HKU Med LKS Faculty of Medicine
School of Biomedical Sciences
香港大學生物醫學學院

BMSC1101/BMSN1601

Anatomy of Reproductive Systems (Female)

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Learning Outcomes

HKU Med

By the end of this lecture, you should be able to:

1. Describe the structure and function of the female internal and external genitalia
2. Describe the structure and function of the breasts
3. Relate the anatomy of the reproductive systems to relevant developmental, functional and clinical features

Main references:

- Saladin K. *Human Anatomy*
- Drake R. *Gray's Anatomy for Students*

For any questions:

- gfonseca@hku.hk with subject Nurse / TCM

1. Female Genitalia

1. Female Genitalia

Internal genitalia

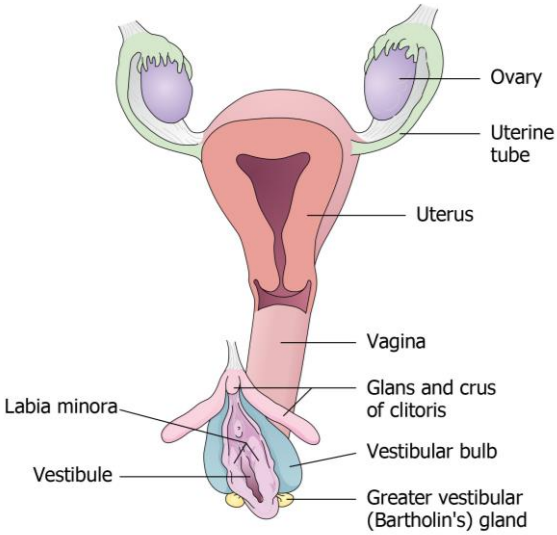
- Ovary
- Uterine tube (Fallopian)
- Vagina

External genitalia (Vulva)

- Labia majora
- Labia minora
- Greater vestibular glands (Bartholin)
- Lesser vestibular glands
- Paraurethral glands (Skene)
- Clitoris

Additional reproductive organs

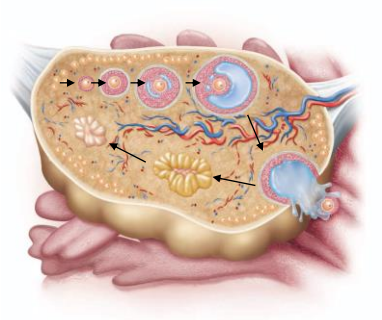
- Breast (mammary glands)



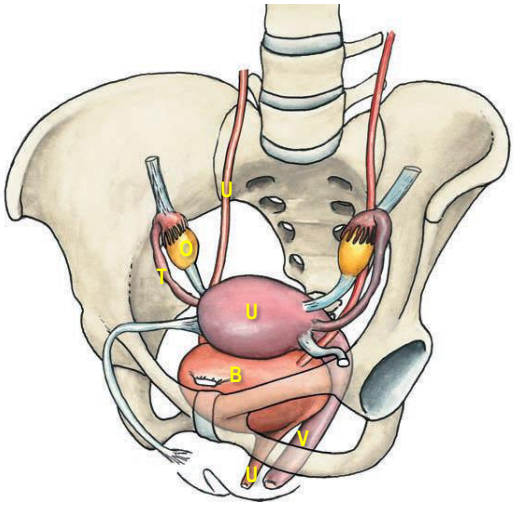
1. Female Genitalia

A) Ovaries

- Female gonads. On lateral wall of pelvic cavity. Combined endocrine and exocrine glands that produce sex hormones and oocytes (oogenesis).



Primordial follicle → … → mature follicle → ovulated oocyte → corpus luteum → corpus albicans

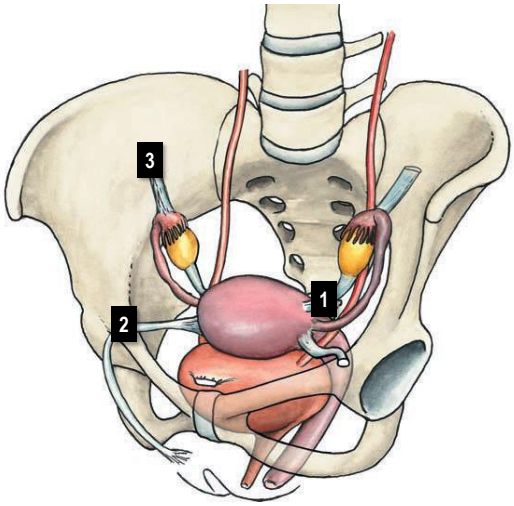


1. Female Genitalia

A) Ovaries

- Ligaments and peritoneal folds support the ovary and uterus in the pelvic cavity:

