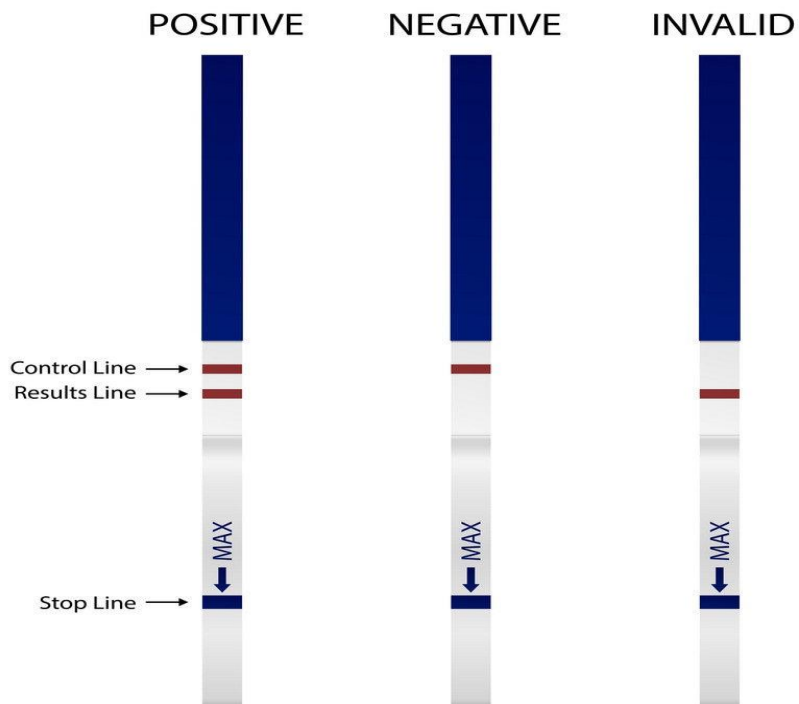


BLOCK F OSPES

BY FATIMA HAIDER

KGMC

- What is the result of the following pregnancy test



- What are the causes of false pregnancy test
 1. Pregnancy test has expired
 2. Being on certain medications that affect hCG levels
 3. Having an ectopic pregnancy
 4. Having residual hCG after abortion or miscarriage
- From where is hcg secreted – from Placenta
- Identify thyroglossal cyst

A thyroglossal duct cyst is a mass or lump in the front part of neck that is filled with fluid.



- **What is its reason (of thyroglossal cyst)**

Cysts may form anywhere along the course of thyroglossal duct. Normally, the thyroglossal duct atrophies and disappears, but a remnant of it may persist and form a cyst in the tongue or in the anterior part of the neck, usually just inferior to hyoid bone.

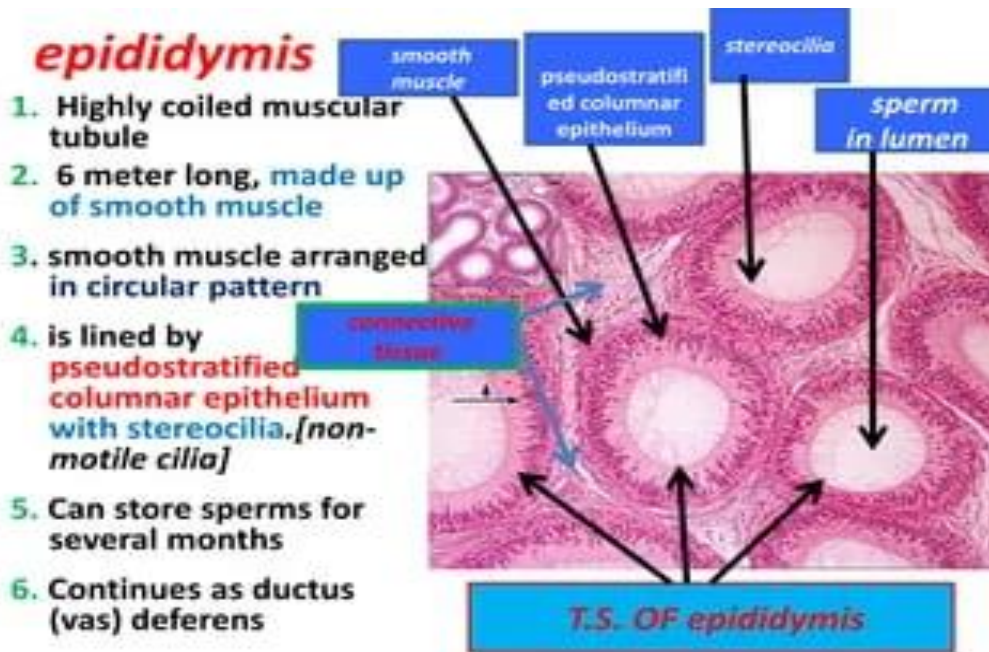
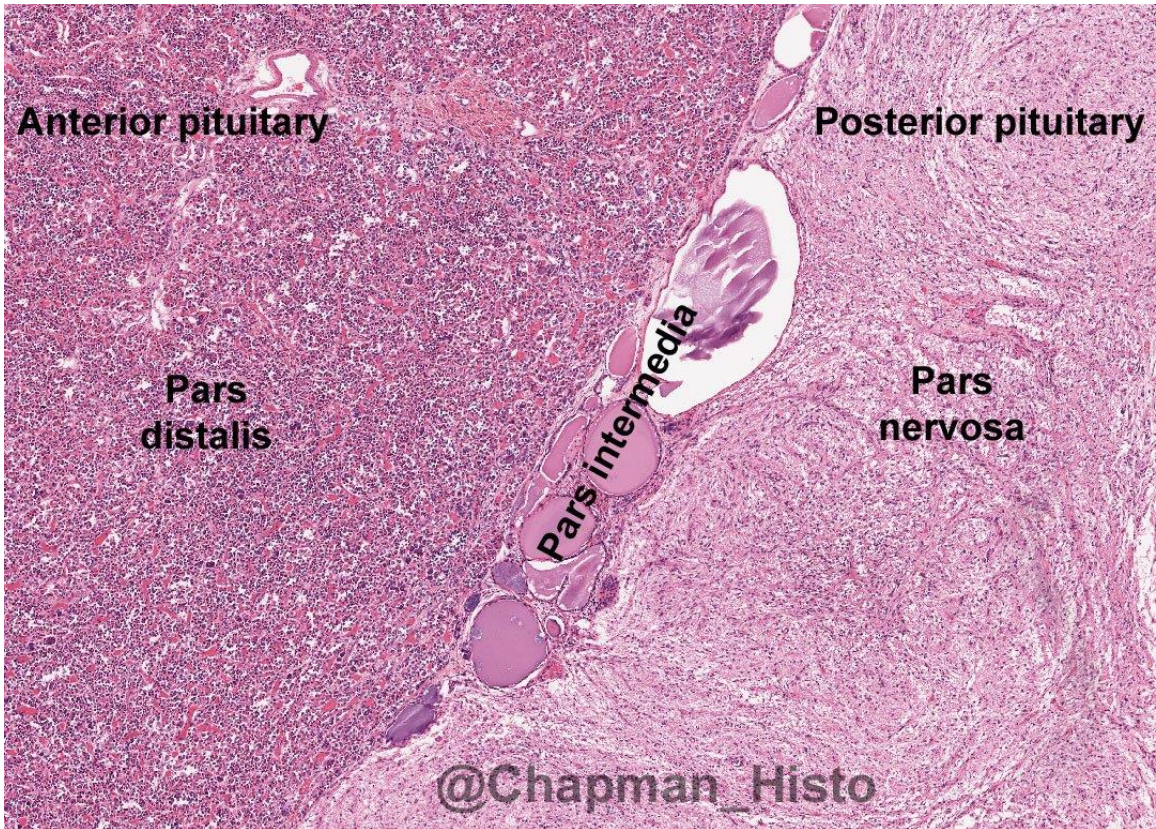
- **Derivatives of paramesonephric duct**

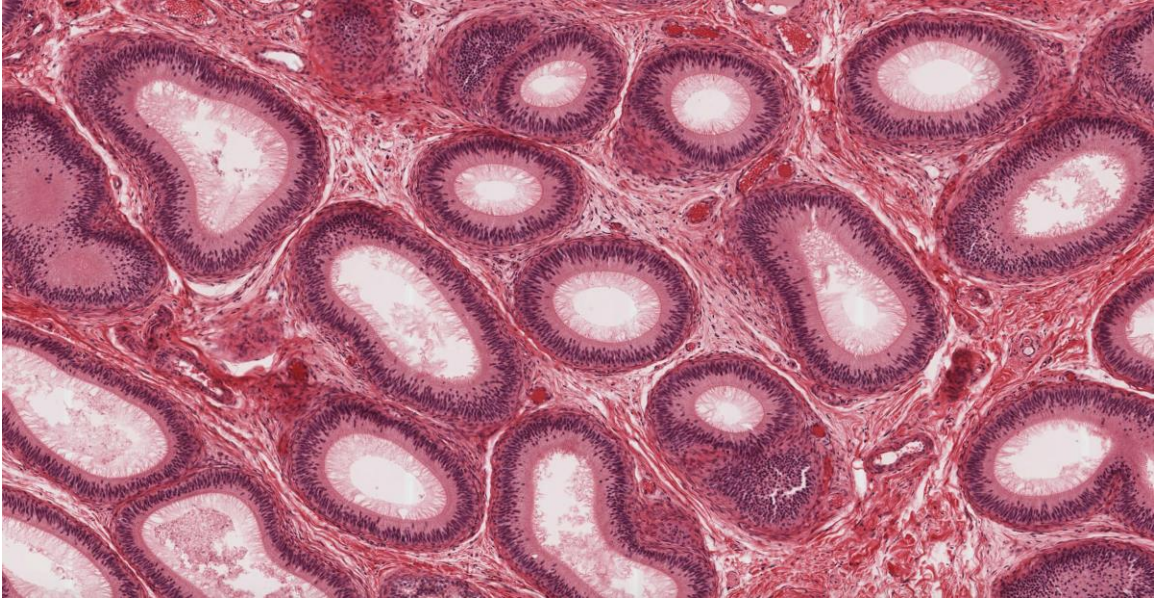
Embryonic structure	Female	Male homologue
Gonad	Ovary	Testis
Cortex	Ovarian follicles	Seminiferous tubules
Medulla	Rete ovarii	Rete testis
Gubernaculum	Ovarian ligament and round ligament of uterus	Gubernaculum
Mesonephric tubules	Epoophoron, paroophoron	Ductuli efferentes
Mesonephric duct	Appendix vesiculosa, duct of epoophoron, duct of Gartner	Appendix of epididymis, duct of epididymis, ductus deferens, ejaculatory duct and seminal vesicles
Paramesonephric duct	Hydatid of Morgagni, uterine tube, uterus	Appendix of testis
Urogenital sinus	Urethra, vagina urethral, paraurethral and greater vestibular glands	Urethra, prostatic utricle, prostate and bulbourethral glands
Sinus tubercle	Hymen	Seminal colliculus
Phallus	Clitoris	Penis
Urogenital folds	Labia minora	Ventral aspect of penis
Labioscrotal swellings	Labia majora	Scrotum

