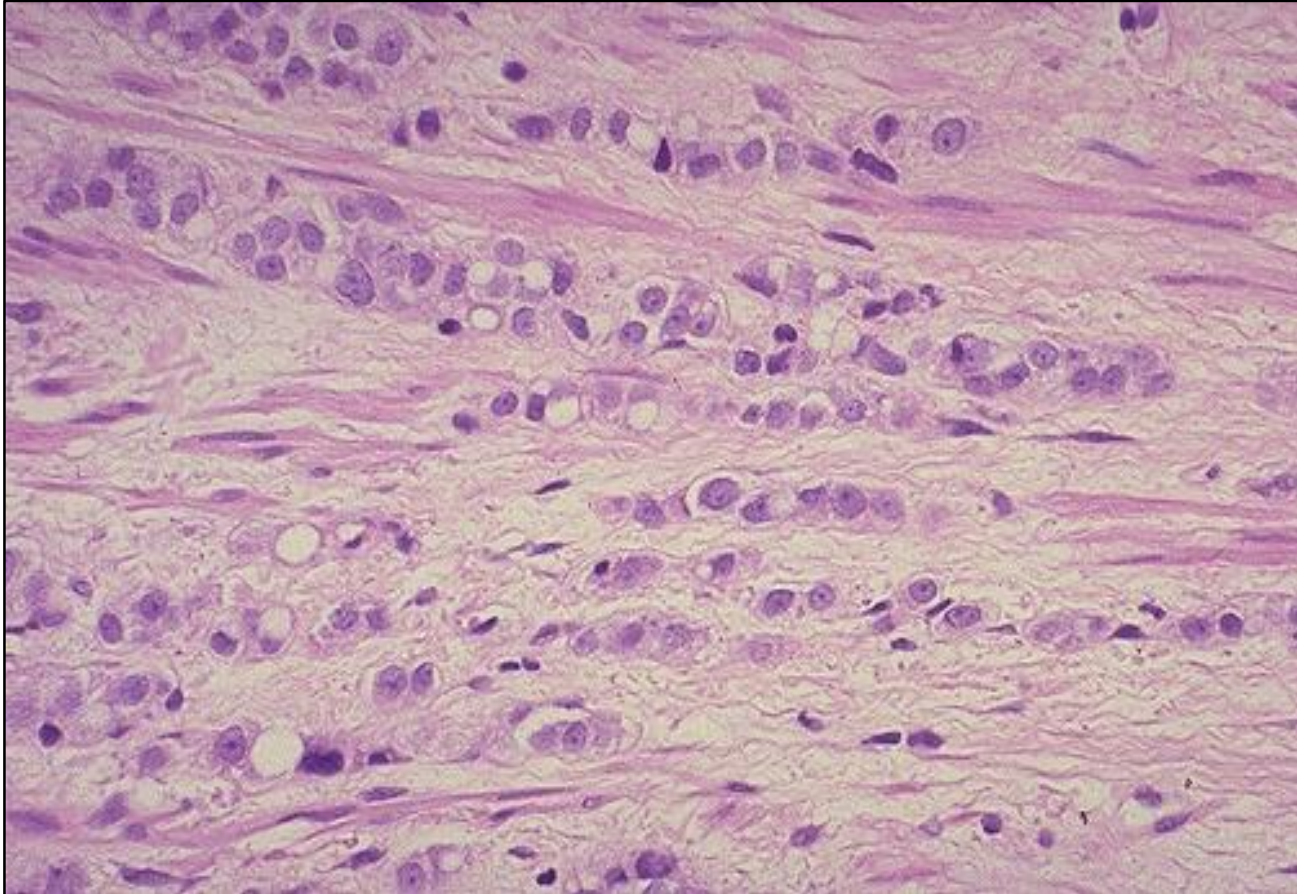
*At high magnification, the neoplastic glands of prostatic adenocarcinoma are still recognizable as glands, but there is no intervening stroma and the nuclei are hyperchromatic.*

## *Adenocarcinoma of the Prostate - HPF*



*At high magnification, this poorly differentiated prostatic adenocarcinoma demonstrates cells with nucleoli and mitotic figures.*

## *Adenocarcinoma of the Prostate - HPF*




*This adenocarcinoma of prostate is so poorly differentiated that no glandular structure is recognizable, only cells infiltrating in rows.*



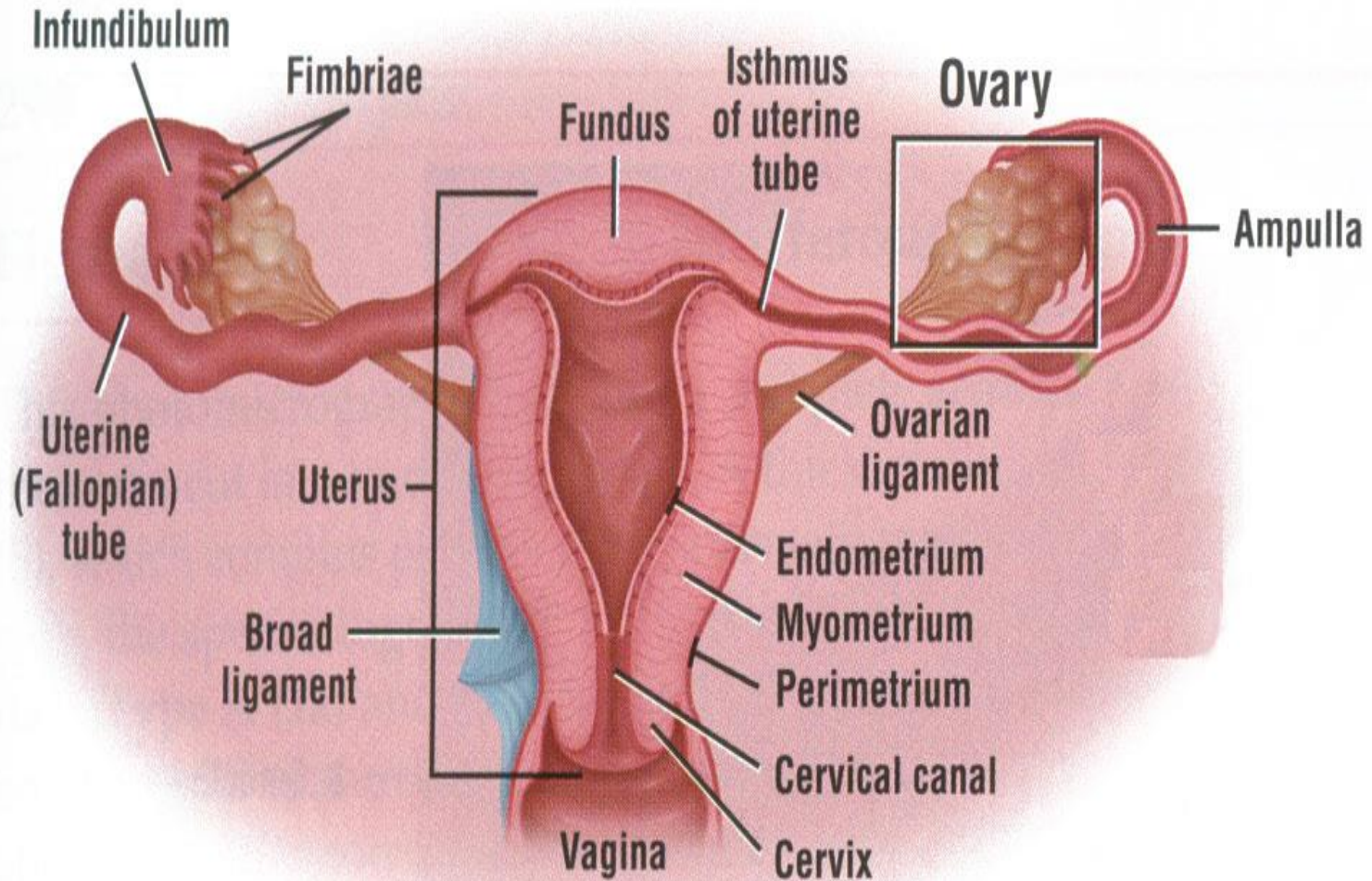
# **2<sup>nd</sup> Practical Session**

## **FEMALE GENITAL SYSTEM**



# *Normal Anatomy and Histology*

# Female Reproductive System - Diagram



## *Female Reproductive System - Gross*



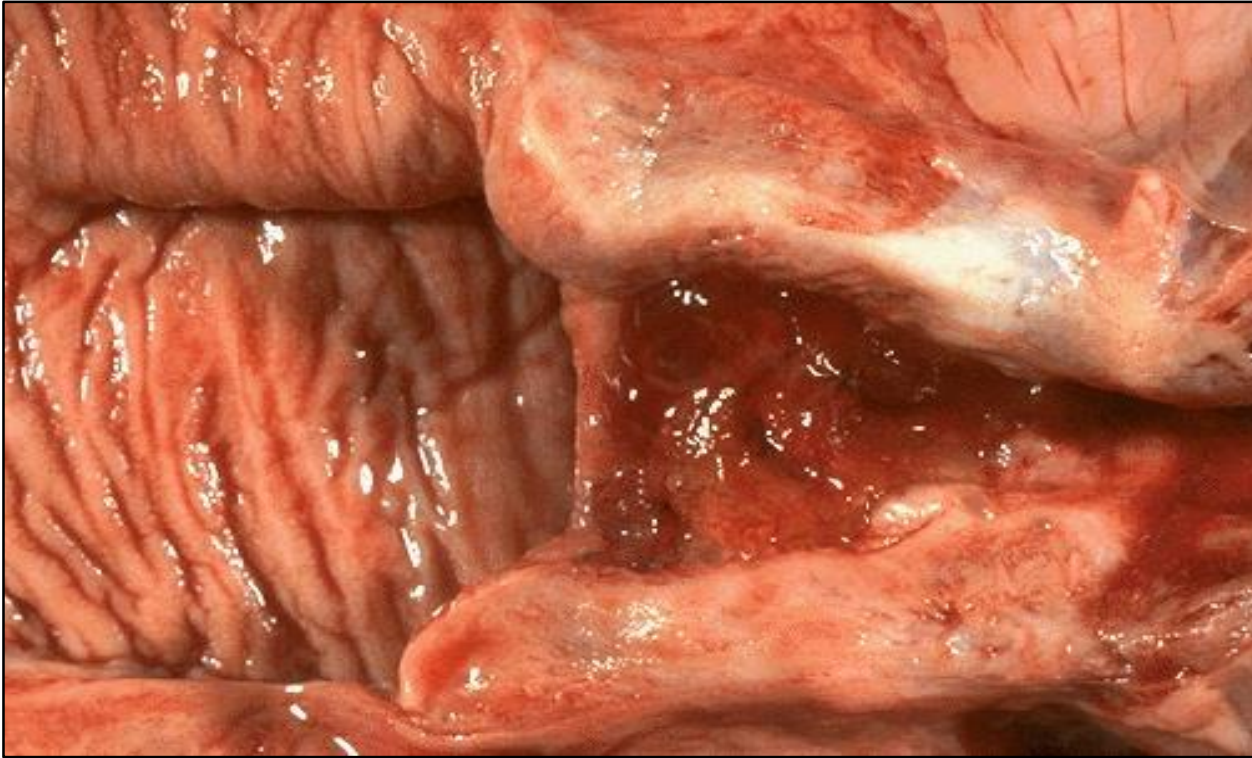
*Uterus with Cervix, Ovaries and Fallopian Tubes*

