

English For the Students of Veterinary Medicine

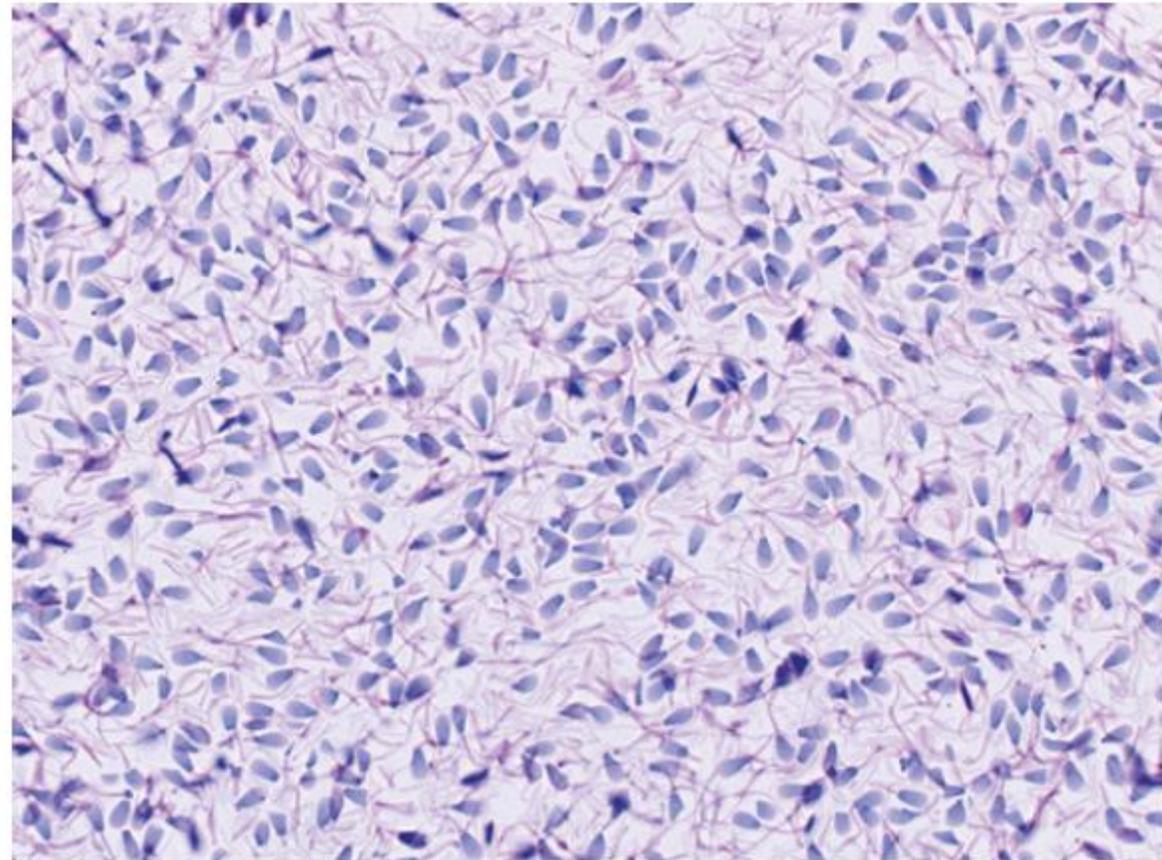
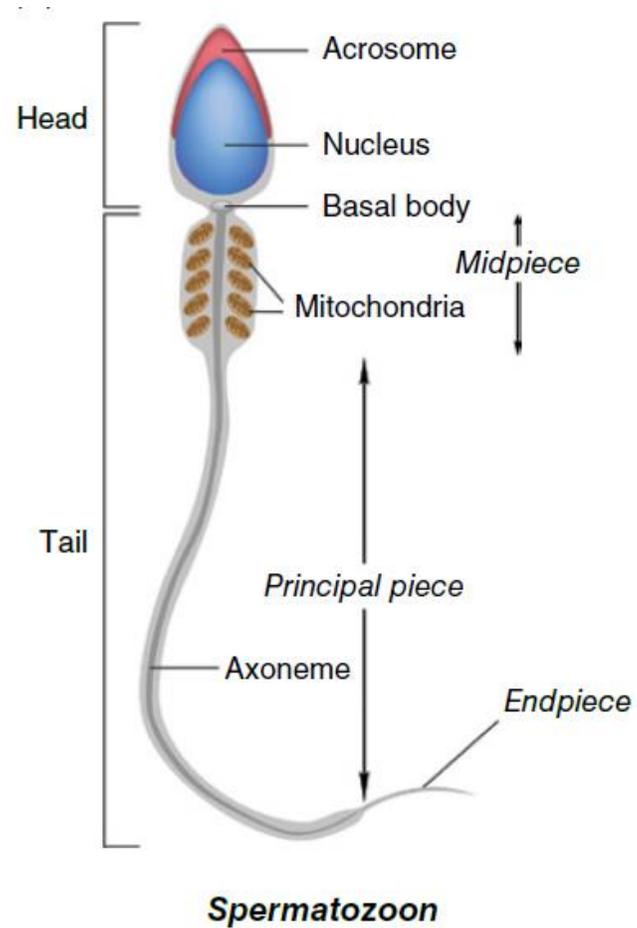
The Reproductive System

Dr. A. K.Goudarzi, D.V.M. Ph.D
Faculty of Veterinary Medicine
I.A. University, Karaj Branch

