

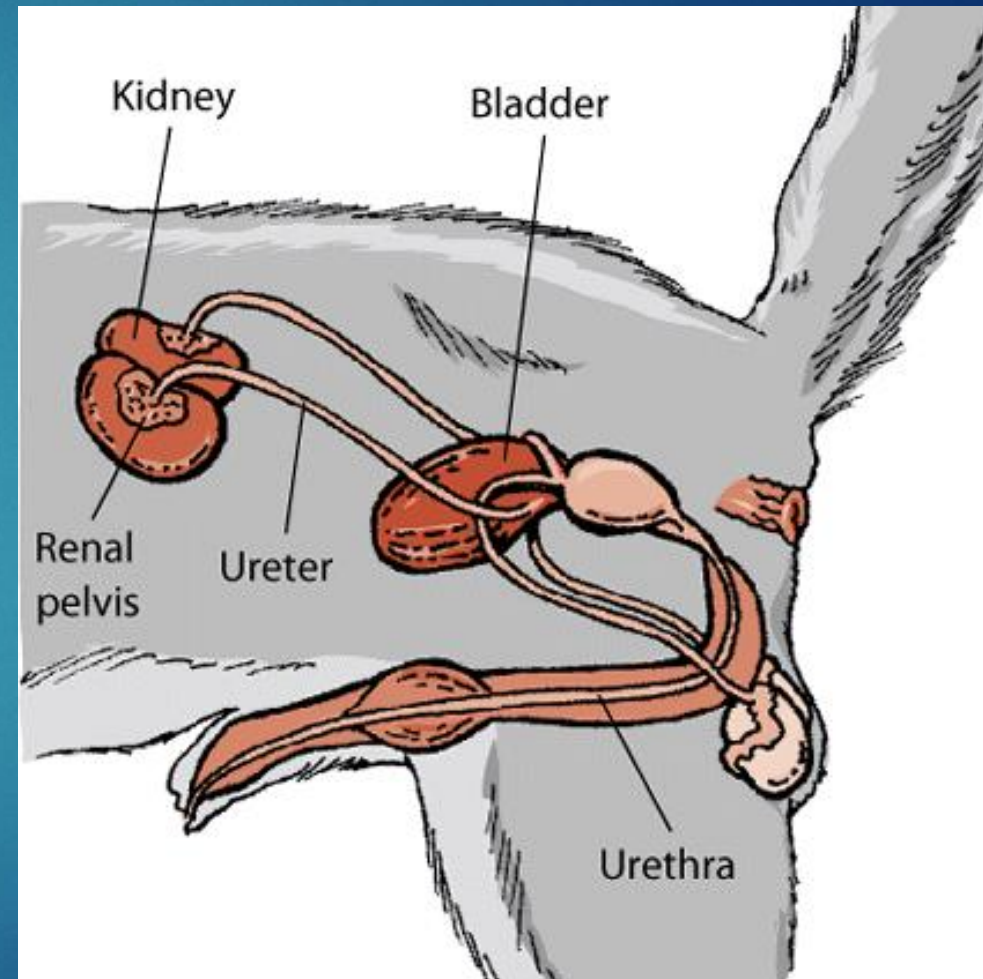
UROGENITAL SYSTEM SURGERY

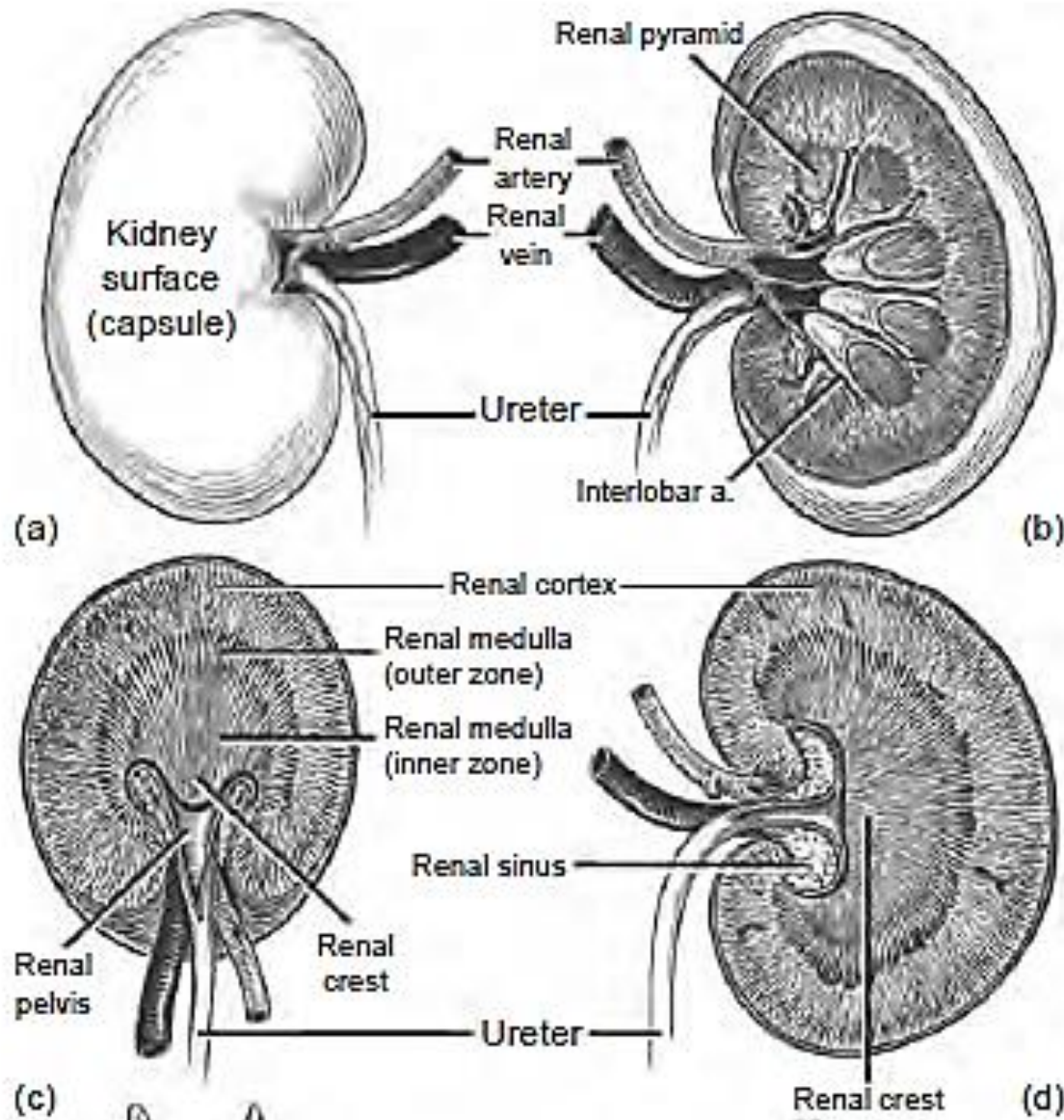
UROGENITAL SYSTEM ANATOMY

- ▶ Kidneys and Ureters
- ▶ Urinary Bladder
- ▶ Urethra
- ▶ Genital Organs Male
- ▶ Genital Organs Female

