



SOP 4.17 Surgical castration of calves

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Purpose

- (1) The objective of this standard operating procedure is to provide guidance to the Charles Sturt University staff on:
 - a. The surgical castration of male bovids, involving permanent removal of a testis, or the testes from the scrotum.

Scope

- (2) This procedure applies to any person who is involved in AEC approved projects involving research or teaching activities associated with surgical castration of calves.
- (3) All researchers and teaching staff using animals for scientific purposes must be competent in the surgical castration procedure. For definition of competency refer to Charles Sturt University's Policy on 'Animal Care Competency Training and Assessment'. All actions should be at least carried out according to the updated Australian Animal Welfare Standards and Guidelines:
http://animalwelfarestandards.net.au/wp-content/uploads/2023/08/Cattle-Standards-and-Guidelines-Endorsed-Jan-2016-061017_.pdf

Details of procedure

Restraint:

- (4) The animal needs to be restrained appropriately to allow for exposure of the scrotum to the operator in a safe manner; typically, this is in a crush/shute; but can be in a 'tip crate', or restraint using a halter, or manual restraint against a solid barrier; or a combination of the techniques.

The surgical procedure:

- (5) The scrotum should be clean or disinfected if not.
- (6) The testis should be drawn into the ventral, or distal, part of the scrotum.
- (7) Appropriate amounts of local anaesthetic agent, 2% lignocaine, should be injected into the ventral scrotum over the projected incision site to afford skin desensitisation. Local anaesthetic should then be injected into the testicular parenchyma to facilitate local anaesthetic to anaesthetise the spermatic nerve in the spermatic cord resulting from vascular transit and diffusion. (For a young calf this is usually in the order of 2mL SC and 3mL intra-testicular). If the testes are required for research purposes, intra-testicular lignocaine should be avoided.
- (8) The ventral aspect of the scrotum is incised whilst the testis is held in the ventral scrotum. Pressure exerted distally with the non-incising hand should force the testis through the incised vaginal tunics, skin, dartos, and fascia.



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- (9) The blade is placed in a safe location, and the now free hand is used to exteriorise the testis from the scrotum.
- (10) The non-vascular-vaginal tunic, ductus deferens, cremaster muscle, and the ligaments associated with the testis and epididymis parts of the spermatic cord are transected.
- (11) The vascular-testicular artery and vein, testicular nerve and lymphatics are exposed to ensure that appropriate haemostasis can be applied to the blood vessels for the size and the age of the animal. This might include the following procedure:
 - a. Two haemostat forceps are applied to the pampiniform plexus/ blood vessels, 5cm apart, and rotated several times.
 - b. A third haemostat is placed between the two previously applied forceps, approximately 1cm from the proximal forceps.
 - c. The distal haemostats are rotated a few times.
 - d. The vascular tissue is dissected by manual tension to separate the two more distal haemostats.
 - e. The remaining proximal haemostats are released whilst assessing for the presence of any bleeding. (This procedure can be used, with appropriate analgesia, to castrate older animals with a high degree of success and minimal complications).
- (12) A disinfectant/fly repellent spray solution may be applied to the wound as deemed appropriate.

Drugs, chemicals, or biological agents

- (13) Ideally calves should have been administered at least one dose of tetanus toxoid or combination vaccination containing tetanus toxoid or should be young enough to deem maternally derived antibodies protective against possible Clostridial infection.
- (14) It might be necessary to sedate older animals with an appropriate sedative and analgesic [such as xylazine at an appropriate dose (0.05mg/kg)].
- (15) Non-steroidal anti-inflammatory drugs should be administered at the time of castration.

Impact of procedure on wellbeing of animals

- (16) When carried out correctly with appropriate hygiene, pain relief and haemostasis there are minimal impacts on the animals.

Animal care

- (17) Animals should be housed in clean buildings or yards post-surgery, to decrease wound contamination and resulting infection.

Pain relief

- (18) Administration of pain relief is an Australian Animal Welfare Standard for all animals over 6 months of age undergoing castration. (Standard 6: http://animalwelfarestandards.net.au/wp-content/uploads/2023/08/Cattle-Standards-and-Guidelines-Endorsed-Jan-2016-061017_.pdf)



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- (19) Local anaesthesia and non-steroidal anti-inflammatory drug administration should be considered the minimal pain relief requirement and provided to all cattle undergoing castration under this SOP irrelevant of age.

Reuse and repeated use

- (20) The correct procedure renders this a single use operation.

