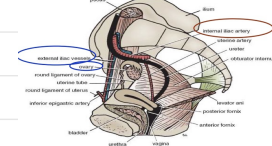
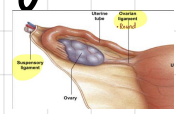


# ★ TOPIC 1 :- Female genital system.



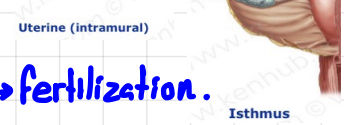
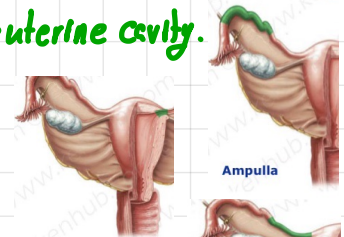
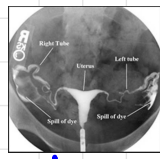
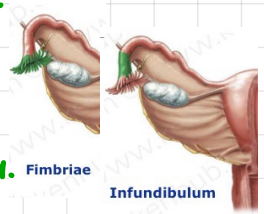
## • Ovaries

- site :- ovarian fossa in the lateral wall of pelvis, bounded
  - ↳ Anteriorly :- External iliac vessels.
  - ↳ posteriorly :- internal iliac vessels.
  - ↳ Laterally :- obturator Nerve & vessels.
- shape :- almond-shaped.
- orientation
  - ↳ Nullipara :- Long axis is vertical with superior & inferior pole
  - ↳ multipara :- Long axis is horizontal, superior pole → laterally, inferior pole → medially
- 2 Ends
  - ↳ Superior (tubal) :- attached to ovarian fimbria of uterine tube.
    - ↳ side wall of pelvis by suspensory ligament.
  - ↳ Inferior (uterine) :- connected to superior aspect of the uterotubal junction by the Round Ligament which runs within the broad ligament.
- 2 Borders
  - ↳ Anterior (mesovarian) :- Hilum of ovary & attached to posterior layer of broad ligament by mesovarium (peritoneal fold)
  - ↳ posterior (free) :- Related to lateral curved end of uterine tube.
- 2 surfaces
  - ↳ Lateral :- parietal peritoneum of ovarian fossa (ovary/obturator nerve & vessels).
  - ↳ medial :- uterine tube.
- uterine tube has triple relation with ovary :- tubal end, posterior border, medial surface.
- 3 Ligaments
  - ↳ Round :- Between uterine end/uterotubal junction.
  - ↳ mesovarium :- peritoneal fold between anterior border/posterior layer of broad.
  - ↳ suspensory :- peritoneal fold between superior end/side of pelvic wall, part of broad ligament, conducts (vessels, nerves, lymphatics).
- Arterial supply :- ovarian artery
  - ↳ origin :- abdominal aorta at L4 of L2
  - ↳ course :- suspensory lig → mesovarium → hilum → + uterine A
- venous drainage :- veins → pampiniform plexus → ovarian vein
  - ↳ Rt :- IVC.
  - ↳ Lt :- Lt. Renal vein
- Lymphatic :- Lateral Aortic LN.
- nerve supply :- Autonomic from coeliac & Aortic nerve plexus (sensory & visomotor).