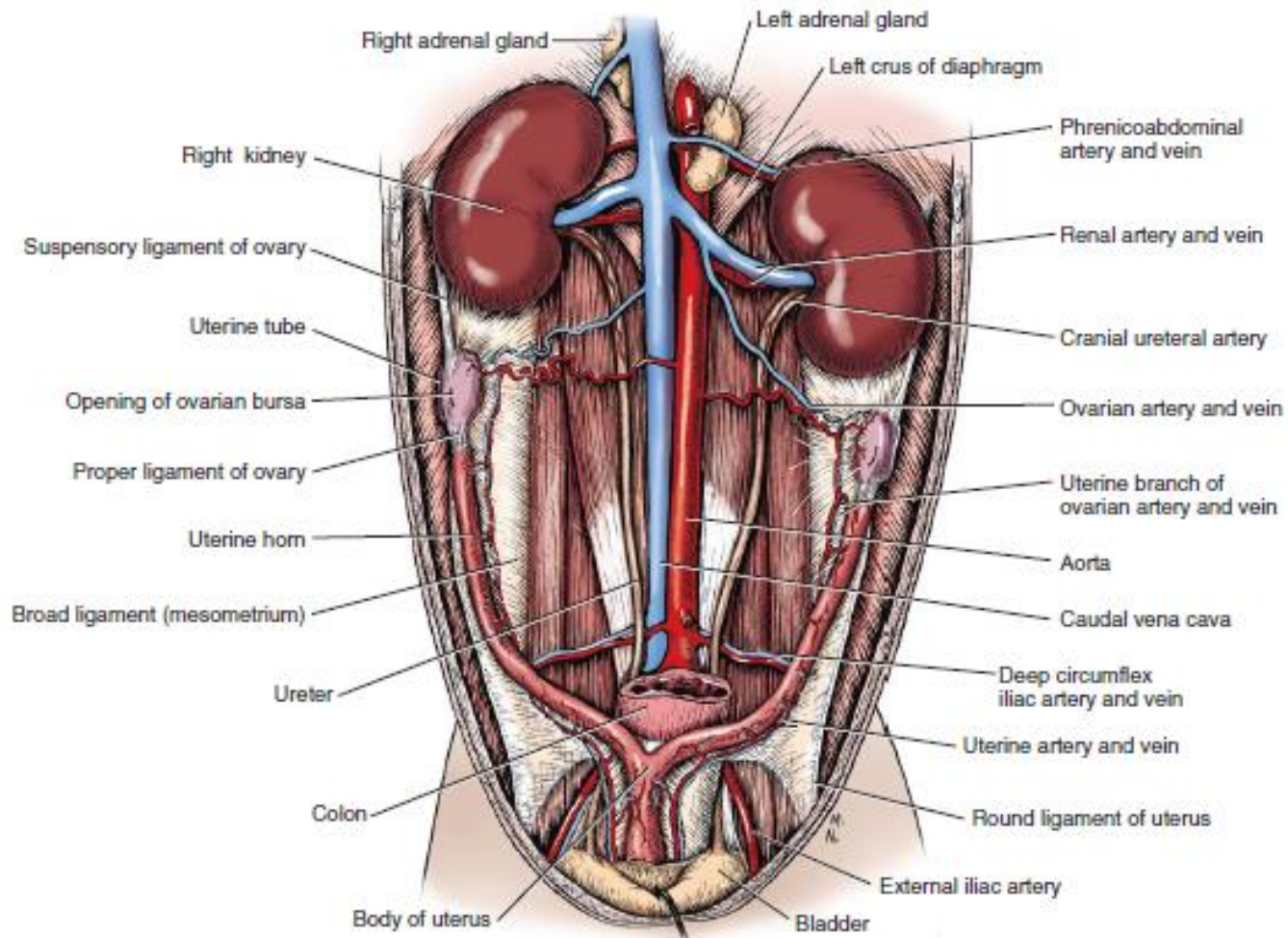
KIDNEY and URETERS

- ▶ The kidneys lie in the retroperitoneal space lateral to the aorta and the caudal vena cava. They have a fibrous capsule and are held in position by subperitoneal connective tissue.



