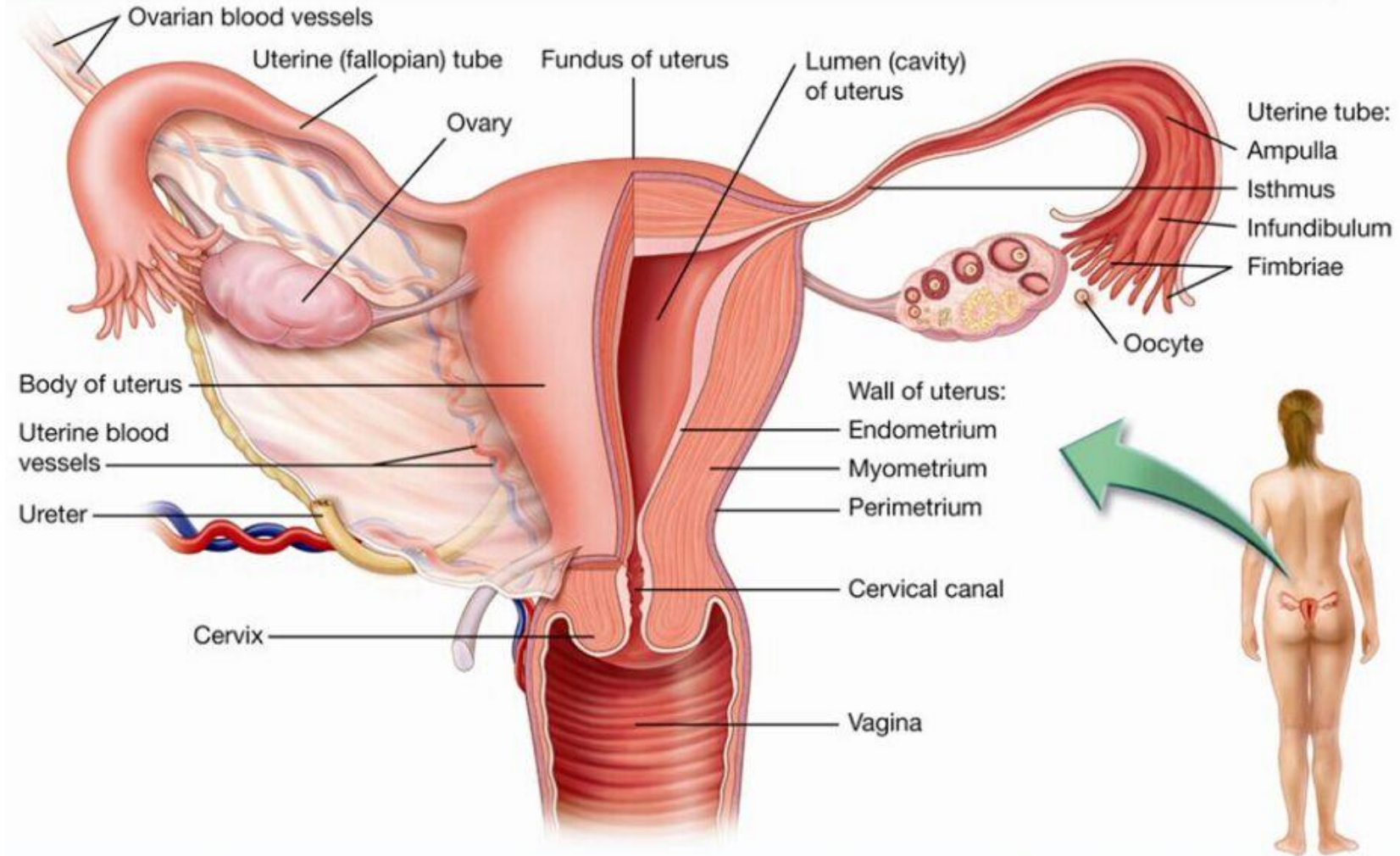


Gynecology

Mária Suchoňová, mariasuchonova@gmail.com

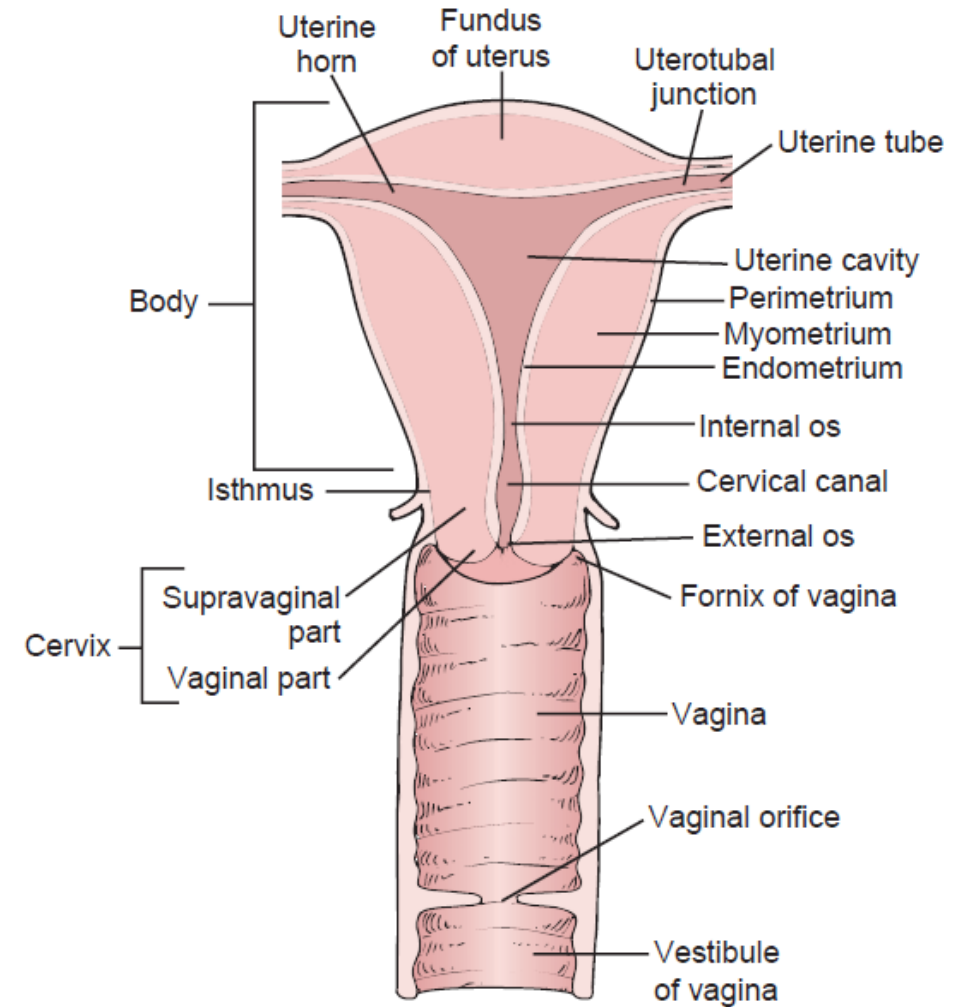
Gynecology is a field in medicine dealing with the health of the female reproductive system and the breasts.

Female Reproductive System Anatomy



Vagina

- free of sensory nerve fibers
- located behind the urinary bladder and urethra and anterior to the rectum