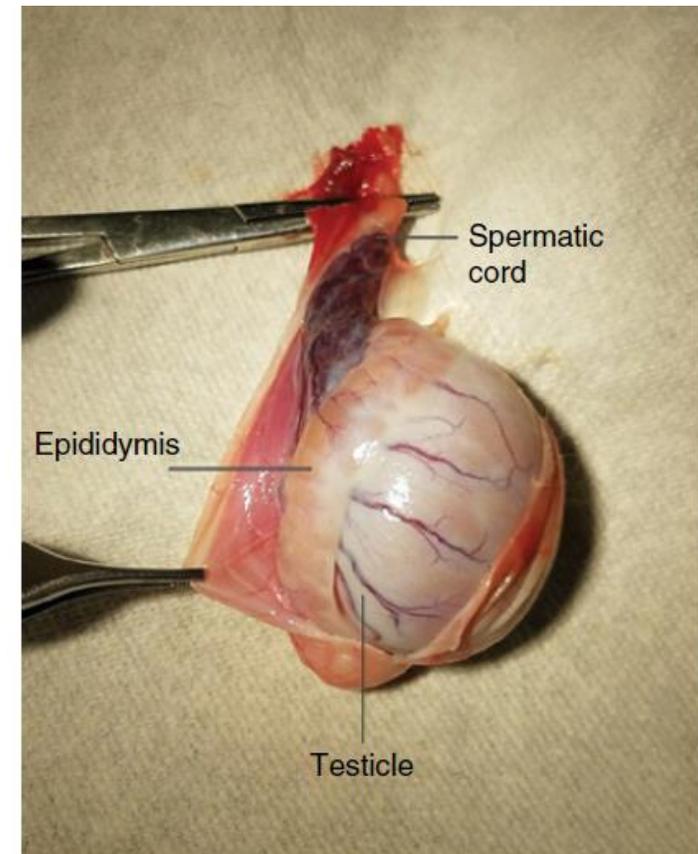
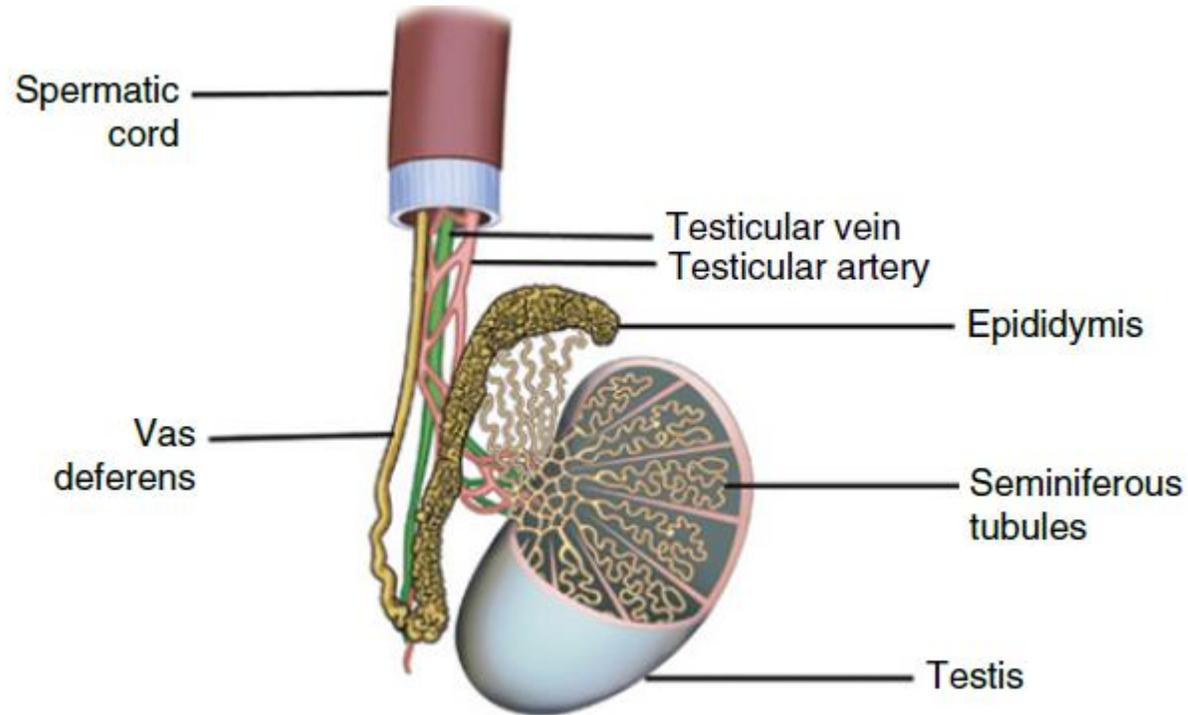
The male reproductive system