## Normal Uterine Cervix - Gross



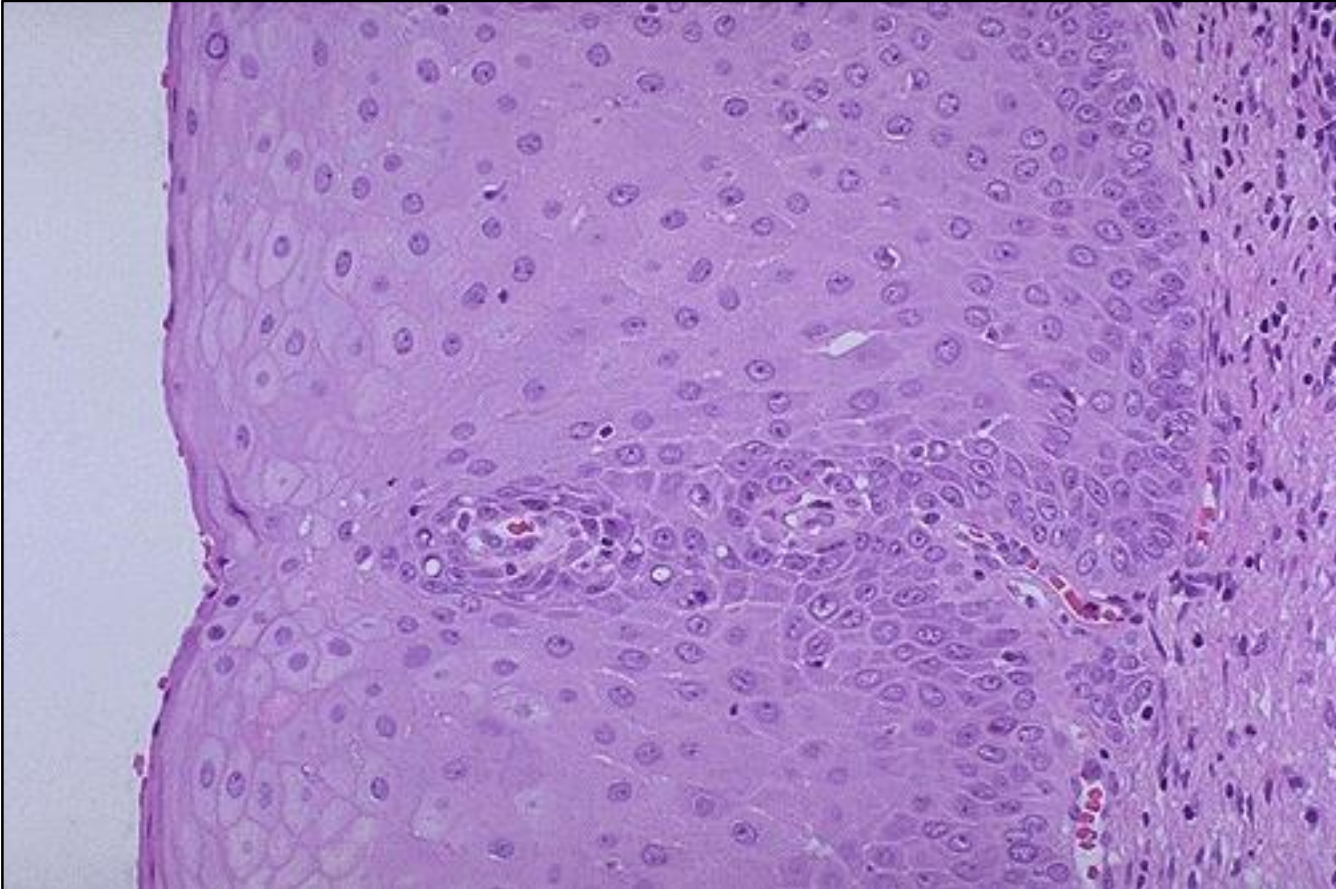
*Normal cervix with a smooth, glistening mucosal surface. There is a small rim of vaginal cuff from this hysterectomy specimen. The cervical os is small and round, typical for a nulliparous woman. The os will have a fish-mouth shape after one or more pregnancies*

## ***Normal Vagina & Cervix - Gross Cut section***



***The normal adult vaginal mucosa with a wrinkled appearance that is seen in women of reproductive years appears at the left. The cervix has been opened to reveal an endocervical canal leading to the lower uterine segment at the right that has an erythematous appearance extending to the cervical os consistent with chronic inflammation.***

## ***Normal Cervical Mucosa - HPF***



***This is normal cervical non-keratinizing squamous epithelium.  
The squamous cells show maturation from the basal layer to  
the surface***



# ***UTERUS***

## ***GROSS and HISTOPATHOLOGY***



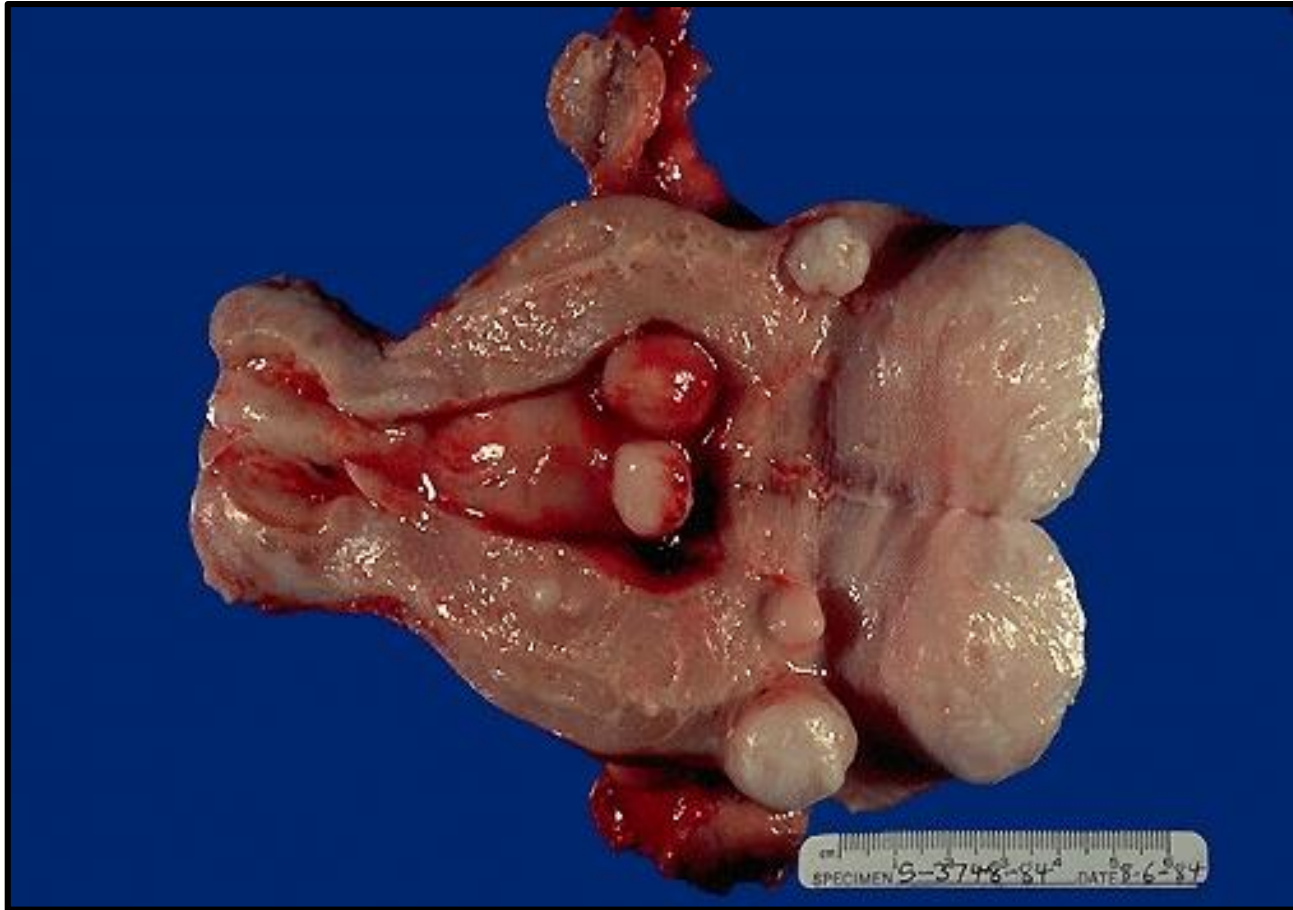


# ***ENDOMETRIUM***



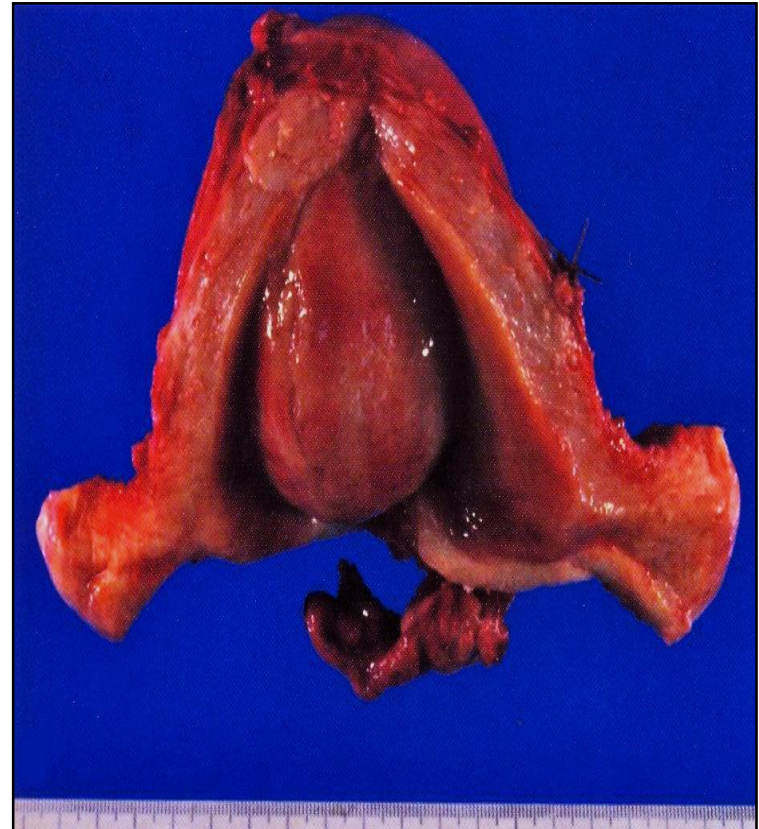
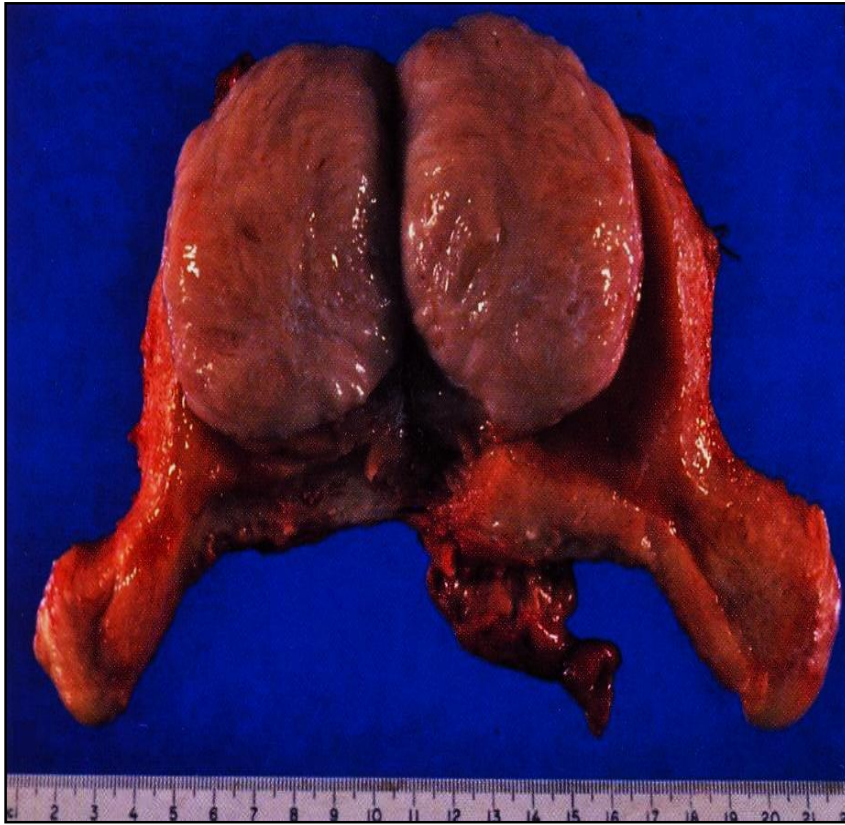
# ***Uterine Leiomyomata***

