

T400-Series Surgical Protocol

Bovine External Pudic Artery: Chronic Blood Flow Measurement

APPLICATION BASICS

Site:	External Pudic Artery
Species:	Cow
Weight:	600 kg
Duration:	Chronic
Vessel Diameter:	11 -16 mm

PROBE

Size:	12 - 16 mm (side exit)
Reflector:	U with wide silicone shield
Connector:	10-pin
Cable Length:	1 meter
Catalog #:	MC-12PSS-USW-WC100-CRS10-GC

FLOWMETER	TS420 Perivascular Module
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Application

This protocol was used to validate the transit-time technique. It has also been used to study the effect of "stray voltage" on dairy cows. Other possible uses include studies on the hormonal control of lactation, as well as the pathogenesis of udder edema and mastitis.

Surgical Approach

Anesthesia is induced with 0.3% sodium thiamyl and 5% glycerol guaicolate solution given i.v. at 0.25 mg/kg BW. The cow is then intubated and maintained on halothane.

Make a 10 to 12 cm incision over the inguinal region between the medial thigh and the lateral surface of the mammary gland. Locate the inguinal canal. Carefully isolate the pudendal artery just ventral to the inguinal canal. Place the Flowprobe around the pudendal artery by unscrewing the reflector, fitting the reflector and Probe around the artery and then reattaching the reflector to the Probe body with the screws. Suture the Probe via the silicone shield, directly into the musculature of the external pudendal artery with #00 silk. Direct suturing is necessary because the vessel is loosely attached and normally follows a sigmoidal path. Correct suturing prevents twisting and constriction of the artery.

(Continued on next side.)

Flow Ranges Observed

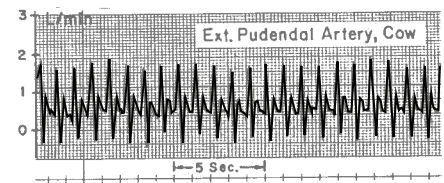


Fig. 1: Normal mean flow is 2.5 L/min. This increases to 3.7 L/min during milking

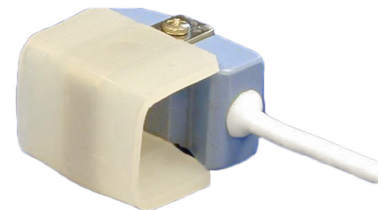


Fig. 2: Flowprobe with wide silicone shield

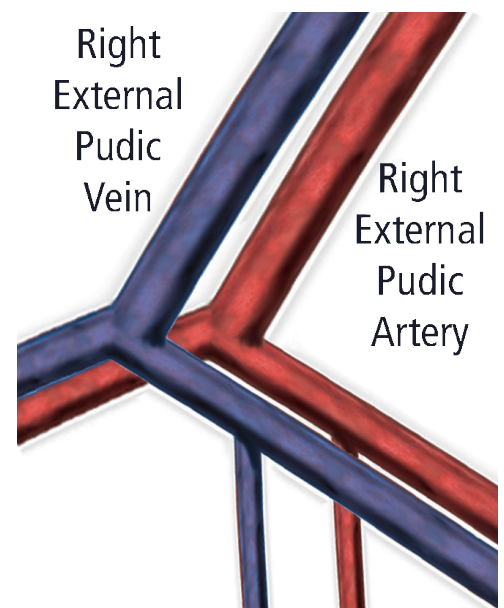


Fig. 3: Pudic vessel schematic

Cow External Pudic Artery: Acute Blood Flow Measurement Cont.

Surgical Approach cont.

Use a 2 cm blunt trochar to create a subcutaneous tunnel to the flank to exteriorize the Flowprobe cable (keep connector capped during implantation, exteriorization and when not connector to the Flowmeter for measurements). Place a mattress suture in the skin around the cable exit site to stabilize the cable and reduce the risk of infection. Use branding cement to affix a plastic bag around the exit site. The bag helps keep the site and the cable clean. Use of post operative penicillin every 12 hours for 3 days is recommended. The exit site should also be cleaned with alcohol every other day.

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REFERENCES

Gorewit RC, Aromando MC, Bristol DG, "Measuring Bovine Mammary Gland Blood Flow Using a Transit-Time Ultrasonics Flowprobe", J Dairy Science 1989; 72(7).

Gorewit RC, Bristol DG, Aromando MC, Thomas GG, "Mammary Blood Flow of Cows Measured by Ultrasonics and Electromagnetic Flow Meter," J Dairy Science 1984; 67 Sup: 159.

Gorewit RC, Scott NR, "Cardiovascular Responses of Cows Given Electrical Current During Milking", J Dairy Science 1986; 69(4): 1122-1127.

Note: Protocol has been updated to reflect advances in Probe technology.



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