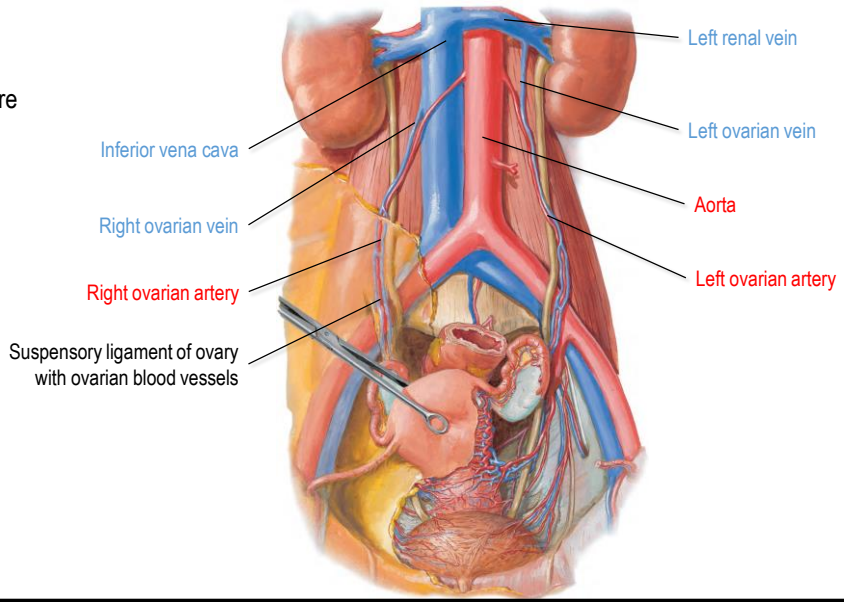
1. Ovarian ligament → from ovary to uterus.
2. Round ligament of uterus→ continuation of ovarian ligament from uterus to labia majora via inguinal canal.
3. Suspensory ligament of ovary → peritoneal fold that transmits blood vessels to ovary.



1. Female Genitalia

A) Ovaries

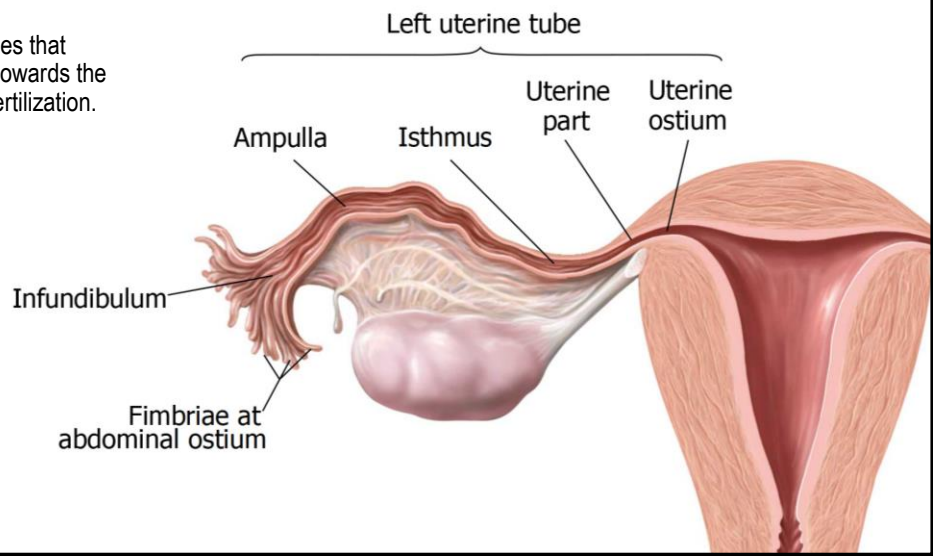
- Vasculature



1. Female Genitalia

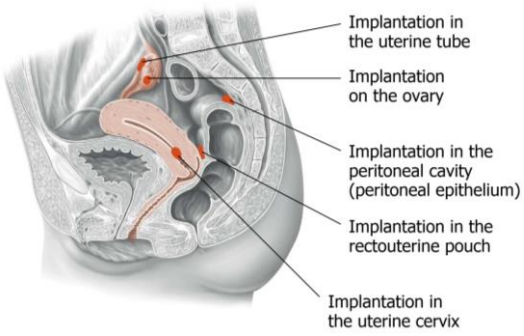
B) Uterine tubes (Fallopian)

- Mucosal-lined tubes that transmit oocytes towards the uterus. Place of fertilization.