## *Multiple Uterine Leiomyomata - Gross*



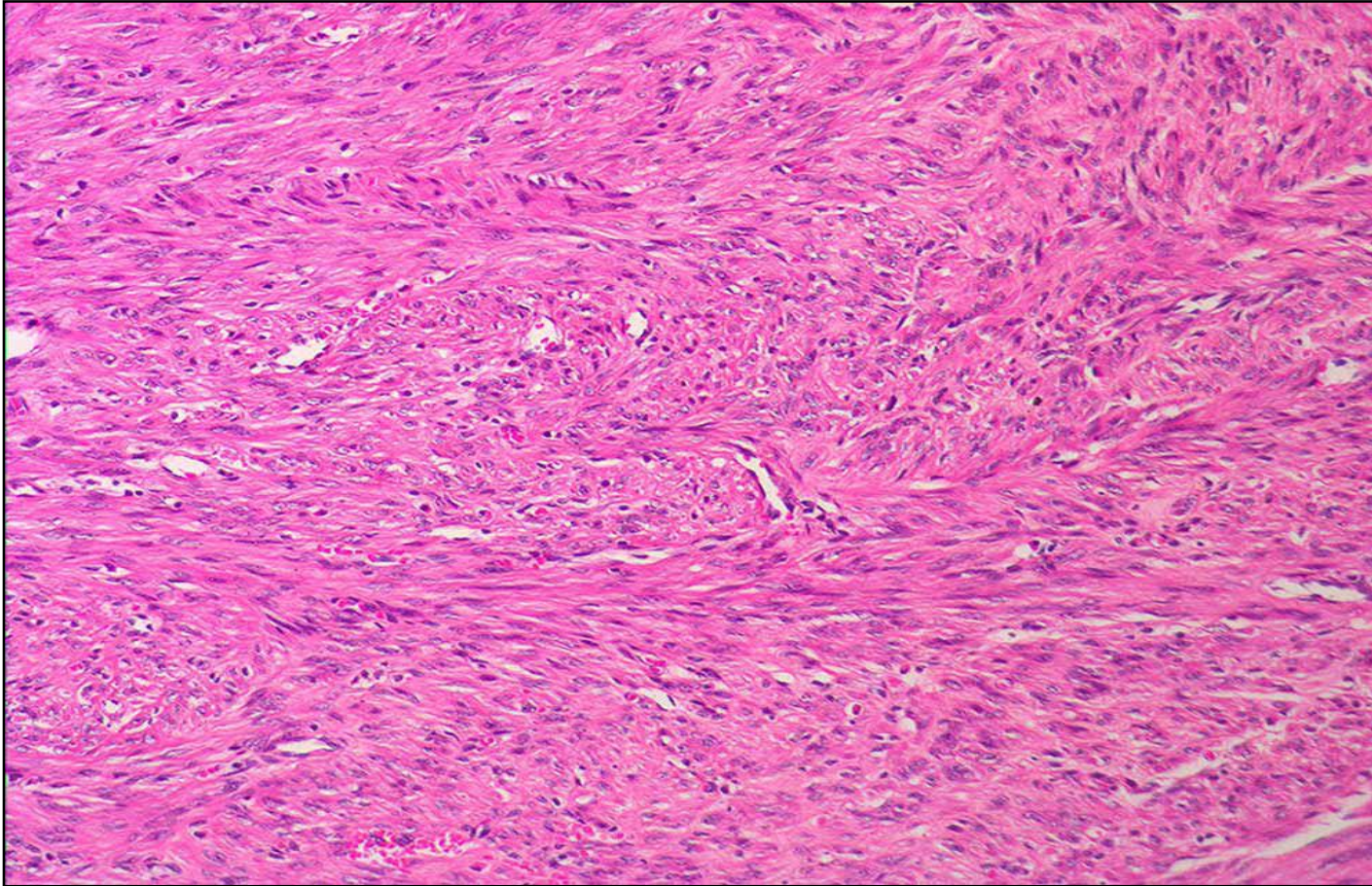
*Smooth muscle tumors of the uterus are often multiple.  
Seen here are submucosal, intramural, and subserosal leiomyomata  
of the uterus.*

## *Multiple Uterine Leiomyomata - Gross*



*A well demarcated tumour mass in the muscle coat of uterus without a definite capsule.*

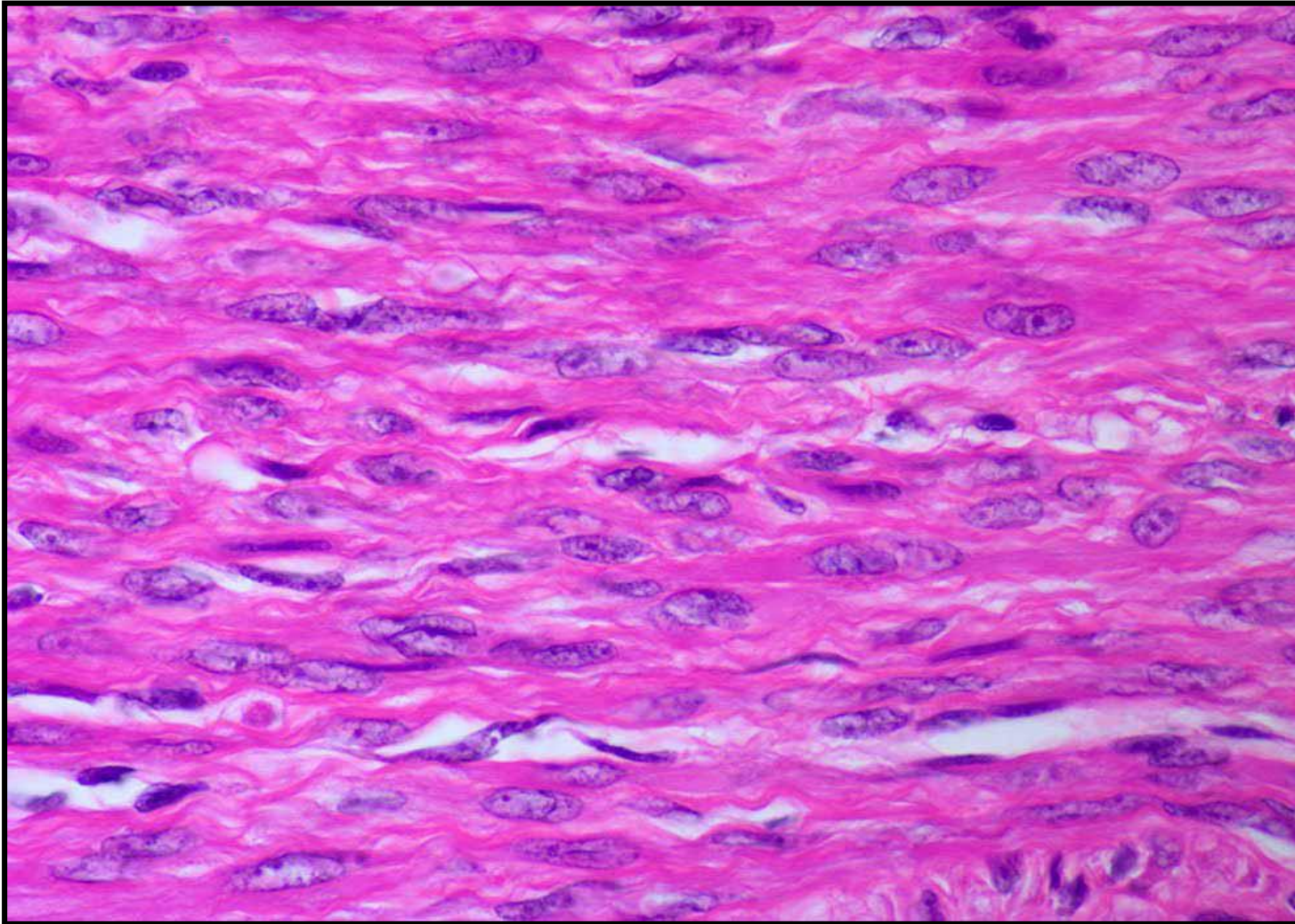
## *Uterine Leiomyoma – LPF*




*Tumour consists of interlacing bundles of smooth muscle and fibrous tissue.*

*The muscle cells are spindle shaped with elongated nuclei and eosinophilic cytoplasm.*

## *Uterine Leiomyoma – HPF*

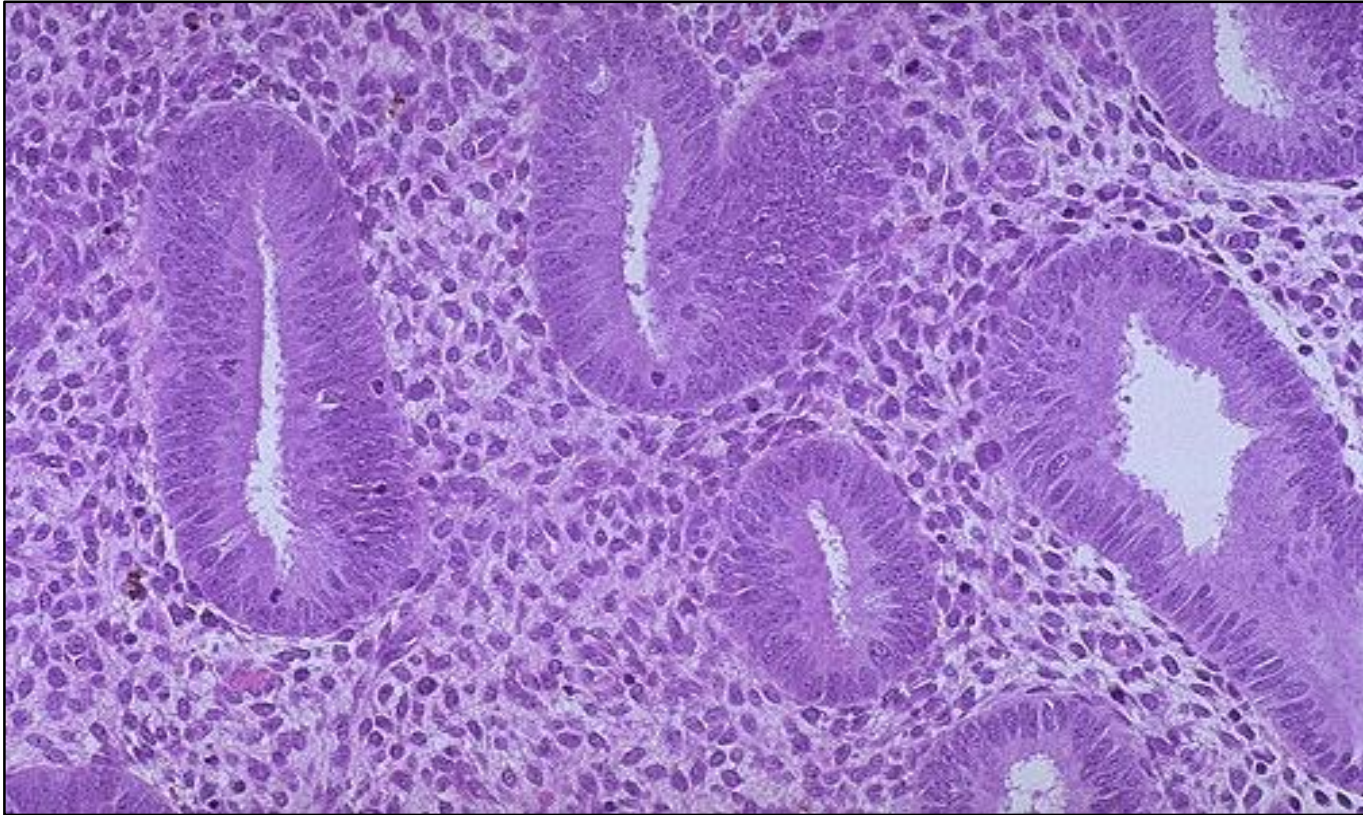


*The muscle cells are spindle shaped with elongated nuclei and eosinophilic cytoplasm*