Uterus

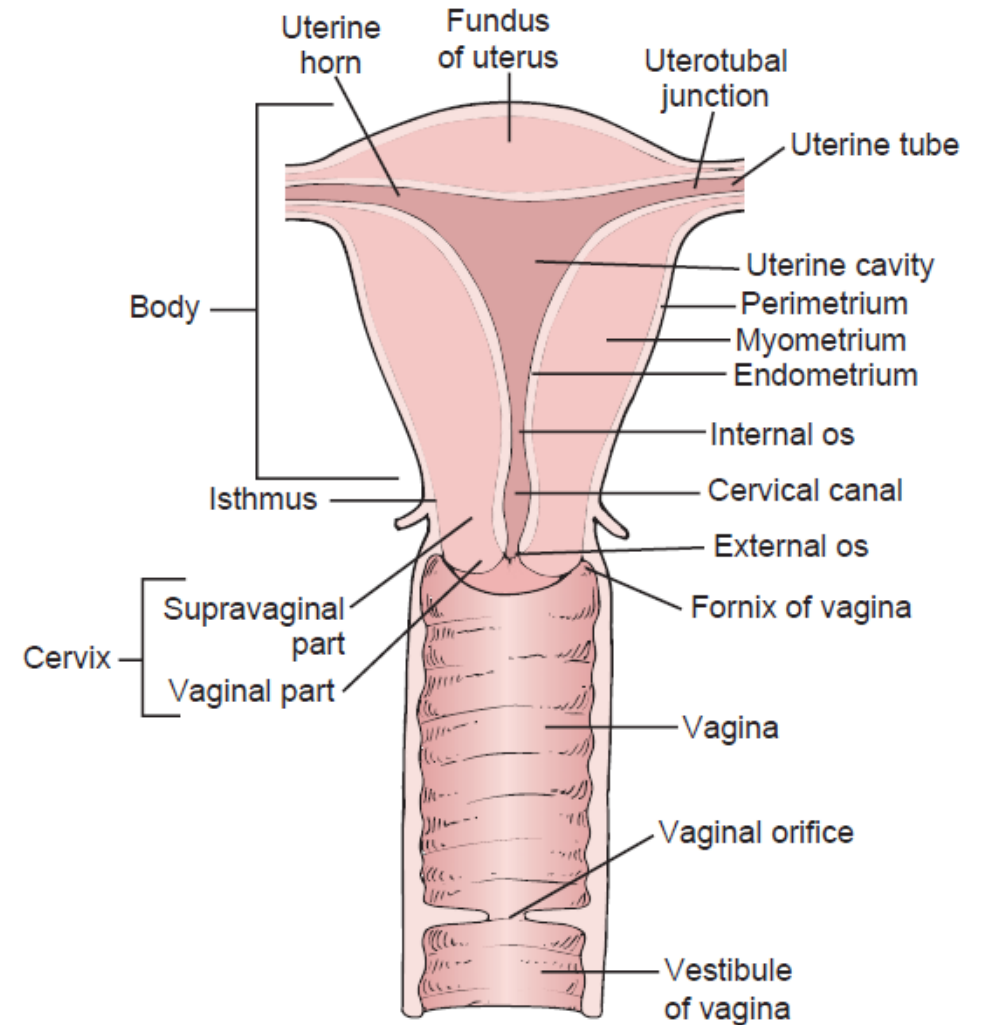
- located between the urinary bladder and the rectum

Parts of uterus

- *fundus of uterus*
- *body of the uterus*
- *cervix*

Wall of uterus

- *endometrium*
- *myometrium*
- *perimetrium*

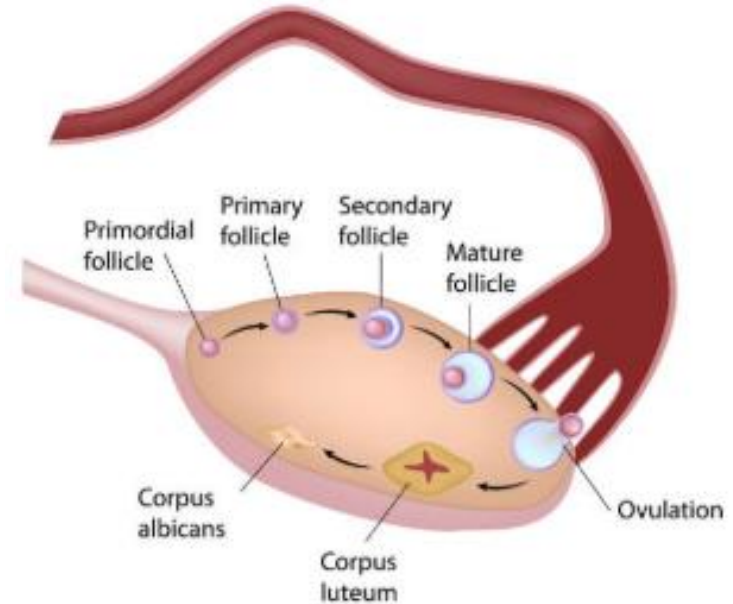


Ovaries

- flat, almond-shaped structures
- 3 to 5 cm long and weigh 2 to 3 g

Function

- To store the female germ cells
- To produce the female sex hormones (estrogen and progesterone)



