Aseptic Technique

Division of Laboratory Animal Medicine
Goals

- How to prepare the patient for surgery
- How to monitor the patient under anesthesia
- How to recognize and prevent contamination: before, during and after surgery
- How to perform surgery aseptically and prevent post-op complications
Surgical definitions

- **Major surgery**: invading a body cavity (thorax or abdomen), loss of a limb, causing a stroke, bone fractures
- **Minor surgery**: subcutaneous incision, castration, subcuticular pump implant
- **Survival surgery**: animal will regain consciousness, must be performed aseptically
- **Non-survival surgery**: animal will be euthanized on the table
- **Multiple survival surgeries**: defined as more than one operative procedure from which the animal is allowed to recover
Before surgery: ARC requirements:

- Name is on active protocol
- Read protocol
- Aseptic technique class completed (in addition to species-specific training)
- Pre operative weight
- Medical health questionnaire is valid
- ARC certification - called CITI training, needs to be updated every 3 years
- Surgery records need to be kept by lab
  - Must be available for ARC to review
Surgery preparation

- Have all supplies ready **before** you pick up the animals

- Items supplied by DLAM in 2V Surgery Suite
  - Anesthetic vaporizer, oxygen, patient and surgeon surgical scrub, hot bead sterilizer and circulating water pump (**only**).

- Items supplied by the lab
  - Artificial tears, pain relief, sterile gloves, sterile instruments, sutures, wound clips or tissue glue, external heat source (**pad**), anesthetic drugs, mouse or rat induction chamber, F-air canister, sterile drape, clippers and nose cone set up.
Preparing the animal for surgery

Evaluate animal’s health:
- A healthy animal will recover well from surgery.
- A sick animal will be immuno-compromised and will not recover well from surgery.

Be prepared:
- You will need a clean cage for after surgery, medication for the water bottle (if applicable), and pain relief administered before surgery starts.
Personal protective attire for surgery

- Gown
- Hat
- Gloves: sterile for surgery
- Mask
- Booties (shoe covers)
- Do not wear these items outside of surgery area or room
Anesthetized animals

- Once an animal has been anesthetized, do not leave it unattended.

- Once the animal has regained consciousness, you can return it to the cage.

- If you anesthetize by injection, recovery time will be longer than inhalation anesthesia.

- Animal should be housed alone after surgery.
Analgesics

- Must be given in accordance with the protocol
- Must be started **pre-operatively**
- Must be continued post-operatively – 48 hrs for major surgery, 24 hr for minor surgery
- Exceptions must be justified and approved by the ARC

Benefits of Alleviating Pain

- Humane Animal Care
- Shorter recovery period
- Minimization of variables that could confound the interpretation of data
Preventing Dry Eyes

- Eye lubrication for the patient
  - Eyes stop producing tears when anesthetized
  - No blink reflex while unconscious
  - Artificial tears must be applied
Preventing Dehydration

- Fluids need to be warmed
- If you use a microwave, make sure fluids are not too warm.
- Fluids can be given IP or SC
Surgery Preparation

- Clean, sharp clippers size: 40 blade or pocket pro trimmer, small enough for mice

- Shave - at least 1 cm from the incision in all directions for rodents, larger area needed for covered species

- Surgical preparation should always take place away from the intended surgical field
Surgery Preparation

- **Surgical scrub:**
  - Betadine and alcohol 70%
  - Chlorhexidine

- **3 alternating scrubs**
  - Start from the center and work your way out
  - Move the animal to the surgical area before draping
Surgery Preparation

- Sterile drape must cover entire animal
Surgery

- Dedicated surgery area:
  - Disinfect surgical room & surgical area
  - Proper preparation surgical site & draping
  - Aseptic Preparation of Surgical Team
  - Sterilization of all instruments & materials to be used

- Dedicated preparation area:
  - Animal should be shaved in an area away from the surgical area.
  - This will help reduce potential sources of contamination
Surgery in your lab

- Only allowed if approved by ARC

- Lab room number needs to be listed on your protocol as the surgical suite

- Low traffic area

- Must follow all survival surgery guidelines set up by the ARC
Instruments

- Autoclaved - required
- Glass bead sterilizer used on instruments between surgeries or Cold trays
- Clean instruments of debris before placing them in the sterilizer
Preventing Hypothermia

- Body temperature
  - Mouse range: 97.7-100.4°F
  - Rat range: 96.9-99.5°F

- Recommended external heat source: circulating water pump and pad
  - (DLAM provides only the pump)
The Closing Act: Suturing

- Tissue very delicate

- Wound closure: one or two separate layers of closure needed depending on depth of wound.

