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Vandy - Mouse Blood Pressure Telemetry V.2

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We use this protocol and it's working

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Abstract

Summary:

Imlantable radiotelemetry devices allow for long-term continous monitoring of blood pressure and heart rate in conscious freely moving caged animals. This protocol describes the surgical implantation of a radio transmitter device in the mouse.

Materials

MATERIALS

- Telemetry system **DSI**
- PA-C10 transmitter **DSI**
- Pentobarbital
- Buprenorphine
- Betadine
- 6-0 sutures

1 Mice are anesthetized with pentobarbital (50 mg/kg, IP).

2 The ventral neck and upper dorsum are shaved and disinfected with Betadine and then 70% alcohol.

3 The mouse is positioned supineon a heating pad and a 1.5 cm midline incision is made through the skin underlying the trachea.

4 The mouse is placed lateral decubitus and a 3″ 16G needle is advanced through the left ventral neck to the upper dorsum , creating a tunnel.

5 The catheter of asterilized PA-C10 transmitter (DSI) is advanced through the needle from the dorsal to the ventral side and the needle is carefully removed leaving the catheter in the ventral neck area and the transmitter body in the dorsal area.

6 The mouse is again positioned supine and the left carotid artery is located and isolated from surrounding tissue.

7 Three pieces of non-absorbable 6-0 sutures are passed under the carotid artery. The cranial suture furthest from the aorta is positioned just below the bifurcation of the interior and exterior carotid arteries and a secure knot is tied to permanently occlude the vessel.

8 The suture closest to the aorta is gently lifted to temporarily occlude blood flow and a small puncture is made in the carotid artery just distal to the middle suture.

9 The catheter is inserted through the puncture and advanced towards the aorta until it reaches the occlusion sutures.

10 The middle suture is loosely tied to prevent the catheter from slipping out and to stop bleeding from the puncture hole.

11 The tension in the occlusion sutures is released and the catheter is advanced further beyond the suture towards the aorta until the catheter tip is approximately 2 mm into the aortic arch.

12 Tie the occlusion suture and the middle suture to seal the vessel wall around the catheter and anchor it in place.

13 Close the skin incision with a 6-0 suture.

14 The mouse is repositioned prone and starting from the needle puncture, a small incision is made and small surgical scissors are inserted into the incision to form a subcutaneous dorsal pocket using blunt dissection.

15 The pocket is irrigated with warm saline and the body of the transmitter is inserted into the pocket.

16 The dorsal skin incision is closed with a 6-0 suture.

17 The mouse is maintained on the heating pad until fully recovered from anesthesia.

18 Buprenorphine is administered SC immediately following surgery and every 8-12 hr for 72 hr.

19 Upon recovery, the mouse is placed in its cage and the cage is placed on a receiver platform (DSI) to confirm the fidelity of the blood pressure signal.

20 Mice are allowed to recover for 10 days after the surgical procedure before collection of blood pressure and heart rate data.