Policy and Guidelines on Survival Surgery of Animals Used in Research, Teaching and Testing

Purpose:
This document addresses the policy and guidelines pertaining to survival surgical procedures and post-surgical care and monitoring of animals used in research, teaching or testing at the UIUC campus.

Policy:
Survival surgical procedures on research and teaching animals must be done in appropriate facilities using aseptic technique by qualified personnel. Peri-procedural care must conform to current established veterinary medical and nursing practices.

Definitions

- **Appropriate Facilities:**
    1) **Non-rodent mammals**
    2) **Rodents bred for research and non-mammalian vertebrates**
    3) **Agricultural animals**
    4) **Wildlife**
- **Major Survival Surgery:**
- **Multiple Major Survival Surgeries:**
- **Minor Surgery:**
- **Aseptic Techniques:**
- **Procedures on Multiple Animals:**
- **Clean Non-sterile Surgery:**

Guidelines

- **Animal Care during the Perioperative Period:**
- **Post Operative Analgesia:**
- **Surgery Records:**
    1) **Non-rodent mammals regulated by the USDA**
    2) **Rodents, agricultural animals used in food and fiber research, and non-mammalian vertebrate species**

- **Veterinary Monitoring and Oversight:**
- **Institutional Animal Care and Use Committee Monitoring and Oversight:**

References

Definitions

- **Appropriate Facilities:**

1) Non-rodent mammals
Major survival surgical procedures performed on non-rodent laboratory animals must be conducted in a dedicated surgical facility (i.e. a facility that is intended for that purpose and is maintained and operated to ensure cleanliness). Major survival surgery performed on agricultural animals in biomedical research must also be conducted in dedicated surgical facilities.

2) Rodents bred for research and non-mammalian vertebrates
Major survival surgical procedures with laboratory rodents and non-mammals do not require a dedicated surgical facility. Although the campus Institutional Animal Care and Use Committee (IACUC) may approve the conduct of survival surgical procedures in specific laboratory settings, a separate room used primarily for aseptic procedures is desirable. When approved by the IACUC, the area of the laboratory or facility where surgery is conducted should be maintained in a manner that ensures cleanliness and minimizes unnecessary traffic and activities during the times that animals are present.

3) Agricultural animals
Surgical procedures and standard agricultural practices conducted with agricultural species used in food and fiber research and teaching may be performed in agricultural animal facilities, on private farms, or in a field setting when approved by the IACUC. Equipment should be sterilized and procedures conducted in accordance with standard veterinary practices. Reasonable precautions must be made to limit site contamination and risks of infection. Wounds must be monitored until healed and post-surgical analgesia must be used where appropriate.

4) Wildlife
Surgical procedures, both major and minor, performed on wild animals may be conducted in field settings when approved by the IACUC but aseptic principles must be followed. Animals may need to be maintained in temporary captivity to ensure protection from predation or limit exposure to environmental factors. Analgesia must be provided where appropriate.

- **Major Survival Surgery:**

Major survival surgery is defined as any surgical intervention that penetrates and exposes a body cavity or has the potential for producing a substantial physical or physiologic impairment in an animal that is expected to recover.

- **Multiple Major Survival Surgeries:**

Multiple major survival surgeries performed on an individual animal during its lifetime may be approved by the IACUC when adequate scientific justification has been provided. Multiple major survival surgical procedures should be related components of a single research or instructional project. Cost reduction alone is not an adequate reason for performing multiple major survival procedures on an individual animal. However, such procedures may be approved by the IACUC in the interest of conserving numbers of rare species.

- **Minor Survival Surgery:**

Minor survival surgery does not expose a body cavity and causes little or no physical impairment. Minor procedures may be performed under less stringent conditions than major procedures. Although minor procedures need not be conducted in a dedicated surgical facility (depending on the species involved), aseptic technique is required.

- **Aseptic Techniques**:

Aseptic techniques for all species include:

a) preparation of the patient (hair or feather removal and disinfection of the operative site)
b) preparation of the surgeon (use of clean or sterile surgical attire, appropriate cleansing of the hands and sterile gloves)
c) sterilization of instruments, supplies, and implanted materials
d) use of operative techniques to reduce the likelihood of infection

- **Procedures on Multiple Animals:**

Surgical procedures may be performed on multiple rodents, non-mammals, and agricultural animals used in food and fiber research during a single session using one sterile surgical pack, providing that:

a) Care is taken to minimize contamination; and
b) Instruments are soaked in an approved disinfectant for the recommended exposure times and then rinsed in sterile saline, or are heated in a hot bead sterilizer and/or flamed with 95% alcohol between animals.

- **Clean Non-sterile Field Surgery:**

Certain standard agricultural practices, terminal procedures or field procedures may be conducted using clean techniques rather than adhering to strictly aseptic procedures.

a) Clean, but not sterile, gloves and clothing may be used when the procedures are terminal or are appropriately conducted in agricultural facilities.
b) Hair or feather removal may not be required when conducting certain standard agricultural practices.
c) Techniques that reduce the likelihood of infection are important in conducting clean field procedures or standard agricultural practices.