- *Spermatozoon*
- *Anatomy and
physiology*

Spermatozoon

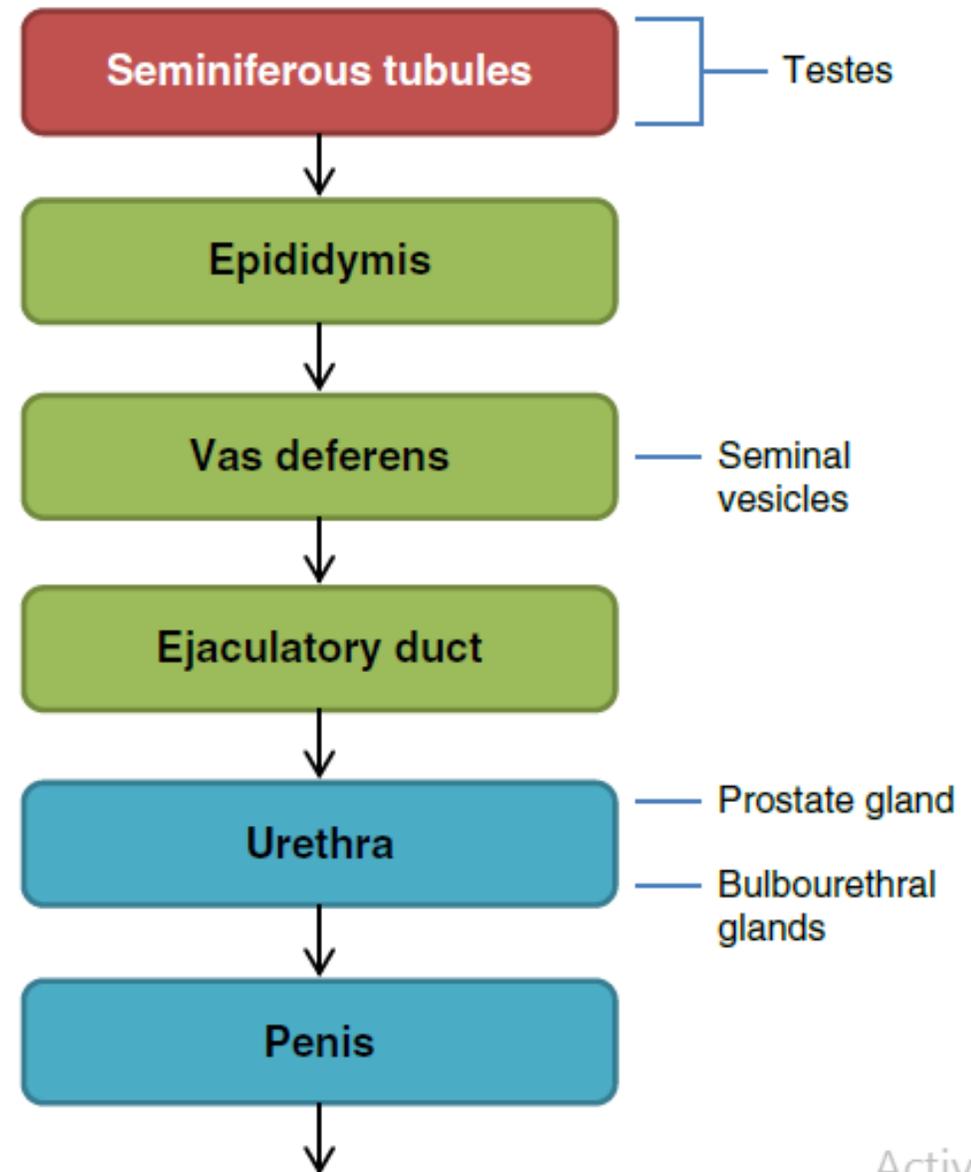


Anatomy and Physiology

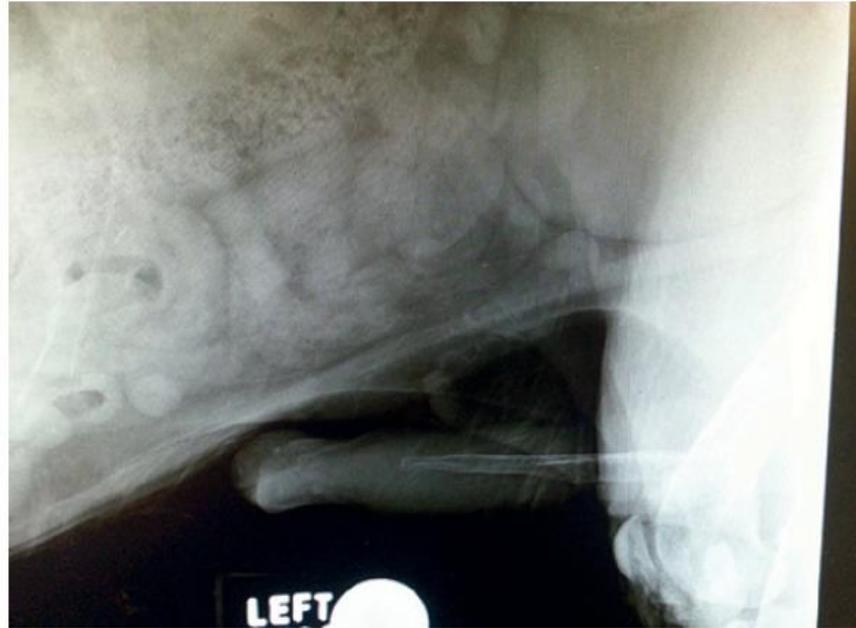


Terms for the Male Reproductive System

Bulbourethral glands	Pair of glands below the prostate that secrete fluid into the urethra.
Ejaculation	Ejection of sperm and fluid from the male urethra.
Ejaculatory duct	Tube through which semen enters the urethra.
Epididymis	One of a pair of tightly coiled tubes lying on top of each testicle. They carry sperm from the seminiferous tubules to the vas deferens.
Flagellum	Hair-like projection on a sperm cell that makes it motile.
Gametes	Sex cell; sperm in males and ova in females.
Genitalia	Reproductive organs such as the ovaries, uterus, and vagina in females; the testes, penis, and vas deferens in males. Also called genitals.
Glans penis	Sensitive tip of the penis.



Gonads	Sex organs that produce gametes (sex cells). Testes in males and ovaries in females.
Intact	Male that has not been neutered; male that still has its reproductive capability.
Os penis	Bone found in the penis of some carnivores (Figure 5.5).
Perineum	In males, the area between the anus and scrotum.
Prepuce	Cutaneous sheath covering the penis.
Prostate gland	Gland in males that surrounds the urethra. Depending on the species, it may be well defined or diffuse. It secretes a thick fluid that aids the motility of sperm.
Scrotum	External sac that contains the testes.
Semen	Spermatozoa and fluid.
Seminal vesicles	Pair of glands that secrete a fluid into the vas deferens.



Anatomy and Physiology

Seminiferous tubules Narrow, coiled tubules that produce sperm in the testes.

Spermatozoon Sperm cell.
(plural: spermatozoa)

Sterility Inability to reproduce.

Testes Male gonads that produce spermatozoa and the hormone testosterone.
(singular: testis)

Testosterone Hormone produced by the testes and responsible for male sex characteristics.

Urethra

In males, tube that carries urine and semen to the outside of the body. The tube extends from the urinary bladder, through the penis, to the outside of the body.

Vas deferens

Narrow tube that carries sperm from the epididymis toward the urethra. Also called the ductus deferens.

