Canine Catch-Neuter-Return (CNR) Good Practice Guides

Surgical approach to dog castrate

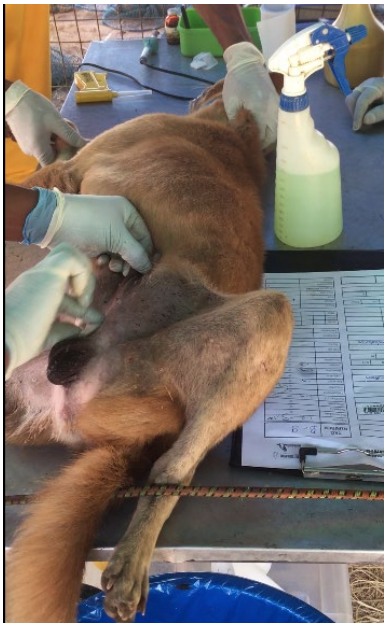
Acts of veterinary surgery should only be performed by qualified, trained and licensed veterinary professionals.
This is aimed at qualified and licensed veterinarians only and is not fully comprehensive and does not qualify you to perform surgery.

Learning Outcomes:

1. Recite that acts of veterinary surgery should only be performed by qualified, trained and licensed veterinary professionals.
2. Describe the requirements in preparing the dog prior to castration, including use of local anaesthetic for analgesia.
3. Summarise the benefits and disadvantages of scrotal versus the traditional pre-scrotal approach.
4. Outline the two approaches to castration once the testes are exposed: open and closed castration.

Prior to castration surgery palpate the scrotum to ensure two descended testicles are present. Testes should be descended by 6-9 months of age. If not descended by 9-12 months of age, then the inguinal canal should be palpated to try and identify the cryptorchid testicle/s, and exploratory inguinal and/or abdominal surgery and testicular removal should be performed. Retention of inguinal or intra-abdominal (cryptorchid) testes increases testicular cancer risks. Within the context of CNR, you should consider where performing surgery to retrieve cryptorchid testes is a viable option in your project.

The dog must be stabilised under anaesthesia and have appropriate analgesia and fluid therapy administered. The dog's bladder should have been expressed and the surgical site clipped and aseptically prepared during patient preparation. The dog should be comfortably positioned in dorsal recumbancy on a table, but not tied to the table, in the aseptically prepared surgical area. The injection of local anaesthetics such as lignocaine into the testes may help to provide effective analgesia, particularly if opioid drugs are not available for analgesia.



Aseptically preparing the surgical site of a dog for castrate surgery

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The images shows a dog positioned on the surgery table in dorsal recumbancy held in position with the use of a trough. Dog is under general anaesthetic, with an intravenous cannula and connected to intravenous fluid therapy.

Local anaesthetic block of Lignocaine being administered into the testes of the dog prior to castrate surgery.

Incision and approach

There are two approaches to surgical castration - scrotal and pre-scrotal. Traditionally veterinarians have been trained in pre-scrotal castration, but a more recent study indicates that scrotal castration may be associated with reduced risk of post-operative trauma and complications. Additionally, in juvenile dogs, sutureless scrotal castration may offer a safe and inexpensive alternative to traditional pre-scrotal castration as it is faster and cheaper. However, one potential drawback of scrotal castration is the risk of environmental contamination of the scrotum which is left open for post-operative fluid drainage. Regardless of the technique used, the skin of the scrotum is sensitive, so gentle handling to avoid irritation and inflammation is important. The most important thing is to select a technique that you are familiar with and that works for dogs in your environment.

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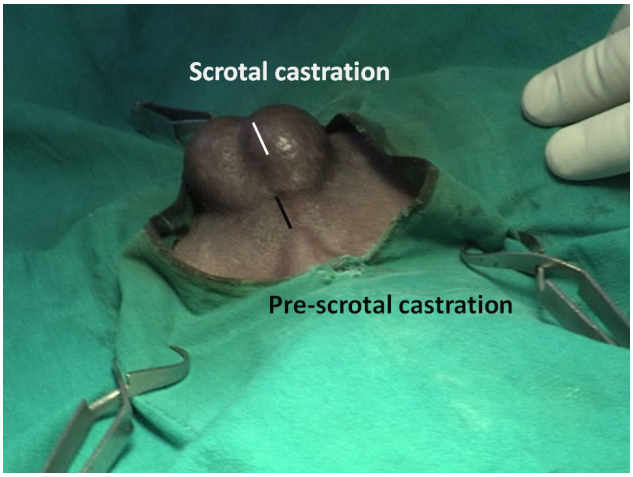


Fenestrated drape over aseptically prepared surgical site for dog castrate surgery, annotated with both scrotal and prescrotal approach.

For the **scrotal approach to castration**, the scrotum must be aseptically prepared taking care not to damage the very sensitive skin. A sterile fenestrated drape should cover the aseptically prepared surgical site, with the testes visible through the fenestration and a sterile surgical kit opened in such a way so as to maintain sterility. Make a single bold incision on the ventral surface of the testicle through the skin and subcutaneous tissue, just lateral to the median raphe, approximately one third of the length of the testicle. Then follow an open or closed castration technique as described below.