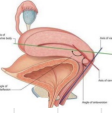


## • Uterine tubes :- medial 1/3 of upper free border of broad ligament, 10 cm

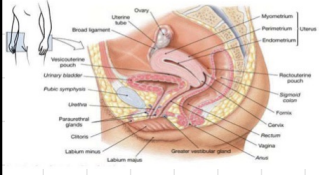
- Communications
  - ↳ Laterally :- pierces the upper layer of broad ligament → peritoneal cavity near the ovary (abdominal ostium).
  - ↳ medially :- opens into superior angle of the uterine cavity
- 4 parts
  - ↳ Infundibulum :- funnel-shape, lateral part, related to ovaries, 2 cm the bottom presents abdominal ostium 3mm diameter, the margins have fimbriae which spread over the surface of ovary.
  - ↳ Ampulla :- widest & longest, thin walled & tortuous, site of fertilization.
  - ↳ isthmus :- narrow, short, thick-walled.
  - ↳ uterine (intramural) :- short, narrowest, → uterine ostium → uterine cavity.
- Blood
  - ↳ medial 2/3 :- uterine vessels.
  - ↳ Lateral 1/3 :- ovarian vessels.
- nerve :- IHP
  - ↳ medial 2/3 :- uterine plexus.
  - ↳ Lateral 1/3 :- ovarian plexus.
- Hysterosalpingography :- injection of dye in vagina → end of tube, to dx any blockage or Therapeutic.
- functions
  - ↳ carry oocyte from ovaries & sperm from uterus → Ampulla → fertilization.
  - ↳ conveys the dividing zygote to the uterine cavity.
- Applied Anatomy
  - ↳ Blockage (due to inflammation) → sterility.
  - ↳ Most common site of ectopic pregnancy → rupture → Abdominal Hemorrhage
  - ↳ abdominal ostium :- infection of uterus & tube → peritonitis.
  - ↳ birth control by ligation of the uterine tube.



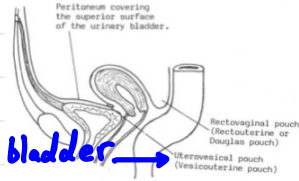
• **Uterus**:- hollow thick walled, pear-shaped muscular organ situated in Lesser pelvis between the urinary bladder / Rectum. piriform in shape.



- **Communications**
  - **Superolateral**:- uterine tubes
  - **Inferiorly**:- vagina at external os.
- **normal position**
  - **Anteversion**:- angle Between 2 Long axes of cervix & vagina (90°)
  - **Anteflexion**:- angle Between 2 Long axes of Body of uterus / cervix (170°)
- **Abnormal position**:- Retroflexed & Retroverted :- Hard to get pregnant & risk of abortion.
- **Isthmus**:- transverse constriction, divides the uterus in Body & cervix.
- **Body**:- upper 2/3
  - **Fundus**:- above uterine tubes entry, covered by peritoneum, Colis & sigmoid
  - **Anterior (vesical) surface**:- covered with peritoneum to internal os, urinary bladder & uterovesical pouch.
  - **posterior (intestinal) surface**:- covered by peritoneum → posterior vaginal fornix, sigmoid colon & coils of small intestine.
  - **Lateral borders**:- uterine tube at upper end
    - **Anteriorinferior**:- Round Lig of Uterus
    - **posterosuperior**:- Round Lig of ovary.
  - **\* Runs on Broad Ligament \***
- **Cervix**:- lower 1/3
  - **supravaginal**
    - **Anteriorly**:- Not covered by peritoneum, urinary bladder + parametrium
    - **posteriorly**:- Covered by peritoneum, Rectum + Douglies pouch
    - **on each side**:- parametrium, uterine A crosses the ureter 2cm
  - **vaginal**:- 4 vaginal fornices (Anterior, 2 Lateral & posterior → deepest & covered by peritoneum).



Peritoneal covering of the uterus

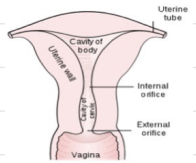


• **peritoneal covering of the uterus**

- Posterior surface & fundus of Body are covered.
- covers the anterior surface down to internal os Lvl, where it is reflected on bladder
- The supravaginal cervix is covered by peritoneum only posteriorly.
- The front & sides of supravaginal are bare of peritoneum (parametrium)

• **uterine cavity**

- **Cavity of Body**:- triangular, Base → opening of uterine tubes, Apex → internal os.
- **cervical canal**:- internal os → vagina by external os.