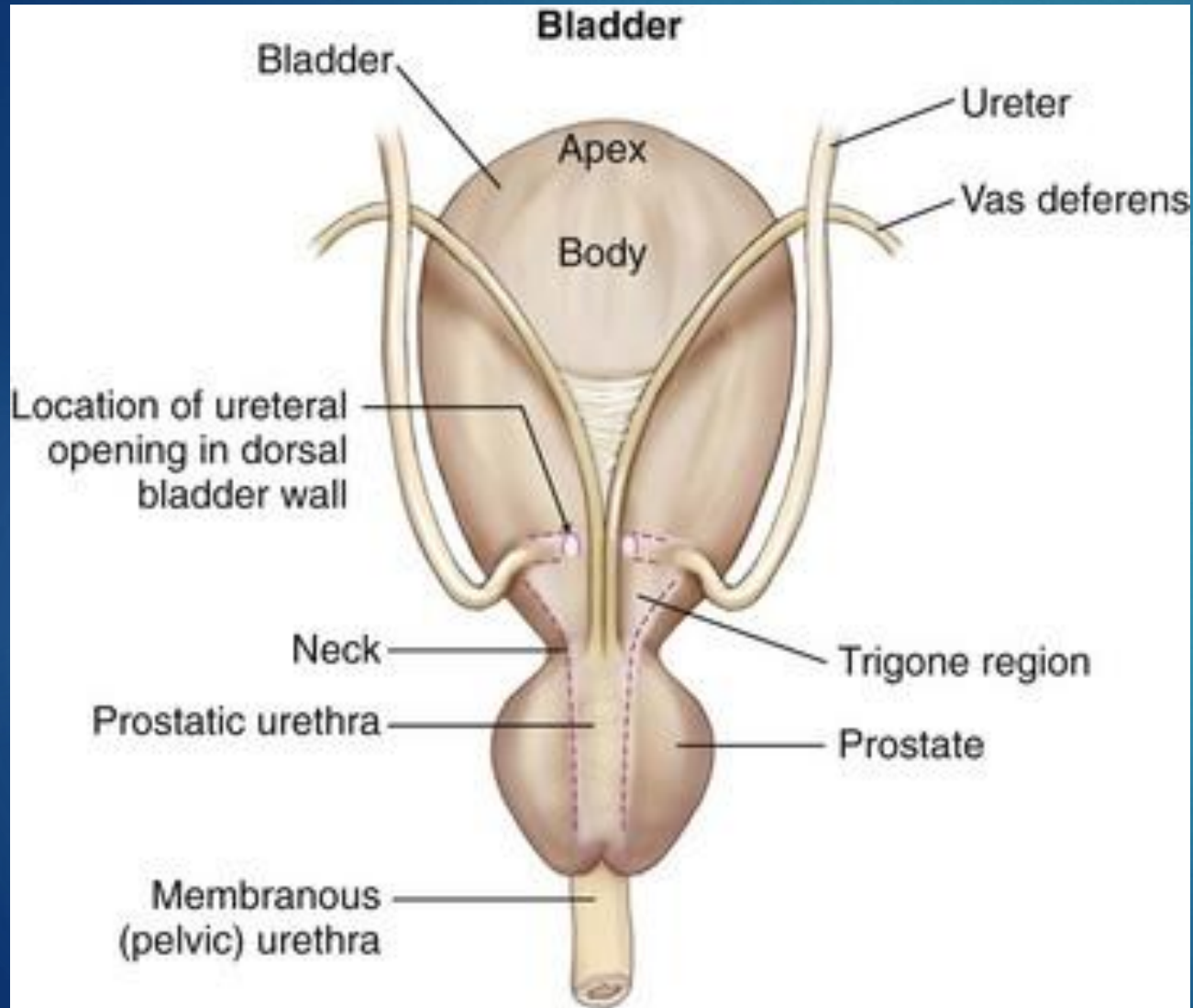


- ▶ The renal pelvis is the funnel shaped structure that receives urine and directs it into the ureter. Generally, five or six diverticula curve outward from the renal pelvis.
- ▶ The renal artery normally bifurcates into dorsal and ventral branches; however, variations in the renal arteries and veins are common.



- The ureter begins at the renal pelvis and enters the dorsal surface of the bladder obliquely by means of two slit like orifices. The blood supply to the ureter is provided from the cranial ureteral artery (from the renal artery) and the caudal ureteral artery (from the prostatic or vaginal artery).

Urinary bladder and urethra

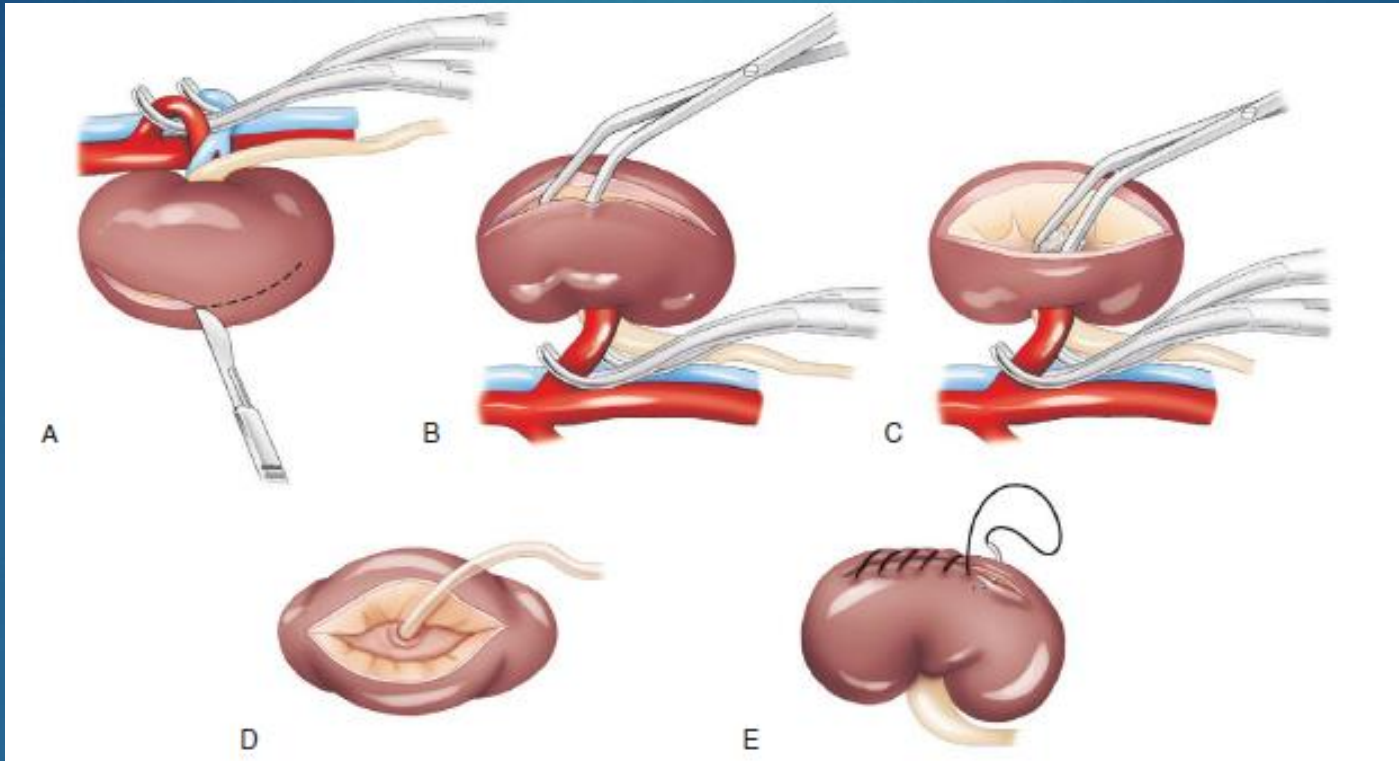


- The bladder is divided into the trigone, which connects it to the urethra, and the body.
- The urethra in male dogs and cats is divided into prostatic, membranous (pelvic), and penile portions.