# ***Endometrial Hyperplasia & Carcinoma***

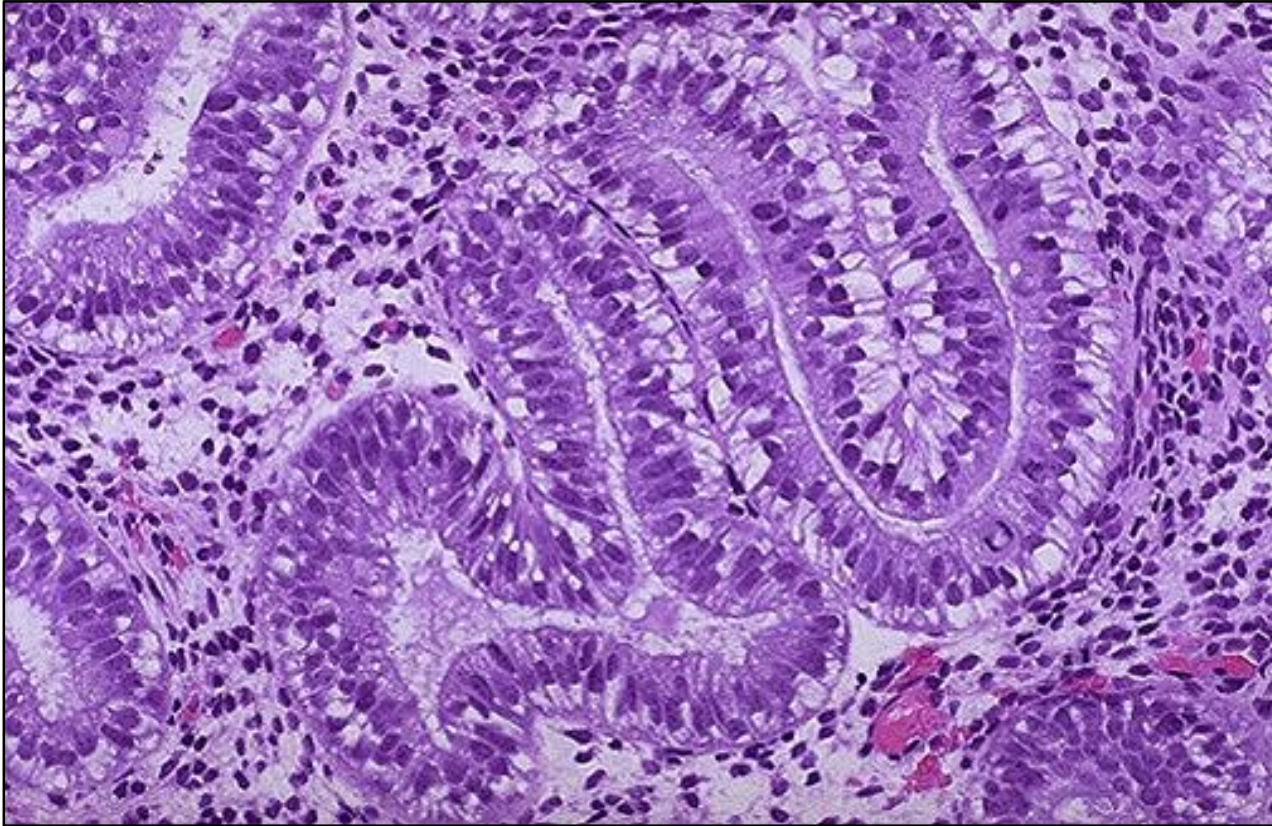
## *Normal Proliferative Endometrium*



*Normal proliferative endometrium in the menstrual cycle. The proliferative phase is the variable part of the cycle. In this phase, tubular glands with columnar cells and surrounding dense stroma are proliferating to build up the endometrium following shedding with previous menstruation.*



## *Early Secretory Endometrium*



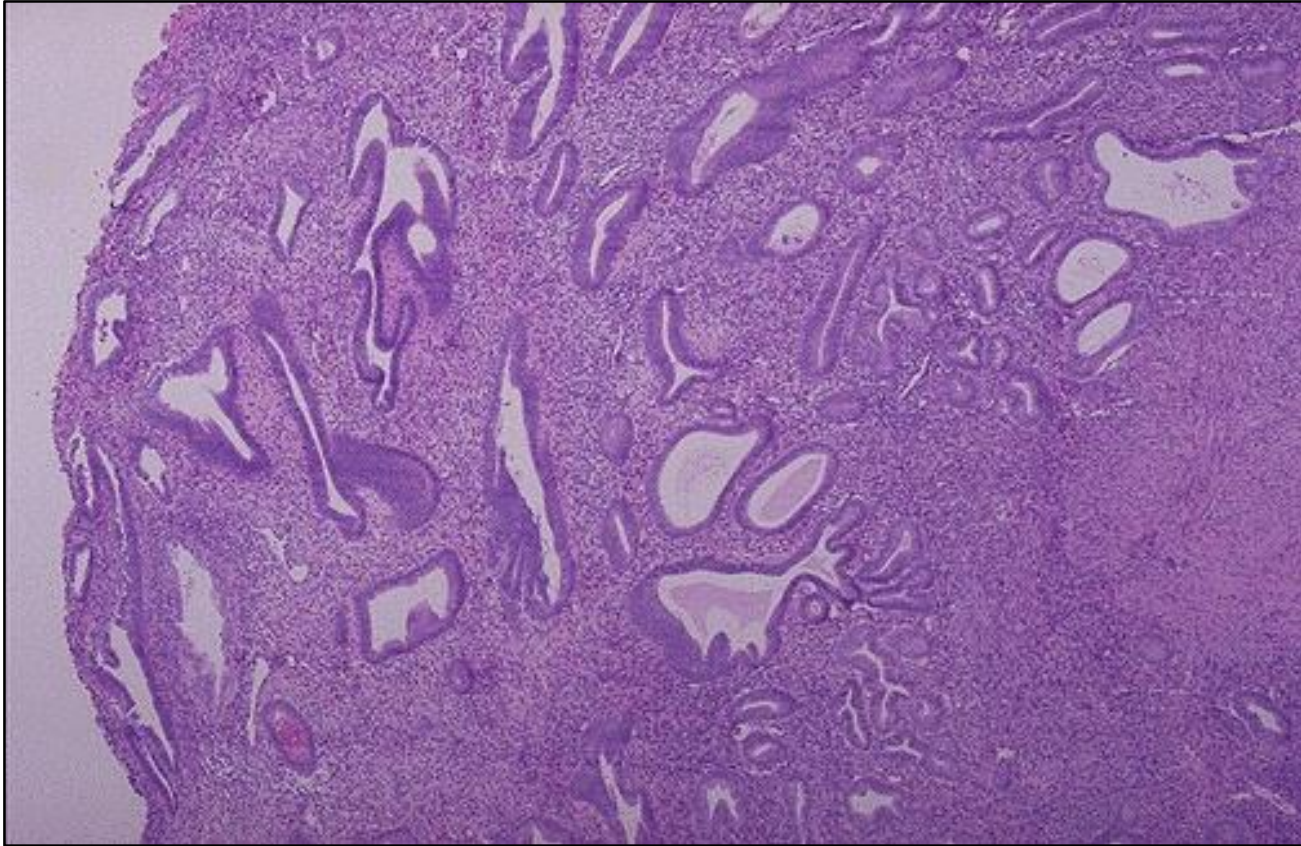
*The appearance with prominent subnuclear vacuoles in cells forming the glands is consistent with post-ovulatory day 2 of luteal phase. The histologic changes following ovulation are quite constant over the 14 days to menstruation and can be utilized to date the endometrium.*

## *Endometrial Hyperplasia - Gross*



*The endometrial cavity is opened to reveal lush fronds of hyperplastic endometrium. Endometrial hyperplasia usually results with conditions of prolonged estrogen excess and can lead to metrorrhagia (uterine bleeding at irregular intervals), menorrhagia (excessive bleeding with menstrual periods), or menometrorrhagia.*

## *Endometrial Hyperplasia - LPF*



*This is endometrial cystic hyperplasia in which the amount of endometrium is abnormally increased and not cycling as it should. The glands are enlarged and irregular with columnar cells that have some atypia. Simple endometrial hyperplasias can cause bleeding, but are not thought to be premalignant.*