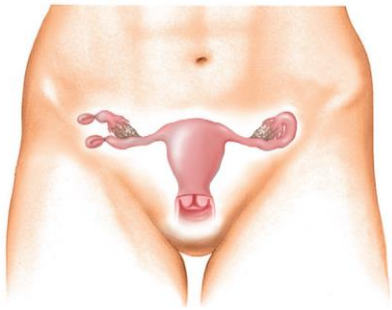


1. Female Genitalia

B) Uterine tubes (Fallopian)



Ectopic pregnancy

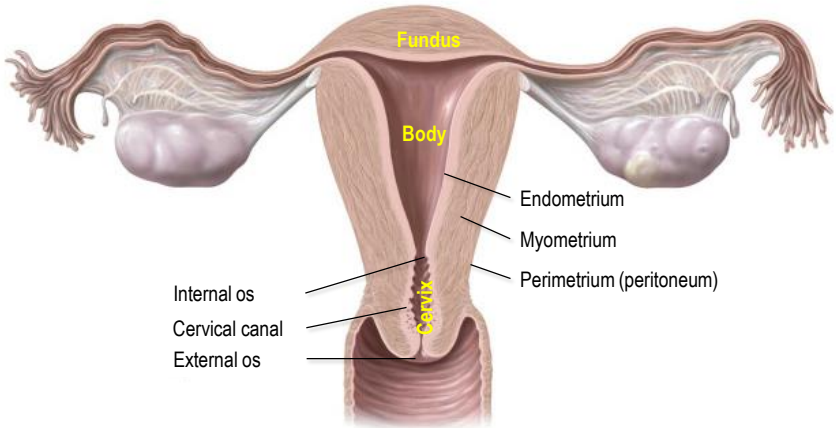


Tubal ligation

1. Female Genitalia

C) Uterus

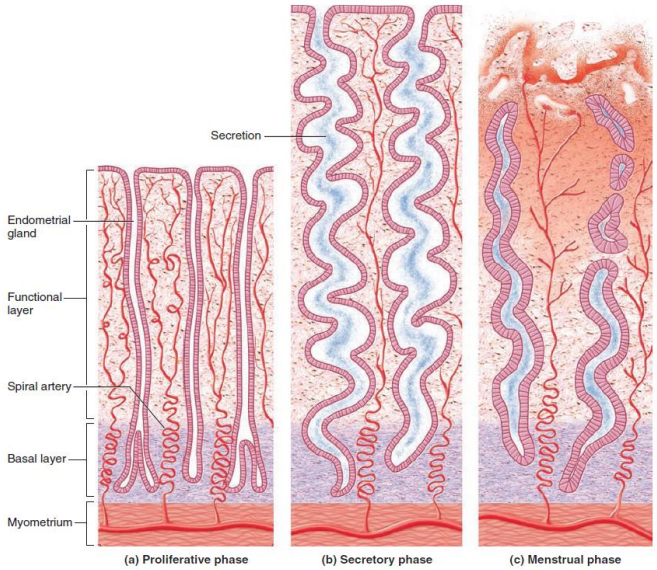
- The womb is a mucosal-lined and very thick-walled muscular organ. Place of implantation, embryonic development and fetal growth.



