T400-Series Surgical Protocol

Rat Abdominal Aorta: Acute Blood Flow Measurement

APPLICATION BASICS

Site:	Abdominal aorta
Species:	Rat
Body Weight:	270 grams
Duration:	Acute
Vessel Diameter:	1.2 mm

PROBE

Size:	1.5 mm
Reflector:	JS
Connector:	CRA10: 10-pin
Cable Length:	60 cm
Catalog #:	MA-1.5PRB

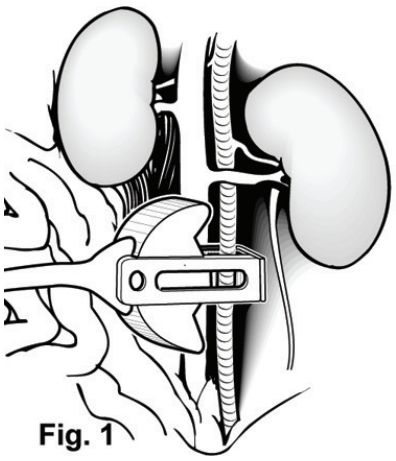
FLOWMETER TS420 Perivascular Module

Flow Ranges Observed

Anesthetized rat, instantaneous abdominal flow: 2 to 25 ml/min.

Application

The measurement of blood flow on the abdominal aorta is commonly used by researchers for protocols that require relative cardiac output, vascular resistance or absolute flow to the hind limbs. The surgical approach to the abdominal aorta is less difficult than the corresponding approach to the ascending aorta and does not require mechanical ventilation.



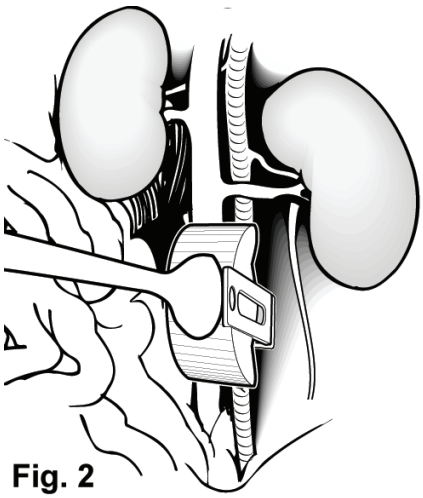
Surgical Approach

Anaesthetize the rat with ketamine/xylamine solution (0.09 ml solution / 100 gm body weight IM, thigh). The use of a heating pad or hot water bottle is recommended as hypothermia also reduces flow. In long procedures, fluid infusion (0.9% NaCl @ 1 ml/hr) through a femoral catheter is also recommended.

Place rat in dorsal recumbency and make a ventral midline abdominal skin incision. Extend the abdominal incision through the linea alba into the abdominal cavity. Deflect the intestines to the rat's right to expose the abdominal aorta and the left kidney. Carefully dissect free a 1 cm segment of the aorta just caudal to the kidneys. Remove adjacent fat for proper acoustical coupling. Place the 1.5 mm Probe around the artery and close the slide. Manually position the Probe so that the artery is centered within the window and then tape down the Probe cable to help stabilize the Probe. If there is sufficient connective tissue, the Probe may also be sutured in position.

Remove the plunger of a 30 cc syringe and load the syringe with SurgiLube gel, taking care to prevent the formation of air bubbles. Place a flexible catheter (or angiocatheter) on the tip of

(Continued on next side.)



Figs. 1,2: Application of Flowprobe on the Abdominal Aorta.

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Rat Abdominal Aorta: Acute Blood Flow Measurement Cont.

Surgical Approach cont.

the syringe; the catheter may be inserted into the Probe's acoustic window adjacent to the vessel and the gel deposited as the syringe is withdrawn. A low signal or an acoustic error can usually be traced to an insufficient amount of lubricating gel or an air bubble.

ACKNOWLEDGEMENT

Flow trace courtesy of Dr. Wayne Schwark, Department of Pharmacology, New York State College of Veterinary Medicine, Cornell University, Ithaca, NY.

REFERENCES

Validation

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Applications

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Myers SI et al, "Endotocis Shock After Long-Term Resuscitation of Hermorrhage Reperfusion Injury Decreased Splanchnic Blood Flow and Eicoanoid Release," Annals Surg 1996; 224(2): 213-218.

For additional references, visit www.transonic.com

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