- **What is the embryonic origin of adrenal medulla**

Neural crest cells

- Slides.... Pituitary and epididymis

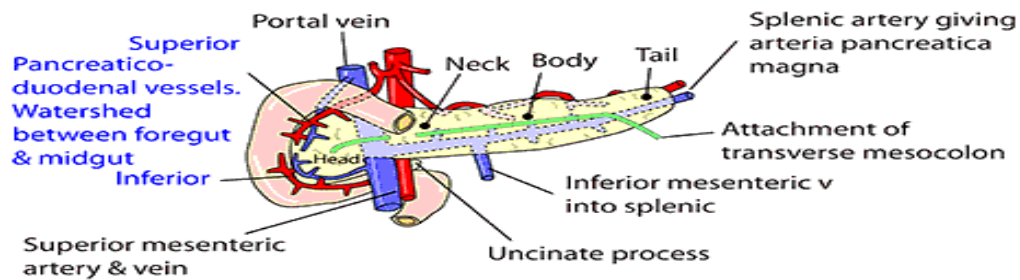




- Contents of ischiorectal fossa
 1. Fat
 2. Pudendal canal (internal pudendal artery, internal pudendal vein, pudendal nerve)
- Any 4 posterior relations of pancreas

PANCREAS - RELATIONS

Anterior: lesser sac, pylorus, 1st part of duodenum, superior mesenteric artery & vein, transverse mesocolon, stomach
Superior: splenic artery
Lateral on right: 2nd part of duodenum, ampulla of Vater
Lateral on left: hilum of spleen
Posterior: left crus of diaphragm, psoas, right renal vein, inferior vena cava, bile duct, spleen, left renal vessels, left kidney, left suprarenal gland, coeliac plexus, inferior mesenteric vein, splenic vein, portal vein, superior mesenteric artery & vein, aorta

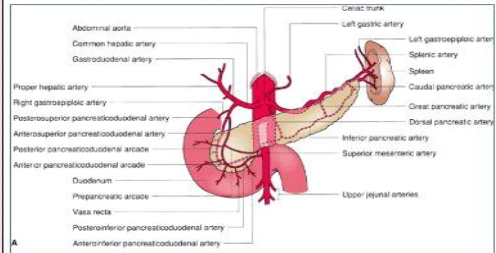


- Blood supply of pancreas

Blood Supply of Pancreas

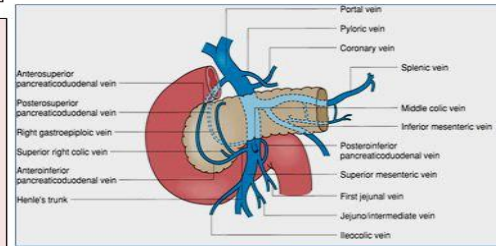
Arteries

- **Head & neck:** Supplied by branches from:
 - Celiac trunk through **Superior pancreatico-duodenal artery**
 - Superior mesenteric artery through **Inferior pancreatico-duodenal artery**
- **Body and tail:** Supplied by Splenic artery through 8-10 branches



Veins

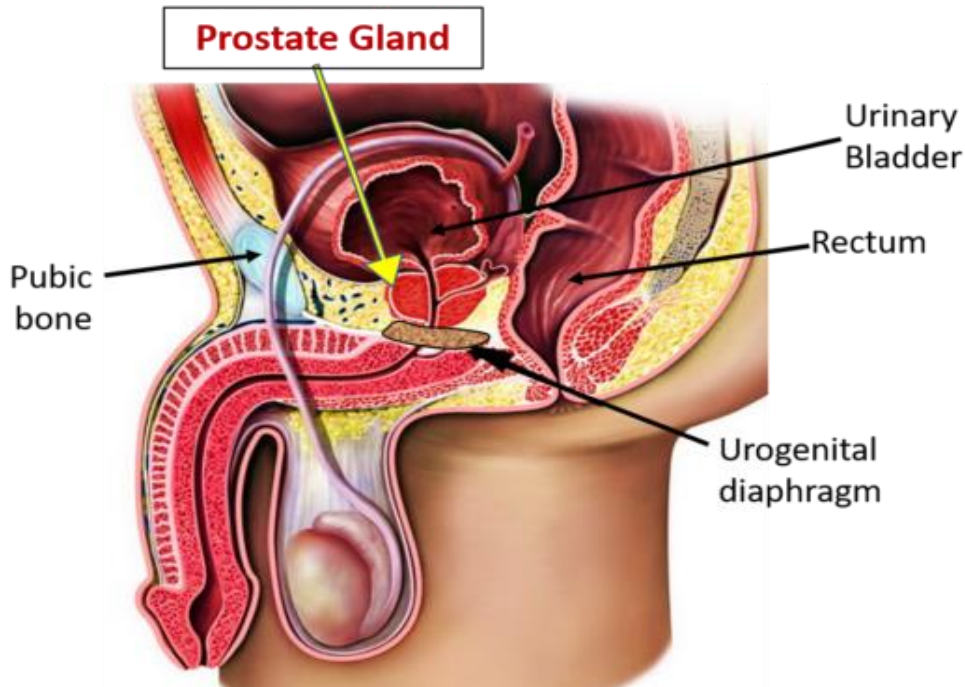
- **Head & neck:** Drained by anterior and posterior venous arcades that form the **superior & inferior pancreaticoduodenal veins** which follow the corresponding arteries.
- **Body and tail:** Drained by splenic vein, which is a tributary of portal vein