1. Female Genitalia

C) Uterus

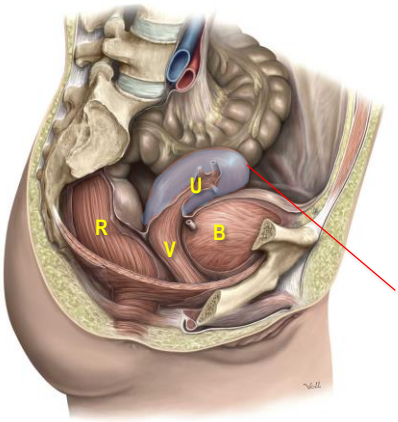
Endometrial changes through the menstrual cycle



1. Female Genitalia

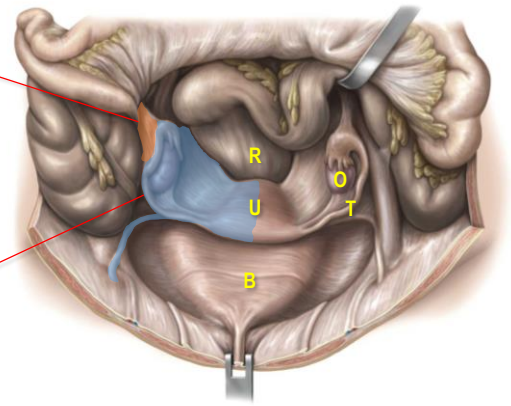
C) Uterus

- Specific peritoneal folds cover the ovaries, uterine tubes, uterus, as well as the ovarian and round ligaments.



Suspensory ligament of the ovary (covers ovarian blood vessels)

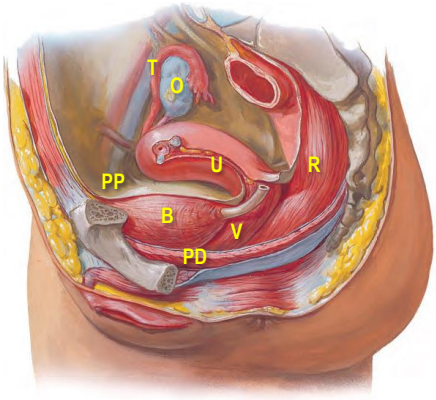
Broad ligament of the uterus (covers ovary, uterine tube, uterus, round and ovarian ligaments)

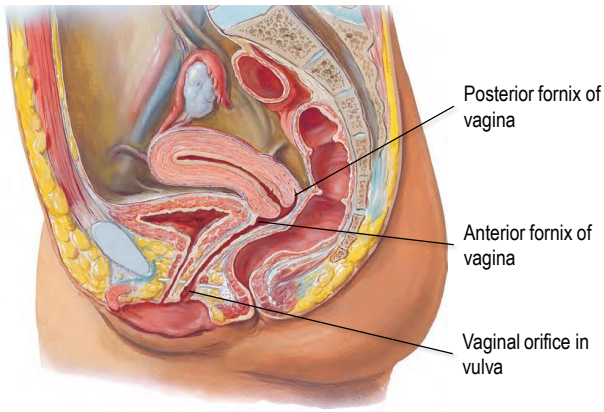


1. Female Genitalia

D) Vagina

- Female copulatory organ. Mucosal-lined fibromuscular canal between the uterus and the vulva. Anterior to rectum and posterior to bladder.





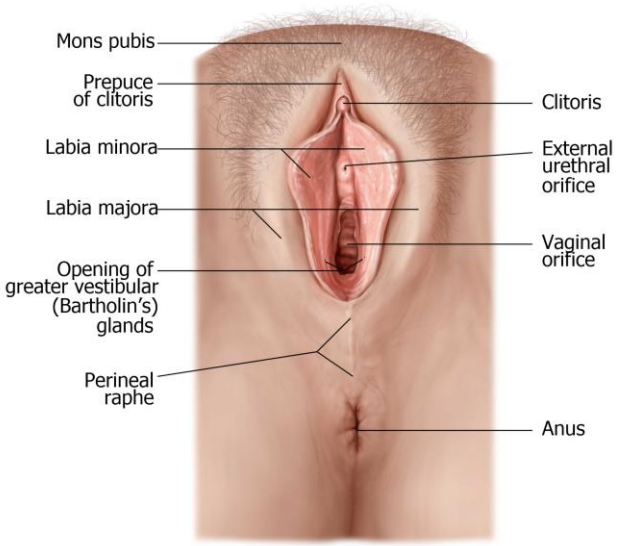
1. Female Genitalia

E) Vulva

- Formed by all female external genitalia. It is the perineal region bordered by the two labia majora.

  i. Vestibule – the region of the vulva bordered by the two labia minora.

  ii. Hymen – mucosa that may cover the vaginal orifice, completely or partially, before first penetration.