Menstrual cycle

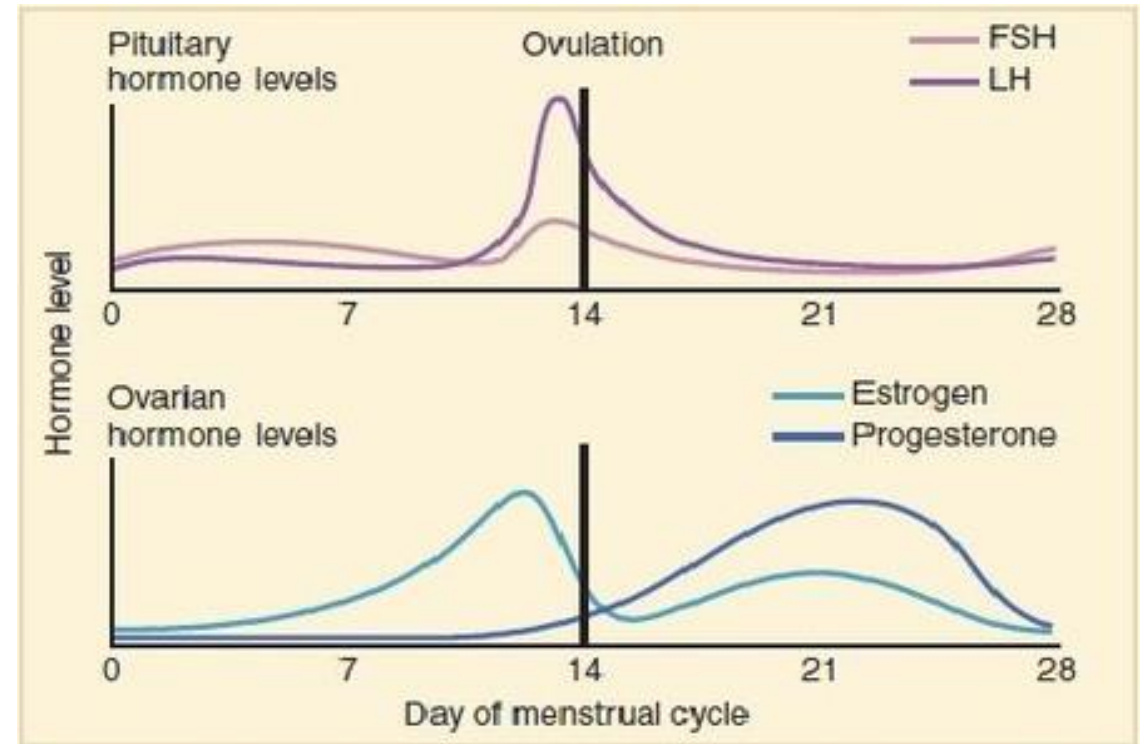