## Endometrial Adenocarcinoma - Gross



### Predisposing factors

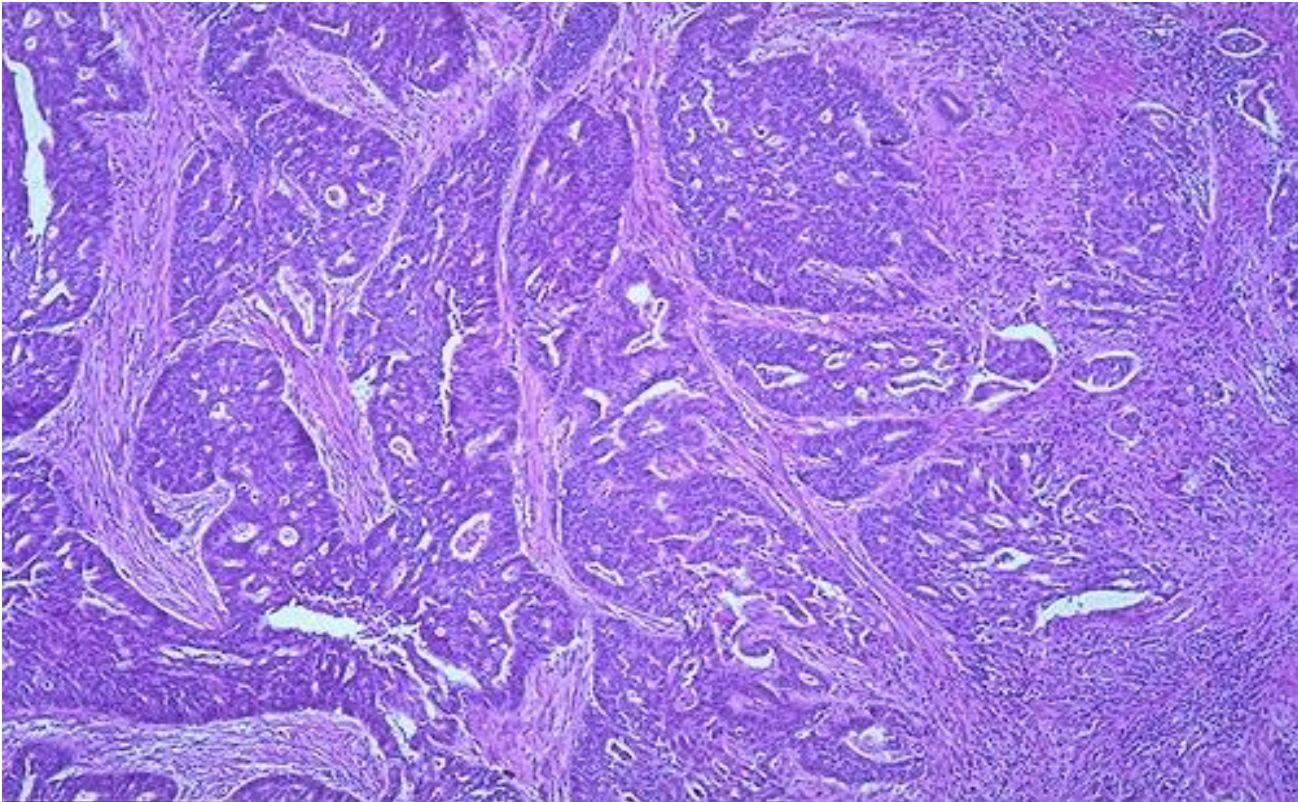
- **Obesity**
- **Diabetes.**
- **Unopposed estrogenic stimulation.**
- **Hypertension.**
- **Infertility.**

*Haemorrhagic mass at the uterine fundus.*

*Gene mutation responsible for endometrial adenocarcinoma :*

- **PTEN.**
- **TP53.**

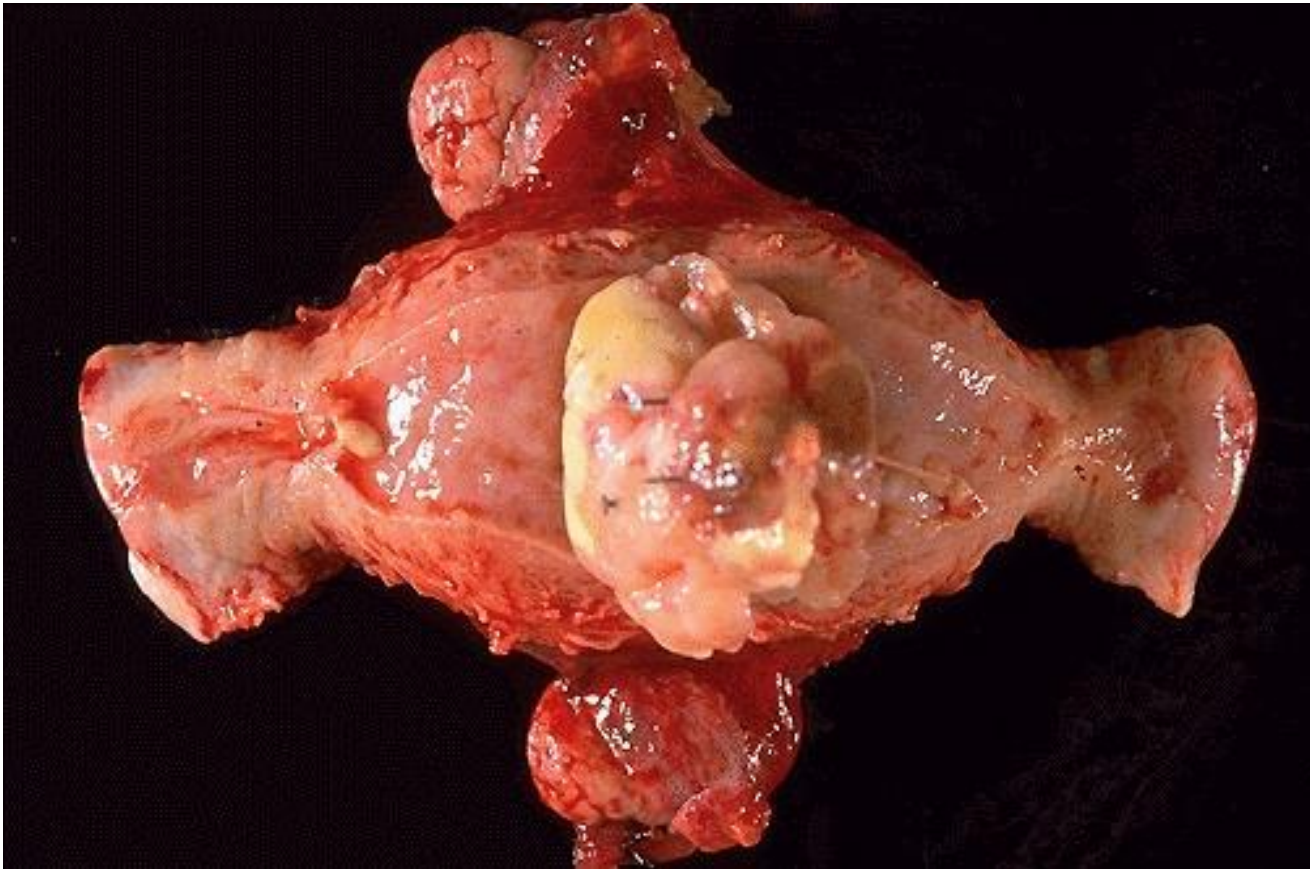
## ***Endometrial Adenocarcinoma - LPF***



***Endometrial Adenocarcinoma with abnormal malignant glands invading into the smooth muscle bundles of the myometrial wall of the uterus.***

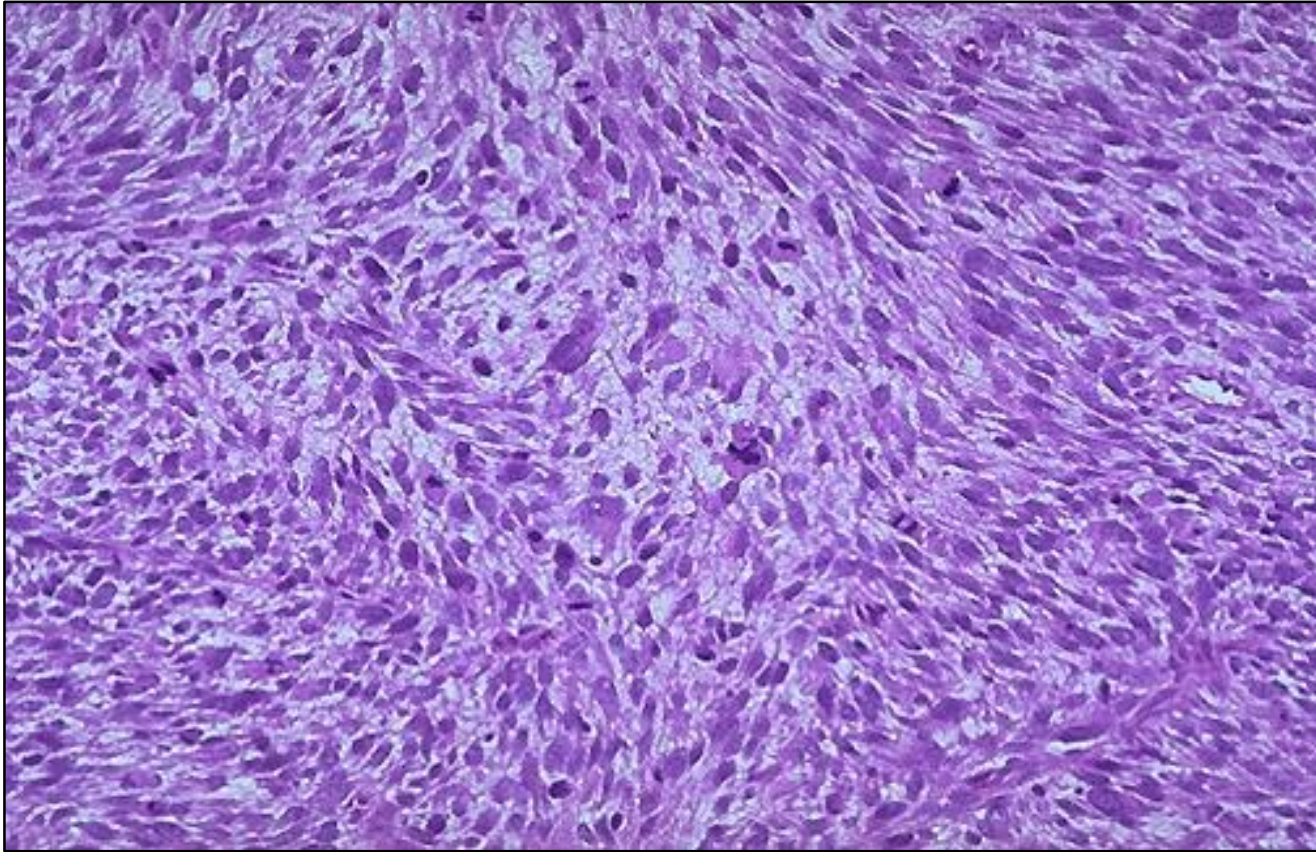
***This neoplasm has a higher stage than a neoplasm that is just confined to the endometrium***

## *Endometrial Leiomyosarcoma - Gross*



*This is a leiomyosarcoma protruding from myometrium into the endometrial cavity of this uterus that has been opened laterally so that the halves of the cervix appear at right and left. Fallopian tubes and ovaries project from top and bottom.*