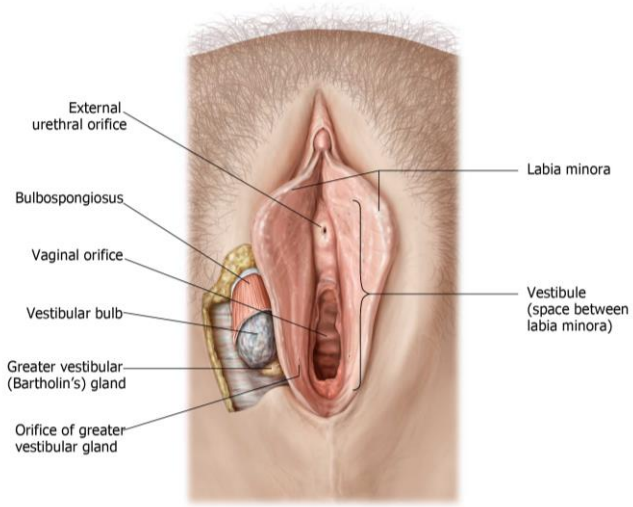


1. Female Genitalia

E) Vulva

iii. Glands that open in vulva

1. Greater vestibular gland (Bartholin) → lubricates vulva and vagina in sexual intercourse.
2. Lesser vestibular glands → minor glands with same function as greater vestibular glands.
3. Paraurethral glands (Skene)→ minor glands that may eject fluid during orgasm ("female ejaculation").

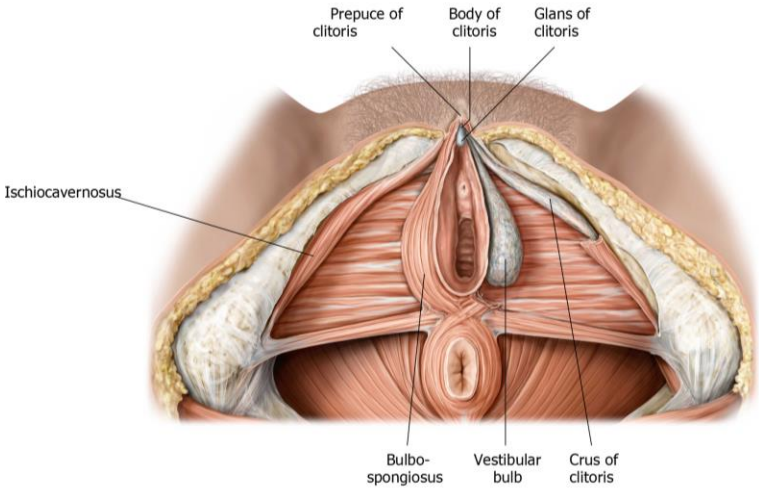


1. Female Genitalia

E) Vulva

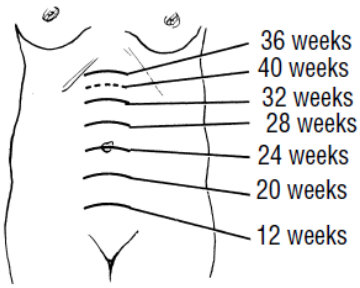
iv. Clitoris – its function is entirely sensory, serving as the primary center of sexual stimulation. Formed by erectile tissue bodies.

1. Crus of clitoris, supported by ischiocavernosus
2. Vestibular bulb, supported by bulbospongiosus

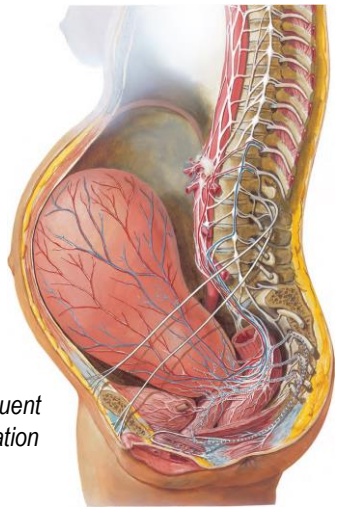


1. Female Genitalia

F) Anatomy of pregnancy and parturition



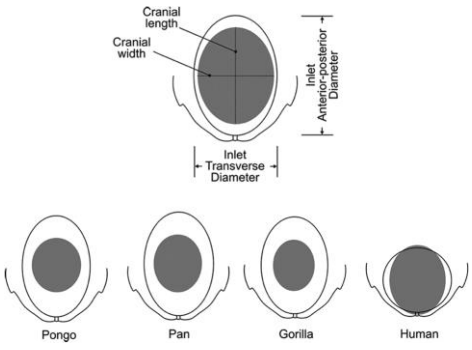
Height of fundus of uterus during gestation



