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This Standard Operating Procedure (SOP) describes procedures for general surgery of large animal species such as swine, dogs, rabbits, cats, non-human primates (NHP).

It outlines pre-, peri- and post-operative procedures for surgery on non-rodent species and therefore does not apply to mice, rats, gerbils, guinea pigs, chinchillas and hamsters.

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Principal investigator (PI) and their research staff, veterinary care staff and all qualified personnel who perform surgery on non-rodent species, or assisting in the procedures.



- 4.4.8. Transfer the patient to the designated surgical suite only after the animal has been shaved and coarsely cleaned with a disinfectant scrub. Perform final preparation of the surgical site after the animal has been positioned on the surgery table.
- 4.4.9. Antiseptic skin preparation:
  - 4.4.9.1. Use aseptic technique when performing skin antiseptics.
  - 4.4.9.2. Start at the center of the surgical site and move to the outside of the prepared area in a circular manner.
  - 4.4.9.3. Perform three scrubs with a non-soap solution (e.g., alcohol, diluted non-soap antiseptic or sterile water) and three alternating rinses with an antiseptic soap solution (e.g. 2% chlorhexidine solution or povidone-iodine solution).
- 4.4.10. Sterile surgical draping:
  - 4.4.10.1. Drape the animal with a sterile, impermeable covering to isolate the disinfected area. This is performed by the gloved and gowned surgical team.
  - 4.4.10.2. Fix the drape in place with clamps.
  - 4.4.10.3. Cover a stand or table with a sterile drape on which sterile instruments, gauze and suture are placed.
- 4.4.11. The use of antibiotics prophylactically is to be established with the clinical veterinarian.
- 4.4.12. Prior to surgery, verify the depth of anesthesia by loss of the palpebral reflex, pedal withdrawal reflex, and jaw tone, heart rate and blood pressure.
- 4.5. Surgical Procedures, Monitoring, and Supportive Care:
  - 4.5.1. Maintain aseptic conditions during all survival procedures.
  - 4.5.2. Continuously monitor physiological parameters, e.g., heart rate and rhythm, blood pressure, respiratory rate and depth, oxygen saturation, temperature, capillary refill time (less than 2 seconds), end tidal CO<sub>2</sub>.
  - 4.5.3. Document these parameters at least every 10 minutes.
  - 4.5.4. Maintain normal body temperature by the use of warm circulating water blankets, thermal pads, and/or warm IV fluids. Do not use electric heating pads as they are a less consistent, safe, and reliable source of heat.
  - 4.5.5. Administer IV fluids to maintain adequate hydration and blood pressure.
  - 4.5.6. Adjust the depth of anesthesia according to the monitored parameters (presence of reflexes, respiratory rate and breathing pattern, and heart rate).
  - 4.5.7. In the case of respiratory or cardiac arrest, stop anesthesia, administer oxygen, and begin resuscitation efforts immediately. Calculate the dosage of emergency drugs before the start of anesthesia.
  - 4.5.8. Use efficient surgical planning to decrease surgical time, tissue contamination, and tissue damage.
  - 4.5.9. Handle tissues gently.
  - 4.5.10. Use a scalpel blade or scissors to make the smallest possible incisions.
  - 4.5.11. Use appropriate suture technique:
    - 4.5.11.1. Use absorbable suture if the suture will be buried in tissue.
    - 4.5.11.2.

- 4.5.11.5. Use an alternative to skin sutures, such as a subcutaneous/intradermal closure technique, if skin sutures are not necessary. Skin sutures can cause an animal to chew or scratch at the incision site.

#### 4.6. Postoperative Care:

- 4.6.1. Postoperative care begins with recovery from anesthesia, and may extend from days to weeks depending on post-surgical outcomes.
- 4.6.2. Place animals in a clean, quiet environment for anesthetic recovery.
- 4.6.3. Continuously observe the animal and monitor temperature, heart rate and respiratory rate until the animal can maintain a patent airway and sternal recumbency. Emergency airway equipment must be available in the anesthetic recovery area. Administer oxygen as needed.
- 4.6.4. Keep the animal warm and dry in order to prevent hypothermia. Care should be taken to not overheat or burn the animal. Over-the-counter heating pads are prone to burning animals and cannot be used for this reason. Examples of surgical thermoregulation devices include:
  - 4.6.4.1. Water-circulated heating pad
  - 4.6.4.2. Air circulating heating blanket
  - 4.6.4.3. Surgical thermal barrier

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