

Catheterizations in Rats: Handling Instructions

Intrathecal Catheterization

Catheter Manipulation

All procedures should be performed using aseptic technique.

1. Materials

- a. Blunted 22- or 23-gauge needle
- b. Lumen lock solution - cerebrospinal fluid (CSF)

2. Sampling Procedure

- a. Have one person gently restrain the animal, while a second performs the procedure.
- b. Pull the plug, together with the catheter, cranially out of the skin pocket about 1.5 inches.
- c. To remove the plug, use a hemostat to clamp the tip of the plug. Pull the hemostat, together with the plug, with one hand, while the thumb and index finger of the other hand firmly holds the junction of the polyurethane tubing at the plug.
- d. A blunted 22- or 23-gauge needle attached to a syringe is used for infusion or withdrawals. Infusion of the drug is made without withdrawal of the saline.
- e. Infusion of the drug is made without withdrawal of the CSF.
- f. The catheter is locked with CSF.
- g. Using a cushioned instrument, clamp the tip of the catheter before replacing the plug to prevent blood pressure from pushing the lock solution out.
- h. Wipe the catheter with alcohol or other disinfectant and replace the plug by reversing the steps above.
- i. Place the catheter back into the pocket using forceps. Make sure to leave the junction of the tubing and plug outside of the wound clip.

Catheter Maintenance

1. Animals should be housed individually.
2. The exterior portion of the catheter should always be kept in the skin pocket when not being used.

Miscellaneous

1. The catheter is constructed using 2 cm PE 10 tubing attached to a 7 cm piece of polyurethane tubing (0.025 ID x 0.040 OD).
2. The total dead volume of the catheter is about 20 μ L.
3. The exterior end of the catheter is plugged, and the excess length (about 1.5 inches) is tucked into a combination of a subcutaneous and skin pocket. The plug is then secured with a wound clip.

Bile Duct Catheterization

Catheter Manipulation

All procedures should be performed using aseptic technique.

1. Materials

- a. 0.29" diameter metal plug or substitute
- b. Blunted 21-gauge needle stock

2. Sampling or Dosing Procedures

- a. Have one person gently restrain the animal, while a second performs the procedure.
- b. Disconnect the catheter loop and leave the needle bore on the left end. Bile flow from the left side may be noticed at this time.
- c. Plug the right side of the catheter.
- d. Extend the left side of the catheter as needed using a piece of tubing attached to one end of the needle stock.
- e. After collecting bile, the two ends of the catheter should be reconnected using the needle stock.

Catheter Maintenance

1. Animals should be housed individually.
2. Flushing the duodenal end (right side) of the catheter with saline is recommended to maintain longer patency.

Miscellaneous

1. Polyurethane tubing (0.025 ID x 0.040 OD) is used with a total finished length of about 28 cm.
2. A 3-4 cm catheter loop is located in the scapular region.
3. The loop is cut in the middle, and the two ends are connected with blunted 21-gauge stock.
4. The direction of the bile flow is from the animal's left to right.



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