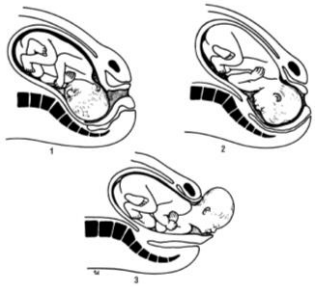
Frequent urination

1. Female Genitalia

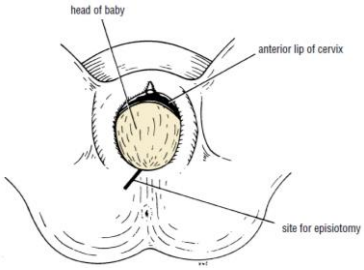
F) Anatomy of pregnancy and parturition



Head to pelvic inlet relationship



Head rotation in childbirth



Episiotomy

2. Breasts and Mammary Glands

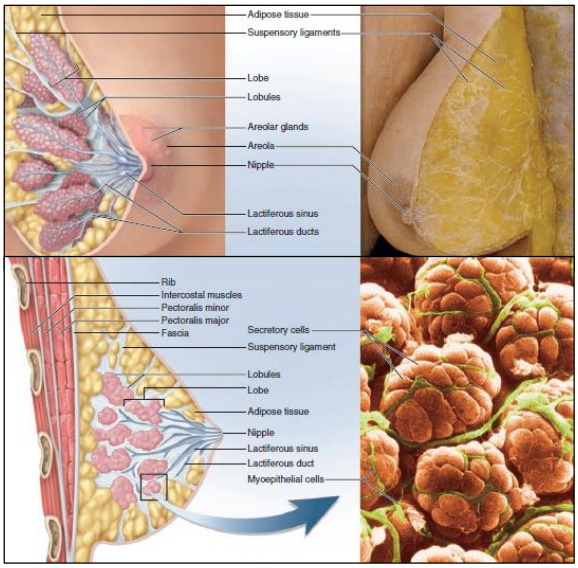
2. Breasts and Mammary Glands

A) Breasts

- Mound of soft tissues, mostly fat, overlying the pectoralis major muscle.

B) Mammary Glands

- Exocrine glands present within the breasts.
- The non-lactating breast contains very little glandular tissue.



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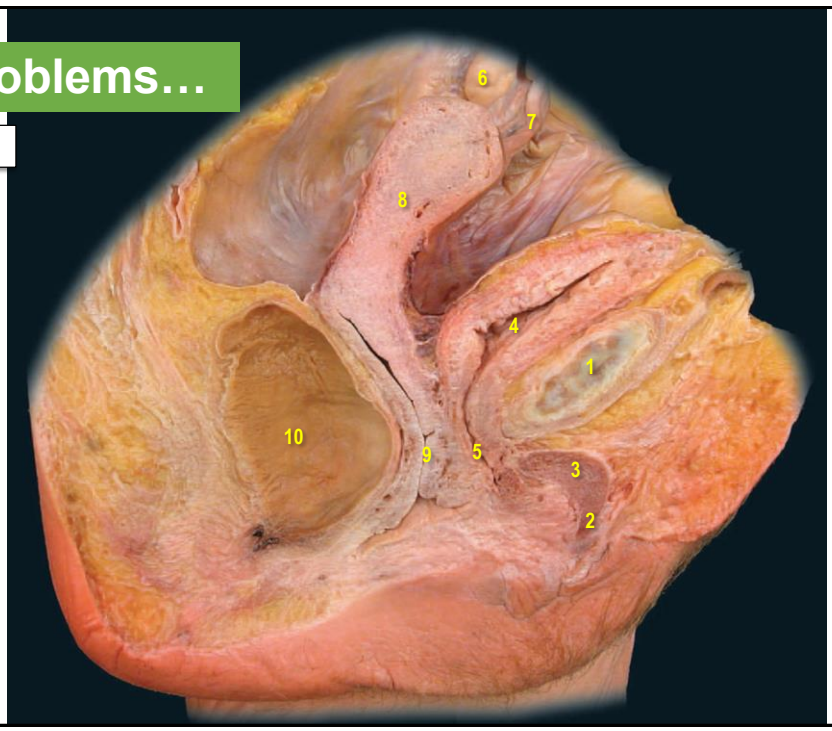
Some problems…