Male Reproductive System Pathology and Procedures

Azoospermia	Lack of spermatozoa in the semen.
Castration	Removal of gonads (sex organs) (Figure 5.6).

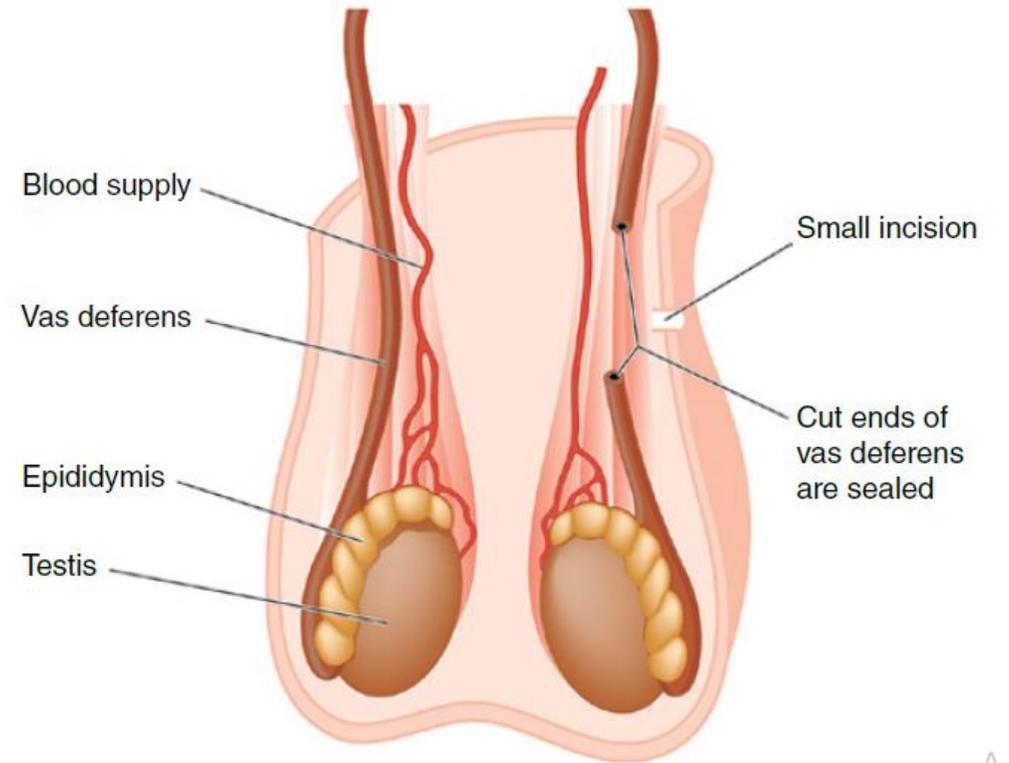
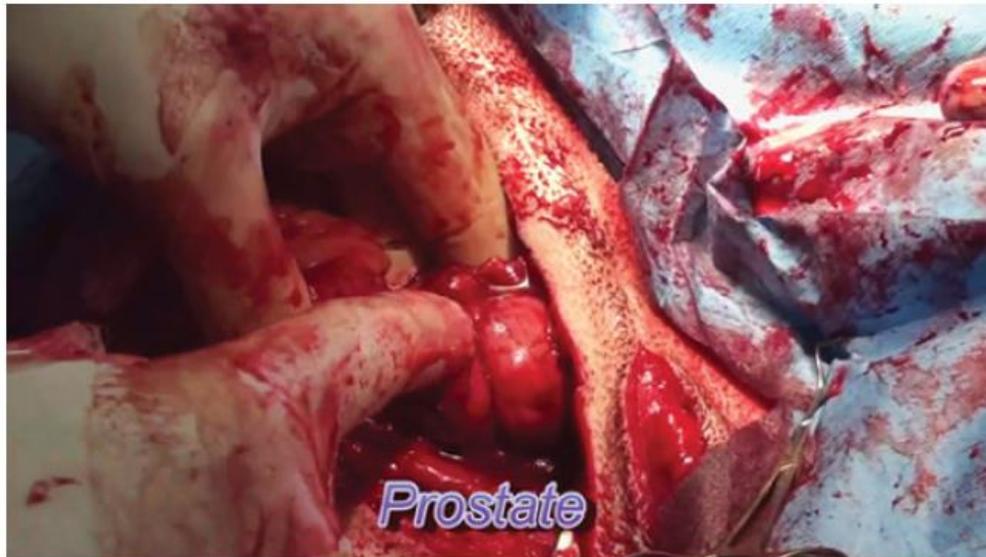
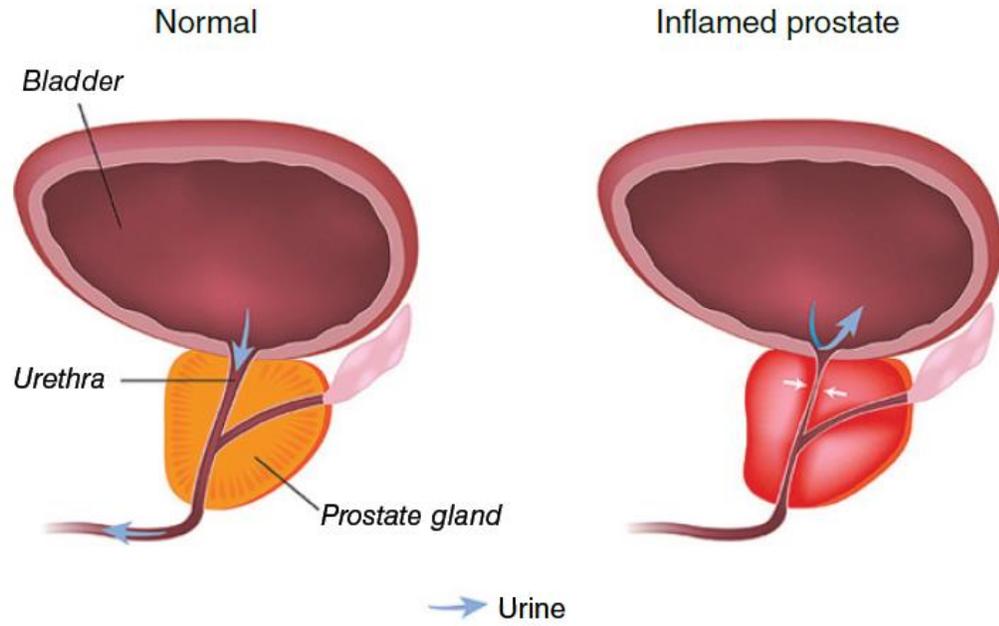
TECH TIP 5.1 Castration

