



SOP 9.10 Surgical Ram Vasectomy

Version and Date of Issue: April 2024
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Review due date: March 2027

Purpose

- (1) The objective of this standard operating procedure is to provide guidance to the Charles Sturt University staff on:
 - a. a safe and welfare-aware surgical approach to vasectomy in the ram.

Scope

- (2) This procedure applies to any person who is involved in AEC approved projects involving ram vasectomies.
- (3) All researchers and teaching staff using animals for scientific purposes must be competent in the procedure. For definition of competency refer to Charles Sturt University's Policy on 'Animal Care Competency Training and Assessment'

Details of procedure

- (4) Each ram will be individually weighed using an electronic weigh crate, or an appropriate measurement and/or estimate made of the weight of the animal.
- (5) Each ram will be sedated and provided with analgesia. The drug used will depend on the clinicians preferences, typically in consultation with veterinary anaesthesia specialists and small ruminant specialists to maintain best practice. Acepromazine is typically used. 0.05-0.1mg/kg of ACP per ram intramuscularly is typically given as directed by the clinician and the animals are left for 20 minutes for the drug to take effect.
- (6) Xylazine administration at 0.05mg/kg and ketamine at 5mg/kg is administered IM prior to preparing the animal for the surgical procedure. Butorphanol, diazepam or other sedative/neurolept analgesics can be administered at the correct dose, as considered appropriate by the attending clinician. A top-up dose of ketamine can be given halfway through the procedure at 1-2mg/kg iv if required. Or other appropriate anaesthetic/agent, and if necessary appropriate pharmacological combinations
- (7) Diazepam (provides sedation) can be used in combination with the other drugs, usually at an Initial dose 0.3mg/kg iv, with a top-up dose halfway through the procedure at 0.15mg/kg iv.
- (8) Following sedation, the rams will be restrained preferably in a specifically designed restraining device and held in a relaxed sitting position in a clean environment with good lighting; or other appropriate position as deemed suitable by the overseeing clinician.
- (9) Rams will be prepared aseptically for the surgical (preparation of scrotal skin area over spermatic cord) procedure including the injection of local anaesthetic (Lignocaine 20mg/mL) over the incision site. The Lignocaine 20mg/mL may be repeated during the procedure, if necessary, after assessment of the response of the animal to stimuli. A sterile surgical technique will be employed including the use of surgical drapes.
- (10) A vertical skin incision, about 4 cm in length, is made on the cranial surface of the neck of the scrotum to the left of the midline over the neck of the left spermatic/vaginal cord. The left spermatic sac is freed by blunt dissection and exteriorised through the skin incision where it



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may be held in place with a pair of haemostats or tissue forceps placed underneath the loop of the spermatic sac, so that it is resting on top of the instrument. The deferent duct lies medially within the spermatic sac, so it is necessary to roll the sac outwards with a finger and thumb. It is usually possible to identify the duct within the sac by its solid texture (and off-white colouration) and by the presence of a small artery and vein which run close to it. A nick is made in the vaginal tunic over the duct which then usually pops out; a spey hook, or pair of closed artery forceps, help to retain the duct. (The sac should not be incised until the duct is identified and held firmly below the point of incision. N.B. To incise the sac and then search for the duct is to invite considerable haemorrhage, and loss of vision of the surgical site.) A portion of the duct is exteriorised and a length of not less than 3 cm (preferably more to reduce the risk of re-anastomosis) is prepared for resection by placing artery forceps as clamps at each end of that piece of vas deferens. The ductus deferens is ligated, using absorbable USP 2/0 (metric 3) (or other appropriate) suture material, at both sites of resection adjacent to the artery forceps but on the opposite side of the forceps from where the cut will be made. The ductus deferens can then be resected and the resected piece placed in a pot of 10% buffered formalin for histopathological confirmation at a later date. The formalin pot needs to be identified with the ram number, the name and address of the owner of the ram, the date, and the name of the surgeon. One resected end of the ductus deferens can be anchored in the fatty tissue outside the vaginal tunic. The aperture in the spermatic sac need not be sutured. Any dead space created by dissection of the sac is closed with absorbable USP 2/0 (metric 3) (or other appropriate) suture material, but this is not usually necessary. The skin is sutured, with non-absorbable USP 0 or USP 1 (metric 3.5 or 4), or absorbable suture if deemed appropriate by the attending clinician, suture material or stapled closed.

- (11) The whole procedure, from skin incision to skin closure, is repeated to the right of the midline.

Drugs, chemicals, or biological agents

- (12) Diazepam (provides sedation): Initial dose 0.3mg/kg IM or iv, with a top-up dose halfway through the procedure at 0.15mg/kg iv.
- (13) Ketamine (provides analgesia and sedation): Initial dose 2-5 mg/kg IM or iv, with an appropriate top-up dose during the procedure, typically 1mg/kg IM or iv.
- (14) Xylazine: Initial dose of 0.05mg/kg IM.
- (15) Lignocaine 20mg/mL for local anaesthesia, to effect.
- (16) Oxytetracycline (antibiotic), 1.5 mL/10 Kg IM (Typically 5-30mg/kg depending on formulation) intramuscularly or intravenously at a dose deemed appropriate by the attending clinician.
- (17) Flunixin meglumine 2.2 mg/Kg intravenously (non-steroidal anti-inflammatory), or other appropriate NSAID such as meloxicam 1mg/mL SC (or appropriate dose as determined by the attending clinician and the NSAID used).

Impact of procedure on wellbeing of animals

- (18) Some temporary discomfort, which is mitigated by the analgesics and non-steroidal anti-inflammatory drug. However, this should wear off during the same day as surgery takes place.



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Animal care

- (19) Once rams can move independently, they should be moved to a shaded location and provided with good quality hay and water ad-lib. This can be inside the shearing shed.
- (20) Following initial recovery, any rams showing signs of post-operative pain (e.g., lying down, not eating, standing away from feed and water) should be examined by a clinician and prescribed additional non-steroidal anti-inflammatory (e.g., Flunixin meglumine 2.2 mg/Kg or meloxicam at 0.5-1mg/kg as directed, intravenously) or other treatment as necessary.
- (21) Rams should be visually examined twice daily for 2 days, and once daily for up to 5 days. Rams should then be returned to a paddock. Skin sutures may be removed after 7 - 14 days post-surgery, as deemed necessary.

Pain relief

- (22) Xylazine, ketamine, butorphanol, lignocaine and NSAID's as described above.

Reuse and repeated use

- (23) There can be no re-use for the procedure as the surgery removes a portion of the ductus deferens.

Qualifications, experience or training necessary to perform this procedure

- (24) Demonstrator and supervisor: Clinician registered to practice in Australia, and appropriate skills in surgical and anaesthetic procedures.
- (25) Students: training in basic surgical skills, basic anaesthesia, venepuncture, and aseptic surgical technique prior to undertaking this procedure. The students need to be closely supervised by at least one fully qualified and experienced clinician at all times.

Record requirements

- (26) Each Ram's ear tags/number is recorded along with its weight and drugs administered. The vital signs are recorded prior to, during, and after the procedure and appropriately recorded.

Associated documentation (including pictures if available)

- (27) None required.

References and relevant links

- (28) Boundy, T and Cox, J. (1996) Vasectomy in the Ram in Practice 1996 18: 330-334
- (29) [Animal welfare \(nsw.gov.au\)](http://www.nsw.gov.au)