Nov-2014

10

- Identify prostate gland

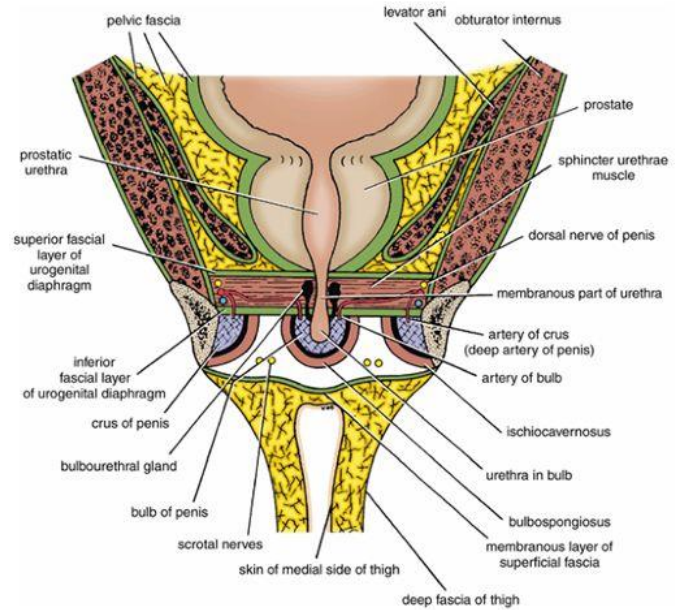


- Identify urogenital diaphragm

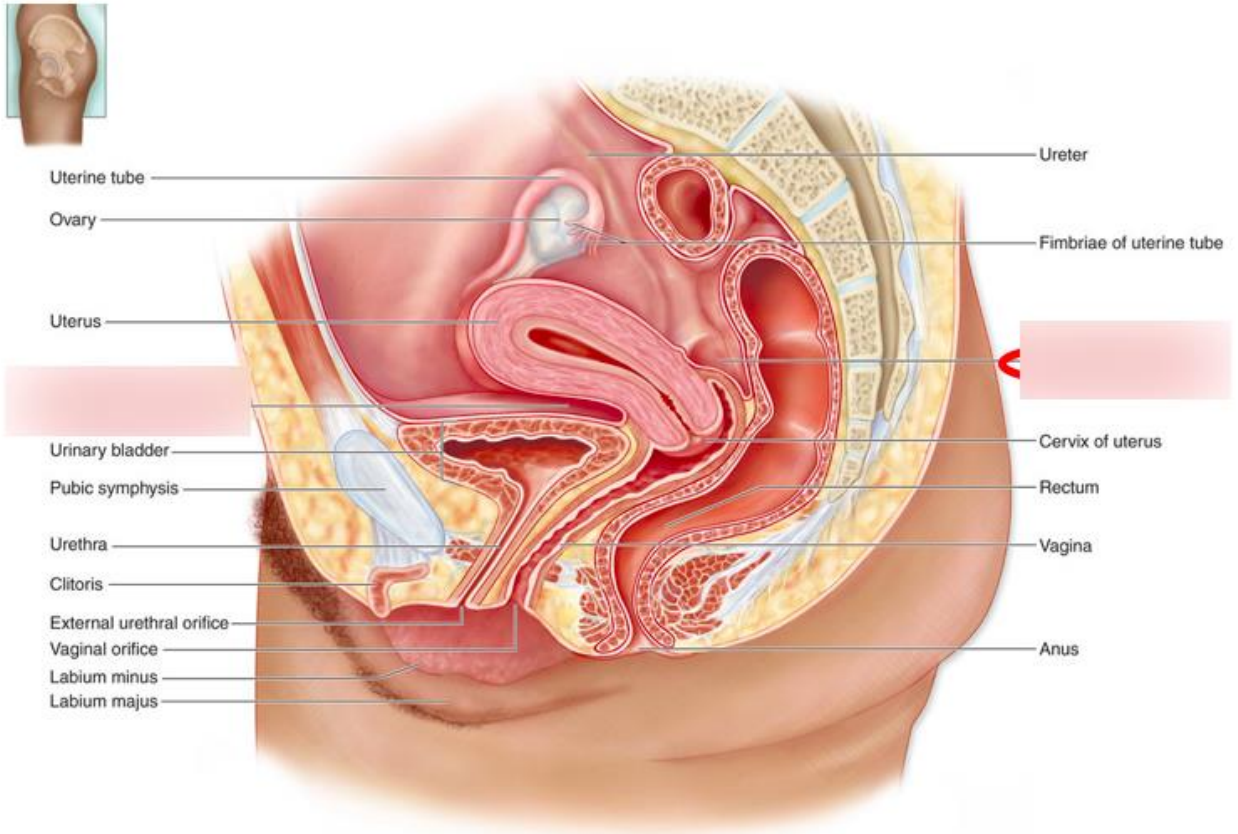
The urogenital diaphragm, also called the triangular ligament, is a **strong, muscular membrane** that occupies the area between the **symphysis pubis** and **ischial tuberosities**

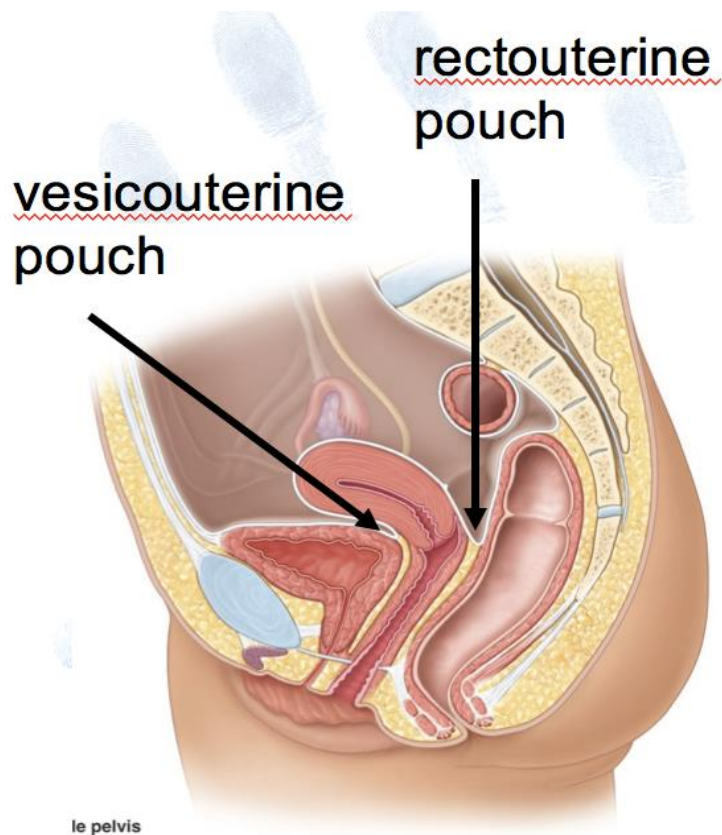
Urogenital Diaphragm

The urogenital diaphragm is a triangular musculofascial diaphragm situated in the anterior part of the perineum. It is formed by the sphincter urethrae muscle & deep transverse perineal muscles, which are enclosed between a superior and an inferior layer of fascia of the urogenital diaphragm. The inferior layer of fascia is often referred to as the **perineal membrane**.



- Identify rectum and rectouterine pouch in model

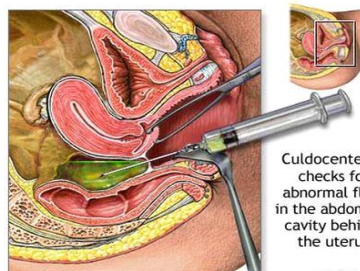




- Significance of rectouterine pouch

CLINICAL CORRELATES

- The rectouterine pouch is the lowest portion of the peritoneal cavity, it can collect fluid and cells from peritoneal cavity
- Culdocentesis is aspiration of fluid from the cul-de-sac of Douglas (rectouterine pouch) by a needle puncture of the **posterior vaginal fornix near the midline between the uterosacral ligaments;**
- **Indications: the procedure is done when pain occurs in the lower abdomen and pelvic regions and when a ruptured ectopic pregnancy or ovarian cyst is suspected!!!**

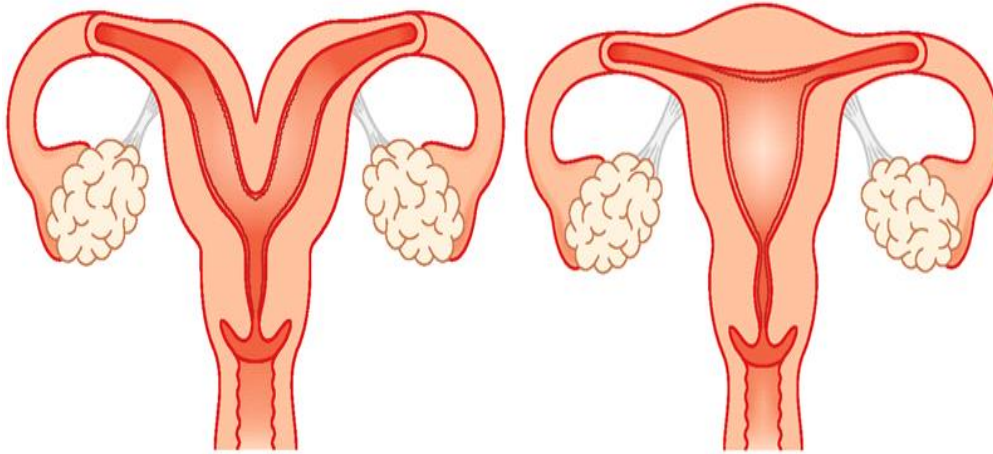


Culdocentesis:
checks for
abnormal fluid
in the abdominal
cavity behind
the uterus

ADAM

-
- Bicornuate uterus..

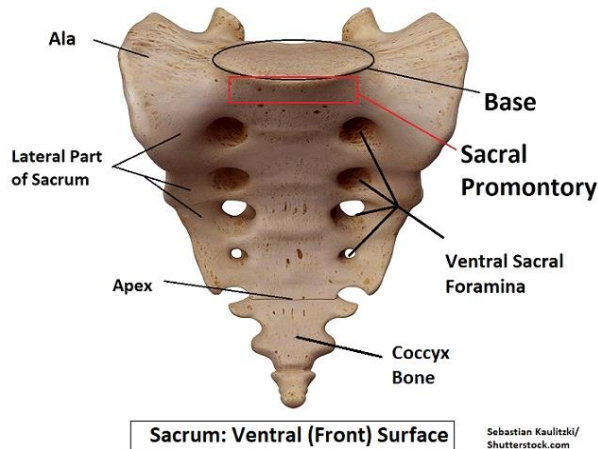
A bicornuate uterus is a uterine malformation that is produced due to impairment in the fusion of Mullerian ducts. The bicornuate uterus is a rare anomaly, but it is associated with worse reproductive outcomes; recurrent pregnancy loss and preterm labor are most common



4. Bicornuate uterus

1. Normal uterus

- Identity sacral promontory



Sacrum: Ventral (Front) Surface

Sebastian Kaulitzki/
Shutterstock.com

RegisteredNurseRN.com

-
- Biochem practical.... Test for determination of glucose in blood
- Which special instrument is used for detection of blood glucose and why is it used
-
- Three functions of following hormones... Growth hormone, cortisol, estrogen

ESTROGEN VERSUS PROGESTERONE

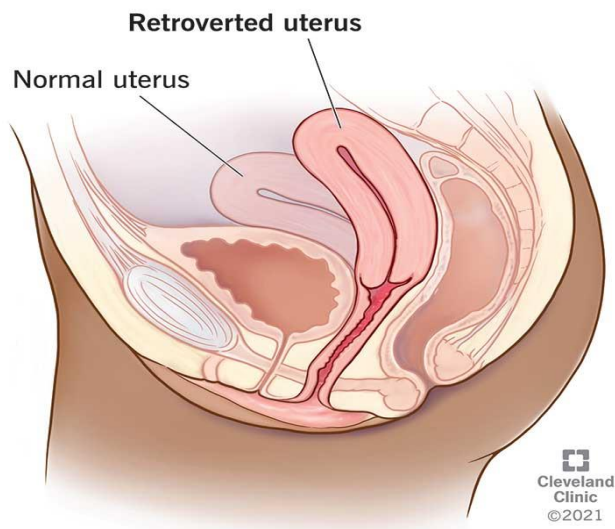
Estrogen refers to a steroid hormone that is important in the reproductive development in females	Progesterone refers to a steroid hormone that prepares the uterus for pregnancy
Produced by the growing Graafian follicle	Produced by the corpus luteum
Secreted by ovaries prior to ovulation; also produced by the placenta during pregnancy	Secreted by the ovaries after the ovulation; also produced by the placenta during pregnancy
Secretion is regulated by FSH	Secretion is regulated by LH
Involved in the formation and maintenance of secondary sex characteristics; also important in bone resorption	Involved in the formation and maintenance of endometrium and uterus
Involved in the enlargement of the uterus and breasts during pregnancy	Involved in the reduction of contractility of the uterus and stimulates the growth of mammary glands
	Visit www.pediaa.com

