

T400-Series Technical Note

Rodent Studies: Surgical Recovery

Principles of Proper Laboratory Use in Research and Teaching,
(Wake Forest Univ., Bowman Gray School of Medicine, 1992)

During the post-surgical period, a record must be kept in the room where the animal is housed. It should include a brief description of the surgical procedure, anesthetic used, time of induction, duration of surgical anesthesia, and time returned to cage. It should also include the findings of each physical examination during the recovery period. The post surgical medical record will be retained as a part of the animal's permanent medical record. It is best to keep experimental notations in a separate location.

For medical monitoring purposes, it is helpful to stage animals according to extent of recovery from surgery and anesthesia. The animal should be examined and the findings recorded according to the following schedule:

Stage 4 - Animal unconscious or semiconscious and unable to sit or maintain sternal recumbency.

- a. Examine and record findings no less frequently than every 2 hours. More frequent examination is recommended. Examples of notations include:
 - i. Body temperature
 - ii. Heart rate
 - iii. Respiratory rate
 - iv. Capillary refill time (record in seconds)
 - v. Jaw tone (record resistance or no resistance)
 - vi. Response to toe pinch (record withdrawal or no withdrawal)
 - vii. Time of extubation
- b. Animal should be turned from side to side frequently to prevent dependent pulmonary congestion & edema.
- c. Ambient temperature should be adjusted (heat lamp or warming board) to bring body temperature to normal. Take care to not burn or over heat animal at this stage of recovery. The animal should be kept dry.
- d. The state of hydration should be assessed and fluids should be provided as necessary.

Stage 3 - Animal conscious & can maintain sternal recumbency to sit, but can not stand

- a. Examine and record findings so less frequently than every 6-10 hours depending on the nature of the surgery and the status of the animal.
Examples of notations include:
 - i. Body temperature until it becomes normal+ 2°F.
 - ii. Capillary refill time
 - iii. Condition of the operative site
- b. Examine closely for other abnormalities
- c. Keep the animal dry and adjust the ambient temperature to bring the body temperature to normal
- d. Consider use of analgesic medication
- e. Professional judgement should be exercised in those cases in which there is difficulty in examinations every 6-10 hours. We recommend that one should be cautious in prolonging examinations of animals in stage 3.

Rodent Studies: Surgical Recovery Cont.

Stage 2 - Animal can stand and move about but is not eating and drinking normally

- a. Examine daily and record findings. Examples of notations include:
 - i. Body temperature
 - ii. Hydration
 - iii. Attitude (alert or depressed)
 - iv. Activity (active or inactive)
 - v. Food consumption
 - vi. Water consumption
 - vii. Condition of operative site
- b. Examine closely for other abnormalities
- c. Consider use of analgesic medication

Stage 1 - Animal active, alert, eating and drinking normally; skin sutures are in place

- a. Examine daily and keep a post surgical record of surgical site care until the sutures are removed.
- b. Sutures should be removed within 10-14 days of surgery.

Stage 0 - Animal normal and skin sutures removed.

- a. Specific post surgical care and record are no longer required.

Ideal Anesthetic Agent

- Reliable
- Wide Safety Margin
- Rapid onset/rapid recovery
- Easy to administer & control
- Nontoxic
- Causes no physical impairment
- Produces analgesia and muscle relaxation

Suggested Anesthetic Protocol for Mice

Mix
 5 ml ketamine (100 mg/ml)
 1.6 ml xylazine (20 mg/ml)
 Administer:
 0.09 ml solution / 100 gm body weight IM (thigh)
 Duration: @ 40 minutes;
 re-administer at 1/3 dosage

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