NU–IACUC POLICY

Northeastern University Institutional Animal Care and Use Committee

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| Rodent Surgery |

*Re-Approved: 02/08/2022*

All survival rodent surgery at Northeastern University will be performed aseptically which adheres to the specifications as outlined in *The Guide for the Care and Use of Animals*.

**Surgery Location**

Surgery must take place in a work area or laboratory removed from the mainstream of traffic. The area must be uncluttered and sanitizable. It is not recommended to perform surgery directly on a table or bench surface without covering the area with a plastic backed absorbent pad for sanitation reasons and warmth for the animal. A disposable absorbent chuck fulfills this requirement.

**Surgical Instruments and Implantable Devices**

All surgical instruments must be sterilized prior to use either in a steam or gas sterilizer. Multiple surgeries may require the use of at least two separate sets of instruments, each set being disinfected alternatively between surgeries. The use of a glass bead sterilizer on instruments between animals is acceptable. However, these instruments must still be initially sterilized.

All implantable devices and materials, including catheters, mini-pumps, tubing, screws, etc. must be either sterilized via gas or steam sterilization prior to use.

**Required Garments for performing rodent surgery**

* A clean laboratory coat, surgical mask, and sterile gloves must be worn.
* Hands must be thoroughly washed prior to donning sterile gloves.

**Please follow the steps listed below for rodent surgery:**

1. Weigh the animal.
2. According to body weight, anesthetize the animal with the appropriate dose of approved anesthetic. (see the NU-IACUC policy on the Recommended Doses Anesthetics and Analgesics of Laboratory Animals).
3. Prepare the animal for surgery

* Remove the hair at the intended incision site using clippers (preferred), or depilatory cream, prior to placement of the animal on the surgery table.
* Disinfect the skin at the intended incision site by first scrubbing the area with povidine/iodine or appropriate disinfectant followed by a rinse with 70% alcohol and repeat three times.
* Place the animal on a clean, warm surface to minimize heat loss. Heat must be provided to the animal. Warmth can be maintained by the use of various heat sources or circulating water heating pad placed under another drape or pad. Electric heat pads should not be used. is being used. Close attention must be paid as not to overheat the animal. Placing a blue chuck over the pad will help with this.
* Remember, all anesthetics and many surgical procedures will result in heat loss, and body temperature management is an important factor in survival and recovery.
* Additionally, failure to provide adequate thermal support will reduce the effectiveness of anesthetics and analgesics.
* Apply ophthalmic ointment to anesthetized animal’s eyes to prevent ocular drying and potential irritation or ulceration.
* Draping of the animal is recommended.

1. Administer analgesics to the animal prior to the start of surgery (i.e. prior to making the skin incision). This will ensure that when the animal is recovering, it is not in any pain. For the proper dose of analgesic, see the NU-IACUC policy on the Recommended Doses Anesthetics and Analgesics of Laboratory Animals.
2. The surgery must be performed using aseptic technique; i.e. the surgeon must wear sterile gloves, use sterile surgical instruments should not touch any non-sterile areas outside the surgical field. If an instrument is contaminated, it should be re-sterilized using in a glass bead sterilizer.
3. Incision site closure must be done using either sutures, stainless steel wound clips, surgical glue, or a combination of these. The selection of suture material should be based on the properties of the material and characteristics, i.e. absorbable vs. non-absorbable. The use of silk in the skin is not allowed due to the possibility of wicking of bacteria into the incision site through the braided material. A monofilament suture material or sterile wound clips must be used for skin closure.

**Multiple Surgeries:**

When performing multiple surgeries during a single session, care must be taken to avoid contaminating one animal to another. Use either multiple sets of instruments or a glass bead sterilizer to sterilize instrument tips between animals. When using the glass bead sterilizer, it must be taken into account that only the instrument tips will be re-sterilized and care must be taken not to contaminate the handles.

**Post-Surgical Care/Monitoring**

The Principal Investigator, or designate, is responsible for the monitoring of animals recovering from anesthesia and surgery.

Immediate post-surgery period and up to 7 days post surgically:

1. The animal cannot be left unattended and must be monitored until it is ambulatory (walking). Only then can it be returned to the animal housing room. During the recovery process the animal should be turned from side to side every 15 minutes until the animal is sternal.
2. To hasten recovery, the animal must be kept warm. Place a drape, blanket or pad between the animal and the heat source to prevent overheating and/or burns.
3. Animals recovering from anesthesia should not be placed directly onto contact bedding, i.e. pine shavings, as they may inhale or ingest bedding particles. Placing the animal on a paper towel or equivalent should prevent this from happening.
4. Do not place anesthetized animals with conscious animals. House separately until anesthetized animal is completely recovered.
5. For all surgeries you must complete a Rodent Surgery Card and place on the cage. This card is displayed as the front cage card for 7-10 days post-surgery.
6. The Rodent Surgery Card has sections for the following information:

* Surgery and date performed,
* Anesthetic used. There is also a section for the PI to record if/when analgesia is given after the first initial dose.
* Post-Surgical monitoring (on back of card): For the first 3 days, the animal(s) are observed twice daily for activity, pain, and infection at the incision site. There is a scoring system which is listed on the card for each category. Pain evaluation should be based on *The Prevention, Recognition, and Treatment of Pain & Distress in Laboratory Animals*. The incision site should be observed for cleanliness, healing and dehiscence.
* After 7-10 days, the card is placed behind the original cage card. If the animal is permanently disabled, the card must remain displayed on the cage. This card should not be used as the animal’s primary cage ID card.

1. Evaluate adequate hydration by “tenting” loose skin between the shoulder blades. Skin should normally fall back immediately to the body when tented. The absence of this response may indicate the animal is dehydrated and is in need of intravenous or subcutaneous fluid therapy (consult veterinarian for best type, dose, and route of fluids).
2. Evaluate adequate nutrition by palpating spine and/or ribs and evaluation the animal for body condition. A body Condition Score of <2 will require euthanasia. Daily weights will ensure undisputed proof of food intake or lack thereof. A greater than 15% loss of body weight would require the animal be euthanized.
3. Sutures or wound clips must be removed 7 – 10 days post-op.

**Rodent Surgery Card**

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| Rodent Surgery Card P.I.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ PROTOCOL #\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Contact Person/Phone #\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Date & Procedure Performed:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Anesthetic  Iso  Ket/Xyl  Other\_\_\_\_\_\_\_\_\_\_\_  Post-op Analgesic  Buprenorphine \_\_\_mg/kg Route\_\_\_\_ Time\_\_\_\_  Other\_\_\_\_\_\_\_\_-mg/kg Route\_\_\_\_ Time\_\_\_\_ Exempt per IACUC  Comments: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (front) |

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| **Surgery Score Code:**  Activity 0=normal 1=reduced 2=poor 3=moribund  Pain 0=none 1=mild 2=moderate 3=severe  Incision 0=normal 1=inflamed 2=infected 3=dehisced   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Post op care | Day 0 | Day 1 | Day 2 | Day 3 | | Activity |  |  |  |  | | Pain |  |  |  |  | | Incision |  |  |  |  | | Initials |  |  |  |  | | Analgesic |  am  pm |  am  pm |  am  pm |  am  pm |   Comments: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  (Back) |