- Definition of renal glucosuria

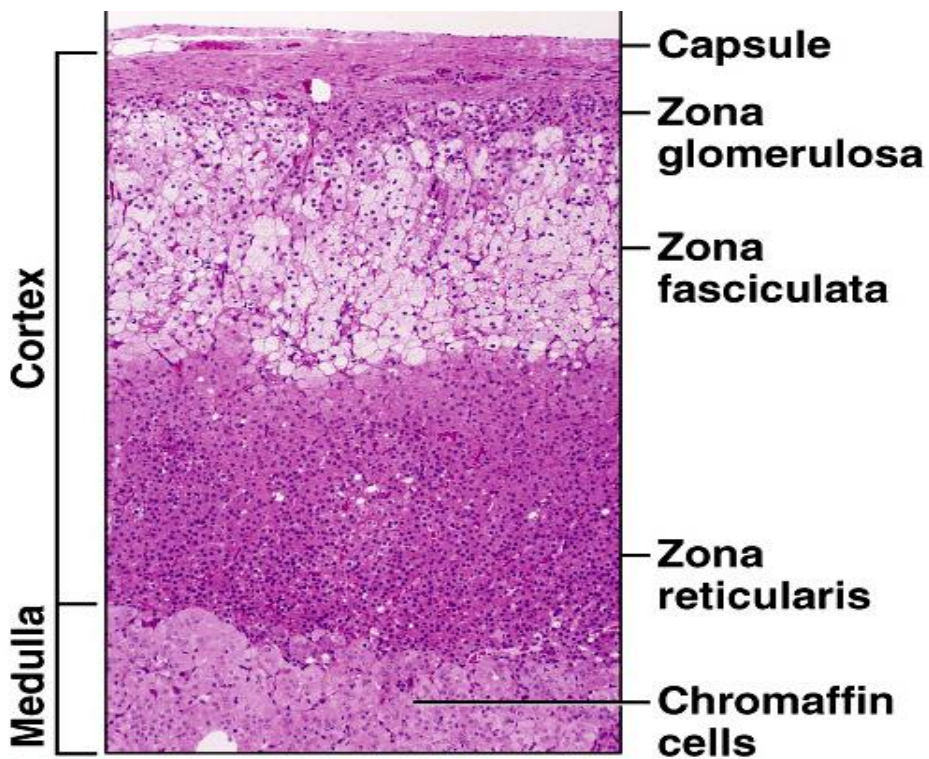
RENAL GLYCOSURIA

- This is observed due to impairment tubular reabsorption of glucose and have lowered renal threshold for glucose.
- In such cases, blood glucose level is below.
- 80mg% i.e. Below normal renal threshold for glucose, but glucose appears in the urine due to lowered renal threshold.
- Renal glycosuria is benign condition, unrelated to diabetes and it may occur temporarily in pregnancy without symptoms of diabetes.

- **Normal fasting glucose level** = 65 – 110 mg/dL
- Conditions in which glucose level is increased and decreased
- What are the contents of superficial perineal pouch
- **What are the passive supports of uterus**
 1. Muscular support
 - Pelvic diaphragm
 - Urogenital diaphragm
 - Perineal body
 2. Fibrous or fascial support
 - Pubocervical ligament
 - Sacrocervical ligament
 3. Transverse cervical ligament or cardinal ligament: between cervix and lateral wall
 4. Minor support: 3 ligaments
 - Broad ligament
 - Round ligament of uterus
 - Ligament of ovary
- Write down the positions of uterus shown in the figure



- Write down the three histological layers of the adrenal cortex



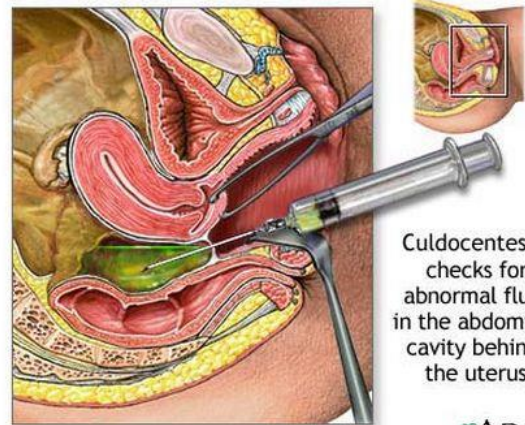
- Name the hormones secreted by adrenal medulla

1. Epinephrine
2. Norepinephrine

- Embryological origin of adrenal medulla
Neural crest cells
- Identify the muscles of the pelvic diaphragm
 1. Levator Ani
 - Puborectalis
 - Pubococcygeus
 - Ileococcygeus
 2. Coccygeus
- VIVA DR SHIMI
- Significance of pouch of Douglas

CLINICAL CORRELATES

- The rectouterine pouch is the lowest portion of the peritoneal cavity, it can collect fluid and cells from peritoneal cavity
- Culdocentesis is aspiration of fluid from the cul-de-sac of Douglas (rectouterine pouch) by a needle puncture of the posterior vaginal fornix near the midline between the uterosacral ligaments;
- **Indications: the procedure is done when pain occurs in the lower abdomen and pelvic regions and when a ruptured ectopic pregnancy or ovarian cyst is suspected!!!**



Culdocentesis: checks for abnormal fluid in the abdominal cavity behind the uterus

ADAM

- Contents of superficial perineal pouch in male
 1. Root of penis formed of bulb and 2 crura

2. Muscles

- Bulbospongiosus
- Ischiocavernosus
- Superficial transverse perineal muscle

3. Two scrotal nerves

4. Two scrotal vessels

• **Contents of superficial perineal pouch in female**

1. Root of clitoris formed of bulb of vestibule and 2 crura

2. Greater vestibular glands

3. Muscles

- Bulbospongiosus
- Ischiocavernosus
- Superficial transverse perineal muscle

4. Two labial vessels

5. Two labial nerves

• **Contents of Deep Perineal Pouch**

1. Urethra

2. Vagina or bulbourethral glands

3. Muscles

- External urethral sphincter around urethra
- Deep transverse perineal muscles

4. Internal pudendal vessels

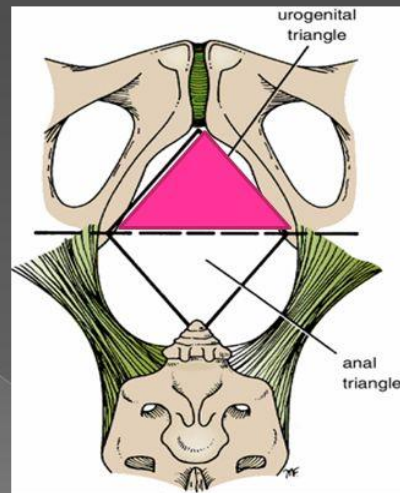
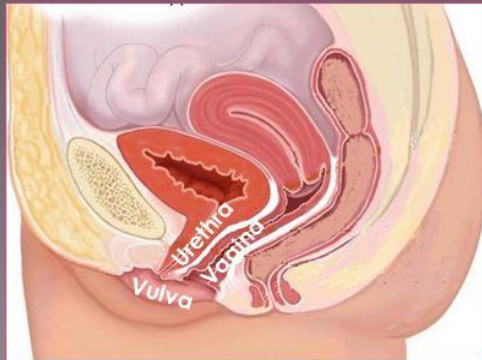
5. Dorsal nerve of penis or clitoris

• **Urogenital triangle... Boundaries, contents**

Urogenital Triangle in female

BOUNDARIES :

- **Anteriorly** : Symphysis pubis
- **Posteriorly** : Transverse line passing through the 2 ischial tuberosities.
- **Laterally** : Ischiopubic rami & ischial tuberosities.



CONTENTS :

- Lower part of **urethra & vagina**.
- External genitalia (vulva).

- **Length of urethra**

Male urethra – 20 cm

Female urethra – 4 cm

- **Parts of male urethra**

1. Preprostatic part – surrounded by internal urethral sphincter
2. Prostatic part – widest part
3. Membranous part – narrowest part surrounded by external urethral sphincter. It lies in deep perineal pouch
4. Spongy part – have 2 dilatations i.e. bulbar fossa and navicular fossa
Spongy part receives opening of bulbourethral glands

- **Blood supply of urethra**

Arterial supply

- 1) **urethral artery**– br. of internal pudendal artery
- 2) **dorsal artery of penis**- br. of internal pudendal artery