→ **Anatomical significance of the internal os**

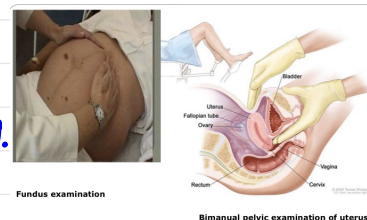
- corresponds to the isthmus of the uterus
- site of Junction Between uterine cavity / cervical canal.
- Lvl of angle of anteflexion.
- Lvl at which the peritoneum reflected anteriorly on to the bladder.

# • Topic 2 :- Female genital system - 2.

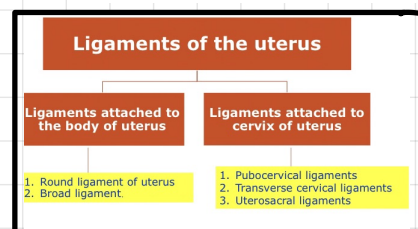
- **Blood supply**
  - **uterine A**:- runs medially → upper surface of pelvic diaphragm → root of Broad Lig. close to Lateral fornix → runs a tortuous course along the Lateral margin of uterus → + ovarian A.
  - Branches to pelvic part of ureter, vagina (Azygos A), cervix, uterus & tube
  - **Venous Drainage**:- uterine venous plexus → uterine vessels → Int. iliac V
    - communicate with ovarian & vaginal venous plexus.
    - varicose vein & hemorrhoids:- common during pregnancy due to compression of gravid uterus of IVC & Int. mesenteric V.

• **Nerve supply**:- Uterovaginal plexus derived from IHP.

- **Lymphatics**
  - Fundus:- Lateral aortic LN.
  - Uterotubal Junction (Round Lig):- superficial inguinal LN.
  - Body (Broad Lig):- External iliac LN.
  - Cervix:- External & internal & Sacral LN.



## • Ligaments

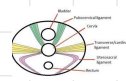


- **Round Ligament of uterus**:- anterosuperior aspect of the uterotubal Junction → Subcutaneous tissue of Labia majora.
  - **course**
    - proximal part runs within the broad Ligament.
    - distal part hook around the beginning of inferior epigastric A → deep inguinal ring & transverse inguinal canal → Labia majora.
  - **accompany in inguinal canal**
    - Artery of Round Lig (cremasteric A in male).
    - Genital Branch of genitofemoral N (supplies Labia majora).
    - Lymphatics from uterotubal Junction → superficial inguinal LN
  - **function**:- Keeps angle of anteversion against the backward pull of uterosacral Ligaments.
  - **pain**
    - symptoms:- sharp, sudden spasms in belly (↑ in cough, laugh, rolling over, stand quickly).
    - cause:- stretch of Round Ligament during pregnancy.
- **Broad Ligament**:- Double-layer fold of peritoneum, side of uterus → Lateral wall & floor of pelvis.
  - **upper border**:- uterine tube (medial 1/3) & suspensory Ligament (lateral 1/3).
  - **lower attached border**:- pelvic floor (levator ani) & uterine crossed uterine A.
  - **medial border**:- side of uterus (+peritoneum of the body of uterus).
  - **lateral border**:- side wall of pelvis (+parietal peritoneum of the lateral pelvic wall).
  - **Anterior Layer**:- Bulged by the Round Ligament of the uterus.
  - **posterior Layer**:- ovaries by mesovarium
  - **parts**
    - **mesovarium**:- between Broad Lig/ovary
    - **Suspensory Lig**:- between ovary/side wall of pelvis (vessels & Lymphatics).
    - **mesosalpinx**:- Between uterine tube/ovarian Lig.
    - **Mesometrium**:- Between ovarian Lig/uterine body.
  - **contents**
    - uterine tube
      - 2 Ligaments:- Round Ligament of ovary & Round Ligament of uterus.
      - 2 vessels:- uterine & ovarian
      - 2 Nerve plexus:- utrovaginal (around uterine A), ovarian (around ovarian A).
      - 2 embryological remnants:- Epoophoron & its duct (Gartner's duct), paroophoron.
      - Lymphatic vessels.
      - parametrium.
  - **Ligaments attached to cervix**:-

1 pubocervical :- anteriorly from cervix → pubis.

