Common Carotid Arterial Blood Flow Measurement (Acute)

Application

Site: **Common Carotid Artery**
Species: **RAT**
Vessel diameter: **.7 mm - 1.2mm**
Body Weight: **280 gm.**
Duration: **ACUTE**

Probe Recommendation

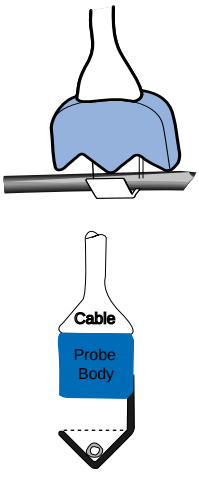
400-Series: **MA0.7VB or MA1PRB**
TX06-Series: **0.7VB or 1RB-JS-WC60-CH10 Acute**

Surgical Approach

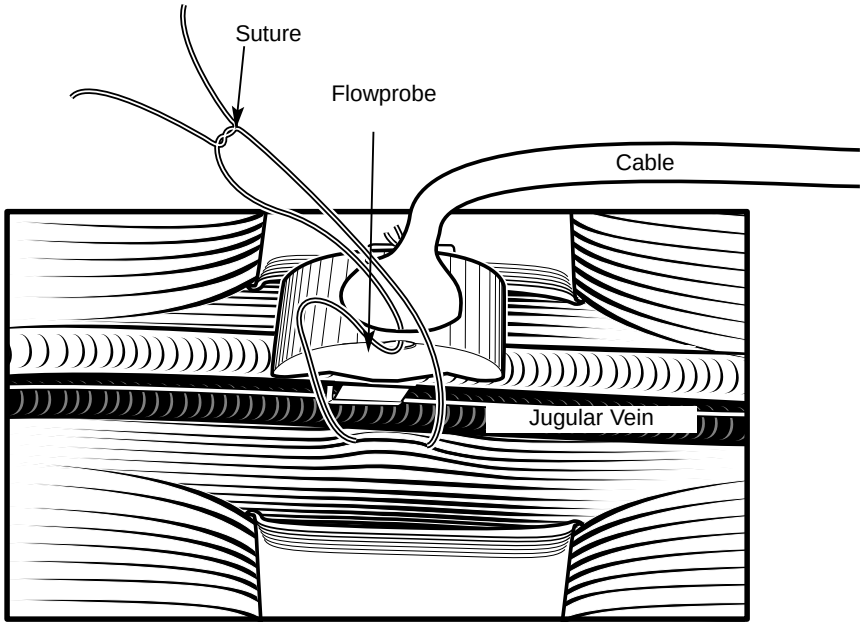
Anaesthetize the rat with ketamine/xylamine solution *(.09 ml solution / 100 gm body weight IM (thigh)*. Place the rat in dorsal recumbency. Palpate the trachea and make a midline incision from the caudal end of the larynx to the suprasternal notch. Using blunt dissection separate the sternothyroideus muscle from the sternomastoideus. Palpate for the pulsating carotid artery. Carefully incise the sheath to expose the carotid artery, the jugular vein and the vagus nerve.

Position the flowprobe around the artery so that the artery is placed within the lumen of the probe *(or within the deepest angle of the V reflector for a V-style probe)* and then tape down the probe cable to help stabilize the probe. If the procedure is long, the probe may also be held in place with a micromanipulator, or a suture may be slipped around the cable.

Remove the plunger of a 30 cc syringe and load the syringe with SurgiLube or sterile HR lubricating jelly, taking care to prevent the formation of air bubbles. Place a flexible catheter on the tip of the syringe; the catheter may be inserted into the probe's acoustic window adjacent to the vessel and the jelly deposited as the syringe is withdrawn. To verify that signal amplitude is near 1 Volt, press the test mode button on the meter. A low signal or an acoustic error can usually be traced to an insufficient amount of lubricating jelly or an air bubble.



Highest sensitivity lies within the deepest angle of the V.



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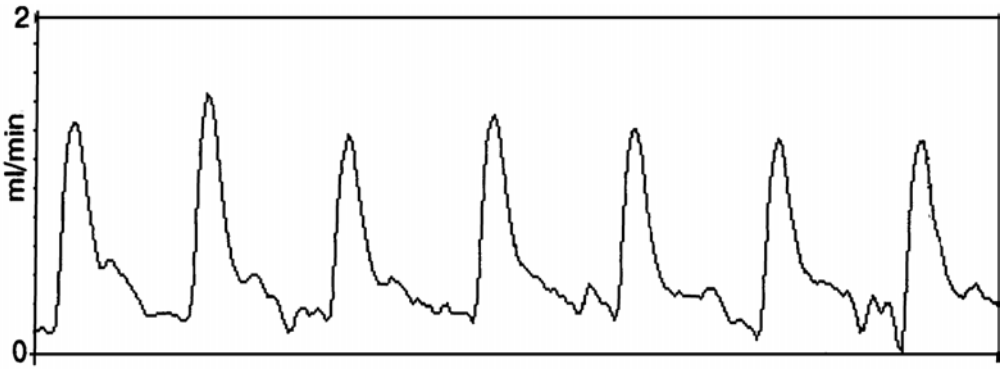
Flow Ranges Observed



Instantaneous flow in the common carotid artery ranged from 0 to 2 ml/min. in a 200 gm rat deeply anesthetized with pentobarbital.

Applications

The common carotid artery is an easily accessible vessel for measurements for relative cardiac output and cerebral blood flow. One advantage of the common carotid artery over the abdominal descending aorta is that the surgical approach for the common carotid a. does not require opening a major body cavity resulting in better thermoregulation and less physiological shock.

Acknowledgement

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Reference

[1] Honda, H., Watanabe, Y., Irino, O., Shimura, H., and Shibuya, T., “Effects of Ifenprodil Tartrate on Vertebral, Basilar and Internal Carotid Arteries”, International Journal of Clinical Pharmacology, Therapy and Toxicology, Vol. 26, No. 1, pp. 4-7, 1988.

[2] Greene, E.C, Anatomy of the Rat, Hafner Publishing Co., New York, 1963.

[3] Miyashiro, JK, Poppa, V., Berk, BC, “Flow-Induced Vascular Remodeling in the Rat Carotid Artery Diminishes with Age,” Circulation Research 1997; 81(3): 311-319.

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