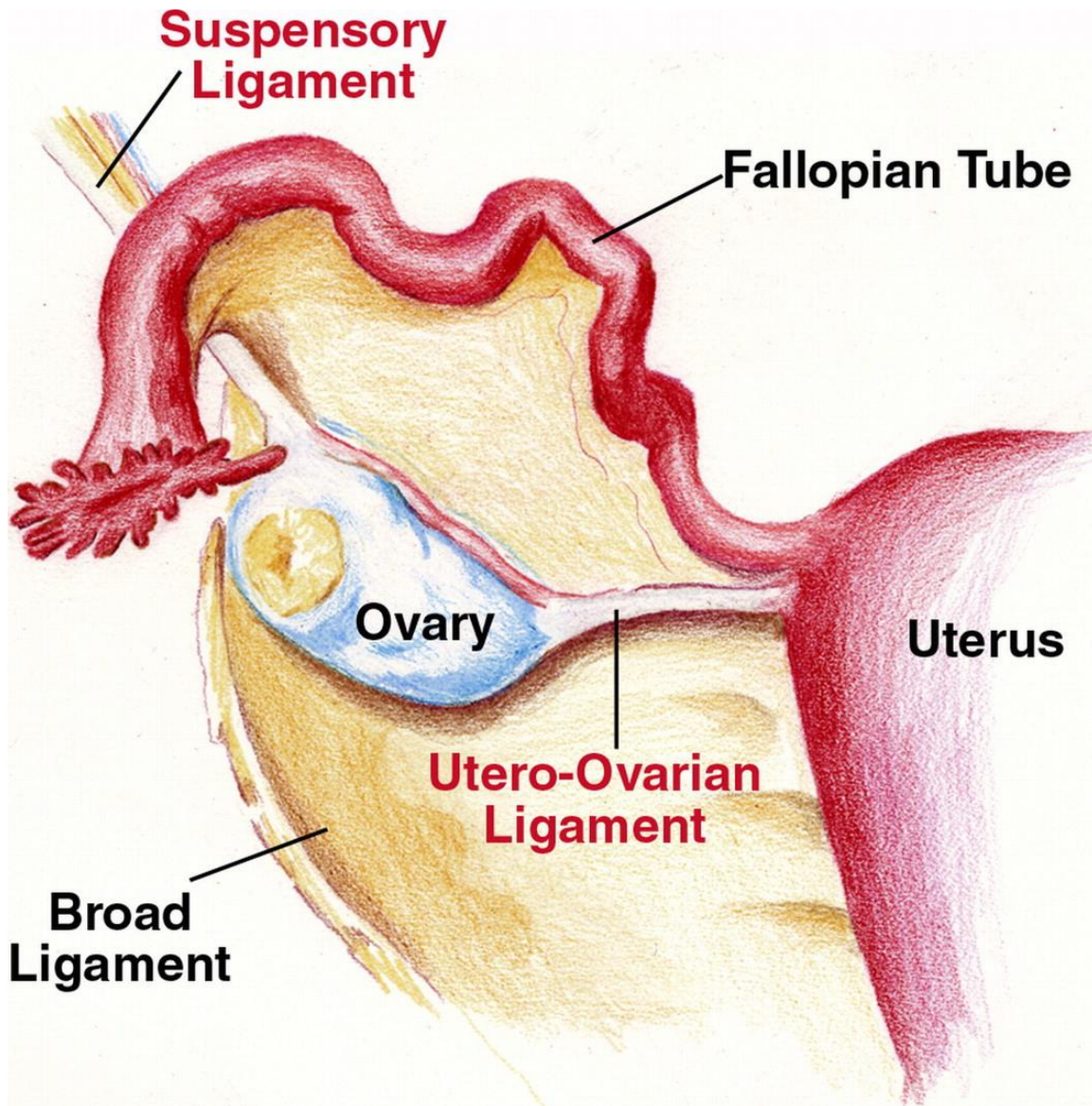
Venous drainage—

- 1) **Anterior urethra**—drained by dorsal vein of penis→internal pudendal vein→**prostatic venous plexus**
- 2) **Posterior urethra**— drained by prostatic and vesicle -venous plexus→**internal iliac veins**

- **Lobes of prostate : 5 Lobes**

1. Anterior – does not contain glands
2. Posterior
3. Middle – rich in glands; liable to enlargement, obstructing the urethra
4. Right
5. Left

- **Ligaments of ovary**



- **Position of uterus:** Anteverted and anteflexed
Anteverted – Long axis of vagina makes an angle of 90 degree with long axis of cervix
Anteflexed – Long axis of cervix makes an angle of 170 degree with long axis of body of uterus
- VIVA DR KULSOOM...
- **Types of sex hormones**

Sex Hormone Ligands

- **Androgens:** testosterone, adrenal prehormones (DHEA, DHEAS)
- **Estrogens:** estradiol, estrone, estriol
- **Progestins:** progesterone

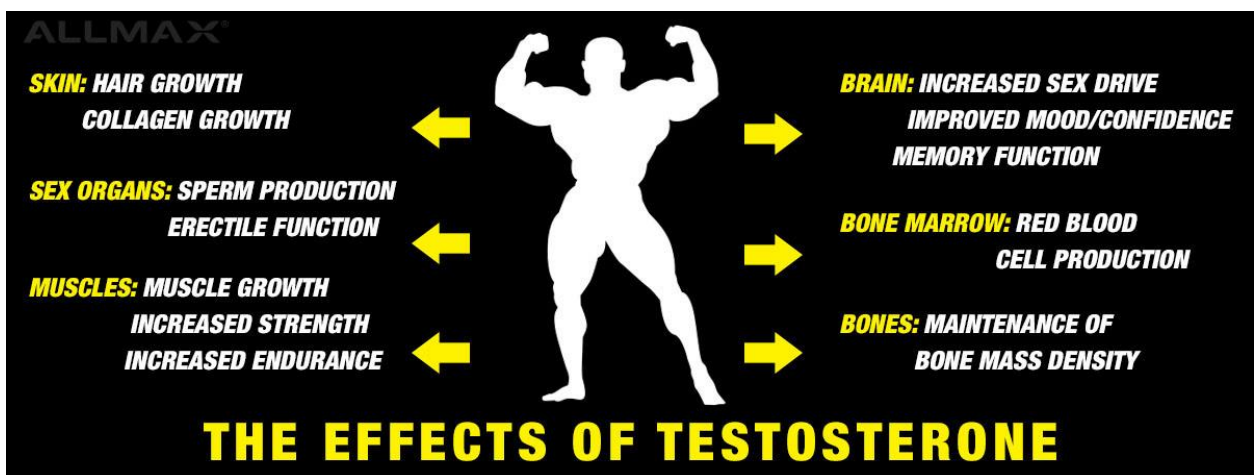
- Types of estrogen
- Function of relaxin in male

Relaxin stimulates sperm motility from suboptimal samples and increases sperm penetration into oocytes. Thus, relaxin may be an effective therapeutic agent in male infertility.

- Hormones secreted by placenta

1. Estrogen
2. Progesterone
3. hCG

- Role of androgens in metabolism



- **Functions of hcg** - maintains production of progesterone from ovary
- Effects of overproduction of estrogen

Effects of Estrogen

Brain

Estrogen helps to maintain body temperature.
 Estrogen may delay memory loss.
 Estrogen helps to regulate parts of the brain that prepare the body for sexual and reproductive development.

Breast

Estrogen stimulates the development of the breasts at puberty and prepares the glands for future milk production.

Heart & Liver

Estrogen helps to regulate the liver's production of cholesterol, thus decreasing the build-up of plaque in the coronary arteries.

Uterus

Estrogen stimulates the maturation of the uterus.
 Estrogen helps to prepare the uterus to nourish a developing fetus.

Ovary

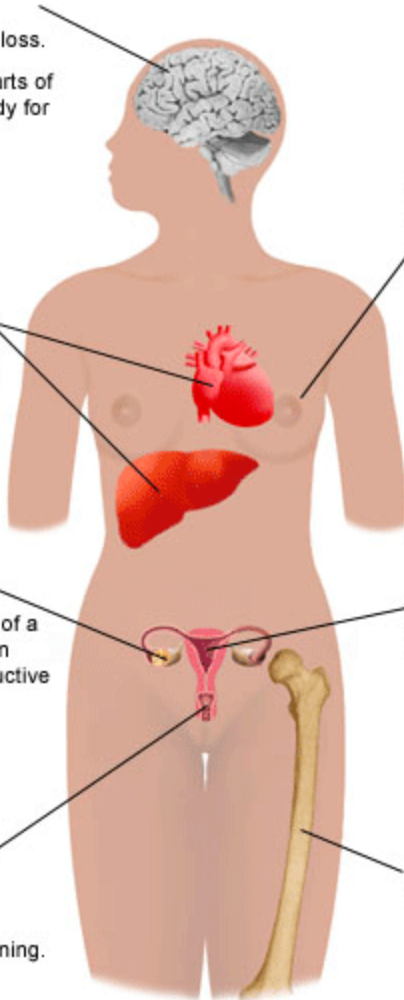
Estrogen stimulates the maturation of the ovaries.
 Estrogen stimulates the start of a woman's menstrual cycle – an indication that a girl's reproductive system has matured.

Vagina

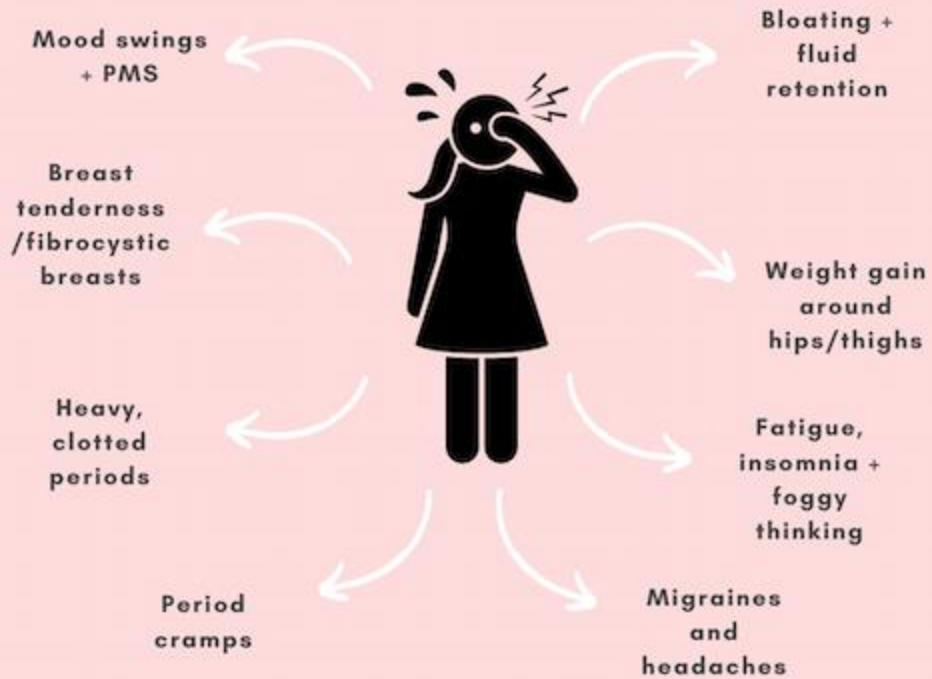
Estrogen stimulates the maturation of the vagina.
 Estrogen helps maintain a lubricated and thick vaginal lining.