Surgery of Kidney and Urethters

- ▶ Nephrectomy is excision of the kidney; nephrotomy is a surgical incision into the kidney.
- ▶ Pyelolithotomy is an incision into the renal pelvis and proximal ureter; a ureterotomy is an incision into the ureter; both are generally used to remove calculi.
- ▶ Neoureterostomy is a surgical procedure performed to correct intramural ectopic ureters; ureteroneocystostomy involves implantation of a resected ureter into the bladder.

Nephrotomy



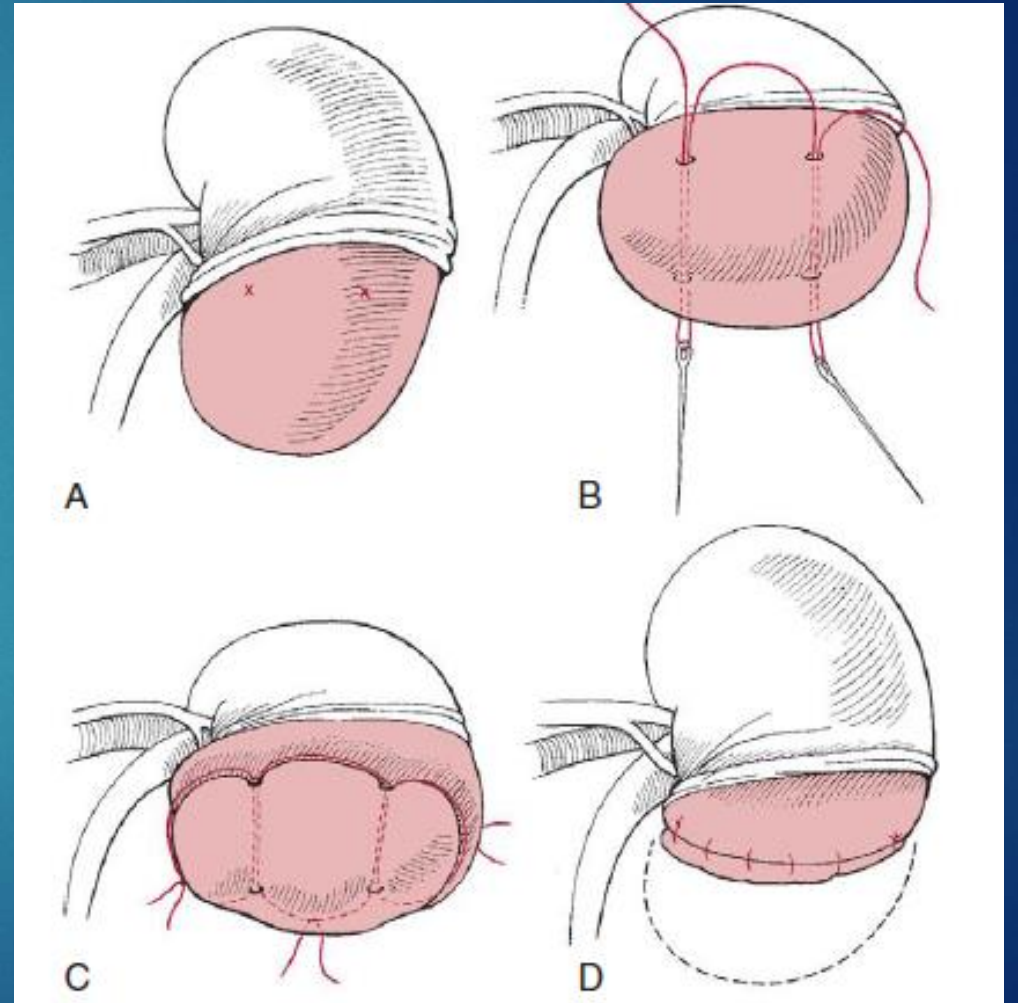
to obtain tissue samples or to gain access to the renal pelvis for removal of nephroliths or other obstructive lesions. Indications for nephrotomy include chronic infection, the presence of renal calculi, persistent hematuria of renal origin, or persistent hydronephrosis