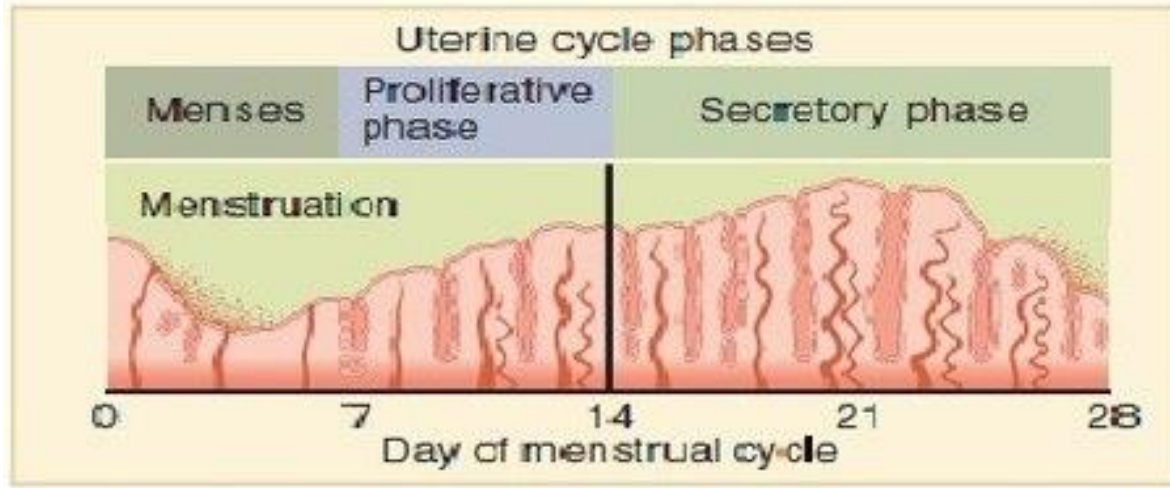
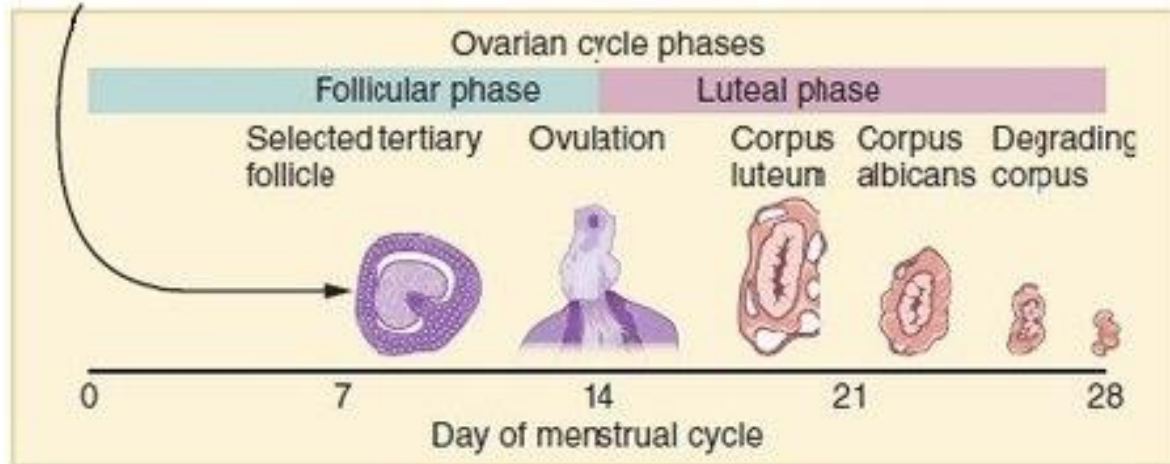
Ovarian cycle