Bone

Estrogen helps to preserve bone density.



SIGNS YOU HAVE ESTROGEN DOMINANCE



@nourishednaturalhealth

- Menopause

Perimenopause

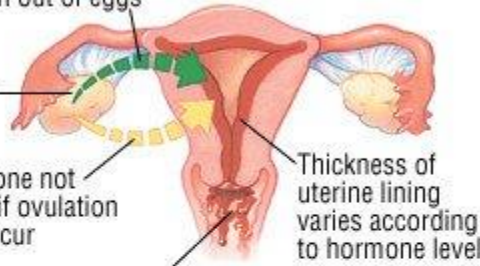
Estrogen decreases as ovaries run out of eggs

Ovulation becomes irregular

Progesterone not produced if ovulation doesn't occur

Periods become irregular

Thickness of uterine lining varies according to hormone level



Postmenopause

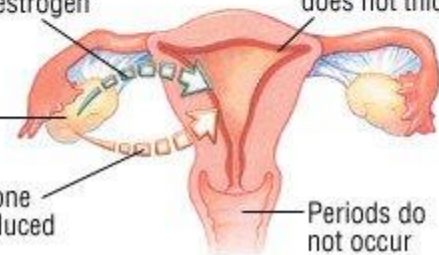
Very little estrogen released

Ovulation does not occur

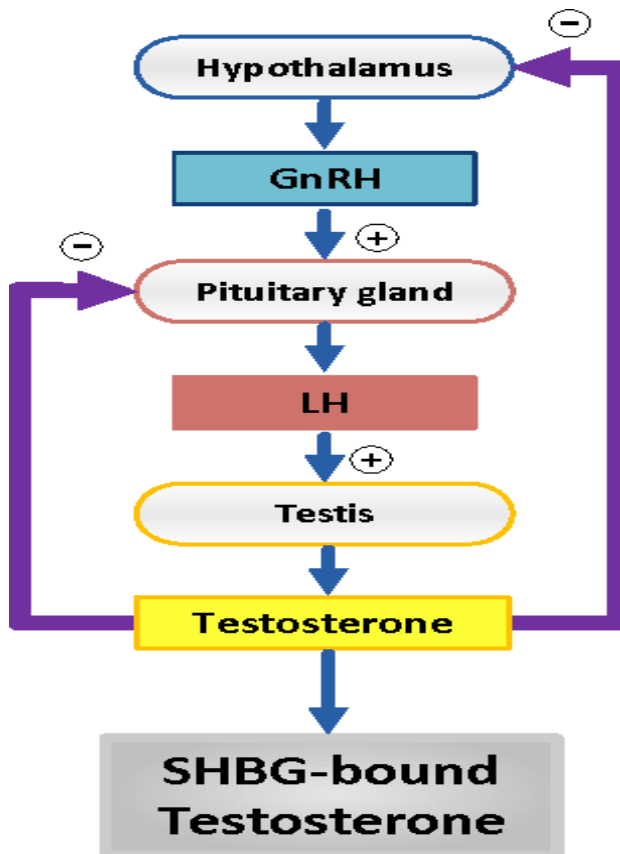
Progesterone is not produced

Uterine lining does not thicken

Periods do not occur



- Regulation of testosterone

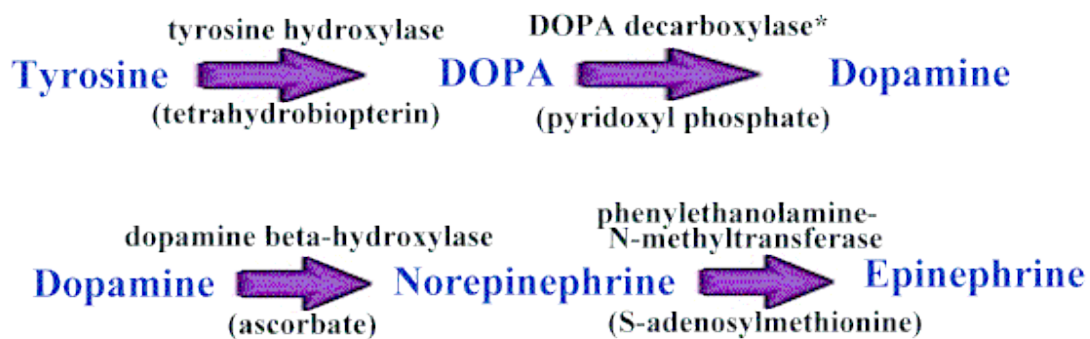


-
- VIVA DR SIKANDAR
- **Epinephrine is synthesized from which amino acid** - Tyrosine
- **Insulin amino acids, chains**

Insulin is a protein composed of two chains, an A chain (with 21 amino acids) and a B chain (with 30 amino acids), which are linked together by sulfur atoms. Insulin is derived from a 74-amino-acid prohormone molecule called proinsulin.

- **Conversion of nor epinephrine to epinephrine....**

Synthetic Pathway for Dopamine, Norepinephrine and Epinephrine



* aromatic L-amino acid decarboxylase
cofactors in parenthesis ()

- **Why adrenal medulla hormones are called catecholamines**

Catecholamines are hormones that the brain, nerve tissues, and adrenal glands produce. The body releases catecholamines in response to emotional or physical stress. Catecholamines are responsible for the body's "fight-or-flight" response. Dopamine, adrenaline, and noradrenaline are all catecholamines.

- **Cretenism vs myxedema**

Hypothyroidism

- **Cretinism (child)**
- **Impaired CNS & bone growth**
- **Mental retardation**
- **Short stature**
- **Coarse facial features**
- **Protruding tongue**
- **Umbilical hernia**
- **Myxedema (adult)**
- **Slow physical and mental activity**
- **Cold intolerance**
- **Over weight**
- **Low cardiac output**
- **Constipation and decreased sweating**
- **Cool pale thick skin**

- u

Cushing syndrome

An array of symptoms as a result of abnormally high levels of cortisol or other glucocorticoids in the blood

-Cushing's Syndrome

- Excess cortisol due to any cause

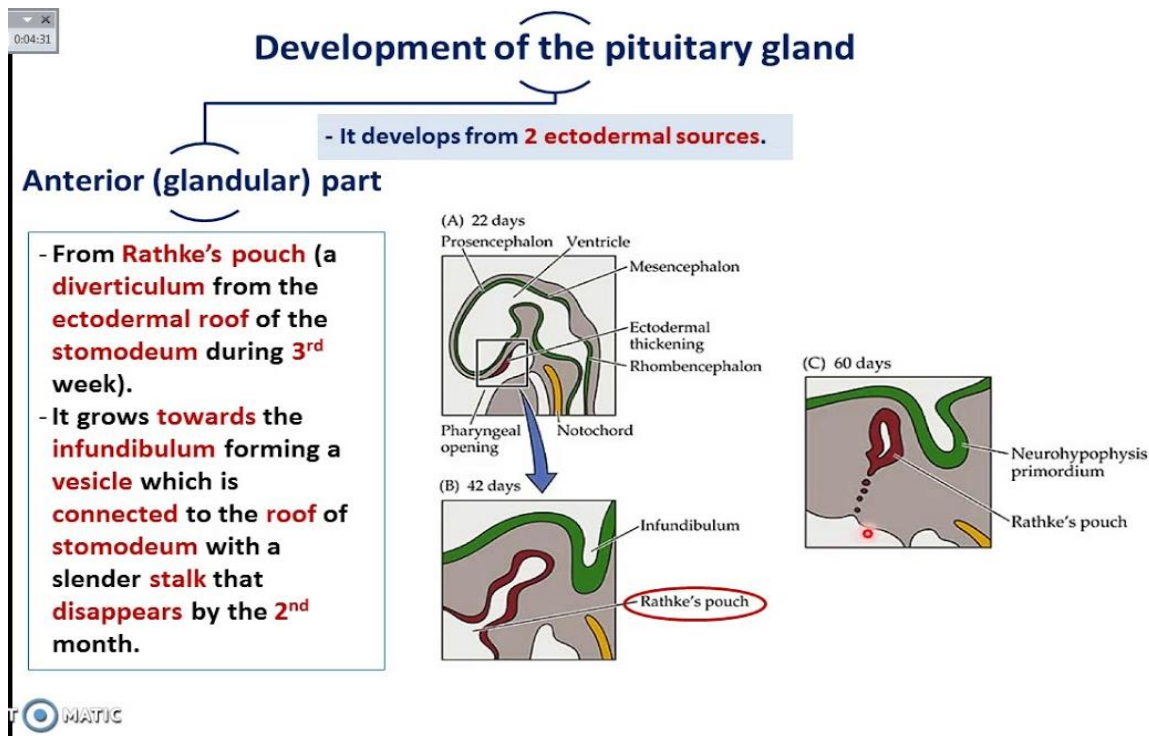
-Cushing's Disease

- Excess cortisol due to pituitary micro-adenoma

- **Which hormones are secreted by zona reticularis** - Aldosterone
- **ADH is synthesized in which part of hypothalamus** - supraoptic nucleus
- **Fasting blood glucose level** = 65 – 110 mg/dl

- **Threshold for glucose** = 180 mg/dl
- For how many days iodine can be stored in body
-
- VIVA DR WAQAR
- **Development of pituitary gland**

Development of the pituitary occurs broadly in three stages: Initiation of pituitary organogenesis and formation of Rathke's pouch. Evagination of Rathke's pouch and cell proliferation. Lineage determination and cellular differentiation.