For the **pre-scrotal approach to castration**, the caudal abdomen from the prepuce to the scrotum and surrounding areas to the medial thighs must be aseptically prepared taking care not to damage the skin. A sterile fenestrated drape should cover the aseptically prepared surgical site, and a sterile surgical kit opened in such a way so as to maintain sterility. The fenestrated opening of the surgical drape should be positioned between the prepuce and the scrotum, thereby covering the prepuce and scrotum to avoid contamination of the incision. Using the non-dominant hand, use pressure on the scrotum to push one testicle cranially into the pre-scrotal area. Make a single bold incision through the skin and subcutaneous tissue.. Then follow an open or closed castration technique as described below

Castrate incision through the skin of the scrotum of the dog using a scalpel.

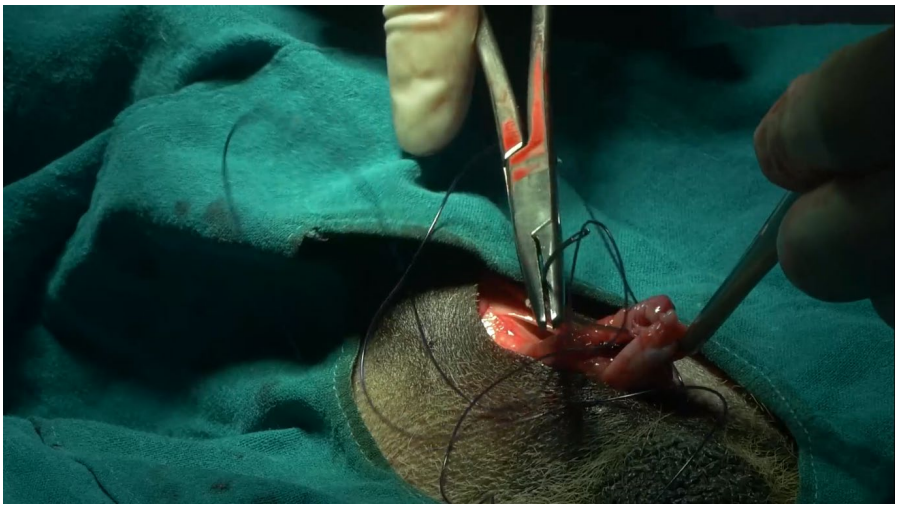
Open and closed castration techniques

Once the testes have been gently exteriorised, there are again two options as to how to proceed with castration – open or closed castration techniques. The open approach where the internal spermatic fascia is incised, and the closed approach where the internal spermatic fascia is not incised. The open technique provides direct visualisation of the spermatic cord and is less likely to

result in suture slippage and hemorrhage, but requires opening the peritoneal cavity and thus the consequences of any infection may be more significant.

Left image – open castration of the dog where the internal spermatic fascia is incised.
Right image – closed castration of the dog where the internal spermatic fascia is not incised.

For the **open castration technique,** separate the ligament of the tail of the epididymis from the vaginal tunic, using haemostats. Gently exteriorise the testicle. Place two sets of haemostats across the ductus deferens and vascular cord to create a crush mark over which to place a ligature. Using 2/0 or 3/0 absorbable suture material, place an encircling ligature around both the ductus deferens and the vascular cord. Ensure that your ligature is securely knotted (6-8 throws for monofilament and 4-6 throws for multifilament suture) and tight enough to create complete haemostasis. Distal to this encircling ligature (away from the dog) place a second ligature if you feel it is necessary. Using a scalpel blade incise between the two haemostats. Inspect the cord for bleeding by gently grasping the cord using tissue forceps before removing the haemostat. Replace the cord into the tunic. Close the vaginal tunic using absorbable suture in a continuous pattern or by placing an encircling ligature around the tunic and cremaster muscle. Repeat the procedure for the remaining testicle, using the same initial skin incision.



Closing the vaginal tunic following open castration of the dog.

The **closed castration technique** is performed in the same way as open technique except the internal spermatic fascia is not incised. The proper ligament of the epididymus will need to be dissected manually or carefully using surgical instruments. Encircling ligatures encompassing the internal spermatic fascia, cremaster muscle, ductus deferens and vascular cord are performed in the same way as with open technique. The vaginal tunic does not need to be closed separately.

Skin closure

When performing the scrotal approach, it is not recommended that the scrotum is sutured. A single interrupted suture may be placed in the dartos fascia, otherwise invert the scrotal skin and leave it alone. A small amount of fluid drainage is normal.

With the pre-scrotal approach, a standard three-layer closure should be performed. Close the dense fascial layer with either interrupted or continuous sutures, the subcutaneous tissue layer can be closed with a continuous suture pattern, and the skin layer closed using buried subcuticular or intradermal sutures.

Checklist:

- ✓ Acts of veterinary surgery should only be performed by qualified, trained and licensed veterinary professionals.
- ✓ Injection of local anaesthetic into the testes may help to provide analgesia.
- ✓ Two approaches to surgical castration: scrotal and prescrotal.
- ✓ Once the testes are exposed, two options: open or closed techniques.
- ✓ Select a technique you are experienced using and that works for dogs in your environment.

References:

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