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SPARC C2 Spinal Cord Hemisection Protocol in Rats

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Protocol status: Working

We use this protocol and it's working

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Abstract

This protocol describes the procedure for performing a left lateral C2 spinal cord hemisection in rats

- 1 Rats are anesthetized in a closed chamber (3.5% isoflurane in 100% O₂) and transferred to a heated surgical station where anesthesia is maintained via nose cone at 2-2.5% in 100% O₂ for the duration of the surgical procedure. Prep injection site for injection using aseptic methods approved by Institutional approval body (IACUC)
- 2 A 1 inch dorsal incision is made from the base of the skull to ~ the 6th cervical segment and the dorsal cervical muscles are dissected in layers to expose the C2 lamina.
- 3 A C2 laminectomy is performed to expose the dorsal C2 spinal cord.
- 4 The C2 and C3 dorsal roots are visualized and a durotomy performed just caudal to the C2 nerve roots.
- 5 A complete lateral hemisection is performed on the left side of the spinal cord, extending from the spinal midline to the lateral edge of the spinal cord using a microscalpel.
- 6 Using gentle aspiration, the left C2 hemisegment is removed (~1mm) between the C2 and C3 nerve roots, enabling visualization and consistency of lesion completeness.
- 7 Closure of Surgical Site:
 - 7.1 The dura is sutured with 9-0 ethilon nylon suture.
 - 7.2 The overlying muscles are sutured with 4-0 Polysorb suture.
 - 7.3 The skin is closed with 9mm stainless steel surgical wound clips.
- 8 Post-surgical care:
 - 8.1 analgesic administration (buprenorphine, 0.03 mg/kg, s.q. every 12 hours for 72 hours post-surgery).
 - 8.2 anti-inflammatory administration (meloxicam, 1 mg/kg., s.q. every 24 hours for 48 hours post-surgery).



- 8.3 administration of Lactated Ringers Solution (5 ml, 2x/day, s.q.) and Diet Gel Boost (1-2mL, 2x/day, p.o.) until adequate volitional drinking and eating resume.
- 8.4 manual bladder expression (2x/day) until voluntary bladder voiding resumes.