SPARC C2 Spinal Cord Hemisection Protocol in Rats

Elisa Gonzalez-Rothi[1], Marissa Ciesla[1], Latoya Allen[1], Gordon Mitchell[1]

[1]University of Florida

Jul 12, 2019

1 Works for me

dx.doi.org/10.17504/protocols.io.2kngcve

Elisa Gonzalez-Rothi

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.