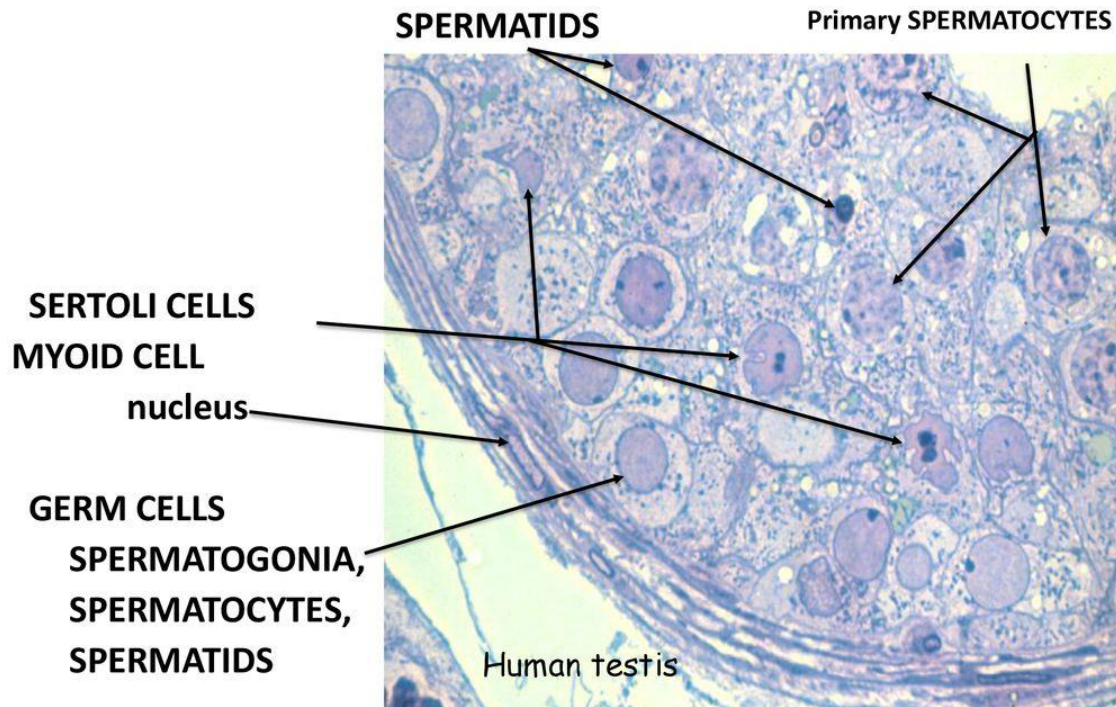


- **Blood testes barrier is formed by**

The blood-testis barrier is formed by basal tight junctions between adjacent Sertoli cells; these serve to compartmentalize the seminiferous tubule into basal and adluminal compartments.

- **Cells in seminiferous tubules**

SEMINIFEROUS TUBULES COMPOSED OF:



- Function of sertoli cells

Function of Sertoli Cells

Important functions of Sertoli cells:

- Nutritive, Protective and Supportive functions for the spermatogenic cells.
- Phagocytize regressive and spermatogenic cells.
- Detached residual bodies of spermatid.
- They mediate the action of FSH and testosterone on the germ cells.
- They secrete **inhibin which blocks the secretion of pituitary-FSH.**

- Blood supply of thyroid gland

Blood Supply of the Thyroid Gland

Arterial supply

1. Superior thyroid artery:

- ❑ is a branch of external carotid artery.
- ❑ Runs downwards and forwards with intimate relation to the external laryngeal nerve.
- ❑ Divides into anterior and posterior branches

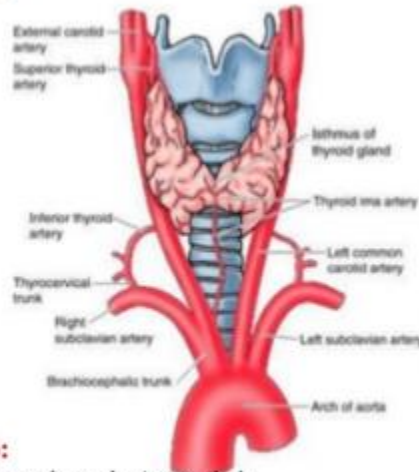
(2) Inferior thyroid artery:

- ❑ Is a branch of the thyrocervical trunk from the subclavian artery
- ❑ Runs first upwards, then medially and finally downwards to reach the lower pole of the thyroid lobe.
- ❑ Its terminal part is intimately related to the recurrent laryngeal nerve

(3) Thyroidea ima artery (in 3% individuals):

- ❑ Arises from the brachiocephalic artery or the aortic arch. Ascends in front of the trachea to reach the isthmus.

- (4) **Accessory thyroid arteries** : come from the tracheal and esophageal vessels.



Mohamed el fikry

- Types of cells in anterior pituitary

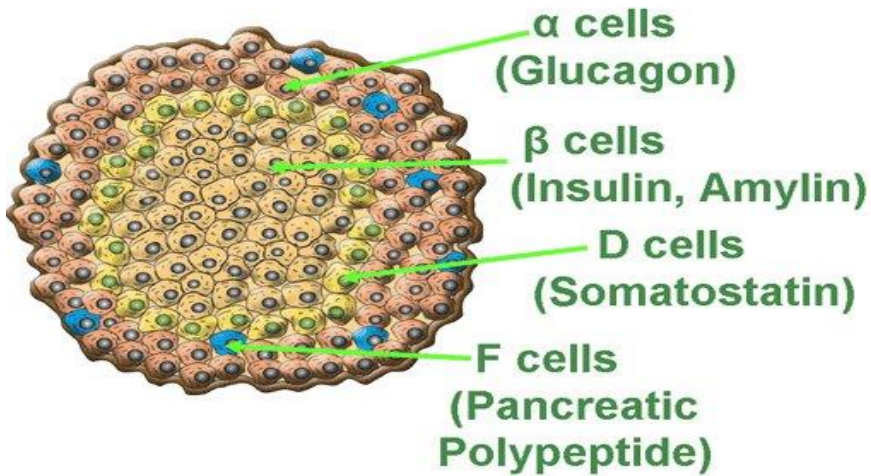
1. Somatotrophs
2. Lactotrophs
3. Gonadotrophs
4. Thyrotrophs
5. Corticotrophs

- Types of cells in adrenal medulla

The adrenal medulla is the centrally located part of the adrenal gland surrounded by the adrenal cortex. It contains chromaffin cells, which secrete two hormones adrenaline and noradrenaline.

- Types of cells in pancreas

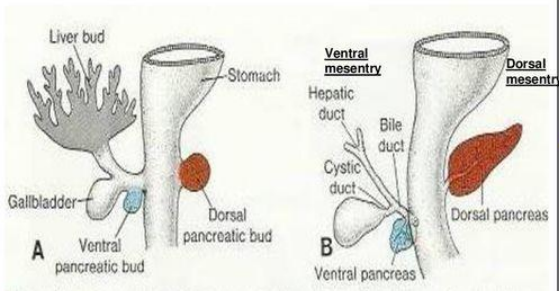
PANCREATIC ISLET



- **Development of pancreas**

The pancreas first appears at approximately 5 weeks of gestation as two outpouchings of the endodermal lining of the duodenum just distal to the forming stomach (Figure 5). The outpouchings are the ventral and dorsal pancreas. The dorsal pancreas grows more rapidly than the ventral pancreas.

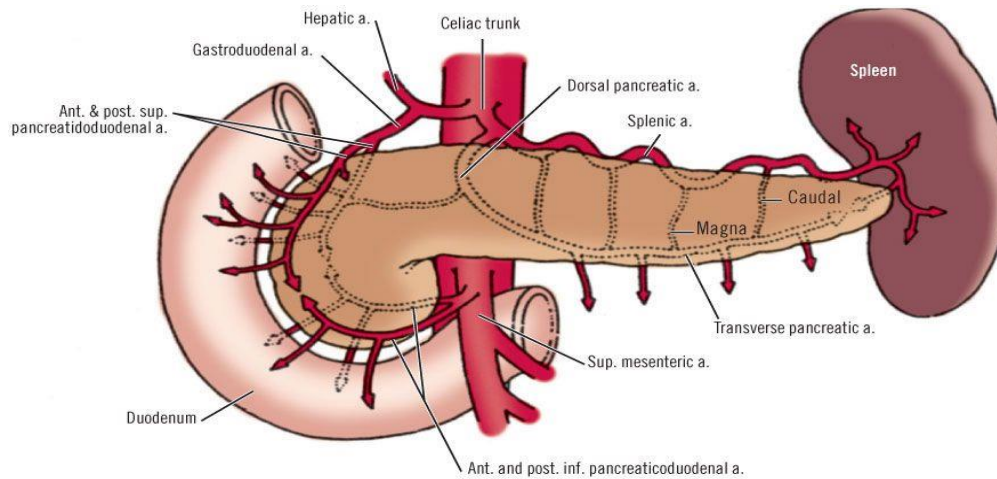
DEVELOPMENT OF PANCREAS



- The pancreas develops from 2 buds arising from the endoderm of the caudal part of foregut :
- **A ventral pancreatic bud ;** which develops from the proximal end of hepatic diverticulum (forms the liver & gall bladder).
- **A dorsal pancreatic bud ;** which develops from dorsal wall of duodenum, slightly cranial to the ventral bud.
- **Most of pancreas** is derived from the dorsal pancreatic bud.

