Aseptic Survival Surgery in Rodents

Responsible Official: VP for Research Administration
Administering Division/Department: IACUC
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The following are recommendations that represent best practices. Please contact either an Emory DAR veterinarian at 7-3248 or a Yerkes veterinarian at 7-8101 for additional guidance.

I. **Facilities:** Surgical procedures should be done in procedure rooms within the animal facility. Procedures, can, however, be done in a space within laboratories that is dedicated to performing surgery during the time such surgeries are taking place and as specifically approved by the IACUC. These areas must be clean, uncluttered and free from nearby, non-essential traffic, unnecessary personnel and unrelated activity during surgery. Prior to initiation, the work surface must be sanitized with an appropriate disinfectant such as ethanol, Virkon, or other Yerkes or Emory DAR approved disinfectant.

II. **Surgeon training:** All individuals performing surgery must have appropriate training in proper technique prior to the first procedure in compliance with IACUC policy and procedure. Credentials will be reviewed concurrently with IACUC protocol review. Recommendations for necessary training will be made at that time.

III. **Instrument preparation:** All instruments must be cleaned and then sterilized prior to use in surgery. Any method of sterilization (steam, gas, cold chemical, hot bead) is acceptable if done properly. If cold chemical sterilization methods are employed, it is important to remember that extended contact time is often necessary e.g. 10 hours for glutaraldehyde. Contact time for contaminated instruments require a contact time of up to 30 hours for 70-90% alcohol making this method of sterilization of instruments generally unsuitable. Instruments that are properly wrapped in sterile packaging and protected from dust accumulation (e.g. in a closed cabinet) may be stored for later use.

IV. **Surgeon preparation:** Hands should be washed and free of gross contamination. Gloves must be worn when performing surgical procedures;
these must be sterile surgical gloves, but clean examination gloves are acceptable if approved by the IACUC where the ‘sterile tip’ technique is used. This is where only the sterile instrument tips and not the gloved digits or hands of the surgeon, enter the surgical field and the non-sterile gloved hands don’t contact the surgical field or directly handle the items entering the surgical field (e.g. suture, implants, and catheters). It is required to wear a surgeon’s mask, and either gown or lab coat, and in addition advisable to wear a surgeon cap particularly if the procedure is considered “major” as defined by The Guide for The Care and Use of Laboratory Animals* and denoted in the approved IACUC protocol.

V. Animal preparation: Animals must be anesthetized using agents and doses listed in the protocol. Following induction of anesthesia, hair must be removed from the surgical site using clippers, plucking, or a depilatory agent. After hair removal, the site must be scrubbed using antiseptic agents. It is recommended that the area be scrubbed 3 times, alternating with isopropyl alcohol and another agent such as povidone iodine, making sure to use alcohol as the final scrub. Care should be taken to avoid saturating the animal as this promotes hypothermia. Ocular ointment should be placed on the eyes to prevent exposure keratitis. Prone subjects should be restrained appropriately using tape or fine rope used in a non-occluding manner as a means of affixing limbs to the surgical table or platform. A drape must be used as appropriate for the surgery unless exempted by the IACUC. For those procedures that require suturing, an appropriate drape must be used for the surgery area. The animal should be placed on an appropriate heating surface for procedures lasting longer than 15 minutes.

VI. Surgery on multiple animals: Instruments must be prepared as described above before use on the first animal. If the same set of instruments will be used in multiple animals, it is important to clean and sterilize the instruments prior to starting on each subsequent animal. This is best accomplished by first removing any gross contamination e.g. blood using clean 4x4 gauze pads moistened with sterile saline. Instruments should then be sterilized using a glass bead sterilizer following manufacturer’s guidelines. Gloves and drape must be changed if they become damaged or significantly contaminated with blood, hair or other debris. If examination gloves are used, gloves should be changed between patients.

VII. Post-operative recovery: Animals should be placed in a clean, designated recovery cage that is halfway on an appropriate, approved heating surface and monitored at least every 15 minutes until fully recovered from anesthesia, at which time the animals can be moved into their housing room. They should then be provided care and observed at the frequency required in
the approved protocol. Care should be taken to keep sedated animals separate from ambulating animals so that injury doesn’t occur during recovery. Any analgesia or fluids must be administered as described in the approved IACUC protocol. The postoperative management of the incision sites, including suture or staple removal, must be consistent with the protocol. Cage cards must be annotated to minimally list the surgical procedure and date of the procedure but surgical anesthetics, analgesics, and recovery information must be recorded in a surgical log.

*Major survival surgery penetrates and exposes a body cavity, produces substantial impairment of physical or physiological functions, or involved extensive tissue dissection or transaction.