

**DREXEL UNIVERSITY COLLEGE OF MEDICINE
ANIMAL CARE AND USE COMMITTEE
POLICY FOR SURGERY AND POSTSURGICAL CARE OF RODENTS**

OBJECTIVE: This policy is to ensure that appropriate provisions have been made for preoperative and postoperative care of rodents in accordance with the "Animal Welfare Act" and the American Association for Accreditation of Laboratory Animal Care's guidelines, as outlined in the "Guide for the Care and Use of Laboratory Animals." The policy requires the use of "sterile instruments, surgical gloves, and aseptic procedures to prevent clinical infections" for all animals.

RESPONSIBILITIES

Veterinarian's Responsibilities:

The veterinarian shall provide the IACUC with assessments of the following:

1. Preparation of the animal for the surgical intervention, to include the use of pre-anesthetic drugs where indicated, and appropriate anesthetic agents;
2. The individual performing the surgery has adequate experience or training for the specific procedure outlined in the study;
3. Aseptic procedures are appropriate for the surgery;
4. That adequate post-operative care, to include post-operative analgesics where indicated, is provided and
5. Veterinarian has implicit responsibilities to assess the potential for pain and distress that might be associated with the proposed animal activities, and to recommend the use of pain alleviating drugs, whenever possible, to alleviate those conditions.

Investigator's Responsibilities:

1. The responsibility for proper preoperative, surgical, and postoperative care (including weekends) is that of the Principal Investigator. The veterinarian and ULAR personnel shall provide guidance to train personnel in these three general areas of care. The Principal Investigator is responsible for training or arranging training on the specific surgical procedure;
2. Regulations require that investigators proposing procedures that may cause more than momentary or slight pain or distress to the animals must consult with the veterinarian or his/her designee. The veterinary staff of the ULAR will be available to provide guidance in the care and use of animals regarding handling, immobilization, anesthesia, analgesia, tranquilization and euthanasia;
3. Federal regulations and our internal institutional policies require that protocols must be implemented as approved by the IACUC. Any deviation from the approved protocol must be approved by the IACUC before they are implemented and;

4. Investigators shall have a system in place to sufficiently document animal care and use that meets regulatory requirements and veterinary practice.

PROCEDURES

Surgery must be performed or directly supervised by a trained and experienced individual. New personnel and those unfamiliar with aseptic surgical procedures will be trained by ULAR as part of the Species Specific training. Exceptions to these procedures must receive prior approval by the IACUC.

MAJOR SURVIVAL SURGERY:

Definition:

Major survival surgery is any surgical intervention that penetrates a body cavity or has the potential for producing a permanent handicap in an animal which is expected to recover from anesthesia.

Preparation:

Rodents intended for surgery may be fasted or fed as indicated by the protocol. **Fasting** is not required to prevent vomiting in rodents. It does not occur in these animals. A short fasting (2 to 4 hours) can enhance the effect of certain anesthetic agents (barbiturates). Surgery may take place on a clean, uncluttered lab bench or table surface. However, the area in the lab where surgery is occurring must not be used for any other purpose during surgery. The surface should be wiped with a disinfectant before use and covered with a clean drape. Any new laboratory where animals are to be used must be reported to the IACUC for inspection before any procedures can occur.

If the animal is anesthetized longer than 15 minutes the use of an eye ointment to keep the eyes moist is recommended.

The hair should be removed from the surgical site with clippers or a depilatory for a distance of at least 2 cm around the incision site. The surgical area should be wiped with a suitable skin disinfectant. Betadine® Surgical Scrub is suitable for this. Ethyl alcohol alone is not a skin disinfectant, but may be used to remove other agents from the skin. Due to the large surface area to body volume, an external heating source (e.g. circulating water heating pad) should be used for all rodents which will be anesthetized. Because anesthesia abolishes the shivering reflex, anesthetized animals lose body heat rapidly. Conversely, do not overheat during anesthesia. Circulating hot water heating pads are recommended, but if using an electric heating pad system, place a dry cloth barrier between the pad and animal to avoid contact burns.

Draping the surgical site with a sterile drape (disposable or reusable) is recommended to avoid contamination of the incision, instruments and your gloves.

The surgeon and any assistant working in the immediate surgical field must wear sterile surgical gloves for the surgical procedure. Also, the surgeon should wear a clean lab coat

and either wear his/her hair back or protected with a cap. The use of a surgical mask is required for rodents for both major and minor procedures.

The use of sterile instruments, suture material and supplies is required. Instruments may be sterilized by autoclaving. Implanted medical devices must be sterile. If these are unable to be heat sterilized, the hospital may be contacted for gas sterilization. Surgical packs must contain a sterilization indicator **INSIDE** of the pack. These strips should be kept in a log book along with surgical records. The outer pack should be wrapped with autoclave tape.

Surgery:

Major surgery on multiple animals may be accomplished by using multiple sterile instrument packs or using a glass bead sterilizer to sterilize instruments between animals. The initial pack should be autoclaved prior to the first surgery.

Note: If your glove touches a non-sterile surface you must change gloves before proceeding. Likewise if an instrument touches a non-sterile surface it must be re-sterilized before being used again.

Absorbable suture material should be used to close abdominal and thoracic body walls. A non-absorbable suture material or wound clip(s) should be used to close the skin. Interrupted suture patterns are recommended. If wound clips are to be used, careful attention should be given to placement and spacing to prevent them from either tearing out or catching on caging equipment. Wound clips have a higher potential for postoperative infection and tissue tearing. Suture material must not be used beyond the expiration date.

The monitoring of anesthesia depth is important to ensure the animal is not experiencing pain or distress during the procedure. Records of anesthesia and monitoring must be maintained by the PI and/or staff.

Postsurgery:

Postoperatively the animal should be supplied with supplemental heat and monitored at least every 15 minutes until it regains sternal recumbancy. For major surgical procedures, administration of warmed subcutaneous fluids may be appropriate. Consulting with a member of the veterinary staff will assist in making this determination.

When the animal is returned to the animal facility, the ULAR staff should be notified of any special requirements the animal may have or procedures to follow in the event the animal is found dead or moribund.

The date of surgery must be marked on the cage card.

Provision of analgesia during the postoperative recovery period is a requirement for major survival surgeries and should be documented in the surgical records. Exceptions may occur only if scientific justification for withholding analgesics is provided in your

IACUC protocol. Suggestions for appropriate analgesics may be found by consultation with a member of the veterinary staff.

Daily observation of the animal and surgical site for a minimum of three days for any signs of pain, discomfort, or infection is the responsibility of the principal investigator. Pain in rodents may be identified by a reluctance to move about, eat, drink, and/or by vocalization with handling.

Monitoring food consumption and weighing your animals is an appropriate way to monitor them for pain. If they are not eating, other food supplements should be offered upon recommendation by the veterinary staff.

Skin sutures or wound clips must be removed at 10-14 days post-operatively in order to avoid irritation and/or infection at the surgical site.

MINOR SURGERY

Definition:

Minor survival surgery does not expose a body cavity and causes little or no physical impairment. Examples are wound suturing; peripheral vessel cannulation; microchip implantation; and most procedures routinely done on an 'outpatient' basis in veterinary clinical practice.

Aseptic technique including clipping and disinfection of the surgical site and use of sterile gloves and instruments is required for minor procedures.

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