

T400-Series Surgical Protocol

Cow Afferent Mammary Duct: Chronic Lymph Flow Measurement

APPLICATION BASICS

Site:	Afferent Mammary Duct
Species:	Cow
Weight:	450 kg
Duration:	Chronic
Vessel Diameter:	1.5 -2 mm

PROBE

Size:	2 mm (side exit)
Reflector:	L with sliding cover
Connector:	4-pin
Cable Length:	60 cm
Catalog #:	MC-2PSS-LS-WC60-CM4B-GC

FLOWMETER	TS420 Perivascular Module
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Application

This protocol was developed to study changes in flow dynamics and lymph composition during episodes of mastitis. Lymph flow appears to be a dramatic early indicator of infection in mammary gland.

Surgical Approach

Premedicate the cow with acepromazine (0.25 mg/kg IM). Place the cow in right lateral recumbency and induce anesthesia with thiopentone (IV). Maintain anesthesia with halothane and nitrous oxide. Rotate the cow slightly towards dorsal recumbency. Abduct the left hindlimb to expose the left lateral surface of the udder.

Make an incision in the lateral wall of the udder, just dorsal to the teat of the left hind quarter. Continue the incision through the lateral suspensory ligament. Inject blue patent dye into the parenchymal tissue adjacent to the incision. The dye is absorbed by the lymphatic system and will help identify the afferent lymphatic duct. Pretreat a 30 cm long polyethylene cannula (1.5 mm ID, 2.5 mm OD) with heparin, and place it in this vessel.

Place the Flowprobe around the lymphatic duct above the cannulation site. Pass the Probe cable and cannula through a subcutaneous tunnel to an exit site in the right rear corner. The exposed tube and cable were attached to the udder with surgical tape between measurements.

Flow Ranges Observed

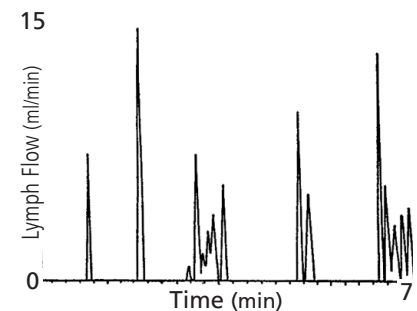


Fig. 1: A trace showing normal lymph flow in the afferent mammary gland lymphatic duct of a lactating cow.

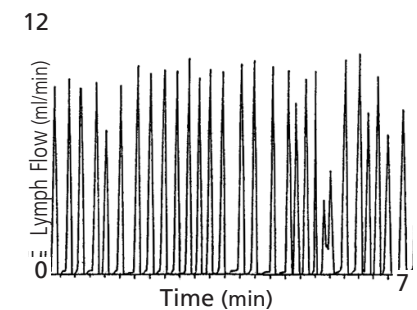


Fig. 2: A trace of abnormal lymph flow in the afferent mammary gland lymphatic duct during inflammation.

Cow Afferent Mammary Duct: Chronic Lymph Flow Measurement Cont.

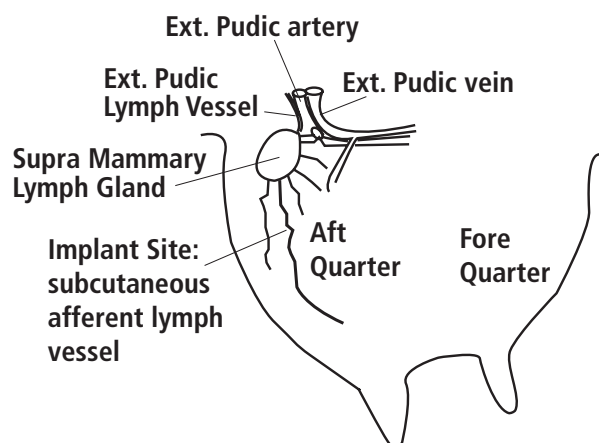


Fig. 3: Schematic of anatomical site.

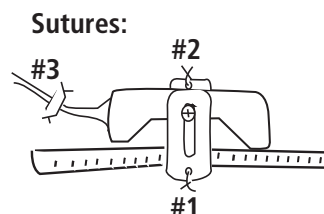


Fig. 4: Flowprobe suture sites.

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REFERENCES

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



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