

T400-Series Surgical Protocol

Rat Common Iliac Artery: Acute Blood Flow Measurement

APPLICATION BASICS

Site:	Common iliac artery
Species:	Rat
Body Weight:	300 grams
Duration:	Acute
Vessel Diameter:	0.7 - 0.9 mm

PROBE

Size:	1 mm
Reflector:	JS
Connector:	CRA10: 10-pin
Cable Length:	60 cm
Catalog #:	MA-1PRB

FLOWMETER	TS420 Perivascular Module
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Surgical Approach

Anesthetize the rat with ketamine/xylazine (0.09 ml per 100 gm body weight) in the thigh. The use of a heating pad or hot water bottle is also 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 abdominal incision through the linea alba into abdominal cavity.

Carefully locate the iliac artery which bifurcates at the terminal of the abdominal aorta. Use blunt dissection with forceps to isolate @ 0.7 mm of the artery from the vein. Place the Probe around the artery (Fig. 2). Manually position the artery so that it lies within the lumen of the ultrasonic window of the Probe. Then tape down the Probe cable to help stabilize the Probe. Probes with a handle may be stabilized with a micromanipulator.

Apply acoustical couplant by removing the plunger of a 30 cc syringe and load the syringe with sterile Surgilube gel, taking care to prevent the formation of air bubbles. Place a flexible catheter on the tip of the syringe. Insert the flexible catheter through the Probe's acoustic window adjacent to the artery and deposit the gel while withdrawing the syringe. The gel acts as an acoustical couplant and must replace all air space. Select test mode on the meter to verify that signal amplitude is about 1 Volt. A low signal or an acoustic error can usually be traced to an insufficient amount of lubricating gel or an air bubble.

Flow Ranges Observed

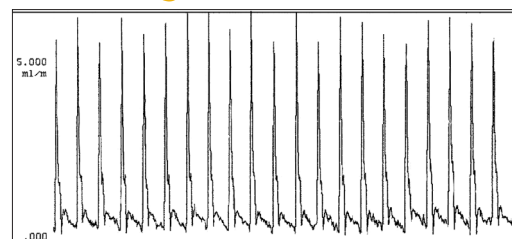


Fig. 1: Iliac flow in the rat varies greatly with the anesthetic used and the plane of anesthesia. In general, protocols with ketamine will show higher flows than those with pentobarbital. Hypothermia is also a common cause of lower than expected flow measurements.

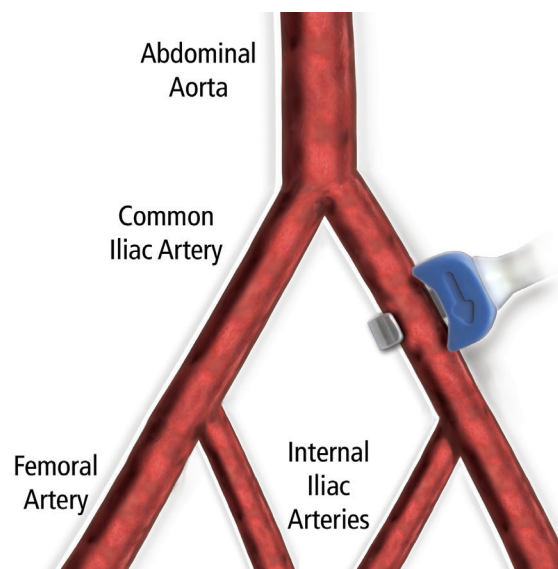


Fig. 2: Flowprobe on common iliac artery

Rat Common Iliac Artery: Acute Blood Flow Measurement Cont.

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REFERENCES

Video: IV. Fundamental Techniques for Hemodynamic Studies in the Rat: (22 min) VP-18: Acute Volume Blood Measurements in the: Superior Mesenteric Artery; Renal Artery; & Iliac Artery of the Rat. TL Smith, PhD, , Wake Forest University School of Medicine, Winston-Salem, NC.

Unthank JL, Nixon JC, Dalsing MC, "Acute Compensation to Abrupt Occlusion of Rat Femoral Artery Is Prevented by NO Synthase Inhibitors," AJP 1995; 68 (Heart Circ. Physiol. 37): H2523-H2530.

For additional references, visit www.transonic.com

For Anesthesia: check what is currently available and allowed with your Institutional Animal Care & Animal Use Committee and know what affects the drugs will have on the parameters you are interested in studying. See Anesthetic Guidelines RL-67-tn for more information.



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