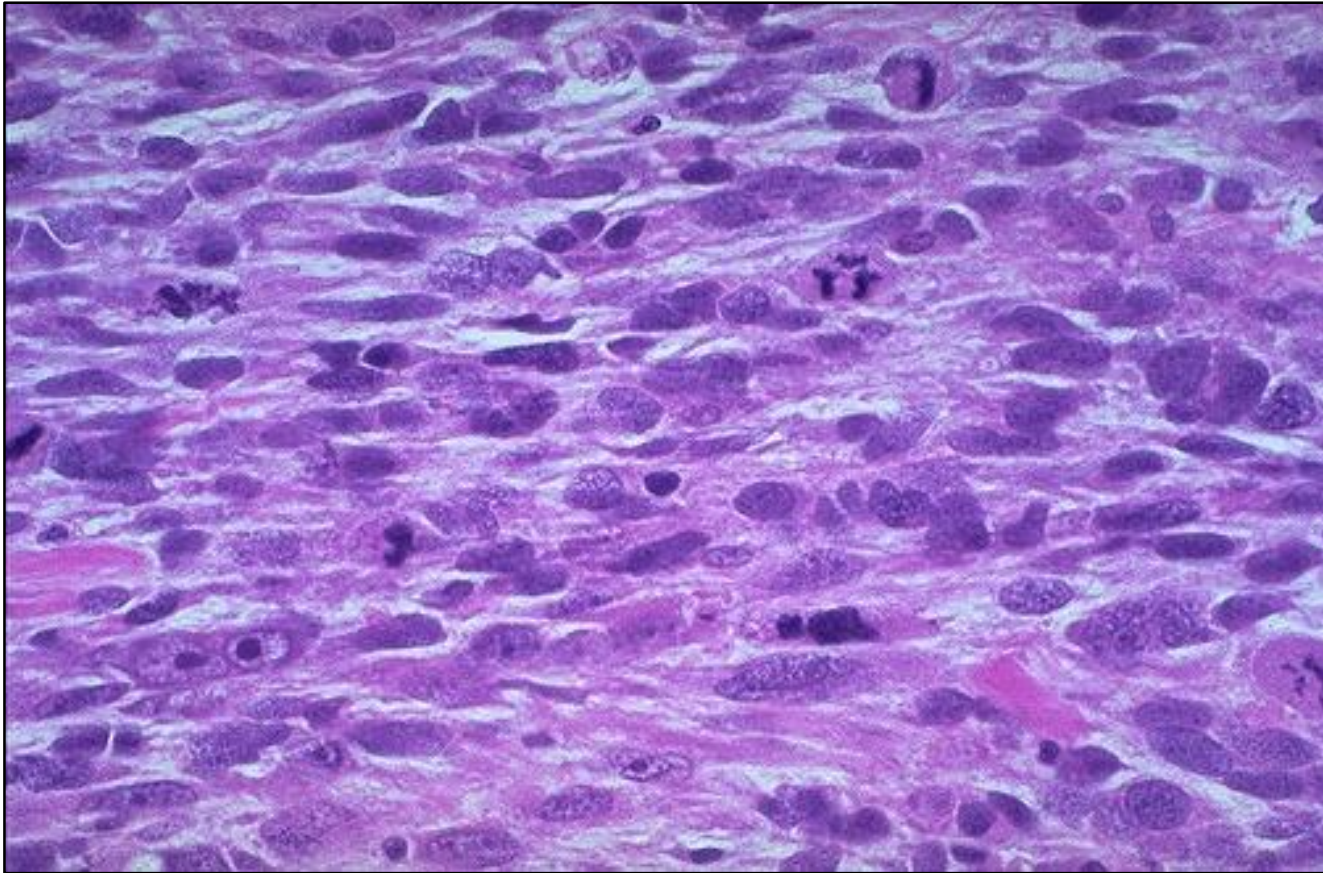
## *Endometrial Leiomyosarcoma - LPF*



*Here is the microscopic appearance of a leiomyosarcoma. It is much more cellular and the cells have much more pleomorphism and hyperchromatism than the benign leiomyoma.*

*An irregular mitosis is seen in the center*

## *Endometrial Leiomyosarcoma - HPF*



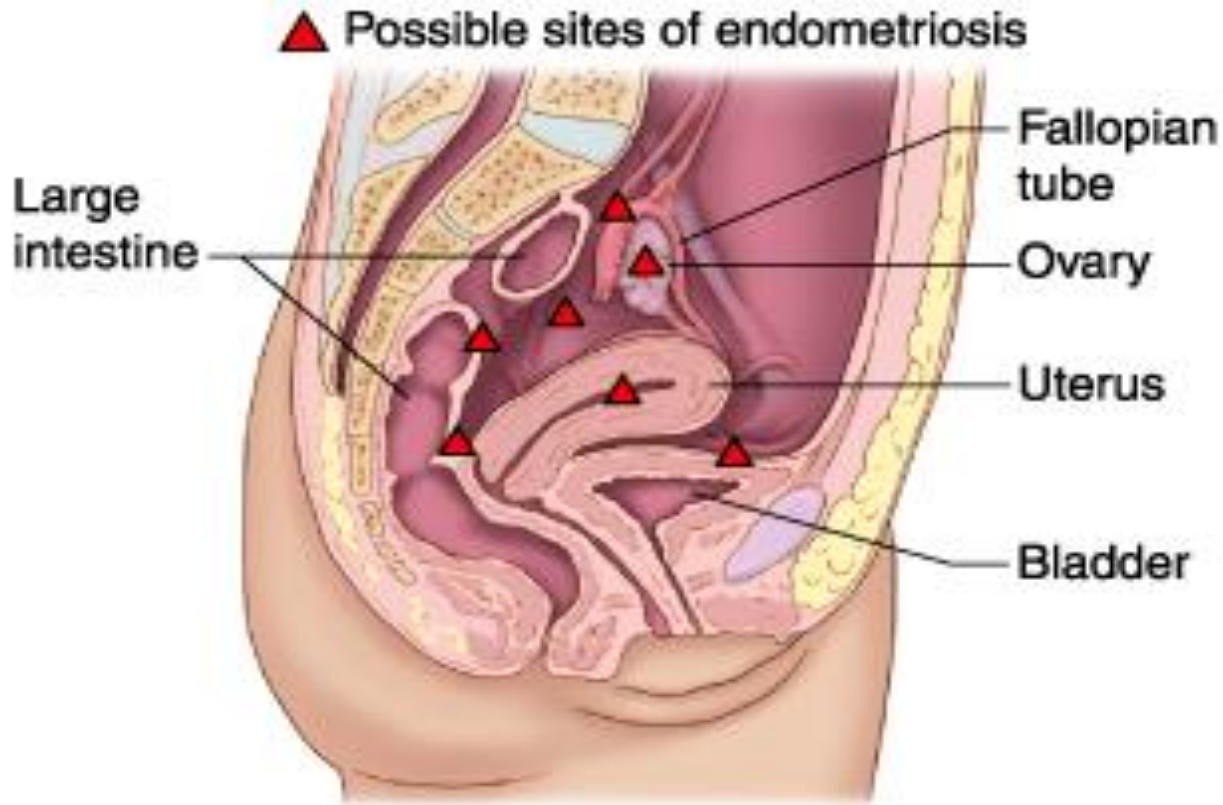
*As with sarcomas in general, leiomyosarcomas have spindle cells. Several mitoses are seen here, just in this one high power field.*





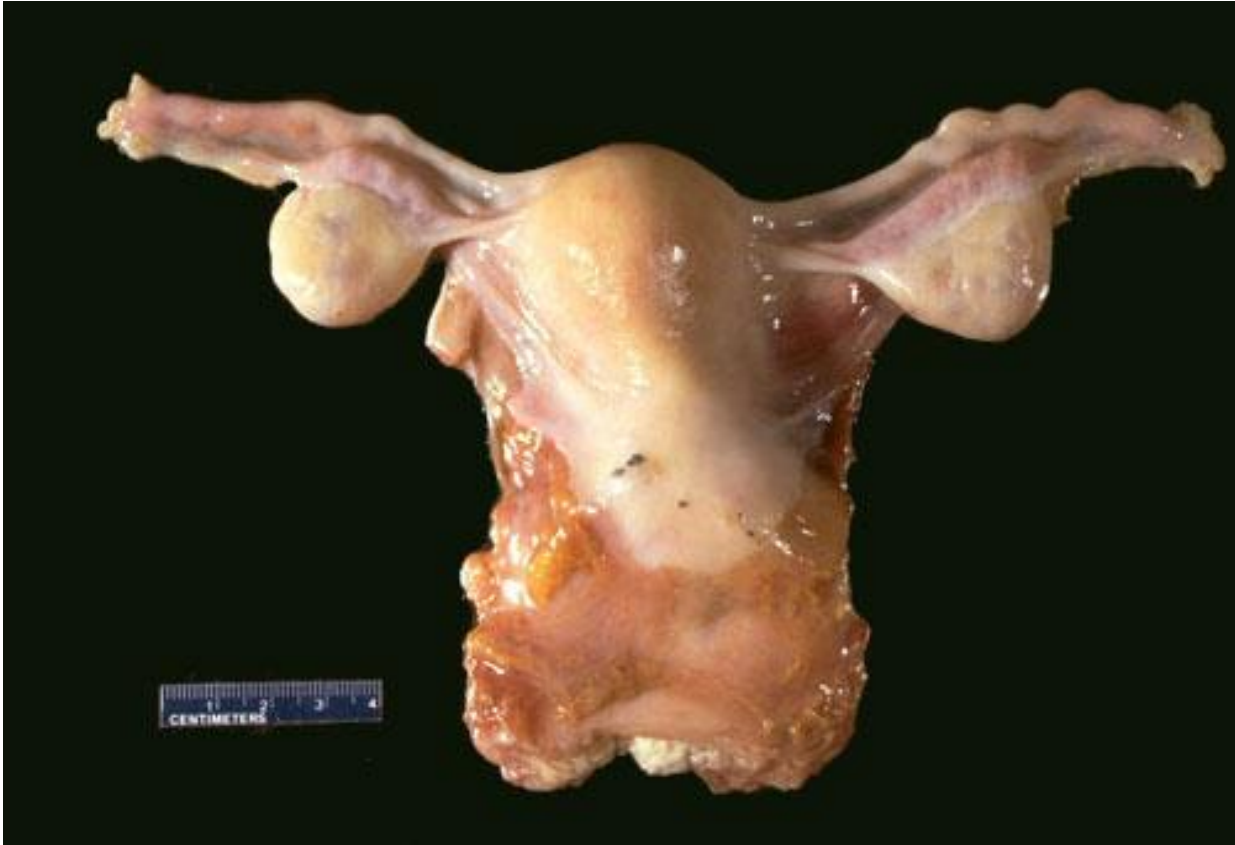
# ***ENDOMETRIOSIS***

## *Endometriosis sites - Diagram*



***Endometriosis, a chronic noncancerous disorder of the female reproductive system, develops when the endometrium grows outside the uterus. Common sites for endometriosis include ovaries, fallopian tubes, external genitalia (vulva), ligaments supporting the uterus, intestine, bladder, cervix, and vagina.***

## *Endometriosis - Gross*



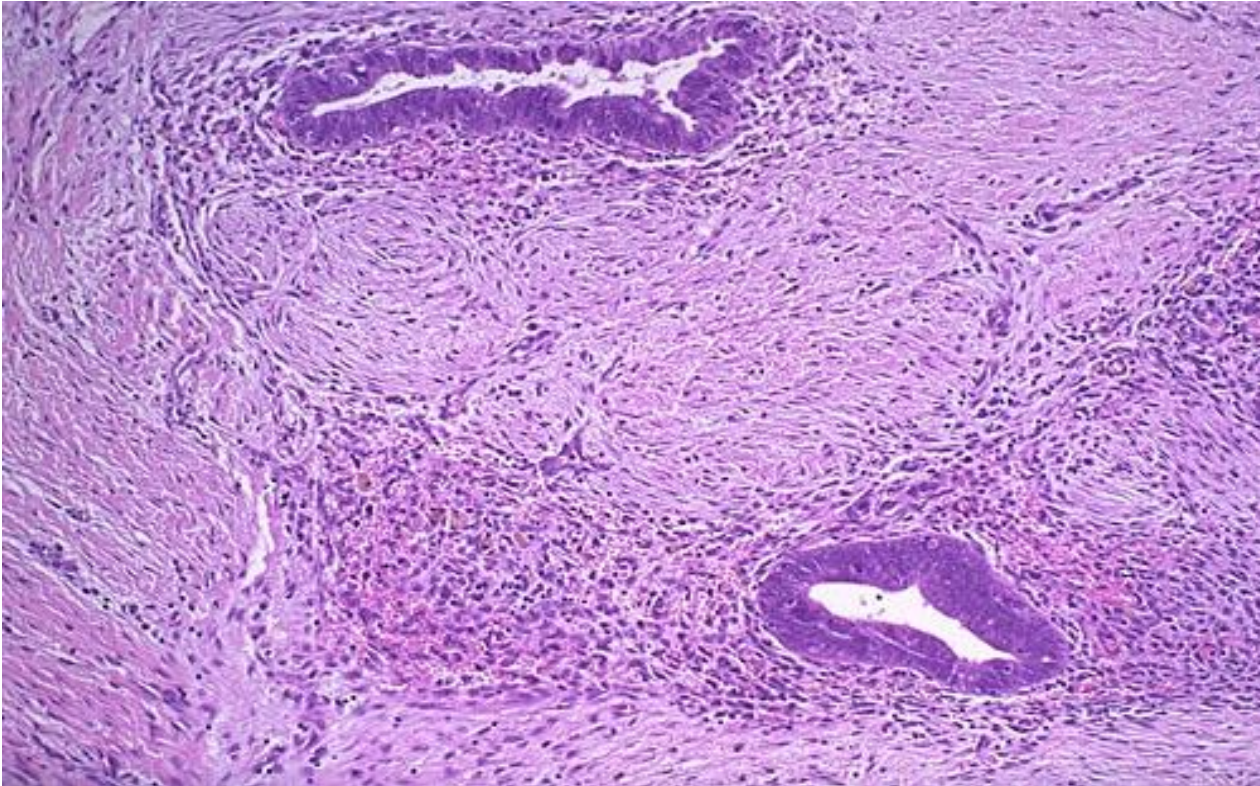
*Grossly, in areas of endometriosis the blood is darker and gives the small foci of endometriosis the gross appearance of "powder burns". Small foci are seen here just under the serosa of the posterior uterus in the pouch of Douglas.*