Since the definition of castration is the removal of gonads, can females be castrated? The answer is yes. Castration is a generalized term; however, in veterinary medicine, it is most commonly used to describe the removal of male gonads.

Cryptorchism	Condition in which one or both testicles is undescended. Also called cryptorchidism . If only one testicle is undescended, then it is termed monorchid . If both are undescended, then the condition is termed bilateral cryptorchism (Figure 5.7).
Electroejaculation	Method used for the collection of semen for artificial insemination or for examination. Electrical stimulation is provided by electrodes to the nerves to promote ejaculation. The rectal probe used is called an electroejaculator (Figure 5.8).
Neuter	Removal of male gonads; orchietomy (Figure 5.6).
Paraphimosis	Inability to retract the penis due to its swollen state or due to the constriction of the preputial orifice (Figure 5.9).
Persistent frenulum	Incomplete separation of the penis and prepuce which causes an inability to breed.
Phimosis	Constriction of the orifice of the prepuce preventing it from drawing back over the glans penis.
Priapism	Persistent erection of the penis due to injury or disease. Causes include injuries to the spinal cord or penis.
Scrotal hydrocele	Swelling of the scrotum due to a collection of fluid in the testes or along the spermatic cord (Figure 5.10).



Prostatitis



The Female Reproductive System

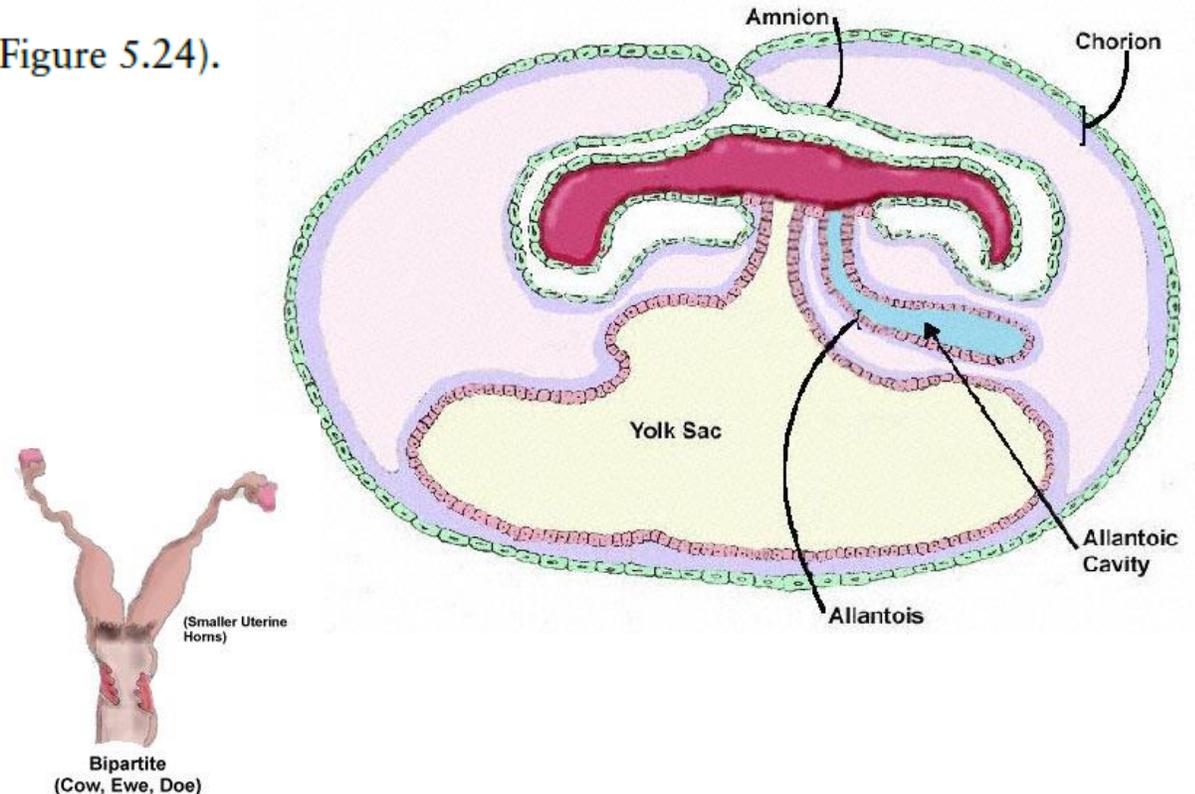
- *Anatomy and physiology*
- *Pathology and procedures*

Terms for the Female Reproductive System

Amnion	Innermost membrane around the developing embryo; amniotic sac.
Amniotic fluid	Fluid contained within the amnion.
Cervix	Lower neck-like portion of the uterus.
Chorion	Outermost membrane surrounding the embryo.
Clitoris	Small, elongated, erectile portion of tissue on the ventral aspect of the vulva.
Coitus	Sexual intercourse; also called copulation (Figure 5.24).



Donkey mounting. Source: Courtesy of shutterstock/Four Oaks.



Conception

Embryo

Endometrium

Estrogen

Estrus

Fertilization

Fetus

Fimbriae

Follicle-stimulating hormone (FSH)

Gestation

Genital lock

The onset of pregnancy.