Label the image



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Some problems…

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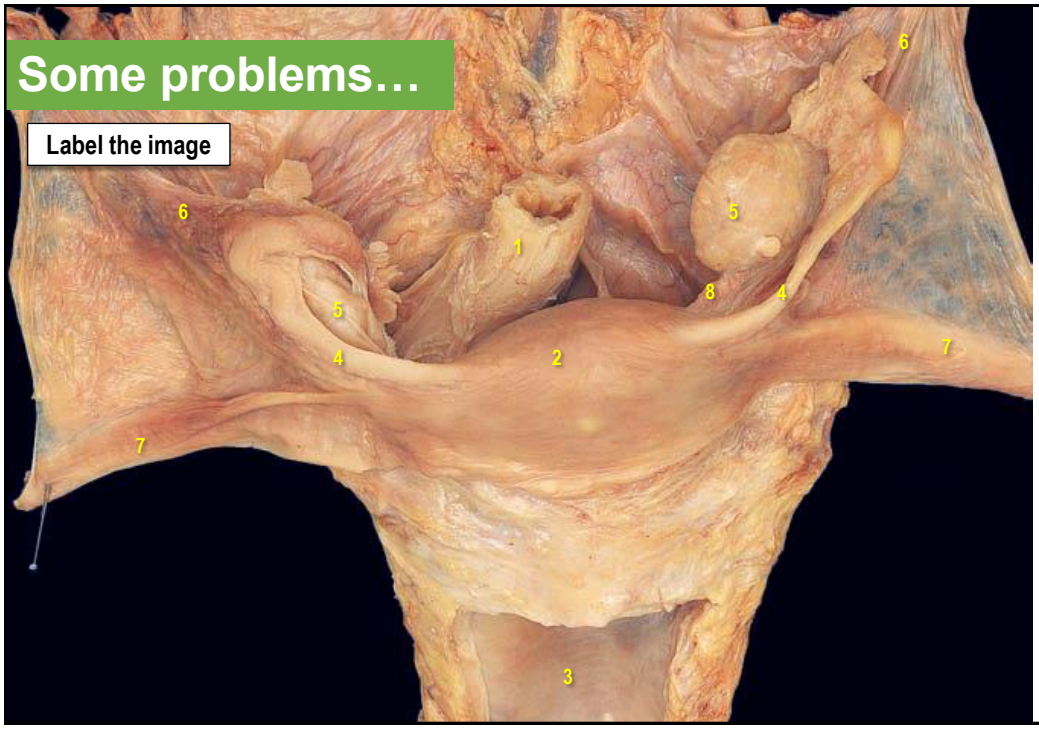

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Some problems…

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1. During labour, it is normal for women to sustain some damage in the birth canal and/or in one of the many supporting structures of the vagina and uterus. Which connective tissue structure of the perineum stabilizes the perineal membrane anteriorly and the external anal sphincter posteriorly?

A. Anococcygeal body
B. Cardinal ligament
C. Perineal body
D. Round ligament of the uterus

2. Varicose veins in the lower limb are common occurrences in pregnancy due to hormonal changes and compression of the inferior vena cava by the gravid uterus. Which vein receives blood from the femoral vein?

A. Common iliac vein
B. Internal iliac vein
C. Inferior vena cava
D. External iliac vein

Some problems…

Draw a diagram of a female pelvis and perineum (sagittal section)

Some solutions…

Label the images (slide 22)
1 pubic symphysis
2 clitoris
3 erectile tissue bodies of clitoris
4 bladder
5 vagina
6 ovary
7 uterine tube
8 uterus
9 vagina
10 rectum

Label the images (slide 23)
1 rectum
2 fundus of uterus
3 vagina
4 uterine tube (Fallopian)
5 ovary
6 suspensory ligament of ovary
7 round ligament of uterus
8 ovarian ligament

MCQ
1. C
2. D