Tail excision protocol is adapted from Jackson Laboratories SOP. Revised April 30, 2001

Surgical Procedures: Tail Tip Excision and Partial Amputation of the Tail

Excision of a few millimeters from the end of a mouse's tail and partial amputation of the mouse's tail are minor surgical procedures and, as such, must be performed in accordance with Public Health Service guidelines and policies for survival rodent surgery. The Harvard Medical School Standing Committee on the Use of Animals and the Harvard University Faculty of Arts & Sciences (HU/FAS) Animal Committee have adopted the policies of the Jackson Laboratory Animal Care and Use Committee for this procedure. The Jackson Laboratory Animal Care and Use Committee (ACUC) considered development of nervous system, bone growth, maternal behavior, relative risks of anesthesia, and amount of tissue to be excised in developing the institutional standards outlined below for excision of tail tips from mice with normal tail length. Mutant mice with defective blood clotting, delayed wound healing, or abnormally thick, short tails may require modified surgical techniques, e.g., tourniquet or skin flap, even if only a few millimeters are excised. The HMA Committee strongly recommends that tail tip excision is performed when mice are between two and four weeks of age because the younger mice heal faster and have less bone at end of the tail.

STANDARD Tail Tip Excision Procedure

Standard tail tip excision is used when diameter of the cut end of the tail is 2 mm or less (infant mice). Use sterile equipment for all procedures. It is most practical to use a new sterile #10- or #15 scalpel blade. You may also sterilize 3 inch or 4 inch sharp/sharp surgical scissors or a safety razor blade using steam or dry heat. Allow the scissors to cool for 90 seconds after glass bead sterilization before use in order to avoid burning the tail. If you use chlorhexidine, glutaraldehyde or Betadine solution as a chemical disinfectant, rinse tips in sterile water before use.

1. Restrain mouse.
2. Pinch tail of weaning or older mouse between thumb and forefinger or two other fingers; fingers act as a tourniquet.
3. Wipe distal portion of the tail with 70% alcohol or chlorhexidine scrub or surgical iodine. (Note: Do not use Wescodyne or other detergent disinfectants designed to sanitize floors, counter tops, etc)
4. Snip appropriate amount of tail using scissors, scalpel blade, or razor blade.
5. Apply firm pressure to the cut end for at least 30 seconds. Verify the absence of bleeding before returning the animal to the cage. If bleeding occurs, apply one drop tissue adhesive (Nexaband Liquid) to cut end of tail. See: Useful products for veterinary surgery.
6. Return the mouse to a clean cage.
7. Disinfect scissors or blades in a glass bead sterilizer or with an appropriate chemical disinfectant between animals. Discard razor or scalpel blades when dull or at the end of each biopsy session, whichever comes first.

MODIFIED Tail Tip Excision Procedure

Modified tail tip excision procedure is used when diameter of the cut end of the tail is between 2 and 3mm.

1. Use sterile surgical scissors or scalpel blade as for standard tail tip excision.
2. Anesthetize the mouse with isoflurane or injectable agents. Anesthesia information and training is available from the veterinary staff.
3. Restrain the mouse and disinfect the distal tail.
4. Incise the skin. Create a skin flap to protect the cut end of the tail. With the scissors parallel to the tail, undermine the first 2-3 mm of skin proximal to the desired biopsy site. Rotate the scissors perpendicular to the tail and cut tendons and bone. Fold skin flap over cut end of tail and apply Nexaband liquid to hold flap in place. Verify the absence of bleeding before returning the mouse to a clean cage.

<table>
<thead>
<tr>
<th>Age of mouse</th>
<th>Total amount of tail excised</th>
<th>Anesthesia</th>
<th>Surgical technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn to 10 days*</td>
<td>1st excision: _ tail length or less 2nd excision: 3-4mm (total excision less ½ tail)</td>
<td>None as long as total excisions are less than ½ tail</td>
<td>Standard</td>
</tr>
<tr>
<td>11-24 days (2-3 wks)</td>
<td>1st excision: 10mm or less 2nd excision: Total 1st and 2nd excision is 10mm or less 2nd Excision: Total 1st and 2nd excision is 14-20mm</td>
<td>None required</td>
<td>Standard</td>
</tr>
<tr>
<td>25-34 days</td>
<td>1st excision: 6mm or less 1st excision: 7-10mm 2nd excision: Total 1st &amp; 2nd 6mm or less 2nd excision: Total 1st &amp; 2nd 10mm or less</td>
<td>Topical ethyl chloride or inhalation of 1% isoflurane</td>
<td>Standard</td>
</tr>
<tr>
<td>5 weeks or older</td>
<td>1st excision: 1-2mm 1st excision: 3-6mm 1st excision: 7-10mm 2nd excision: Total 1st &amp; 2nd 6mm or less 2nd excision: Total 1st &amp; 2nd over 6mm</td>
<td>Topical ethyl chloride or inhalation of 1% isoflurane General anesthesia **</td>
<td>Standard or Modified</td>
</tr>
</tbody>
</table>

* Primiparous or female mice from wild-derived strains may abandon or cannibalize pups if young litters are handled. Also, if blood remains on cut end of tail, dam may cannibalize the pups.
** General anesthesia recommended for four week old mice with total excision approaching 20mm. Appropriate agents include isoflurane 1-2% in oxygen; tribromoethanol; ketamine/xylazine. Detailed dosage information on these techniques is available from the veterinary staff.