Early stage of development from fertilization to when major structures begin to develop.

Inner lining of the uterus.

Hormone produced by the ovaries and responsible for the female secondary sex characteristics.

Time of sexual receptivity; also known as heat.

The union of sperm and ovum; conception.

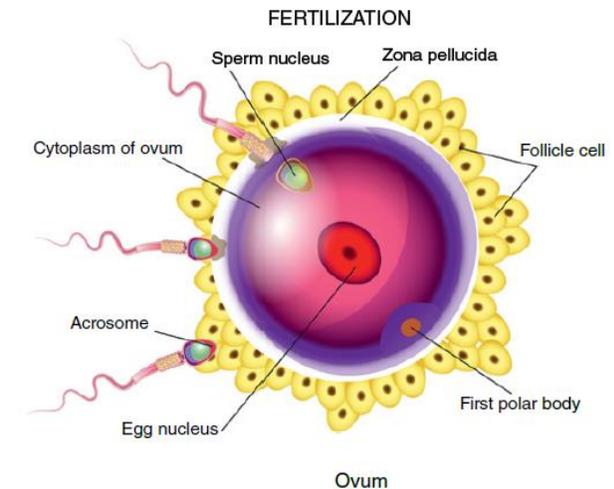
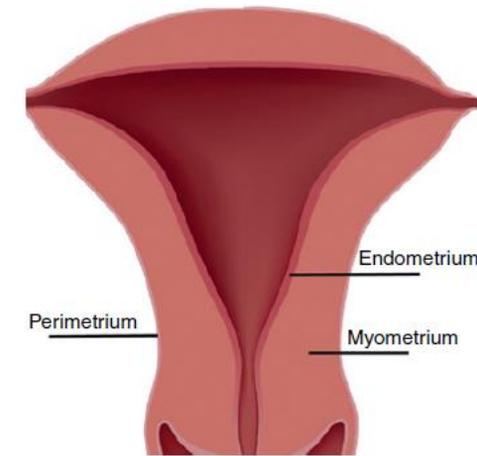
Later stages of development after major structures have developed.

Finger-like projections at the ends of the uterine tubes (fallopian tubes).

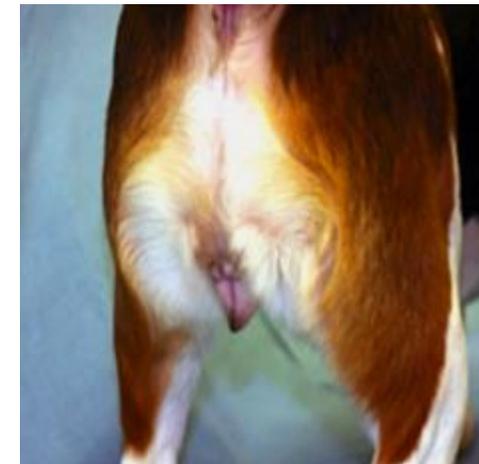
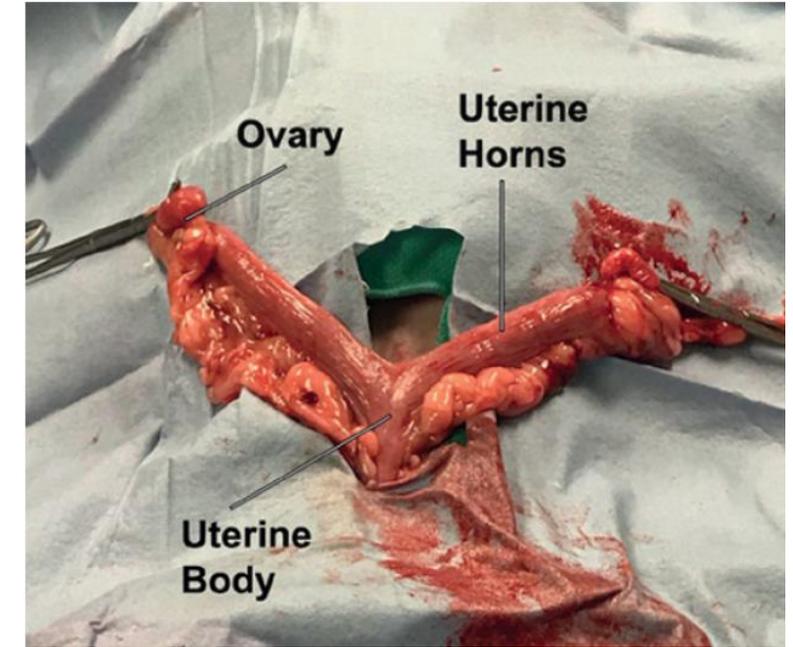
Hormone produced by the pituitary to stimulate the maturation of ovum (Figure 5.26).

Length of pregnancy.

Male and female canine become locked together during coitus due to erectile tissue. Commonly called a tie.



Hymen	Membranous fold that partially or completely closes the vaginal orifice.
Implantation	Attachment of the fertilized egg (zygote) to the uterus.
Involution of the uterus	The uterus returns to its normal non-pregnant size.
Lactation	The normal secretion of milk.
Litter	Group of offspring born during the same labor.
Luteinizing hormone (LH)	Hormone produced by the pituitary to promote ovulation (Figure 5.26).
Meconium	First feces of the newborn.
Mount	Preparatory step to mating of animals.
Myometrium	Muscle lining of the uterus.
Neonate	Newborn.
Ovaries	Pair of female organs on either side of the pelvis that produce estrogen and progesterone.
Ovulation	Release of ovum from the ovary.
Ovum (plural: ova)	Female gamete (sex cell).
Oxytocin	Hormone produced by the pituitary that stimulates the uterus to contract as well as milk secretion (Figure 5.26).
Parturition	The act of giving birth (Figure 5.27).
Perineum	In females, the area between the anus and vagina.