- **Blood supply of pancreas**

Branches of the splenic artery (a branch of the celiac trunk), superior mesenteric artery (SMA), and the common hepatic artery provide blood supply to the pancreas



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- **Uterus development**

The origin of the uterus from the fusion of the two paramesonephric, or Müllerian, ducts

- **Uterus ligaments**

1. Broad ligament
2. Round ligament - The round ligament of the uterus is a ligament that connects the uterus to the labia majora.

- **How does Parathyroid hormone cause bone resorption**

PTH → Receptors on osteoblast → Stimulate synthesis of RANKL → Binds to receptors on pro-osteoclast cells → mature multinucleated osteoclast formed → release of enzymes and acids → Bone Resorption

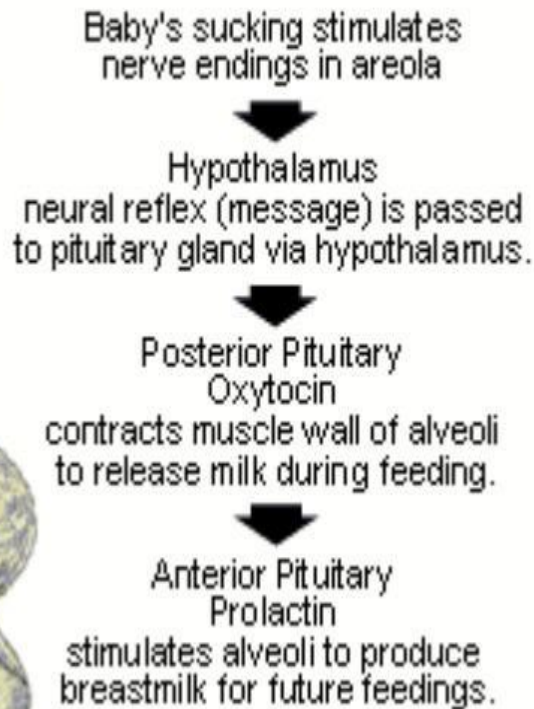
- Mechanism of action of aldosterone

- Hormones released in well fed and fasting state

	WELL-FED STATE	FASTING STATE
Hormones	↑ Insulin	↑ Glucagon, Adrenaline, Cortisol
Response of the body	Hyperglycemia ↑ Glycogenesis ↑ Lipogenesis ↑ Protein synthesis	Hypoglycemia ↑ Lipolysis ↑ Ketogenesis ↑ Proteolysis

- Milk ejection reflex

Let-Down Reflex

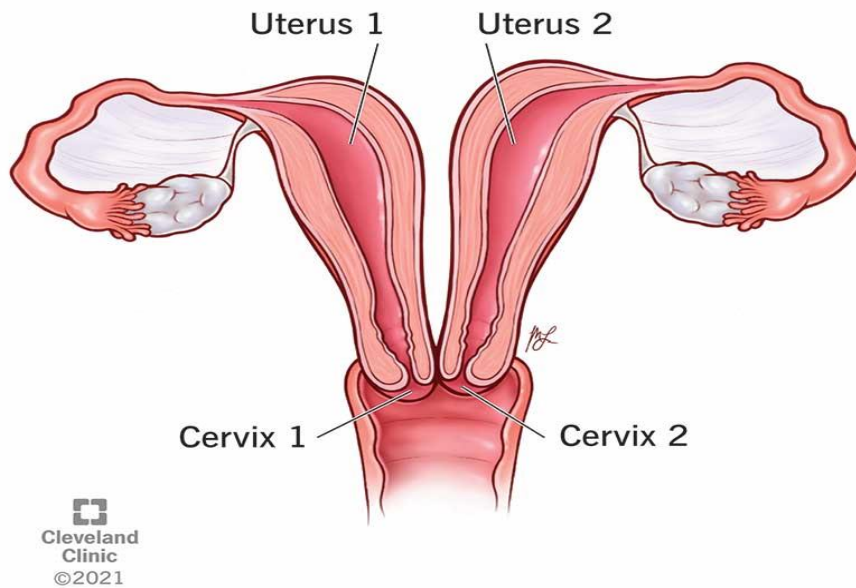


- How does ovulation occur in menstrual cycle

The ovulatory phase begins with a surge in luteinizing hormone and follicle-stimulating hormone levels. Luteinizing hormone stimulates egg release (ovulation), which usually occurs 16 to 32 hours after the surge begins. **The estrogen level decreases during the surge, and the progesterone level starts to increase.**

- **Didelphys uterus**

A double uterus is a rare congenital abnormality.



- Epididymis and Pituitary slides
- Adrenal gland parts histology
- Adrenal gland hormones (for each part of cortex and medulla)
- **Adrenal medulla embryologically comes from?** Neural crest (sympathochromaffin cells)
- **Pancreas posterior relations and its blood supply**

PANCREAS - RELATIONS

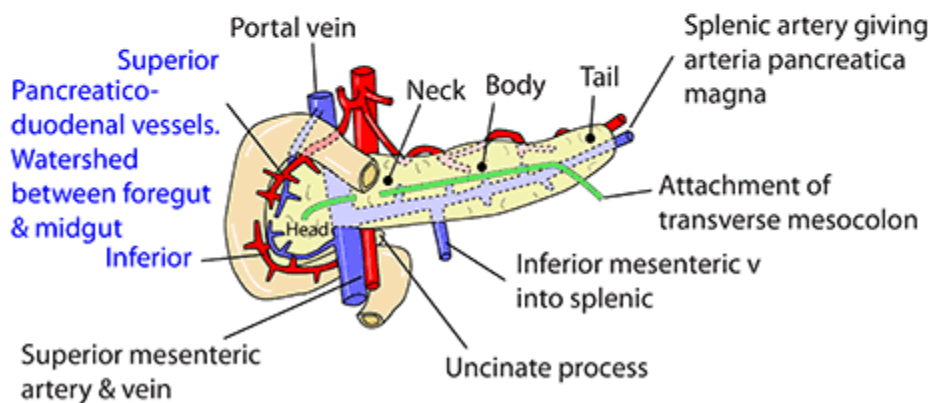
Anterior: lesser sac, pylorus, 1st part of duodenum, superior mesenteric artery & vein, transverse mesocolon, stomach

Superior: splenic artery

Lateral on right: 2nd part of duodenum, ampulla of Vater

Lateral on left: hilum of spleen

Posterior: left crus of diaphragm, psoas, right renal vein, inferior vena cava, bile duct, spleen, left renal vessels, left kidney, left suprarenal gland, coeliac plexus, inferior mesenteric vein, splenic vein, portal vein, superior mesenteric artery & vein, aorta



- **Pelvic fascia layers**

The pelvic fasciae consist of two components: (i) the endopelvic fascia, which primarily covers the pelvic muscles; and (ii) the visceral fascia which covers the pelvic organs and the supplying vessels and nerves. Site of fertilization, fallopian tubes

- Development of penile urethra

- **Lactation reflex, why doesn't lactation occur in pregnancy?**

Estrogen and progesterone inhibit prolactin secretion

- **Ovulation and why it occurs** (LH surge)

-

- Biochem practical: Blood glucose

- **What instrument is used for blood glucose** (Folin Wu tube) **and why?** (prevents reoxidation)

- Hyperglycemia occurs in?

- Blood glucose levels and its increase and decrease

- **Tropic hormones**

Tropic hormones are **a group of hormones that stimulate other endocrine glands so as to produce their particular hormones**. They are produced and secreted by the anterior pituitary gland. They play a vital role in influencing the function, growth, and nutrition of other endocrine cells.

Examples: TSH, FSH, LH, ACTH

- **Insulin like growth factor**

IGF-1 is a hormone that manages the effects of growth hormone (GH) in your body.

Together, IGF-1 and GH promote normal growth of bones and tissues. GH levels in the blood fluctuate throughout the day depending on your diet and activity levels. But IGF-1 levels remain stable.

- Define hormones and classify
- Placental hormones (Progesterone, estrogen, HcG, somatotropin)
- Estrogen types in human body (estradiol, estrone etc)

- **Function of Relaxin hormone**

Relaxin is a reproductive hormone produced by your ovaries and the placenta. It **loosens and relaxes your muscles, joints and ligaments during pregnancy to help your body stretch**.

Relaxin also helps your body prepare for delivery by loosening the muscles and ligaments in your pelvis.

- **Cortisol functions**

- Also known as hydrocortisone
- Stimulate gluconeogenesis by liver, thereby antagonize the effect of insulin
- Mobilize amino acids from extrahepatic tissues, mainly from muscle
- Moderate decrease in glucose utilization by cell, leading to insulin resistance
- Mobilize lipids from fat depots thereby increasing fatty acid concentration in blood
- Insulin resistance
- Reduction in protein stores except liver
- Increase liver and plasma proteins
- Increase oxidation of fatty acids in cell thus utilize fatty acid in starvation or stress
- Important in resisting stress and inflammation
- Suppress immunity

- **Mineralocorticoids (Aldosterone) functions**

- Reabsorption of sodium
- Excretion of potassium

Male urethra – 20 cm

Female urethra – 4 cm

Sigmoid colon – 10 to 15 inch

Rectum – 5 inch

Vas Deferens – 45 cm

- **Benedict's Quantitative Reagent (BQR) contains:**
 1. Copper sulphate
 2. Sodium carbonate
 3. Sodium citrate
 4. Potassium thiocyanate
 5. Potassium ferrocyanide

- **Blood appears in glucose in**
 1. Diabetes mellitis
 2. Adrenal diabetes
 3. Pituitary diabetes
 4. Hyperthyroidism
 5. Renal diabetes
 6. Glomerulonephritis

- Estrogens
 1. Estradiol
 2. Estrone
 3. Estriol

- Pregnanolone is parent compound of all steroid hormones

- Estrogens are produced by aromatization of androgens. The ovaries produce estradiol and estrone while placenta synthesizes estriol