## ***Endometriosis - Gross***



***Upon closer view, these five small areas of endometriosis have a reddish-brown to bluish appearance. Typical locations for endometriosis may include: ovaries, uterine ligaments, rectovaginal septum, pelvic peritoneum, and laparotomy scars***

## *Endometriosis - HPF Microscopy*



*Endometrial **glands** along with **stroma** are seen at high magnification in the smooth muscle wall of the colon. Endometriosis is symptomatic during reproductive years when patients may present with dysmenorrhea, pelvic pain, and infertility*

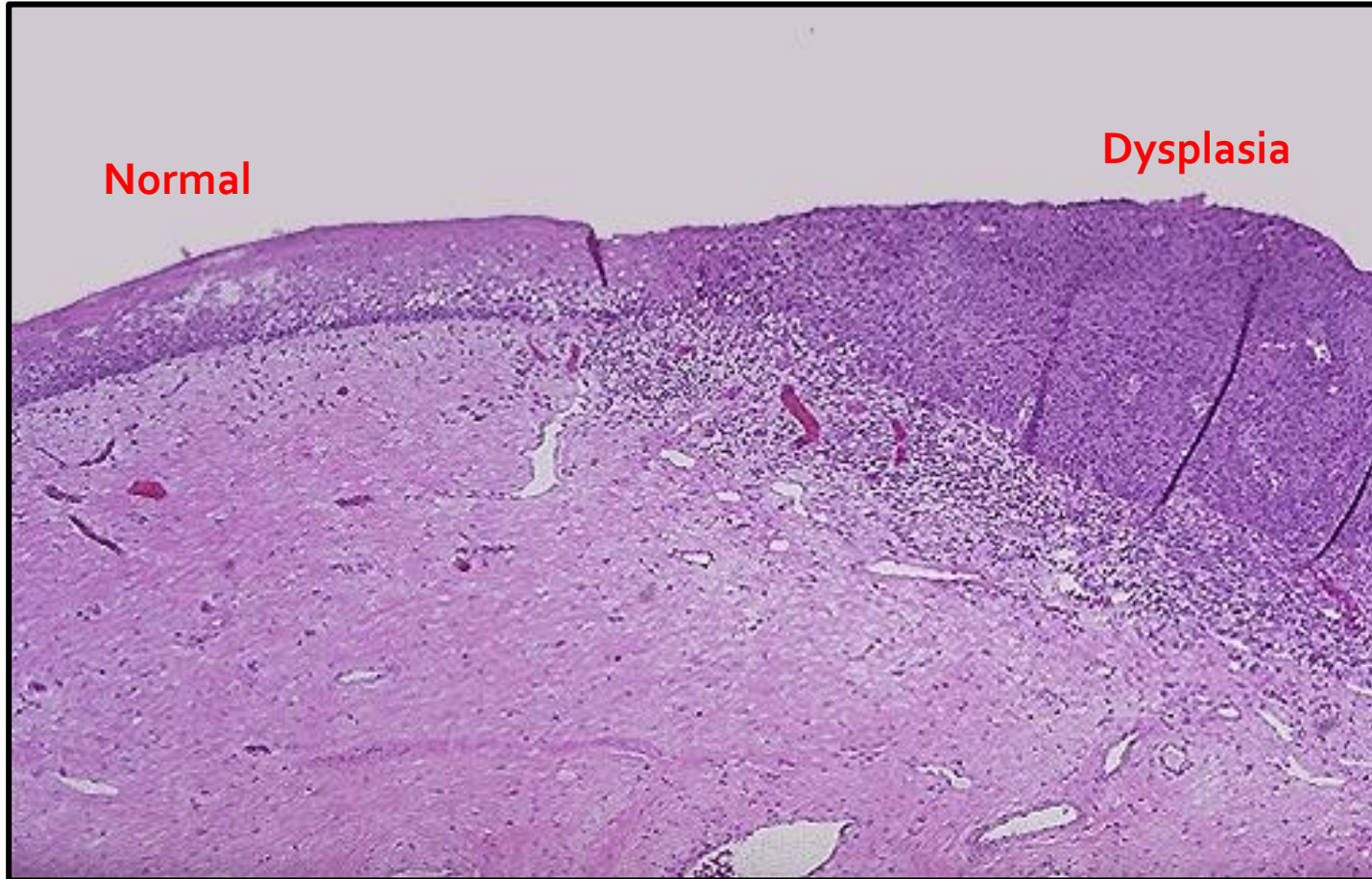


# ***UTERINE CERVIX***



# ***Cervical Dysplasia & Cervical Carcinoma***

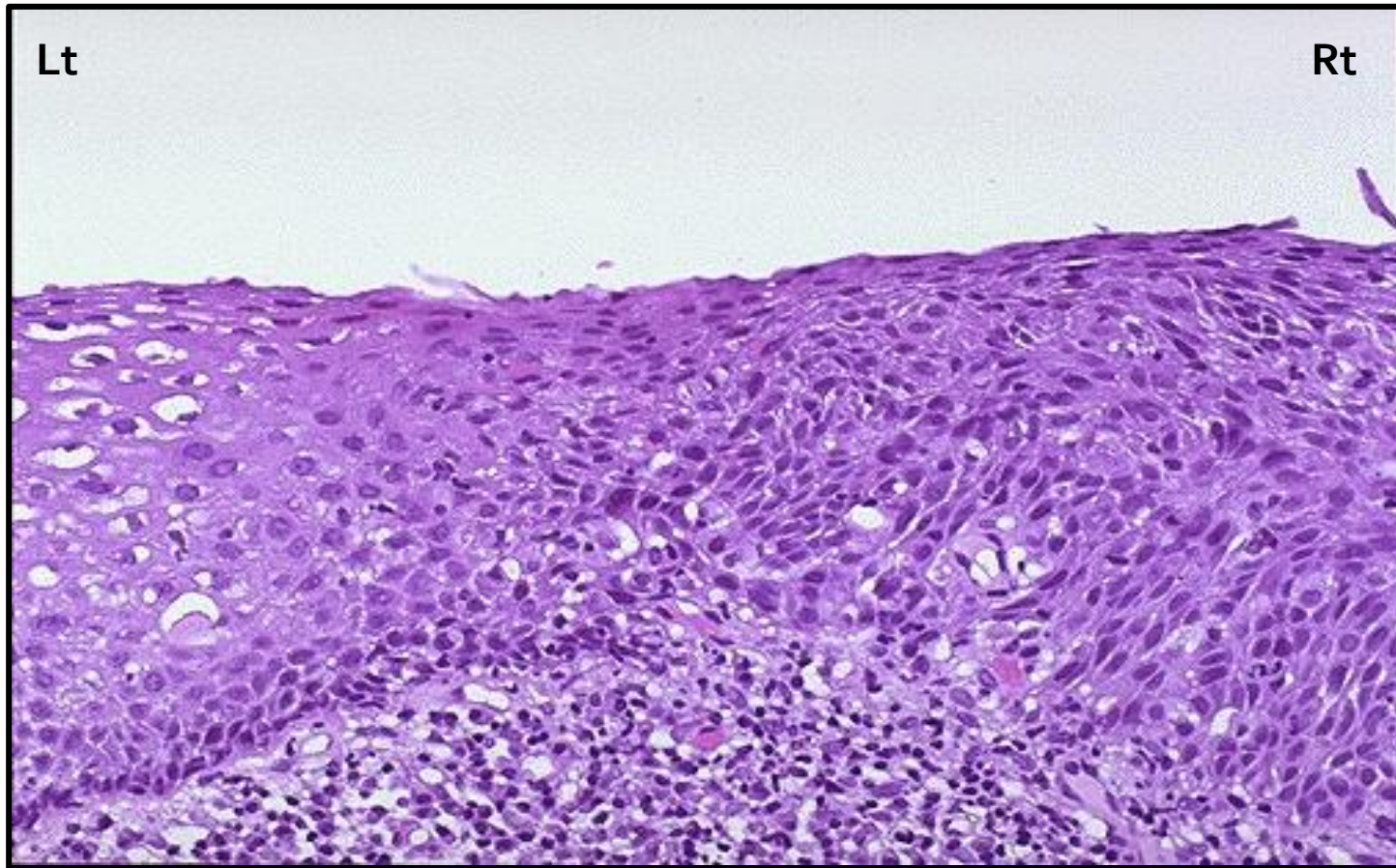
# Normal and Dysplastic Cervical Squamous Epithelium



*The normal cervical squamous epithelium at the left transforms to dysplastic changes on the right with underlying chronic inflammation*



## *Endocervical Squamous Dysplasia*



*Cervical squamous dysplasia is seen at medium magnification, extending from the center to the right. The epithelium is normal at the left.*