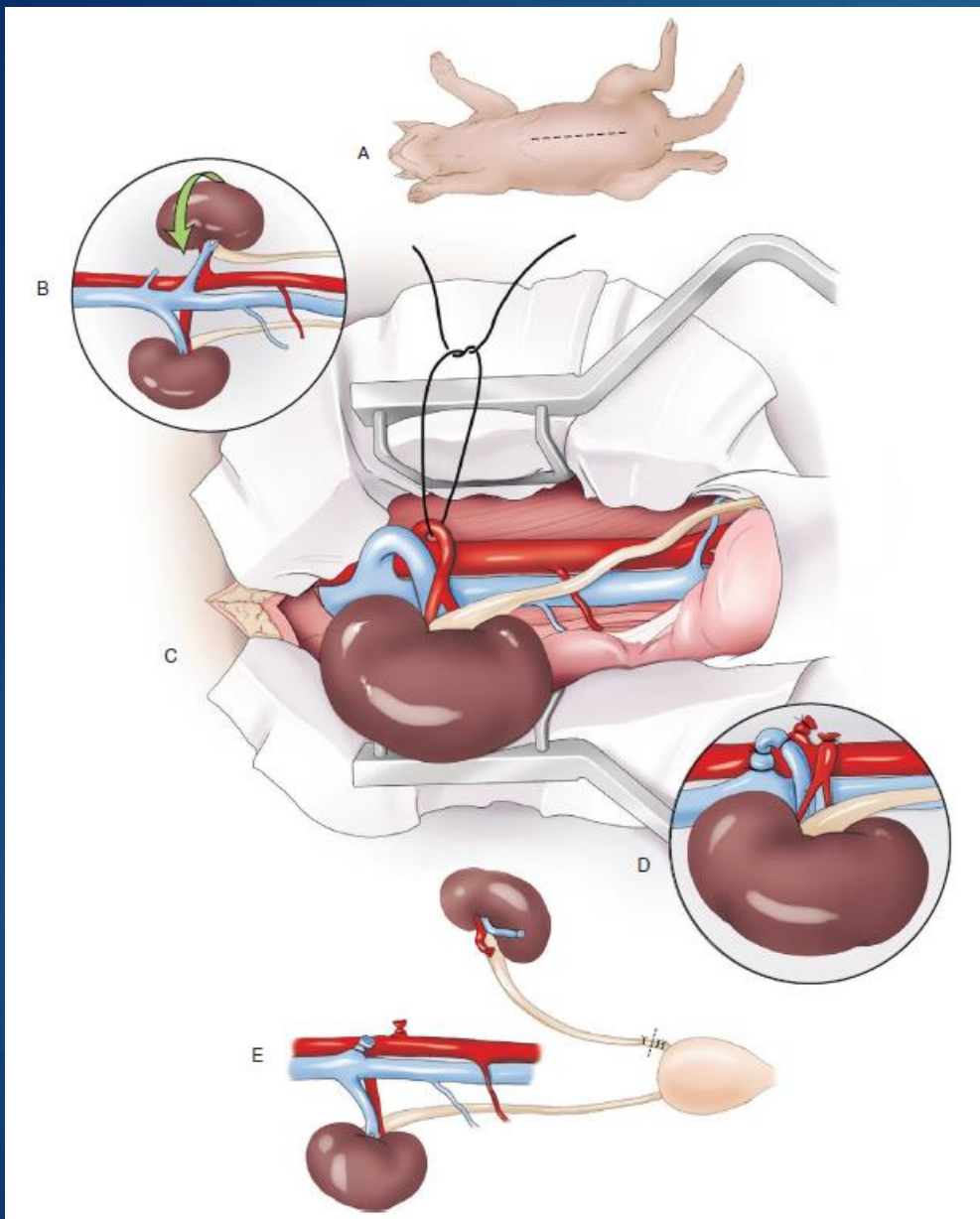
Partial nephrectomy

A, If possible, the capsule is peeled back from the area to be resected.

B, Overlapping mattress sutures are passed through the parenchyma proximal to the proposed line of resection.


C-D, The sutures are tightened to approximate the tissue, and the parenchyma is excised distal to the sutures. If possible, the capsule is reapposed over the resected parenchyma.



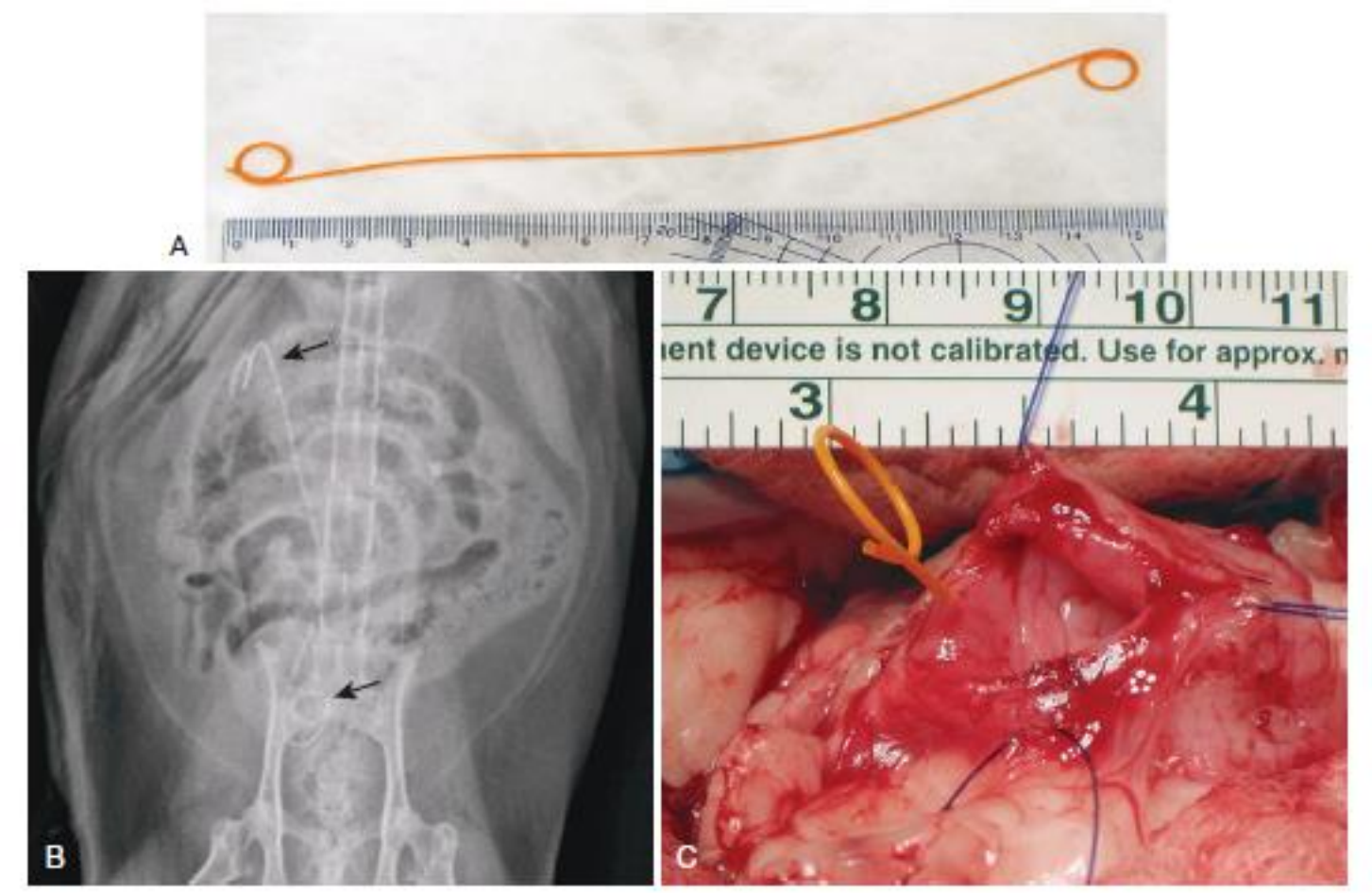


Nephrectomy and Nephroureterectomy

Indications; irreparable trauma, persistent infection, renomegaly, obstructive calculi with persistent hydronephrosis renal or perirenal masses, and harvest for kidney donation.