Qualifications, experience or training necessary to perform this procedure

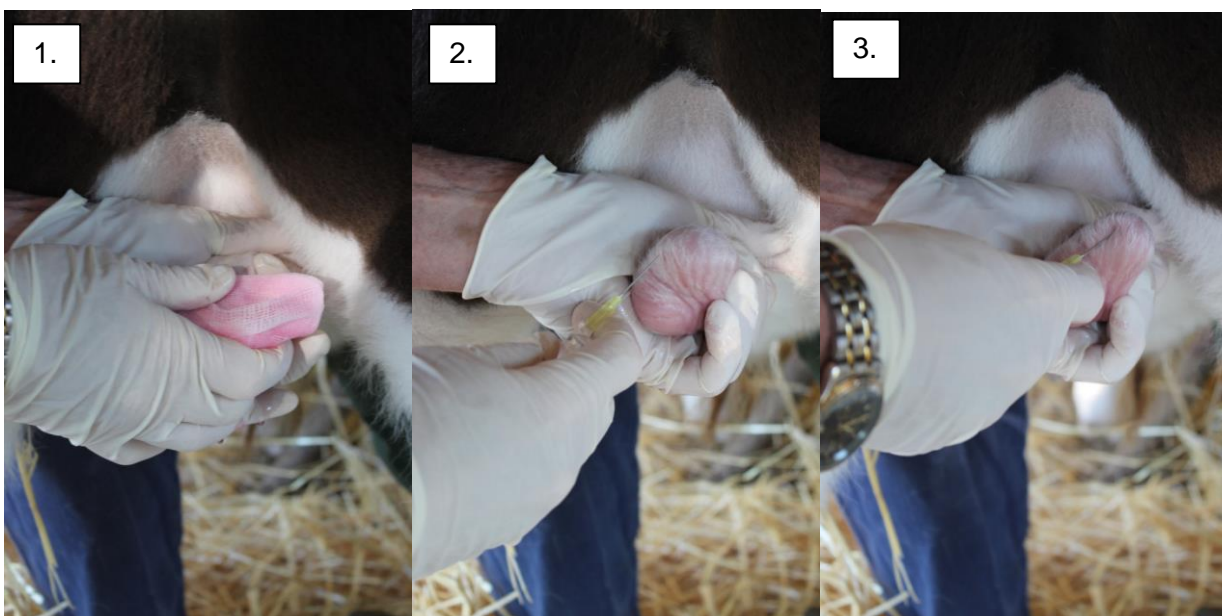
- (21) All procedures should be carried out under the supervision of an experienced operator.

Record requirements

- (22) Appropriate documentation should be completed.

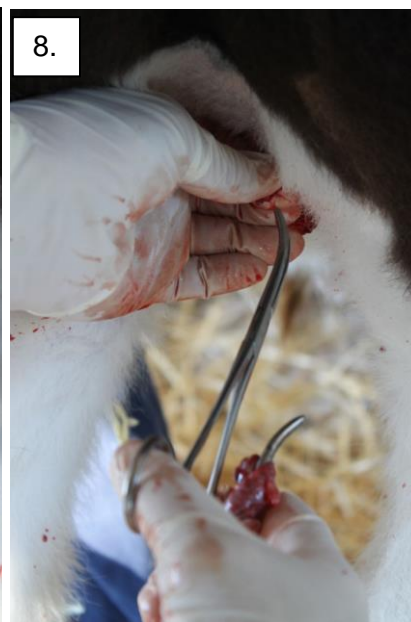
Associated documentation (including pictures if available)

- (23) Legend for photographs below:
- Disinfection
 - SC lignocaine
 - Intra-testicular lignocaine
 - Incising the scrotum
 - Separating vascular and non-vascular parts of the spermatic cord
 - Twisting the vascular cord between the proximal (right) and distal (left) haemostats
 - Placing another set of haemostats proximally
 - Removing the haemostats





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Glossary

- (24) NSAID - non-steroidal anti-inflammatory drug.
- (25) IV - intra-venous
- (26) SC - sub-cutaneous

References and relevant links

- (27) <https://www.dpi.nsw.gov.au/animals-and-livestock/animal-welfare/animal-care-and-welfare/livestock/livestock-files/national-model-codes-of-practice-for-the-welfare-of-livestock>
- (28) <https://www.dpi.nsw.gov.au/animals-and-livestock/animal-welfare>



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- (29) <https://www.dpi.nsw.gov.au/animals-and-livestock/animal-welfare/animal-care-and-welfare/animal-welfare-regulation>
- (30) <http://animalwelfarestandards.net.au/>
- (31) http://animalwelfarestandards.net.au/wp-content/uploads/2023/08/Cattle-Standards-and-Guidelines-Endorsed-Jan-2016-061017_.pdf