- follicular phase
- ovulation
- luteal phase

Uterine cycle

- menstruation
- proliferative phase
- secretory phase

Menstrual cycle



Menstrual cycle

Length of menstrual cycle

- ***time between the 1st day of one period and the 1st day of the next period***
- 25 to 35 days
- Period length – 2 to 7 days
- Period stop during pregnancy and breastfeeding

- *Menarche* - 12 - 15 years of age
- *Menopause* - 48 - 55 years of age
- *Menorrhoea*

Menstrual disorders

- *Amenorrhea*
- *Hypomenorrhea*
- *Oligomenorrhea*
- *Polymenorrhea*
- *Menorrhagia*
- *Metrorrhagia*
- *Menometrorrhagia*
- *Dysmenorrhoea*
- *Premenstrual syndrome*

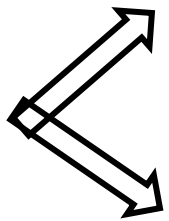


Dysfunctional menstrual
cycles

Amenorrhea

Physiological state

- pregnancy
- lactation (breastfeeding)

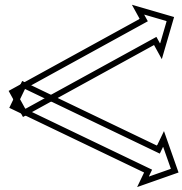


Primary - developmental problems, 14 / 16 years of age

Secondary - hormonal disturbances, absence of menstruation for three / six months

- Low body weight, pituitary tumor, drug-induced, celiac disease, stress

Dysmenorrhea



Primary - is not associated with a physical abnormality or pathology

Secondary - caused by specific conditions

Primary:

- symptoms may begin 1 to 2 days before menses, peak on the first day
- headache, nausea, vomiting, diarrhea, fatigue, irritability, dizziness, and syncope

Secondary:

- endometriosis
- adenomyosis

Endometriosis

- the presence of endometrial tissue outside the uterine cavity
- young women

Risk factors

- early menarche
- regular periods with shorter cycles (<27 days)
- longer duration of period (>7 days)
- heavier flow
- increased menstrual pain

Treatment modalities fall into three categories: pain relief, endometrial suppression and surgery.

Adenomyosis

- abnormal presence of endometrial tissue within the myometrium
- 35 - 50 years of age
- repeated pregnancies, deliveries,
- myoma uteri

Symptoms - heavy, painful periods with clots and painful intercourse

Treatment – menopause, oral treatment, hysterectomy

Menorrhagia

- abnormally heavy (> 80 ml of blood) or prolonged bleeding

Signs and symptoms

- Soaking through one or more sanitary pads or tampons every hour for several consecutive hours
- Needing to use double sanitary protection to control your menstrual flow
- Needing to wake up to change sanitary protection during the night
- Bleeding for longer than a week
- Passing blood clots larger than a quarter
- Restricting daily activities due to heavy menstrual flow
- Symptoms of anemia, such as tiredness, fatigue or shortness of breath

Premenstrual syndrome

- cluster of physical and emotional symptoms that occur in 3 to 14 days before period
- 80% of women

Physical symptoms

- swelling or tenderness in the breasts, cyclic acne, constipation/diarrhea, bloating, abdominal pain, headache, and backache

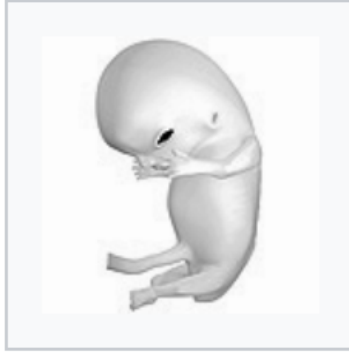
Emotional symptoms

- stress, anxiety, difficulty with sleep, irritability, feeling tired, mood swings

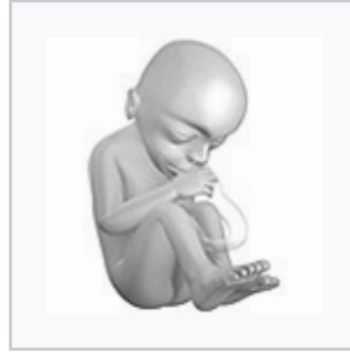
Pregnancy



Embryo at 4 weeks after fertilization. (Gestational age of 6 weeks.)



Fetus at 8 weeks after fertilization. (Gestational age of 10 weeks.)



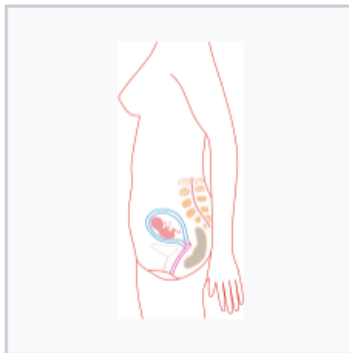
Fetus at 18 weeks after fertilization. (Gestational age of 20 weeks.)



