



Common Iliac Arterial Blood Flow Measurement in the Rat, Acute



Application

Site: **Iliac artery**
Species: **Rat**
Vessel diameter: **0.5 - 0.7mm**

Body Weight: **300 gm**
Duration: **Acute**

Probe Recommendations

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

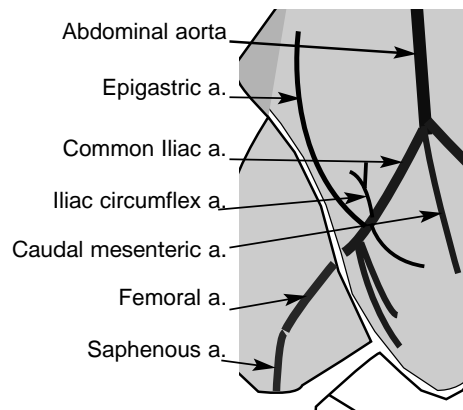
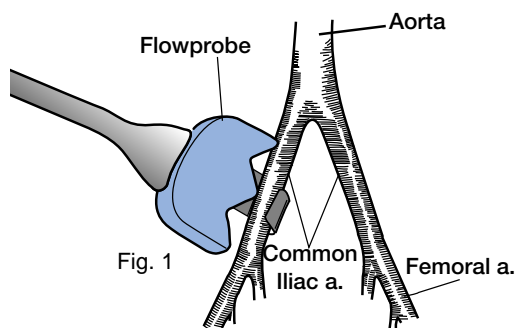
Surgical Approach

Anesthetize the rat with ketamine/xylazine (.09 ml solution 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 (.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.

Carefully locate the iliac artery with bifurcates at the terminal of the abdominal aorta (Fig. 1). Use blunt dissection with forceps to isolate @ .7 mm of the artery from the vein. Place the .7 mm probe around the artery. Manually position the artery so that it lies within the lumen of the ultrasonic window of the probe (for V-probes: nestled in the crook of the V reflector). 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 HR lubricating jelly, 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 jelly while withdrawing the syringe. The lubricating jelly acts as an acoustical couplant and must replace all air space. Press the test mode button 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 jelly or an air bubble.

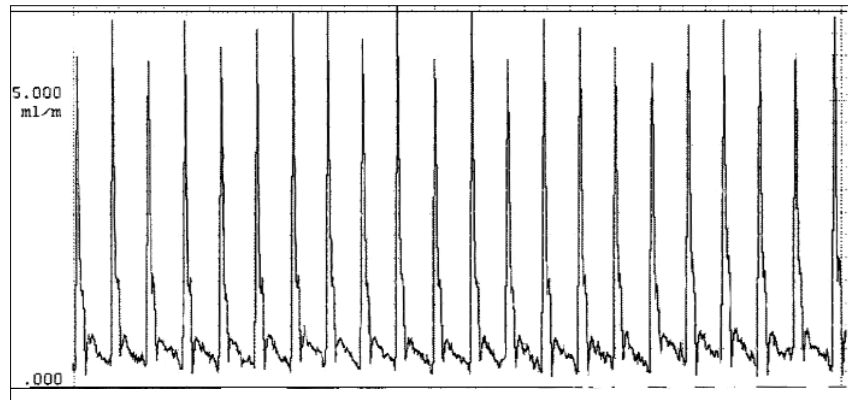




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Flow Ranges Observed



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.

Acknowledgements

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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.
T.L. Smith, PhD, , Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, NC.

Unthank, J.L., Nixon, J.C., Dalsing, M.C., "Acute Compensation to Abrupt Occlusion of Rat Femoral Artery Is Prevented by NO Synthase Inhibitors", *Am. J. Physiology* 268 (Heart Circ. Physiol. 37): H2523-H2530, 1995.