

PATHO FINAL EXAM STUDY GUIDE

Reproductive

Endometrial cycle and the occurrence of ovulation

-menstrual cycle ☾ starts with **menarche** (first menstruation) ends with **menopause** (cessation of menstrual flow for 1 year)

-Cycles -anovulatory at first may vary in length from 10 to 60 days or more.

-As adolescence proceeds into adulthood, regular patterns of menstruation and ovulation are established at intervals ranging from 21 to 45 days.

Menstruation continues to recur in a recognizable and characteristic pattern during adulthood, with the length of the menstrual cycle varying considerably among women.

- commonly accepted cycle average is 28 (27 to 30) days, with rhythmic intervals of 21 to 35 days considered normal.

-Approximately 2 to 8 years before menopause, cycles begin to lengthen again with variation related to changing hormone levels

-2 phases:

1) **follicular/proliferative phase (postmenstrual)**

-lasts until about day 14.

- endometrium grows to form a lush lining inside of the uterus.

🎬 GnRH, activin, and inhibin from granulosa cells cause rise in FSH levels (stimulates number of follicles)

🎬 FSH rescues dominant ovarian follicle from apoptosis day 5-7

🎬 Estrogen and FSH make primary follicle more sensitive to FSH

🎬 Estrogen levels increase, FSH levels drop because of inhibin-B increase from dominant follicle

🎬 Estrogen causes cells of endometrium to proliferate and stimulate LH production

🎬 Surge in FSH and LH require for final follicular growth and ovulation

🎬 Androgen enhances process of follicle atresia

2) **luteal/secretory phase (premenstrual)**

- this is where the body secretes the hormones estrogen and progesterone. -These hormones work together to prepare the lining of the uterus for implantation.

-lasts for 12 days

-During menstruation (menses), the functional layer of the endometrium disintegrates and is discharged through the vagina.

🎬 The estrogen and progesterone start to decline and the endometrial lining begins to shed. This lasts for 3-5 days and the process restarts.

Menstruation is followed by the follicular/**proliferative phase**.

-**Ovulation** is the release of an ovum from a mature follicle and marks the beginning of the **luteal/secretory phase** of the menstrual cycle. The ovarian follicle begins its transformation into a corpus luteum hence the name *luteal phase*.

🎬 Pulsatile secretion of the LH from the anterior pituitary stimulates the corpus luteum to secrete progesterone. -This will initiate the secretory phase of endometrial development.

🎬 Glands and blood vessels in the endometrium branch and curl through a functional layer, and the glands begin to secrete a thin glycogen-containing fluid= **the secretory phase**. *If conception occurs the nutrient-laden endometrium is ready for implantation.

🎬 Release of ovum from mature follicle

🎬 Beginning of luteal/secretory phase

🎬 Follicle begins transformation into corpus luteum (luteal phase)

🎬 Secretion of LH from anterior pituitary stimulate corpus luteum to secrete progesterone

- 🎬 Progesterone initiates secretory phase
- 🎬 Glands and blood vessels in endometrium branch secrete thin glycogen-containing fluid (secretory phase)
- 🎬 If conception occurs endometrium is ready for implantation
- 🎬 HCG secreted 3 days after fertilization by blastocytes and maintains corpus luteum after fertilization at day 6-7
- 🎬 HCG detected in blood/urine 8-10 days after ovulation
- 🎬 Production of estrogen and progesterone continues until placenta can maintain hormonal production
- 🎬 If no conception/implantation corpus luteum degenerates and ends progesterone/estrogen production
- 🎬 Endometrium becomes ischemic and disintegrates (ischemic menstrual phase)
- 🎬 Menstruation occurs (3-7 days)=beginning of new cycle

Ovulatory cycle - 24-26.5 days

Primary ovarian follicle 10-12.5 days

Luteal phase - around day 14

Uterine prolapse

-descent of the cervix or entire uterus into the vaginal canal

-In severe cases the uterus falls completely through the vagina and protrudes from the introitus. Can be caused by cystocele (lowering of bladder wall into vaginal canal) or retrocele (bulging of rectum through vaginal canal)

-Symptoms of other pelvic floor disorders also may be present.

