

Surgical Note

Notes for Surgical Implantation for Intracranial Pressure in Mice

The basic surgical technique is derived from the procedure used for measuring ECG in small animals, alongside a technique used for measuring intracranial pressure in nonhuman primates.

Surgical Description for Mouse:

- Place animal in stereotaxic frame
- Incise skin on head and place device in a subcutaneous pocket on the flank
- Remove periosteum from skull and dry the surface of the skull
- Drill hole in skull at desired placement
 - Position the hole in an area where the catheter is less likely to kink
 - The hole may be drilled at a slight angle to help prevent the risk of catheter kinking
- Etch the skull with a scalpel blade around hole
- Tie a loose throw in a length of non-absorbable suture around the catheter
- Place catheter in hole so the tip rests between the skull and dura
 - Position the loose throw so it lies flat against the skull, and complete a square knot
 - Add 1-2 finger-trap throws down the catheter away from the skull and finish with two square knots
- Apply dental acrylic around hole and catheter, ensuring suture is covered as well to prevent catheter from migrating
- Suture head using 5-0 suture on a taper needle with interrupted horizontal mattress (or other tension-relieving) suture pattern
- Calculate the head pressure using the Knowledge Base article

Related articles: <https://support.datasci.com/hc/en-us/articles/360007479154-DSI-Implant-Head-Pressure-Calculation>

Using the technique above in non-human primates, pressures were demonstrated to be stable over the course of one year. Physical or chemical alterations were required to induce changes in ICP.