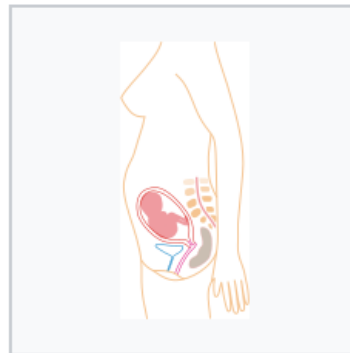
Fetus at 38 weeks after fertilization. (Gestational age of 40 weeks.)



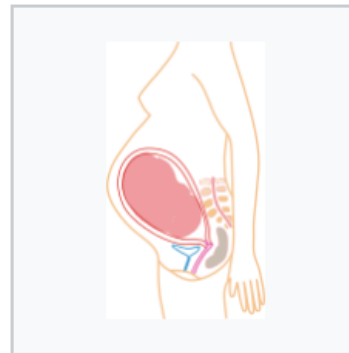
Relative size in 1st month (simplified illustration)



Relative size in 3rd month (simplified illustration)



Relative size in 5th month (simplified illustration)

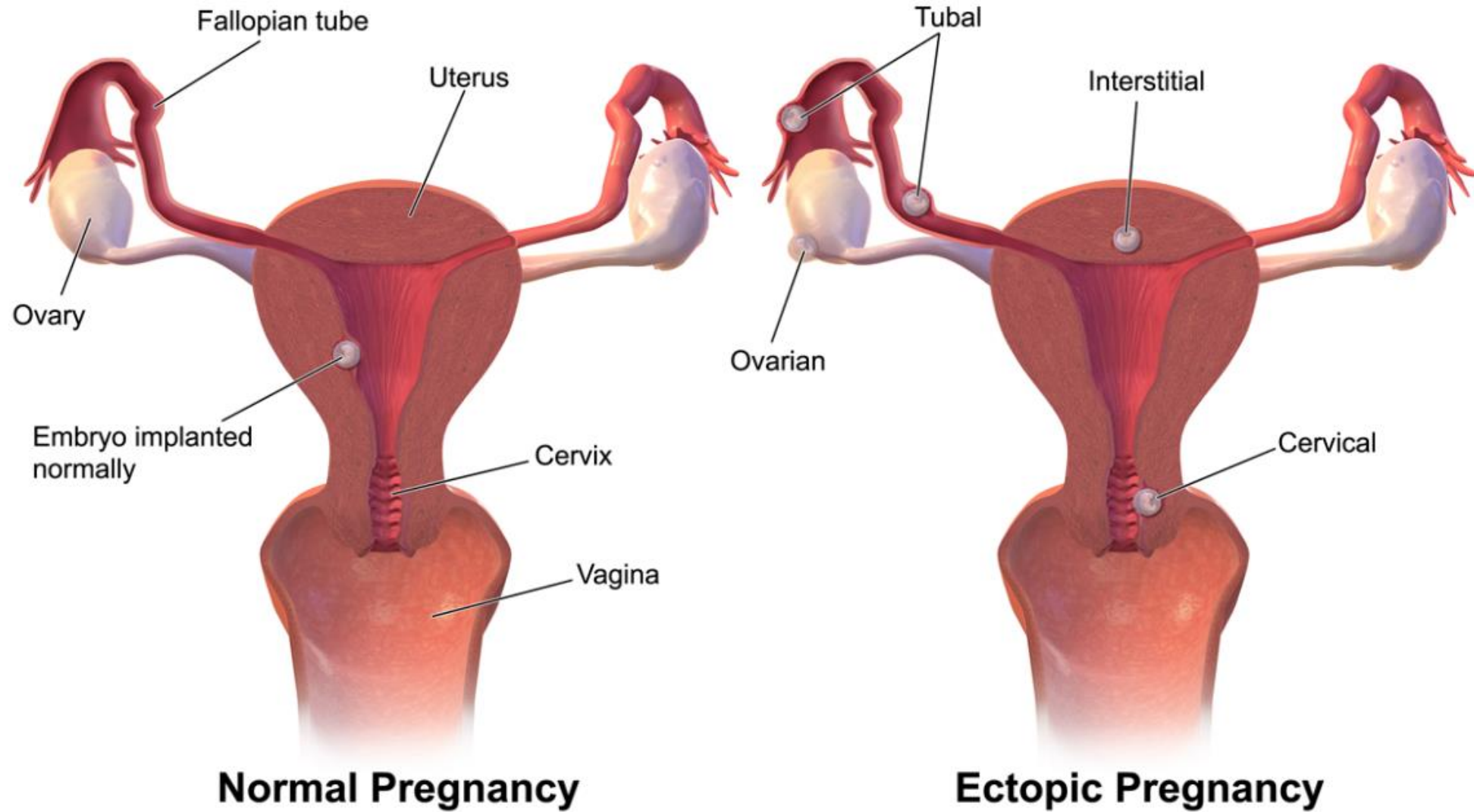


Relative size in 9th month (simplified illustration)

Complications of pregnancy

- *Pregnancy induced hypertension*
- *Anemia*
- *Postpartum depression*
- *Postpartum psychosis*
- *Thromboembolic disorders*
- *Ectopic pregnancy*
- *Hyperemesis gravidarum*
- *Pulmonary embolism*
- *Preeclampsia*
- *Gestational diabetes*

Ectopic pregnancy



Ectopic pregnancy

Signs and symptoms

- abdominal pain and vaginal bleeding

Risk factors

- Pelvic inflammatory disease (chlamydia infection), smoking, surgery, intrauterus contraceptions

Diagnosis

- Blood test, Ultrasound

Fetus is unable to survive.

Preeclampsia

- disorder of pregnancy characterized by high blood pressure and a significant amount of protein in the urine
- after 20 weeks of pregnancy

Risk factors:

- obesity
- prior hypertension
- older age
- diabetes mellitus

Women who have had pre-eclampsia are at increased risk of heart disease and stroke later in life.

Gestational diabetes

- condition in which a woman without diabetes develops high blood sugar levels during pregnancy
- increase the risk of pre-eclampsia, depression, and requiring a Caesarean section

Offspring

- increased risk of being too large, having low blood sugar after birth, and jaundice
- higher risk of being overweight and developing type 2 diabetes

Gestational diabetes

Risk factors

- being overweight
- previously having gestational diabetes
- a family history of type 2 diabetes