2 Transverse cervical (Mackenrodt's) :- Laterally cervix & upper vagina → side wall of pelvis (Main).

3 uterosacral :- Backwards from posterolateral cervix & lateral vagina fornixes → front of S<sub>2</sub>, S<sub>3</sub>.



• Supporting factors of uterus :- prevent prolapse of uterus into the vagina due to ↑ Intra-abdominal pressure

→ Ligaments :- 1, 2, 3

→ Muscles → pelvic diaphragm :- especially pelvic vaginae.  
→ Urogenital diaphragm :- in deep perineal pouch.

• 4d ultrasound → movement

→ Mechanical → perineal body :- Keeps integrity of pelvic floor, Rupture → prolapse of uterus  
→ angle of anteverision (pull of Round Lig on Fundus & Backward pull of uterosacral on cervix) Round uterosacral.

• Vagina :- fibromuscular tube, stratified squamous, uterus → vestibule, axis makes a right angle with cervix.

→ Anterior wall :- Base of Bladder & urethra

→ posterior wall → upper 1/4 :- rectum & Douglas pouch. (covered).  
→ middle 2/4 :- Rectum  
→ lower 1/4 :- anal canal & perineal body.

→ Lateral Relations → upper 1/4 :- ureter

→ middle 2/4 :- sphincter vaginae

→ lower 1/4 :- Urogenital diaphragm, bulb of vestibule, greater vestibular glands.

→ cavity → Superior part surrounds the vaginal cervix → 4 fornixes.

→ posterior vaginal fornix :- Deepest one & covered with peritoneum.

→ in virgins :- vaginal orifice has a thin mucosal fold (Hymen) → perforated at its center.

→ Arterial :- uterine & vaginal Arteries → uterine A → Azygos Artery (supply vagina).

→ venous :- vaginal venous plexus → vaginal vein → internal iliac vein.

→ Lymph → Above hymen :- external & internal iliac LN.

→ Below hymen :- superficial inguinal LN.

→ Nerve → upper part :- uterovaginal plexus (from IHP).

→ lower part :- pudendal N.

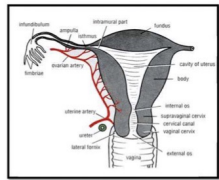
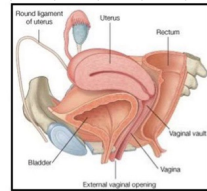
→ uterus :- covered with peritoneum except supravaginal anteriorly & laterally.

→ vagina :- no peritoneum except posterior fornix (Douglas).

→ culdocentesis → Drain of Abscess or blood through vagina by posterior fornix needle passage  
→ misguided nonsterile instruments, which pierce the wall of posterior fornix in a failed attempt at an illegal abortion → pelvic peritonitis → fatal.



→ painless labour :- Epidural anaesthesia, indwelling catheter into epidural space L<sub>3</sub>-L<sub>4</sub>.



• External genitalia

→ clitoris :- resemble the penis but → only 2 corpora cavernosa, arise from crura, no corpus spongiosum.  
→ not traversed by urethra  
→ its free end is sensitive & called glans clitoridis.

→ vestibule :- Between 2 Labia minora

→ urethral orifice :- Between clitoris (P) & vaginal orifice (A)

→ vaginal orifice :- posterior part, closed by hymen.

→ orifice of greater vestibular gland (of Bartholin) :- on each side of the vaginal orifice (superficial perineal pouch).

→ Bulbs :- 2 large, erectile tissue, along the sides of vaginal orifice, covered by bulbospongiosus  
→ correspond root of penis but → bulbs are separated from the clitoris.

→ bulbs are separated by the vestibule (vaginal & urethral orifices).

