

Surgery Model #: JVC-M

Jugular Vein Catheterization (JVC) Care and Use Document for the Mouse

Anesthetic: Sodium Pentobarbital (IP): Mouse Dose 75 mg/kg

Analgesic: Buprenorphine (SQ): Mouse Dose 0.05 mg/kg

Basic Surgical Procedure Description:

An anesthetized and surgically prepared animal is placed in dorsal recumbency under a dissecting microscope. A 2cm ventral cervical skin incision is made right of midline with its caudal terminus at the level of the clavicle. Five millimeters of vessel cranial to the site where the jugular vein passes under the clavicle is mobilized. A catheter is inserted into the vessel via a small incision in the vein. A ligature is then tied loosely around the catheter and patency is verified. Once blood flow has been established the catheter is anchored in place and flushed with 10 µl of saline followed by 10 µl of lock solution via a Hamilton syringe (1.25 to 1.5 turns). The syringe is replaced with a catheter pin. A 0.5cm midline skin incision is made between the scapulae. The JVC port is tunneled back through the scapular incision. A stainless steel wound clip secures the catheter port and closes the scapular incision, while wound glue is used to close the ventral skin incision.

Catheter:

Catheter material consists of a sterilized polyethylene tubing with a silicone rubber intra-vascular tip. The access port consists of a 20mm length of PE50 tubing (0.023" ID) that is sealed with a sterile stainless steel pin. Fill volume of the catheter is 5µl. Access the port via a 23G blunted needle.

Lock Solution:

Heparinized Dextrose (500 IU/ml): 10.0 mL stock heparin (1000 IU/mL) + 10.0 mL Dextrose.

Quality Control:

Patency is verified by the ability to withdraw a blood sample within 24 hours of shipment and is guaranteed upon animal receipt. To maintain animals over longer periods of time, catheters need to be flushed twice per week (once every 3-4 days). Follow the sampling procedure outlined below, minus sample withdrawal to flush catheters. For best results, use the animals within one week of delivery.

Sampling / Test Article Administration:

JVC are reliable for administration of test articles and some blood sampling, provided the mice are 25 grams or larger. To access the port, collect the following materials: syringe assemblies (1cc syringe attached to a 23G blunted needle), a microsyringe, sterile saline and sterile fill solution.

- 1.) Place mouse in a restrainer or sedate the mouse with a gas or injectable anesthetic
Important: Always clamp the port with rubberized or smooth hemostats to prevent unintended blood flow and port damage when changing syringes and flushing the catheter
- 2.) Clamp port and remove the pin from the catheter
- 3.) Insert an empty syringe assembly (SA) and release hemostats
- 4.) **Gently** withdrawal fill solution to the point of seeing blood in the needle hub; clamp port
- 5.) Attach a second SA and administer test article or withdrawal sample; clamp port
- 6.) Release hemostats and **slowly** flush catheter with sterile saline ~100µl; clamp port
- 7.) Attach microsyringe and refill with 10µl lock solution – avoid overfilling the lock solution!; clamp port and replace pin
- 8.) If blood fails to flow in step 3, remove the empty SA and replace with a SA containing saline. Gently flush the catheter with 10µl of saline and repeat as outlined above.

Housing:

Individually house animals to prevent cage mates from chewing on one another's catheters.

Notes: 1. Using needles larger than 23G will stretch the port and make future sampling difficult. Additionally, employing needles with bevels or rough edges will damage the port – decreasing the longevity of the catheter.