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- ▶ Ureterotomy occasionally is performed to remove obstructive calculi. The procedure carries the risk of postoperative leakage and stricture formation.
 - ▶ Transverse or longitudinal incisions may be made in the ureter; however, tension on transverse ureterotomies may be less; therefore they may heal more readily.

Ureteral Catheter Placement

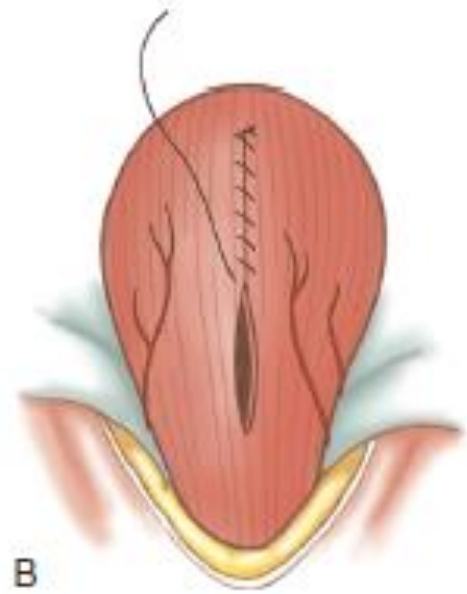


Cystotomy

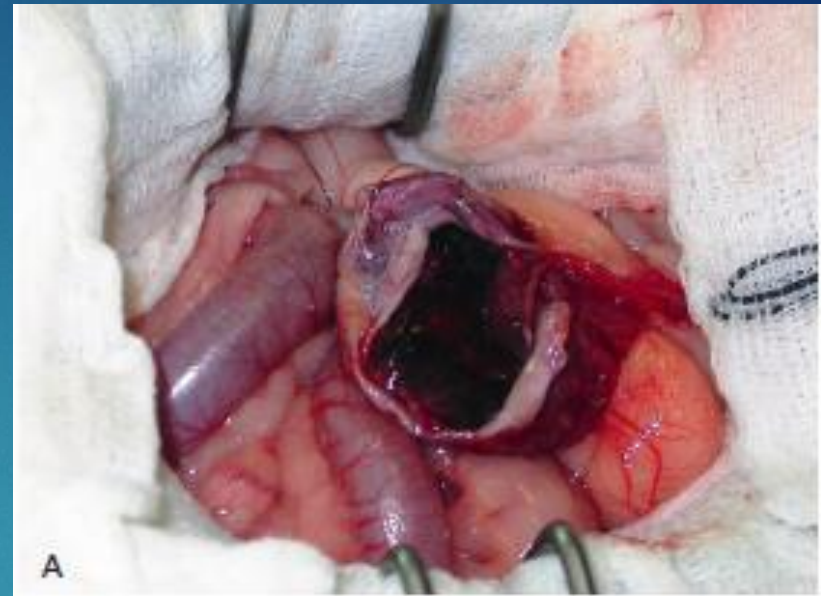
- Indications for cystotomy include removal of calculi, repair of bladder trauma, biopsy or resection of bladder masses, biopsy and culture of the bladder wall in severe cystitis cases, repair of ectopic ureters, and inspection or catheterization of the ureters in the investigation of idiopathic renal hematuria



A



B



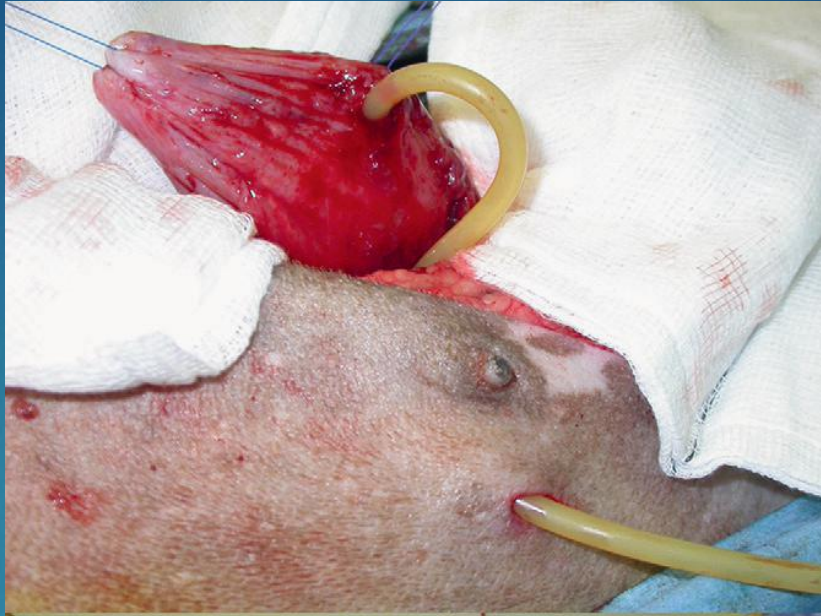
A



B

Cystostomy

Placement of a cystostomy tube is indicated when there is a need for urinary diversion or to avoid bladder distension. Indications for a temporary cystostomy tube include stabilization of an animal with lower urinary tract obstruction, bladder or urethral trauma, and after bladder or urethral surgery. Long-term or permanent cystostomy tubes may be placed in animals with obstructive bladder neck or urethral neoplasia or neurogenic bladder atony.

