



Dartmouth College

Animal Care and Use Program

Institutional Animal Care and Use Committee

IACUC Policies and Procedures

Title: Rodent Surgery

Purpose: It is the purpose of this policy to establish minimum standards for rodent surgery at Dartmouth College.

Policy:

Survival Surgery

- Survival surgery in rodents should be done in an appropriate location following appropriate aseptic technique. Aseptic technique in rodents includes sanitation of the bench surface where surgery will be performed, disinfection of the surgical site, use of sterile instruments, sterile supplies (suture material, catheters, PE tubing, etc.), sterile gloves, and a scrub top or lab coat. In addition, it is often a very good idea to use a sterile surgical drape to cover the animal and surrounding surfaces to avoid accidental contamination of your instruments, gloves or supplies during surgery.
- A clean area (a portion of a room) or separate room is acceptable for all rodent survival surgery. This area should be free of clutter, have an impervious surface, and not be used for any other purpose during the surgical time. Surgical areas should be away from sources of contamination, such as drafts and personnel traffic. Prior to and between surgeries, clean and disinfect the surface upon which surgery will be performed.¹
- The surgical site must be aseptically prepared. This includes shaving the surgical field clean of fur (or using a chemical hair remover). This field should include a margin of at least 1 cm surrounding the incision site. The surgical field should be disinfected by alternating swabs of Betadine with alcohol wipes, three times, ending with the alcohol. Chlorohexidiene or other appropriate skin disinfectant may also be used; these should be discussed with the veterinary staff. Once the animal is placed in the proper position and the alcohol has dried, Betadine or Nolvasan solution should be sprayed on the surgical site.
- Instruments should be sterilized prior to the first surgery. Sterilization can be accomplished by autoclaving at the appropriate temperature, time, and pressure; by cold sterilization using a liquid sterilant (e.g. Cidex), or gas sterilization (e.g. Ethylene oxide, hydrogen peroxide vapor). The use of disinfectants (Betadine, Nolvasan, or alcohol) to “sterilize” instruments is not adequate. The use of these disinfectants for soaking instruments between surgeries is appropriate assuming that sterility was maintained during the preceding surgeries, and a maximum of 3 surgeries is performed using these instruments. In the event that sterilization is broken, a new set of instruments that have been autoclaved, or have been sterilized by one of the other listed approved techniques will need to be used. When all surgeries for the day have been completed, the disinfectant soak must be discarded.

¹ From www.ehs.ucdavis.edu Commonly used disinfectants are quaternary ammonium compounds (such as Roccal™), household bleach diluted 1 part in 32 parts water, chlorine dioxide-based disinfectant-sterilants (e.g., Clidox™), chlorhexidine (e.g., Nolvasan™), or other suitable antimicrobial agent. Disinfectants must be prepared and used according to manufacturer's recommendations to assure safety and efficacy.

When performing multiple rodent surgeries on the same day, at least 2 sets of sterile instruments should be available to allow disinfection of instruments between animals.

- Lubricating eye ointment should be applied to both eyes prior to the start of the surgery.
- Rodents undergoing surgery should have a Health Check Card completed for them.* It is the responsibility of the Principal Investigator to ensure this card is completed and the placed on the cage. Regular observations (frequency dictated by the IACUC protocol) by the Investigator or their staff must be noted on the form.
- Post Procedural care should be performed in compliance with the Post Procedural Care Policy. Immediately following survival surgery, the surgeon should be aware of the possibility of hypothermia. Heating pads can be placed under one fourth to one half of the cage, allowing the animal to choose the amount of heat it receives. An alternate heat source may be a heated gel pack wrapped in a paper towel placed inside the cage. Heat sources need to be continuously monitored - hyperthermia can be as detrimental as hypothermia and burns must be avoided in all cases. Rodents should not be directly placed onto loose bedding material until fully awake, as suffocation can result. A paper towel, towel, etc. can be placed between the bedding and the rodent until it awakens from anesthesia. Any animal that seems to be suffering from dehydration, blood loss, or is slow to recover should receive additional supportive care, such as fluid therapy and/or additional analgesics. Animals should not be returned to the vivarium until they are able to maintain themselves in a sternal position. To prevent cannibalism or suffocation, house rodents individually until they are ambulatory. All post-surgical rodents must be returned to the ARC within 24 hours when they have recovered from surgery, unless they are being held in an approved satellite facility.
- Postoperative complications must be identified on the Animal Health Check Card and addressed in consultation with the veterinary staff. Postoperative observations are required until all sutures, wound clips, or other exteriorized devices have been removed. Postoperative analgesics must be administered according to the IACUC-approved protocol. External wound clips, staples, or sutures must be removed 7-10 days after the surgery.

Non-survival Surgery

Aseptic Technique need not be maintained if the animal will not regain consciousness after the surgery is complete. However, the Institutional Animal Care and Use Committee (IACUC) still requires that the surgical area be free of clutter, have an impervious surface, and not be used for any other purpose during the surgical time. Surgical areas should be away from sources of contamination, such as drafts and personnel traffic. Prior to and between surgeries, clean and disinfect the surface upon which surgery will be performed. Use soap and water to remove all surface dirt and debris, rinse thoroughly, and follow with an appropriate hard surface disinfectant.² Instruments should be carefully cleaned of all residual blood, tissue, and other debris prior to surgery.

*If a group of rodents has the same surgery on the same day, only one Health Check Card per cage will need to be completed.

**Glass bead sterilizers are effective at sterilizing instrument tips and materials that are not heat sensitive. Instruments must be clean and free of tissue or blood residues before placing them in sterilizer. Instrument tips should remain in the hot beads for at least 10 seconds. Instruments cool down in about one minute, so caution must be exercised before using the instruments. Instruments may be quickly cooled with sterile water or saline before contact with tissues.

² From www.ehs.ucdavis.edu Commonly used disinfectants are quaternary ammonium compounds (such as Roccal™), household bleach diluted 1 part in 32 parts water, chlorine dioxide-based disinfectant-sterilants (e.g., Clidox™), chlorhexidine (e.g., Nolvasan™), or other suitable antimicrobial agent. Disinfectants must be prepared and used according to manufacturer's recommendations to assure safety and efficacy.