

2024 Batch-Lecture no. 6

VULVA

1. It comprises of two labia, the dorsal and ventral commissures and the clitoris, and the vestibule located between the vulva and the vagina form the caudal termination of the genital tract.
2. These two structures do not arise from the primitive paramesonephric duct but rather from the entoderm of the primitive urogenital sinus and the ectoderm.
3. The urethra opens into the cranial ventral portion of the vestibule.
4. The vestibule has several circular or sphincter like muscles that close the genital tract to the outside.
5. These muscles are attached to the sphincter muscle of the anus and the coccygeal and last sacral vertebrae.
6. Thus during parturition the vestibule acts as the point of attachment for the entire genital tract to contract upon when expelling the foetus.
7. The clitoris is about 5 to 10 cm long in most animals but practically all of it is hidden in tissues between the vulva and the ischiatic arch.
8. The vulvar lips normally come together evenly, do not gape, and the vulvar opening normally lies at a 90 degree angle to the pelvic floor.
9. The vestibule and vulva are supplied with blood from the urogenital and the external and internal pudendal arteries and have the same autonomic innervations as the vagina.
10. They are well supplied by the sensory nerve fibers of the pudendal and genital nerves.
11. The vulva and vestibules are the only reproductive organs of the female well-innervated by sensory nerve fibers.

VESTIBULE OF THE COW:

1. The vestibule of the cow is about 10 to 12.5 cm long on the ventral floor and 7.5 to 10 cm long on the dorsal wall.
2. Beneath the urethral orifice is the sub-urethral diverticulum, which is about 2.5 to 4 cm long.
3. The external visible portion of the clitoris in the cow is small in size.
4. The vestibular or Bartholin's glands, are two in number, one on each side, located in the constrictor muscles of the vestibule.
5. They are about 1.5 to 3 cm in diameter.
6. This gland in the cow opens by a single duct in the lateral wall of the vestibule about 2.5 cm caudal to the vagina.

MARE:

1. The vestibule of the mare is similar in size to that of the cow.
2. Eight to 10 ducts from each vestibular glands open through its dorso-lateral wall.
3. The external visible portion of the glans of the clitoris of the mare is large and prominent, 2.5 to 5 cm long and 2 to 2.5 cm wide.
4. It is composed of erectile tissue similar to the penis.
5. Contractions of the vestibular and vulvar sphincter muscles elevate the clitoris and protrude it between the vulvar lips. This is called "winking".

EWE:

1. The vestibule and vulva in the ewe are similar to that of the cow, but the sub-urethral diverticulum is very small.
2. The vestibule is about 2.5 to 3 cm long.
3. Vestibular glands are frequently absent.

4. The clitoris is short, with the glans concealed in a fossa.

SOW:

1. The vestibule in the sow is fairly long, about 8.9 cm.

2. The labia are thick.

3. The vestibular glands are small and variable in number.

4. The clitoris is located about 2 cm cranial to the ventral commissure.

5. On either side of the cranial portion of the floor of the vestibule there is a cul-de-sac.

BITCH AND CAT:

1. The vulva has thick labia.

2. The vestibule is 2.5 to 5 cm long.

3. The urethral orifice opens on the urethral tubercle, which is elevated above the floor of the vestibule.

4. There are small depressions on either side of the urethral orifice.

5. Vestibular glands are absent in dog but present in the cat.

6. The clitoris in the dog and cat has a small, 0.6 cm long by 0.2 cm diameter, pointed glans and lies in a fossa.

7. The dorsal commissure of the vulva is 8 to 9 cm below the anus.

EMBRYOLOGY OF THE FEMALE GENITAL TRACT

1. The uro-genital system is formed mainly from meso-dermal tissue that in the early embryonic period forms the nephric and genital regions.

2. The ovaries develop from the undifferentiated gonads that form late in the embryonic period in the genital or gonadal

ridge located between the dorsal mesentery and the mesonephros.

3. The primordial germ cells from the wall of the yolk sac in the region of the hind gut have migrated into the gonad by the early foetal period.
4. The surface epithelium of the female gonad gives rise to cortical cords that contain primitive germ cells, later called oogonia.
5. The surrounding epithelial cells from the surface epithelium form the follicular cells.
6. Thus secondary cortical cords are characteristic of the early female gonad.
7. The ovaries remain in the abdominal cavity suspended by the mesovarial portion of the broad ligament.
8. In both male and female during the embryonic period, two pairs of genital ducts are formed that enter the cloaca, the mesonephric or wolffian tubules and ducts and the paramesonephric or mullerian ducts.
9. The paramesonephric ducts arise as longitudinal invaginations of the coelomic epithelium in the same region as the mesonephric tubules and the ducts.
10. The cranial portion of the paramesonephric ducts differentiate in the female to form the oviducts.
11. While the caudal portion of the ducts unite or fuse to form the uterus, cervix and the cranial two-thirds or more of the vagina.
12. The septum initially present between the two ducts in the caudal region disappears early in the foetal period.
13. The caudal one-third or less of the vagina is formed by evaginations from the wall of the uro-genital sinus.

14. The hymen is formed by the epithelial linings of the vaginal canal, urogenital sinus and a this intermediate layer of mesoderm.
15. In the male the paramesonephric ducts degenerate but portions may persist as remnants, as the appendix testis near the head of the epididymis, and the uterus masculinus between the ampullae and near the prostate gland.
16. Portions of the mesonephric tubules and ducts may persist as remnants in the female forming the epoophoron on the cranial pole of the ovary, the paroophoron or parovarian cysts, and Gartner's ducts in the vaginal floor.
17. Early in the foetal period the external undifferentiated genitalia become modified so the genital tubercle forms the clitoris.
18. The genital folds failing to unite as in the male become the vestibule and the genital swellings enlarge to form the vulvar lips.

EMBRYOLOGICAL STURUCTURES, ADULT MALE AND FEMALE

Embryological structures	Adult female	Adult male
Gonad	Ovary	Testis
Mesentery	Mesoovarium	Mesorchium
Gubernaculum	Round ligament of uterus and proper ligament of the ovary	Ligamentum testis
Paramesonephric duct (Mullerian duct)	Oviducts, uterus, cervix and vagina (cranial portion)	Appendix testis, Uterus masculinus
Mesonephric tubules and ducts	Epoophoron, Paroophoron (Parovarian or	Efferent ducts, Epididymis, Ducts (Vas)

	mesonephric duct	deferens
Genital tubercle	Clitoris	Penis (Phallus)
Genital fold	Vestibule	Penile urethra
Genital Swelling	Vulvar lip	Scrotum