HISTOLOGY OF UTERUS, CERVIX AND VAGINA

LEARNING OBJECTIVES

- At the end of the lecture, students should be able to know:
  - To give an over view of uterus histology.
  - To identify layers of uterus histologically.
  - To identify phases of menstruation of uterus.
  - To identify cervix histologically.
  - To identify both uterus and vagina histologically.

UTERUS

- Muscular female reproductive organ.
- Consists of upper expanded part – fundus.
- Lower narrow part – cervix.

<table>
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<tr>
<th>Commonly referred to as the womb</th>
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<tbody>
<tr>
<td>A pear shaped organ about the size of a clenched fist</td>
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<td>Consists of blood-enriched tissue that sloughs off each month during menstrual cycle</td>
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<td>The powerful muscles of the uterus expand to accommodate a growing fetus and push it through the birth canal.</td>
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HISTOLOGY OF UTERUS

- The uterine wall is composed of the three layers:
  - Outer layer Serosa or Perimetrium.
  - Middle layer - Muscularis or Myometrium.
  - Inner layer - Mucosa or Endometrium.

PERIMETRIUM

- Outer surface of uterus.
- Single layer of mesothelial cells.
- Supported by thin layer of connective tissue.

MYOMETRIUM

- Is thick smooth muscle layer of the uterus.
- Consists of 3 layers:
  - Inner longitudinal layer.
  - Middle circular layer.
  - Outer longitudinal layer.
- Circular layer is very vascular---Stratum vasculare.

ENDOMETRIUM

- It undergoes cyclic changes that result in menstruation.
- It consists of simple columnar epithelium (ciliated and secretory cells).
- An underlying thick connective tissue stroma.
- Mucosa is invaginated to form many simple tubular glands which extend through the entire thickness of the stroma.

- Only the mucosa of the body of the uterus takes part in the menstrual cycle.
- Blood supply is from 2 types of arteries:
  - Coiled arteries.
• Straight arteries.

**LAYERS OF ENDOMETRIUM**

**STRATUM BASALIS:**
- Retained at menstruation.
- Functions as a regenerative zone for the functionalis after its rejection.

**STRATUM FUNCTIONALIS:**
- Luminal part of the endometrium.
- Sloughed off during every menstruation.
- It is the site of cyclic changes in the endometrium.

**MENSTRUAL CYCLE**
- Menstrual phase (day 1-4)… commences as hormone production by corpus luteum decline.
- Proliferative phase (day 4-14)…. concurrent with follicular maturation and influenced by estrogen.
- Secretory phase (day 15-28)…. concurrent with luteal phase and influenced by progesterone

**PROLIFERATIVE PHASE**

Cells in basal layer begin to proliferate to regenerate functional layer.
- Spiral arteries begin to lengthen and revascularize developing.
- Functional layer becomes thicker than basal layer during late proliferative phase.
- Uterine glands increase in proliferative phase.

**SECRETORY PHASE**

- Functional layer thickens
- Glands become coiled and accumulate large quantities of secretory product.
- Two strata distinguished in late secretory phase:
  - Functionale.
  - Basale.

**PREMENSTRUAL PHASE**

- Spiral arteries undergo periodic contractions for several hours.
- This causes ischemia of stratum functionale.
**MENSTRUAL PHASE**
- stratum functionale undergoes necrosis and shed.
- Sloughing continues until only basale layer is left.

**UTERINE CERVIX**
- Made up of circular smooth muscles.
- Outer surface – stratified squamous noncornified epithelium.
- Narrow (cervical canal) – cervical mucosa.
- The area adjacent to the border of the endocervix and ectocervix is known as the transformation zone.
- Transformation zone undergoes metaplasia numerous times during normal life.

**VAGINA**
- Fibromuscular tube.
  - Composed of 3 layers:
  - Inner mucosa
  - Middle muscularis
  - External adventitia
  - Circumscribed by a skeletal muscle sphincter at its external orifice.
  - Lacks glands throughout its length.

**MUCOSA OF VAGINA**
- Shows transverse folds or rugae.
- Composed of:
  - Epithelium.
• Lamina propria.
  **EPITHELIUM:**
  • Stratified squamous non-keratinized epithelium.
  • Contains glycogen.
  • Glycogen is used by vaginal bacterial flora.
  **LAMINA PROPIA:**
  • Fibro-elastic connective tissue.
  • Contains large number of lymphocytes.
  • Highly vascular.

  **MUSCULARIS OF VAGINA**
  • Composed of two layers of smooth muscle fibers:
    • Inner circular layer.
    • Outer thicker longitudinal layer.

  **ADVENTITIA OF VAGINA**
  • Composed of fibro-elastic connective tissue.
  • Fixes vagina to surrounding structures.
  • Rich in elastic fibers.

**THANK YOU**

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