



GENERAL ITEMS

- ALZET Osmotic Pumps*
- Homeothermic pad
- Sterile drape
- Sterile gauze, cotton swabs
- Hair clippers (#40 blade)
- 70% ethanol
- Betadine solution
- Glass bead sterilizer
- Ocular lubricant

SURGICAL TOOLS

- Wound Clips (7mm for mice 9mm for rats)*
- Wound Clip Applier*
- Wound Clip Remover*
- Scalpel handle #3
- Scalpel blade #15
- Brown Adson forceps
- Hemostat (straight tip)

* Available from DURECT Corp.
(877-922-5938, alzetcs@durect.com)

Pump Preparation

(refer to the package insert for complete filling instructions)

- Fill the empty ALZET pump with your vehicle or drug solution using a syringe and filling tube according to the procedure listed in the package insert included in your box of pumps.
- Insert the flow moderator into the filled ALZET pump until the cap or flange is flush with the top of the pump.
- Prime the filled pumps in sterile saline at 37°C.
 - Refer to your package insert for the appropriate period of priming. Most pumps require at least an overnight priming period.

Anesthesia

Anesthesia is required for surgical implantation of ALZET pumps.

- Anesthetize the animal using either an inhalable (i.e., Isoflurane) or injectable (i.e., Xylazine® and Ketamine®, or sodium pentobarbital) anesthetic.

The use of inhalation anesthetics, such as Isoflurane, is highly recommended. It supplies supplemental oxygen during periods of respiratory depression and provides for rapid anesthetic recovery.

Surgical Preparation

- Apply ocular lubricant to the eye.
- Shave the area centered over the site chosen for pump placement.



- Using a sterile swab, disinfect the incision site with 70% ethanol by working outwardly in ever widening circles. With a new sterile swab, apply iodine over the proposed incision site in a similar fashion. Repeat the ethanol and iodine scrub one more time.

Surgical Procedure

The most common site for SC implantation in rats and mice is on the back, between and slightly posterior to the scapulae. Other regions may be used provided that the pump does not put pressure on the vital organs or impede respiration.

- Make a suitable incision adjacent to the site chosen for pump placement. If the back of the animal is chosen, make a mid-scapular incision.
- Insert a hemostat into the incision and, by opening and closing the jaws of the hemostat, spread the subcutaneous tissue caudally to create a pocket for the pump. The pocket should be large enough to allow some free movement of the pump (e.g., 1 cm longer than the pump).
- Avoid making the pocket too large as this will allow the pump to turn around or slip down on the flank of the animal. The pump should not rest immediately beneath the incision because it may interfere with the healing process.
- Insert a filled pump into the pocket, delivery portal first. This minimizes interaction between the compound delivered and the healing of the incision.

- Close the incision with wound clips (7mm for mice, 9mm for rats). Two clips will normally suffice.

Post Operative Analgesia

- An analgesic can be given post-operatively as needed. Analgesic treatment should be provided under the direction of the staff Veterinarian.

Clinical Monitoring and Management

- Animals should be monitored daily until the wound clips or sutures are removed then once to twice weekly until completion of the study.
- It is especially important to check the health of the animal the morning after surgery. Animals that reopen the incision site will typically do so after the first night.
- If any adverse effects are seen, the staff Veterinarian will need to be informed immediately for appropriate treatment. Potential adverse effects from this procedure are minimal, but may include the following:
 - Anesthetic-related respiratory depression: Adverse anesthetic effects can be minimized by proper dosing of anesthetic agents and careful monitoring of animals during the anesthetic period.
 - Infection of the subcutaneous pocket: ALZET Osmotic Pumps are provided sterile. Infection can be prevented or minimized if trained surgeons use aseptic surgical techniques and maintain the sterility of products being used. Administration of prophylactic antibiotics may be useful in minimizing the risk of infection, and this should be discussed with the staff Veterinarian.
 - Post-operative pain or discomfort as evidenced by: decreased activity, decreased food and water intake, weight loss, vocalizations, rough hair coat, hunched posture.
 - Wound clips must be removed 7-10 days post procedure.