- polycystic ovary syndrome

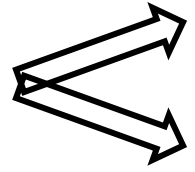
Diagnosis

- Blood test between 24 and 28 weeks of pregnancy

Infertility

Infertility is the inability to conceive a child after 1 year of unprotected intercourse.

Infertility



Primary

Secondary

- male factors (30% to 40%)
- female factors (30% to 40%)
- combined factors (30% to 40%)
- unknown causes - 10% to 25% of infertile couples

Infertility

Treatment:

- Medical treatment
- In vitro fertilization
- Intracytoplasmic sperm injection

Polycystic ovary syndrome

- set of symptoms due to elevated androgens

Symptoms:

- irregular or no menstrual periods, heavy periods, excess body and facial hair, acne, pelvic pain, difficulty getting pregnant

Diagnosis:

- no ovulation, high androgen concentrations, and ovarian cysts

Animal model

Menopause

Preeclampsia

Gestational diabetes

Animal model - menopause

Ovariectomy

- the most common model of human menopause
- low nondetectable concentrations of estradiol in plasma
- 1 – 2 weeks after ovariectomy

Animal model – preeclampsia

Inflammatory model

- systematic inflammation of pregnant mice using lipopolysaccharide
- blood pressure measurements
- analyze of urinary proteins - proteinuria
- plasma arginine concentrations decreasing to near zero

Animal model – preeclampsia

Uteroplacental ischemia model

- model of hypertension
- independent of the renin-angiotensin system
- constriction of the lower abdominal aorta as well as both ovarian arteries leads to hypertension, proteinuria, and decrements in renal function in pregnant but not virgin rats

Animal model – gestational diabetes

Combination of High Fat and Sugar Diet and Streptozotocin and Nicotiamide

- analysed blood glucose concentrations

www.imbm.sk