Surgical Anatomy of Female Pelvis: An Overview

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MGIMS Sevagram
Pelvis

- Walls
- Contents
- Vascular supply & lymphatic drainage
- Sp. Features of female pelvis
- Structural details of selected viscera
Bony pelvis - Female

- Sacroiliac joint
- Sacrum
- Coccyx
- Femur
- Iliac crest
- Ilium
- Ischium
- Pubis
- Pubic symphysis
Wall of Pelvis

• Long bony posterior wall
  - Sacrum & coccyx
  - Sacrotuberous lig & sacrospinous lig.
  - Piriformis muscle with sacral plexus
Muscles of Pelvic floor & posterior wall
Lateral walls of pelvis

- Obturator internus and covering fascia; arcus tendineus for attachment of levator ani
- Ischial tuberosity, spine & conjoint ischio-pubic rami
- Obturator foramen, membrane; greater & lesser sciatic foramina
- Internal iliac vessels, ureter, nerves
Side wall of pelvis
Pelvic Musculature: view from interior
Anterior wall of Pelvis

• Shorter as compared to other walls
• Bodies of Pubis & pubic symphysis
• This wall is at much lower level as compared to Posterior wall
• So inlet of the pelvis is tilted & directed little downwards and forwards
• Lower limit of the anterior wall is below the lower limit of posterior wall but above the two ischial tuberosities (lateral wall)
Two slopes at the pelvic floor

• Due to difference in ratio of pelvic walls, two triangular intervals exist at floor, covered by muscles

• Urogenital $\Delta$ is in front, sloping downward & forward & anal $\Delta$ behind, sloping downward & backward; base of both triangles is shared at a line drawn between two ischial tuberosities

• Urogenital diaphragm covers the urogenital $\Delta$ and pelvic diaphragm covers anal $\Delta$

• Perineal body, lying in the middle of two $\Delta$s, provides attachments to muscles at pelvic floor
Female Pelvic Cavity & Viscera

- Viscera belong to terminal parts of uro-genital system [ureters, urinary bladder, uterus, fallopian tubes & ovaries] and digestive systems [rectum].
- The organs are held in pelvic cavity while their openings (outlets) have to go through urogenital [urethra, vagina] and pelvic diaphragms [anal canal] and open in perineum.
- The line of demarcation between pelvis and perineum is attachment of levator ani muscle.
Pelvic viscera: Top-back view
Peritoneum at Pelvis

• Parietal peritoneum is in continuity of abdomen, follows the walls of pelvis

• Uterus & its adnexa may be assumed to have lifted this peritoneum from pelvic floor to create a coronally held shelf of broad ligament, in addition to number of other folds

• Two hollow pouches are created on either side of peritoneally covered uterus, in front utero-vesical pouch and behind recto-uterine pouch [of Douglas].
Pelvic viscera (female): front-top view
Pelvic Fascia

• The deep fascia beneath peritoneum of pelvic wall
• Fascia is thickened at places where it surrounds the organs and forms supporting band (ligaments)
• Fascia leaves pelvic wall along the vessels and nerves & reach organs forming vascular pedicles or neuro-vascular bundles for the pelvic viscera and then wraps the viscus as a visceral layer of fascia
• Fascia exists even in absence of peritoneum between the organs (e.g. vesico-vaginal space)
• All muscles (including those of two diaphragms) are covered on their pelvic surfaces by this fascia.
Sagittal section of Female pelvis
Special Designing of Female Pelvis

• The nature provides mechanisms to secure the pelvic viscera at their own places and prevent their undue mobilisation or descent (prolapse) through the pelvic outlet

• Pelvis is specially designed to accommodate foetus during pregnancy and facilitates normal vaginal delivery (parturition) at full term.

• The openings of the outlet are protected by sphincteric mechanisms- both internal (involuntary) and external (voluntary) and thus prevent urinary or faecal incontinence
Digital examination of Pelvis

- Pelvis is accessible for digital examination by Per rectal (P/R) or per vaginal (P/V) route, in specific positions such as knee-elbow, lithotomy or P/R.
- One can not go above the levels of ischial spines
- Recto-uterine fossa is the most dependant part of peritoneal cavity; approachable via posterior vaginal fornix (colposcopy and culdescentasis).
Perineum: the Outlet area

• The soft tissue encountered at the diamond shaped interval of the pelvic outlet, comprises the perineum where three outlets- urethra, vagina and anal canal, are affecting the mid line portions.

• The former two openings are in urogenital Δ while the latter is in anal Δ

• The direction of terminal part of the hollow passages at pelvic outlet follow the slopes of corresponding Δs.
Outlet of Bony pelvis

- Pubic symphysis
- Ischiopubic rami
- Body of pubis
- Sacrotuberous ligament
- Coccyx
- Ischial tuberosity
Perineal muscles viewed from below
Blood vessels of female pelvis

• The chief source of blood to pelvic viscera & perineum is through Internal iliac artery.
• The corresponding vein drains the blood from same and empties in inferior vena cava..
• Lymphatics mostly accompany the stem arteries and drain in different lymph nodes confined to pelvis or abdomen.
Internal Iliac artery (Rt): viewed from right side of female pelvis
Lt. Internal Iliac artery (viscera removed)
Lymph nodes of Pelvis (female)

Chief groups are four:
1.External Iliac
2. Internal iliac
3. Common Iliac
4. Sacral

A few more recognised groups are:
- Obturator (along obt. artery)
- Para cervical (at crossing of uterine a & ureter)
- Para Rectal (at recto-sigmoid Jn.) with sup. rect. a.

[Superficial inguinal nodes drain uterine cornu, perineum]
Lymphatic drainage of uterus
Regional L.N.
Paracervical, para-metrial, hypogastric (obturator), common, internal & external iliac, presacral, and sacral
Microscopic structure: uterus
Lining epithelium of endometrium
Cervix (endocervical canal)

Cervical glands with simple columnar epithelium
Ecto-cervix at Ext. os
Structure of ovary
Carcinomatous change

- Common at the external os of cervix
- Stratified squamous epithelium may replace the columnar one near Junctional region - Squamous metaplasia, a fore runner of cancer.
- Uterine endometrium is another source in
- Variety of tumour/cysts arise in ovary, germ line epithelium is a common source
Thanks for patient listening!