Guidelines

Animal Care during the Perioperative Period:

The principal investigator is ultimately responsible for ensuring that care which is appropriate both to the species and to the procedure is provided. The Attending Veterinarians have the authority and responsibility to exercise duties required by university policies, professional standards and federal agencies to assure adequate veterinary care and ethical and humane use of animals in research and teaching. They have administrative authority from the Office of the Vice Chancellor for Research to make immediate decisions when animal health or humane use is an issue.

This is best accomplished by:

a) training and oversight of surgical and perioperative care personnel

b) coordination among the principal investigator, research personnel, animal care staff and veterinary care staff
c) clear delineation of responsibilities among key individuals
d) provision of emergency contact information to key individuals

Anesthetized and unconscious animals must be monitored until they regain consciousness. Unconscious animals should not be housed in a primary enclosure with other animals that are fully or partially awake. During recovery, animals must be kept warm and dry in an environment that does not pose a risk of injury or suffocation.

Adequate veterinary care must be provided for all animals. If any animal develops unexpected complications from surgical or post-surgical procedures, appropriate veterinary care must be provided. If an animal dies unexpectedly during or after surgery, or is euthanized due to post-surgical complications, a veterinarian should be consulted to determine if there is a need for necropsy. Most regulated species which die unexpectedly will need to be submitted for necropsy. Postmortem examinations may be performed at the discretion of the Division of Animal Resources (DAR) or Agricultural Animal Care and Use Program (AACUP), appropriate clinical veterinarians or the animal facility management.

Post Operative Analgesia:

The investigator must provide a detailed written description of methods used to assess and alleviate post operative pain or distress in animals undergoing potentially distressful or painful procedures.. When animals are subjected to major survival surgery, routine provision of postsurgical analgesia is required unless withholding analgesics is scientifically justified. The justification should include the rationale or evidence that agents if given, would compromise the scientific validity of the research. Investigators are highly encouraged to consult with the DAR or AACUP veterinary staff during the planning of surgical procedures to identify appropriate use of analgesics.

Surgery Records:

It is the responsibility of the principal investigator and/or surgeon to maintain accurate and complete records regarding surgical procedures and perioperative care. These records must be maintained for three years beyond the termination date of the protocol. All records must be readily available to the personnel involved in post-surgical monitoring, the veterinary staff, the IACUC and federal regulatory officials. Regardless of the species, close postoperative monitoring until recovery from anesthesia and maintenance of records of daily observations of the animals are required until the postoperative period is complete (for example, when sutures or staples are removed and surgical wounds are adequately healed). Forms useful for this purpose are available from the DAR or AACUP offices and websites.

1) Non-rodent mammals regulated by the USDA
Individual records must be maintained that identify the animal and detail the procedures, dates, personnel, and pre- and post-surgical monitoring. The original or a copy of the surgical record must become part of the animal's health record and must be maintained for three years beyond the protocol’s termination date.

2) Rodents, agricultural animals used in food and fiber research, and non-mammalian vertebrate species
Individual animal or appropriate group records must detail the procedures, dates, identification of the animals, anesthesia, personnel conducting surgery and post-surgical monitoring.

Veterinary Monitoring and Oversight:

IACUC review of animal care and use protocols includes evaluation of the surgical procedures by a veterinarian. In addition, investigators are strongly encouraged to consult with veterinarians during the planning and preparation of protocols. The training and experience of the surgeons and research staff, the surgical procedure to be performed, the species involved, and the needs of the convalescent animal must all be carefully considered when planning invasive procedures. The DAR and AACUP veterinarians are available for consultation when planning for post-operative care of animals. Veterinary services are available 24 hours a day for post-surgical emergencies. The Attending Veterinarian (DAR or AACUP) has the authority to suspend, pending IACUC review, on-going animal activities that are not in compliance with this policy or that directly pose a risk to animal health and well-being.

Institutional Animal Care and Use Committee Monitoring and Oversight:

The IACUC evaluates proposed surgical procedures and perioperative care during the process of review of animal care and use protocols. All procedures, post-surgical monitoring and provision of analgesia must be performed as described in the approved IACUC protocol. Changes in procedures must be approved by the IACUC prior to implementation. Failure to conform to the approved procedures in the IACUC protocol can result in suspension of the project by the IACUC. Routine monitoring and oversight is exercised through periodic review of the animal care and use program, inspection of the animal holding and housing facilities, inspection of the animal procedural areas, and reports from the animal care and veterinary care staff. Records must be available upon request to veterinarians, compliance personnel, and federal regulatory inspectors.

References:

Guide for the Care and Use of Laboratory Animals (Guide), NRC, 1996
Public Health Service Policy on the Humane Care and Use of Laboratory Animals
Health Research Extension Act, 1985
Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching (Ag Guide), FASS, 1999. Contact IACUC or AACUP offices for a copy of the Ag Guide.
Animal Welfare Regulations, 9 CFR, chapter I, subchapter A
U.S. Government Principles for the Care and Use of Animals Used in Testing, Research, and Training, 1983

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