Ovulation

Ovum (plural: ova)

Oxytocin

Parturition

Perineum

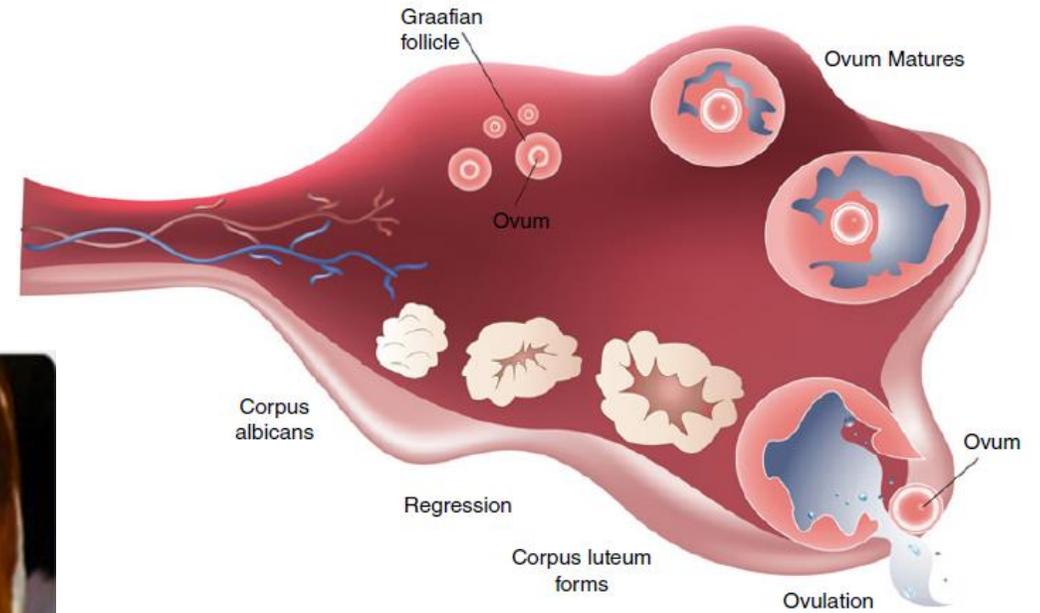
Release of ovum from the ovary.

Female gamete (sex cell).

Hormone produced by the pituitary that stimulates the uterus to contract as well as milk secretion (Figure 5.26).

The act of giving birth (Figure 5.27).

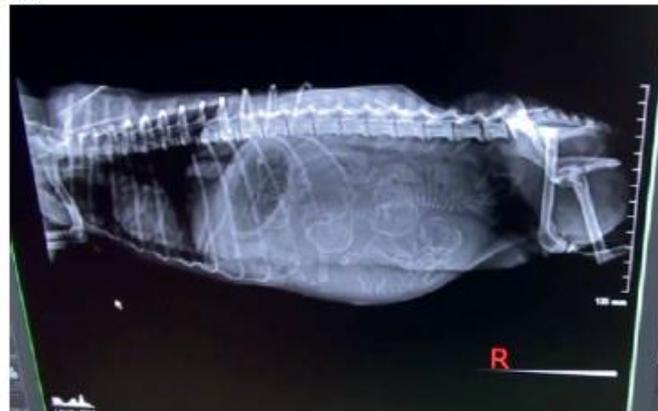
In females, the area between the anus and vagina.



Pituitary gland	Endocrine gland at the base of the brain that produces FSH and LH; also called the master gland or hypophysis (Figure 5.26).
Placenta	Vascular organ that develops in the uterine wall during pregnancy. Used for communication between maternal and fetal blood.
Pregnancy	Condition of having a developing embryo or fetus in the body (Figure 5.28).

TECH TIP 5.9 Types of Pregnancies

Multipara (multiparous)	Female having two or more pregnancies resulting in viable offspring.
Multigravida	Female has been pregnant at least twice.
Nullipara (nulliparous)	Female has never had a pregnancy resulting in viable offspring.
Nulligravida	Female has never been pregnant.
Primipara (primiparous)	Female has had one pregnancy resulting in viable offspring.
Primigravida	Female is pregnant for the first time.

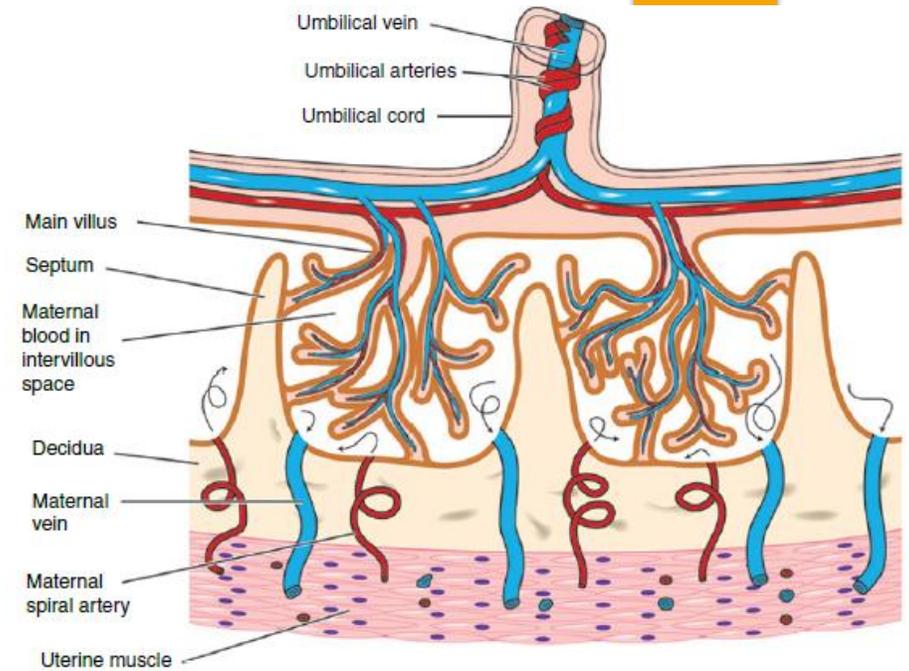


TECH TIP 5.3 Types of Estrous Cycles

Different species have different frequencies of estrous cycles. Below is a list of different types of estrous cycles.