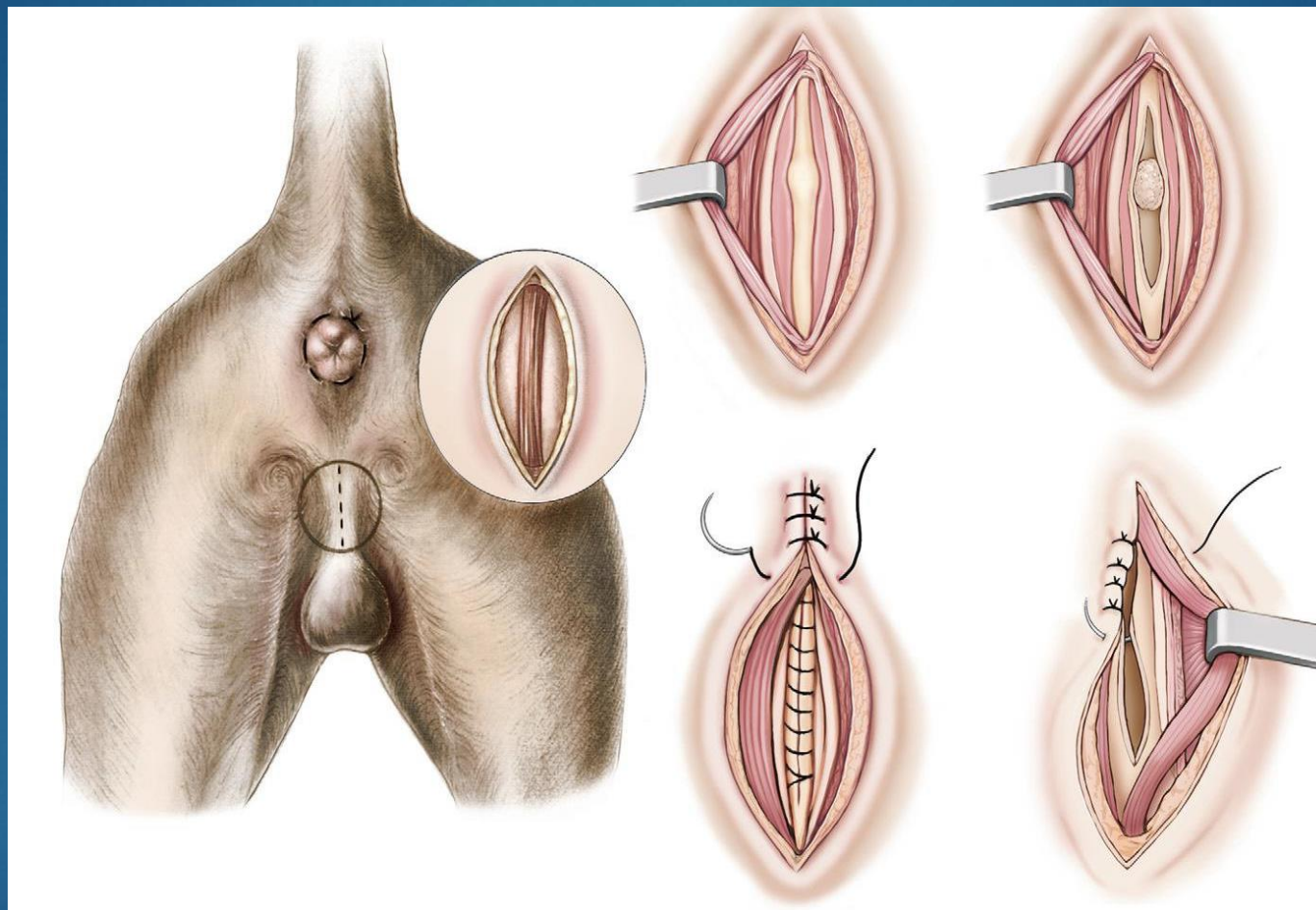


Urethrotomy

creation of a temporary opening in the urethra. It is most commonly indicated for removal of calculi that cannot be shifted by hydropropulsion techniques or to temporarily bypass other types of obstruction. Urethrotomy may also be performed to expose obstructive lesions or masses for biopsy.



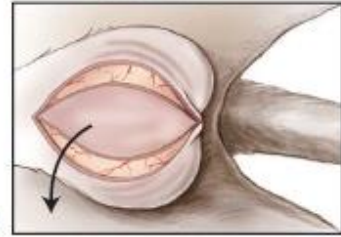
Prescrotal urethrotomy



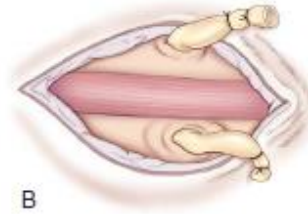
Perineal urethrostomy in the male dog

Urethrostomy

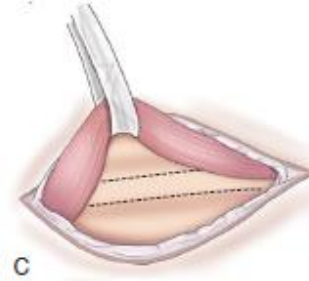
Permanent damage of the distal urethra may require longterm urinary diversion by urethrostomy. Urethrostomy also has been performed in an attempt to decrease the likelihood of obstruction in animals that chronically form urinary calculi. Repeated urethral obstruction is the primary indication for perineal urethrostomy in male cats.



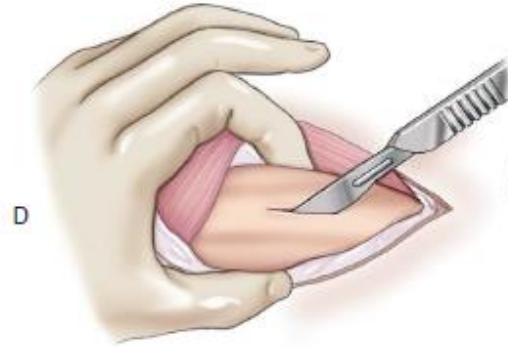
A



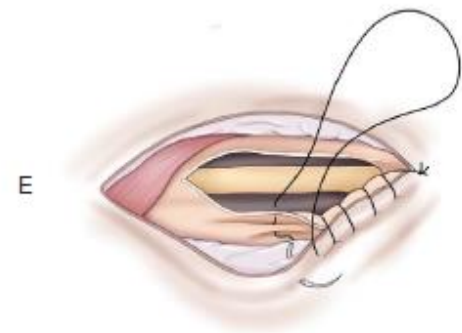
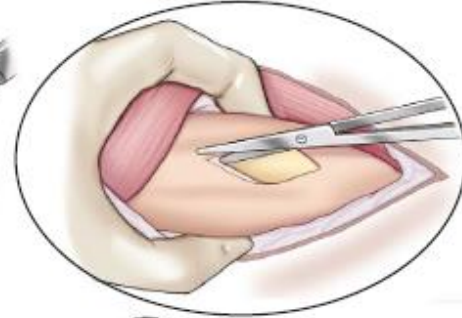
B