- Internal: absorbable suture
  Note: if sutures are subcuticular, absorbable suture is used

- External: non absorbable suture
  - Alternatives- tissue glue and wound clips

DLAM offers suture training for beginners: https://portal.dlam2.ucla.edu/EducationTraining/DLAMTraining/Pages/default.aspx
Animal return rooms

Return Rooms
- Mouse Return rooms: BRI 53-399B and 53-399C
- Rat return rooms: CHS 2V-507, 2V-515, 2V-527
- Contact the supervisor of your area for additional rooms

Reminder:
- If an animal has been removed from a barrier, it can **NOT** go back.
- If you enter the return room, you can **NOT** go back to any clean room or facility
- Animals can not be housed in labs for more than 24 hours or in an unapproved facility
Post-Op Cards for Rats and Mice

- The use of post-op treatment cards for rats and mice that have undergone surgical procedures is mandatory.
- Treatments (such as analgesics and antibiotics) following procedures must be indicated on this form until these treatments are discontinued (for example, until the drinking water containing antibiotics is changed out for fresh water).

The labels (shown above) can either be obtained from our Pharmacy (for a fee of a few cents each) or you can download the form from our website to print on your own Avery® 5163 or other labels:

Post-Op Cards for Rats and Mice

- When using the labels, please do **NOT** apply them directly to the cage or cage card holder, but to the back of the existing cage card, or onto another card to be placed in the cage card holder.

- If you have any questions, please contact a DLAM veterinarian to discuss.

Affix post-op labels (shown above) to the back of your cage cards and fill out as indicated. Pick up labels from the DLAM Pharmacy, 1V-211, or download the form from our website to print on your own Avery® 5163 or other labels:

Post operative Medications

- Post-op antibiotics: generally antibiotics will be given in the water following surgery

- Post-op analgesia:
  - Major surgery- 48 hours of pain relief required
  - Minor surgery - 24 hours of pain relief required

- Use the “investigator Will Feed, Water, & Medicate” Blue tag. Pick up tags in 1V-203.

- Affix post-op labels to the back of your cage cards and fill out as indicated. Pick up labels from the DLAM Pharmacy, 1V-211, or print your own: [https://portal.dlam2.ucla.edu/VeterinaryServices/Documents/Timed Post-Op Labels.pdf](https://portal.dlam2.ucla.edu/VeterinaryServices/Documents/Timed Post-Op Labels.pdf)

Note: Check your protocol
Post Op Monitoring

- Wound dehiscence:
  - Animals may chew or pull out the sutures following the surgery

- Pain:
  - Monitor for signs of pain (see next slide)
  - Administer analgesic for at least the minimum required time

- Water level:
  - Check daily

- Suture removal:
  - Between 7 - 14 days after surgery

- Activity level, Food intake and Hydration status
Signs of Pain

- Vocalization
- Licking of area affected
- Biting
- Restlessness
- Increased rate of respiration

- Reluctance to move
- Loss of appetite
- Unkempt fur
- Hunched
- Weight loss
Potential Sources of Contamination

- **The truth about infections:**
  - Rats and mice are susceptible to the same types of infections as humans are.
  - That is why we study them post operatively. We study their responses to infections and treat them with antibiotics.
  - **Bacterial infections are the most common following surgery**

- **Bacteria!**
  - It is all over- shoes, mouth, hair, clothes, floors, walls, animals cages, fur…
    - Surgical Team/ Surgeon
    - Environmental/Operating Room
    - Instruments/ Materials
    - Patient
Surgery contact information

- 2nd floor surgery room - rats, mice and covered species
  - Sonia Watt is the contact
    - swatt@mednet.ucla.edu
    - The phone number is 794-7392

- Rigler Center-Imaging of covered species
  - Contact the Rigler center at x56561
    - Located on the B floor

- Mouse procedure rooms in Barrier facilities
  - Reserve room/hood by putting name on sign up sheet posted on the door of the procedure room