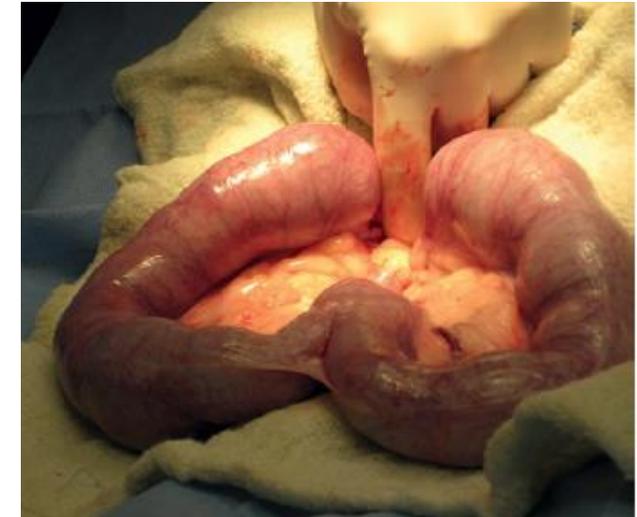
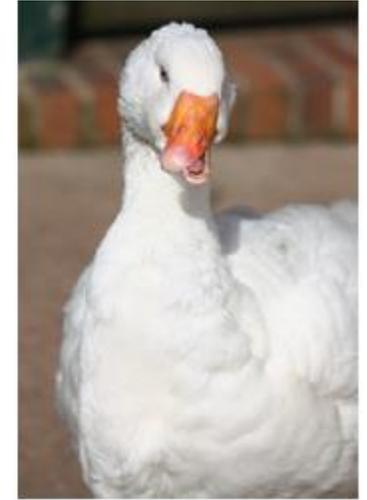
Induced ovulators	Animal that releases ovum after copulation. Examples include cats (Figure 5.18), camelids (alpacas and llamas), rabbits, and ferrets.
Monestrous	Animal has one estrous cycle per year.
Polyestrous	Animal has multiple estrous cycles per year.
Seasonal	Animal has an estrous cycle at a specific time of year. For example, cats are polyestrous from February to October. Horses are polyestrous as well, but their cycle centers around the length of daylight. Their breeding season runs from April to September.
Spontaneous ovulators	Animal in which estrus occurs cyclically.

Presentation	Orientation of the fetus before delivery.
Progesterone	Hormone produced by the ovaries during pregnancy to protect the embryo and stimulate lactation.
Umbilicus	Navel.
Urethra	Tube that carries urine from the urinary bladder to the outside of the body.
Uterine horns	Pair of tubes extending from the uterine tubes to the body of the uterus. Makes animals adapted for litter bearing.
Uterine tubes	Pair of ducts through which the ovum travels to the uterine horns. Also called the fallopian tubes.
Uterus	The womb. Consists of three sections: the uterine horns, uterine body, and cervix.
Vagina	Tube extending from the uterus to the outside of the body.
Vaginal orifice	Opening of the vagina.
Viable	Capable of living outside the uterus.
Vulva	External genitalia of the female (Figure 5.29).
Wean	Remove the young from the mother so that they no longer nurse.



Female Reproductive System Pathology and Procedures

Abortion	Spontaneous or induced termination of pregnancy before the fetus is viable.
Artificial insemination	Implanting of live sperm into the female genital tract.
Assisted delivery	Aiding delivery of a fetus through use of equipment or hands (Figure 5.30).
Cesarean section	Removal of the fetus by abdominal incision; also spelled caesarean section (Figure 5.31).
Congenital anomaly	Malformation present at or existing from birth (Figure 5.32). Congenital means present at or existing from birth. An anomaly is a defect or malformation.
Eclampsia	Decreased calcium during lactation causing convulsions and coma; commonly called milk fever in most species. Cattle have a similar disorder called periparturient hypocalcemia.
Ectopic pregnancy	Fertilized ovum becomes implanted outside the uterus.
Embryo transfer	Transfer of fertilized ova from one female to another. Typically done with cattle.
Episiotomy	Incision through the skin of the perineum to enlarge the vaginal opening for delivery.
Fetotomy	Surgical excision of a fetus; also known as embryotomy or abortion.
Galactorrhea	Abnormal, persistent discharge of milk.
Hydrocephalus	Abnormal accumulation of fluid in the spaces of the brain. Commonly called water on the brain.
Leukorrhea	Sticky, white discharge from the vagina indicative of a disease elsewhere in the reproductive system.
Malpresentation	Faulty fetal presentation.
Pneumovagina	Involuntary aspiration of air into the vagina due to a conformational defect. Seen in cattle and horses. Animals are commonly referred to as windsuckers.
Pyometra	Pus in the uterus (Figure 5.33).



- Retained placenta** Failure to pass the placenta after delivery of the fetus. Causes metritis and eventually infertility.
- Ultrasound** Diagnostic technique using ultrasound waves to produce an image of an organ or tissue.
- Uterine prolapse** Displacement of the uterus through the vaginal orifice (Figure 5.34).



- Vaginal cytology** Study of cells from the vagina to determine stage of heat.
- Vaginal prolapse** Displacement of the vagina through the vaginal orifice.

Canine Age and Sex

- Stud** Intact male dog (Figure 5.35A).
- Bitch** Intact female dog.
- Whelp** Young dog or pup.
- Whelping** Giving birth to whelps.
- Pack** Group of dogs.
- Litter** Multiple offspring from the same labor.

Feline Age and Sex

- Tom** Intact male cat.
- Queen** Intact female cat (Figure 5.35B).
- Kitten** Young cat.
- Queening** Giving birth to kittens.
- Clowder** Group of cats. Also known as a glaring.
- Litter** Multiple offspring from the same labor. Also called a kindle.