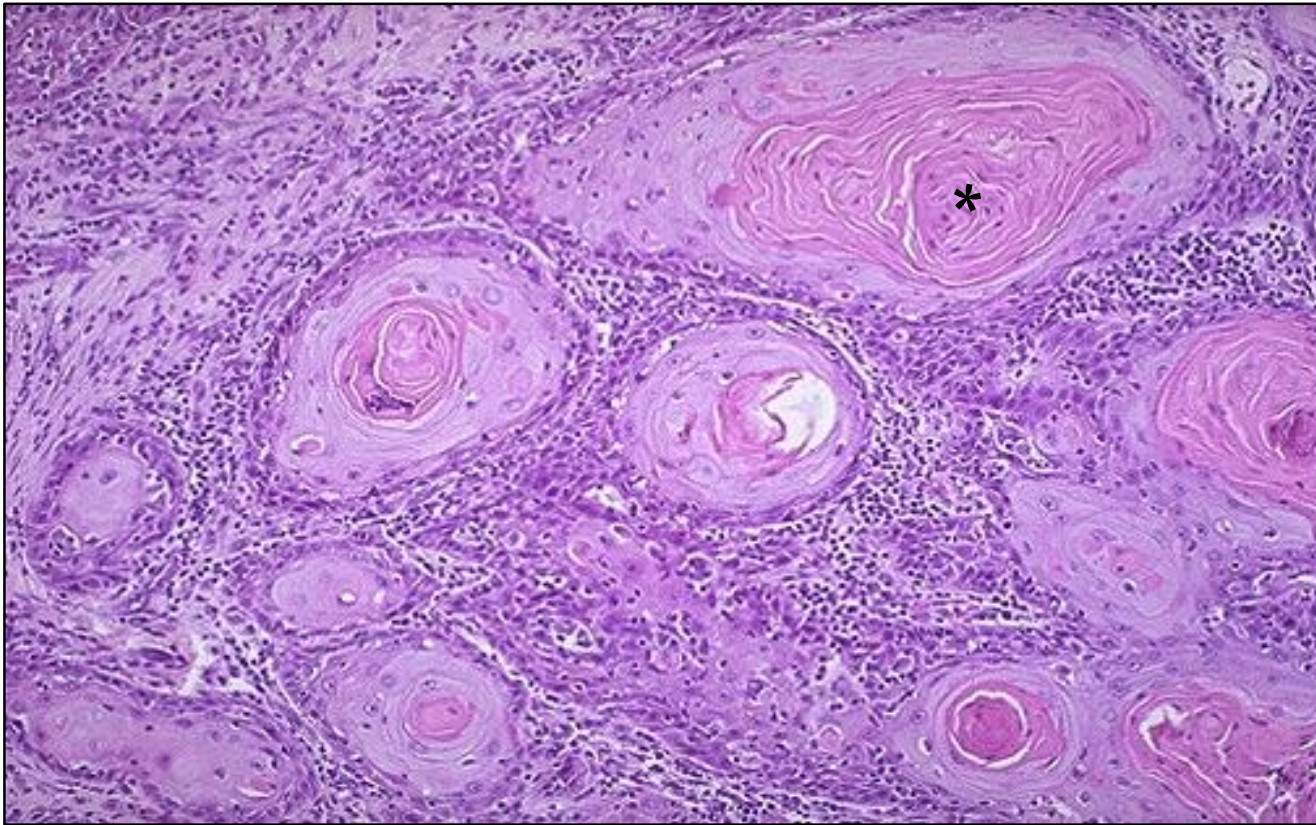
*Note how the dysplastic cell nuclei at the right are larger and darker, and the dysplastic cells have a disorderly arrangement*

## *Cervical Squamous Cell Carcinoma*



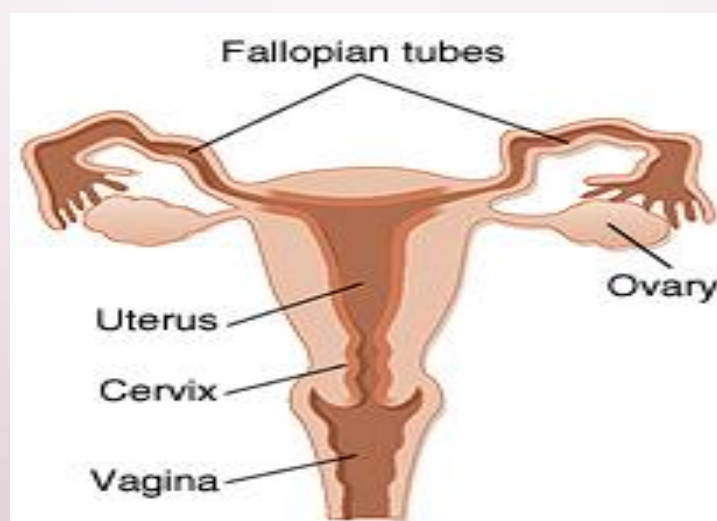
*This is the gross appearance of a cervical squamous cell carcinoma that is still limited to the cervix (stage I).  
The tumor is a fungating red to tan to yellow mass.*

## *Cervical Squamous Cell Carcinoma - HPF*

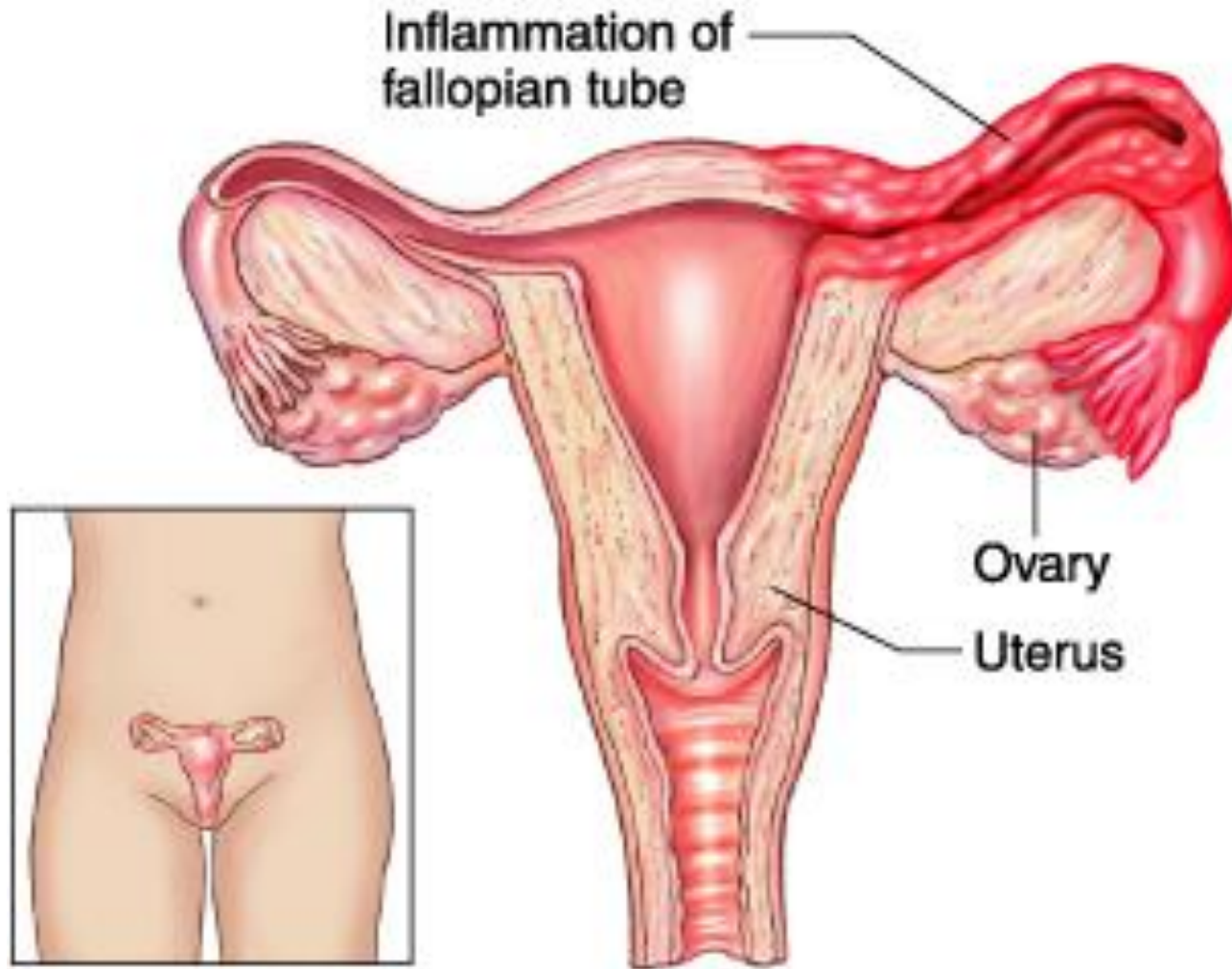


*At high magnification, nests of neoplastic squamous cells are invaded through a chronically inflamed stroma. This cancer is well-differentiated, as evidenced by keratin pearls (\*) within nests of tumor cells. However, most cervical squamous carcinomas are non-keratinizing.*

# FALLOPIAN TUBES



## *Normal vs Inflamed Fallopian Tube*



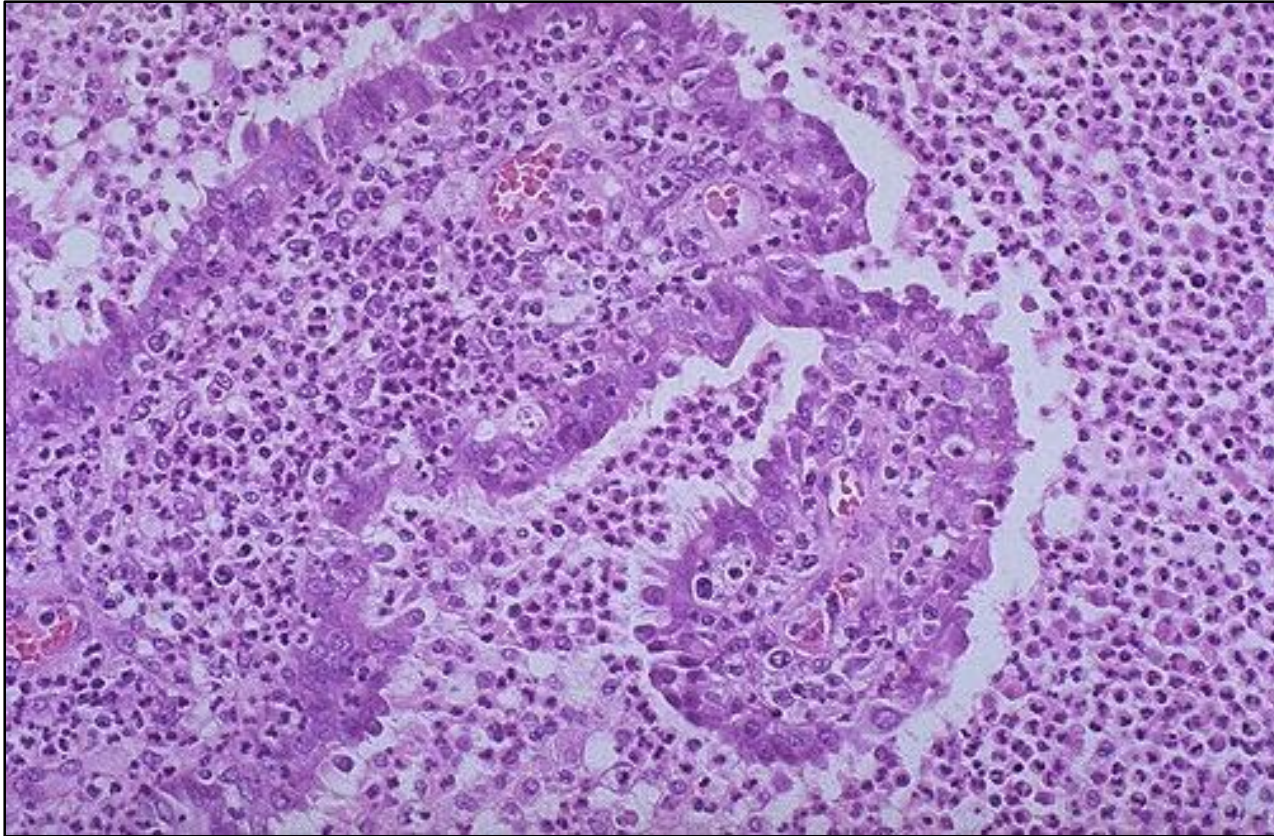
## *Acute Salpingitis - Gross*



- Complications of salpingitis:*
- a. Infertility.*
  - b. Ectopic pregnancy.*
  - c. Tubo-ovarian abscesses.*

- *Congested and swollen fallopian tube.*
- *Haemorrhagic and yellowish patches on the serosal surface of the fallopian tube.*

## Acute Salpingitis - Microscopic



- a- Oedematous and swollen fallopian tube mucosa.*
- b- Infiltration by numerous neutrophils.*

### Organisms responsible

- *Gonococci.*
- *Streptococci.*
- *Staphylococcus aureus.*
- *Chlamydia and mycoplasma hominis.*
- *Mycobacterium tuberculosis.*