C



D




E




FEMALE REPRODUCTIVE ORGANS

- ▶ includes the ovaries, oviduct, uterus, vagina, vulva, and mammary glands.
- ▶ The ovaries are located within a thin-walled peritoneal sac; the ovarian bursa is located just caudal to the pole of each kidney.
- ▶ The uterine tube or oviduct courses through the wall of the ovarian bursa.
- ▶ The right ovary lies further cranially than the left. The right ovary lies dorsal to the descending duodenum, and the left ovary lies dorsal to the descending colon and lateral to the spleen.
- ▶ Each ovary is attached by the proper ligament to the uterine horn and via the suspensory ligament to the transversalis fascia medial to the last one or two ribs.

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- ▶ Ovarian arteries originate from the aorta
 - ▶ The left ovarian vein drains into the left renal vein; the right vein drains into the caudal vena cava.
 - ▶ Uterus has a short body and long narrow horns.
 - ▶ Cervix is the constricted caudal part of the uterus and is thicker than the uterine body and vagina.
 - ▶ The vagina is long and connects with the vaginal vestibule at the urethral entrance.
 - ▶ The clitoris is broad, flat, vascular, infiltrated with fat, and lies on the floor of the vestibule near the vulva.
 - ▶ The vulva is the external opening of the genital tract. The vulvar lips are thick and form a pointed commissure.

MALE REPRODUCTIVE ORGANS

- ▶ The major components of the male genital tract are the testicles, penis, and prostate.
- ▶ The prostate gland completely surrounds the neck of the bladder and beginning of the urethra.
- ▶ The ductus deferens enters the craniodorsal surface of the prostate and courses caudoventrally to enter the urethra at the colliculus seminalis.
- ▶ The penis has a root, body, and glans.
- ▶ The distal end of the penis or glans penis is covered by the prepuce, a mucosa-lined fold of integument.
- ▶ The distal end of the dog's penis is directed cranially and located ventral to the abdominal wall. The distal end of the cat's penis is directed caudal and ventral in the perineum.

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- ▶ The urethra travels through the ventral groove in the os penis and penis. The corpus spongiosum surrounds the urethra.
 - ▶ The scrotum is a membranous pouch with a midline septum that houses the testes, epididymis, and distal spermatic cords.
 - ▶ The testis, epididymis, ductus deferens, and associated vessels and nerves are covered by visceral and parietal vaginal tunic and spermatic fascia. The testes are relatively small and ovoid.
 - ▶ The cremaster muscle travels along the external surface of the parietal tunic. The cremaster is a thin, flat extension of the internal abdominal oblique muscle.

Surgery of the Bladder and Urethra

- ▶ Cystotomy is a surgical incision into the urinary bladder, whereas urethrotomy is an incision into the urethra.
- ▶ Cystectomy is removal of a portion of the urinary bladder.
- ▶ Cystolithiasis and cystolithectomy refer to urinary bladder calculi and their removal, respectively.
- ▶ Cystostomy is the creation of an opening into the bladder; prepubic catheterization (i.e., temporary cystostomy, tube cystostomy) usually is performed to provide cutaneous urinary diversion in animals with urethral obstruction or trauma.
- ▶ Urethroostomy is the creation of a permanent fistula into the urethra; it is generally performed for irreparable or recurrent urethral stricture, or to prevent repeated obstruction.

Cystotomy

- ▶ Cystotomy may be performed for removal of cystic and urethral calculi, identification and biopsy of masses, repair of ectopic ureters, or evaluation of urinary tract infection resistant to treatment.
- ▶ The longitudinal incision generally is made on the ventral or dorsal surface of the body of the bladder, away from the urethra.
- ▶ The goal of cystotomy closure is to obtain a watertight seal that will not promote formation of calculi. This has traditionally been accomplished using a single- or double-layer appositional pattern, or by inverting suture patterns using absorbable suture material.
- ▶ A single-layer appositional closure is sufficient if the bladder wall is thick. Even in normal bladders, simple continuous or simple interrupted is adequate.

Urethrostomy

- ▶ Indicated for recurrent obstructive calculi that cannot be managed medically; calculi that cannot be removed by retrohydropropulsion or urethrotomy; urethral stricture; urethral or penile neoplasia or severe trauma; and preputial neoplasia requiring penile amputation.
- ▶ Depending on the site of the lesion, ureterostomy can be prescrotal, scrotal, perineal, or prepubic in dogs.
- ▶ Scrotal urethrostomy is preferred if castration is an option and if the lesion is distal to the scrotum.
- ▶ Perineal urethrostomy is routinely performed in cats; however, prepubic and subpubic urethrostomy procedures are also described.

ORCHIECTOMY

- ▶ It helps prevent androgen-related diseases, including prostatic diseases, perianal adenomas, and perineal hernias.
- ▶ Other indications for castration include congenital abnormalities, testicular or epididymal abnormalities, scrotal neoplasia, trauma or abscesses, inguinalscrotal herniorrhaphy, scrotal urethrostomy, epilepsy control, and control of endocrine abnormalities.

Canine castration

- ▶ Open Prescrotal Castration
- ▶ Closed prescrotal castration
- ▶ Perineal castration

Feline castration

- ▶ Pluck hair from the scrotum and aseptically prepare the scrotum for surgery.
- ▶ Make cranial to caudal skin incisions over each testicle.
- ▶ Incise and separate the parietal tunic from the testicle, then transect the ductus deferens near the testicle.
- ▶ Tie two to three square knots with the ductus deferens and the spermatic vessels.