-Causes due to weakness of the pelvic musculature, ligaments, and fascia or obstetric trauma and lacerations sustained during labor and delivery.

-Pregnancy, obesity, prolonged standing, and chronic constipation are associated with stretching of the fascia and prolapse over time.

-Women with connective tissue disorders are also at risk, so there is a strong genetic/familial component.

In addition, risk of prolapse increases with age because of cumulative effects of stress on the pelvic floor.

-Because estrogen improves vascularity of the pelvic area, postmenopausal women are at risk since their fascia and pelvic musculature lose resilience with diminished estrogen levels

-Treatment is often progressive with less aggressive treatments tried first.

-The pelvic fascia may be strengthened through Kegel exercises (repetitive isometric tightening and relaxing of the pubococcygeal muscles) or by estrogen therapy in menopausal women.

-Maintaining a healthy body mass index (BMI), preventing constipation, and treating chronic cough or constipation may help as well.

-A common treatment is a **pessary**, which is a removable device that, when placed in the vagina, holds the uterus in position.

-Surgical repair with or without hysterectomy is the treatment of last resort. Symptoms:

🎬 Urinary

- Sensation of incomplete emptying of bladder
- Urinary incontinence
- Urinary frequency/urgency
- Bladder "splinting" to accomplish voiding

🎬 Bowel

- Constipation or feeling of rectal fullness or blockage
- Difficult defecation

- Stool or flatus incontinence

🎬 Urgency

- Manual “splinting” of posterior vaginal wall to accomplish defecation

🎬 Pain and Bulging

- Vaginal, bladder, rectum
- Pelvic pressure, bulging, pain
- Lower back pain

🎬 Sexual

- Dyspareunia
- Decreased sensation, lubrication, arousal

[Polycystic ovarian syndrome](#)

-most common cause of anovulation and ovulatory dysfunction in women.

- defined as having at least two of the following three features:

- irregular ovulation,
- elevated levels of androgens (e.g., testosterone)
- and the appearance of polycystic ovaries on ultrasound

-Polycystic ovaries do not have to be present to diagnose PCOS--presence alone does not establish the diagnosis.

-The diagnosis is one of exclusion, and all other disorders potentially responsible for the clinical findings also must be ruled out, including thyroid dysfunction, hyperprolactinemia, and congenital adrenal hyperplasia.

- associated with metabolic dysfunction, including dyslipidemia, insulin resistance, and obesity

- Insulin stimulates androgen secretion by the ovarian stroma and reduces serum sex hormone-binding globulin (SHBG) directly and independently. The net effect is an increase in free testosterone levels.

Excessive androgens affect follicular growth, and insulin affects follicular decline by suppressing apoptosis and enabling follicles to persist

- there appears to be a genetic ovarian defect in PCOS, which makes the ovary either more susceptible to or sensitive to insulin's stimulation of androgen production

-A HYPERANDROGENIC STATE IS A CARDINAL FEATURE IN THE PATHOGENESIS OF PCOS

-3 X LIKELY TO HAVE INSULIN RESISTENCE.

- ***FSH is low and LH are high.**

- ****Women with PCOS 3 x greater of developing uterine cancer.**

Clinical Manifestations: *Appear within 2 years of puberty. *May not present until normal menstrual function or pregnancy.

- anovulation, hyperandrogenism, and insulin resistance ☹️ dysfunctional bleeding or amenorrhea, hirsutism, acne, acanthosis nigricans, and infertility.

Management:

***Goals are to suppress androgen, instituting menstruation, restore fertility, and reduce endocrine disturbance.**

****FIRST LINE TREATMENT= COMBINED ORAL CONTRACEPTIVES****

-Insulin resistance= metformin

****FOR OBESE WOMEN LIFESTYLE MODIFICATIONS ARE FIRST LINE**** -CLOMIPHENE CITRATE CAN BE USED TO FACILITATE OVULATION*

[Testicular cancer and conditions that increase risk](#)

-Highly treatable, usually curable cancer most often develops in young and middle aged men.

-Rare, but most common form of cancer between young men 15-35.