

# T400-Series Surgical Protocol

## Sheep Splenic Artery: Chronic Blood Flow Measurement

### APPLICATION BASICS

Site: Splenic artery  
 Species: Sheep  
 Weight: 40 kg  
 Duration: Chronic

### PROBE

Size: 8 mm (side exit)  
 Reflector: L with sliding cover  
 Connector: 10-pin  
 Cable Length: 60 cm  
 Catalog #: MC-8PSS-LS-WC60-CRA10-GC

### FLOWMETER

TS420 Perivascular Module

### Application

This protocol was developed for the early validations of transit-time technology against radioactive microspheres. Several vessels in the cranial abdomen were studied, including splenic, right ruminal and cranial mesenteric. Similar protocols may also be used to study the ruminal uptake of nutrients. In this technique, the total flux of any metabolite can be estimated from the product of concentration and blood flow.

### Surgical Approach

Withhold feed for 24 hour prior to surgery. Premedicate with 0.4 g glycopyrrolate IM, induce with 1 g ketamine IM and maintain anesthesia on 1.5% - 2% halothane.

Place anesthetized sheep in right lateral recumbency and make a 15 cm skin incision through the skin and subcutaneous tissues 2 cm caudal to the last rib. Continue the incision through the external abdominal oblique, the internal abdominal oblique, the transverse abdominal muscle and the peritoneum to expose the caudal sac of the rumen. Manually depress the rumen and make a small incision in the bed of the eleventh rib for passing the screwdriver and needle holder.

Manually explore the cranial abdomen from the flank incision. Palpate the cranial sac of the rumen, identify the spleen and locate the splenic artery. Trace the splenic artery over the top of the rumen to locate the other branches of the celiac artery. The right ruminal artery is the first branch encountered. Manually strip the fat from the desired artery and place the Probe around the artery. Close the slide and rotate the Probe so that the screw is directed towards the rib incision. Depress the rumen, pass the screwdriver through the rib incision and tighten the screw. If possible, suture the Probe or the cable to adjacent perivascular connective tissue in the same manner. Pass the cable through the rib incision, and create a subcutaneous tunnel to the exit site in the paralumbar fossa. Close the peritoneum and transverse abdominal muscles with a

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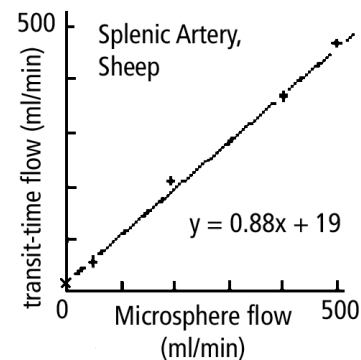


Fig. 1: Blood flow by transit time ultrasound vs microspheres in the splenic artery, supplying the spleen, abomasum, duodenum, omasum, rumen and reticulum. Anesthetized, +; post-mortem zero, x.

## Sheep Splenic Artery: Chronic Blood Flow Measurement Cont.

### Surgical Approach cont.

simple continuous pattern of #1 absorbable suture. Close the internal and external abdominal oblique muscle individually in the same manner. Close the skin with simple interrupted sutures. Also, close the stab incision and the cable exit site with simple interrupted sutures.

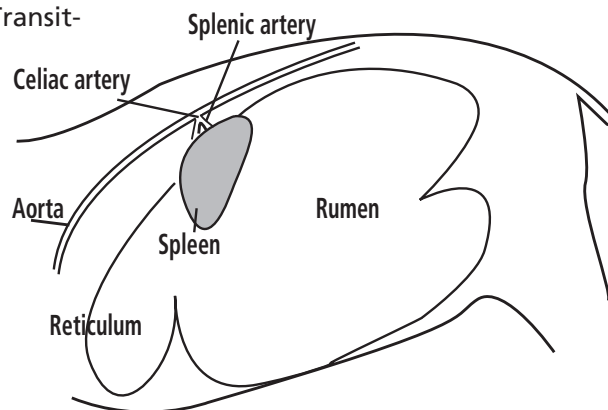
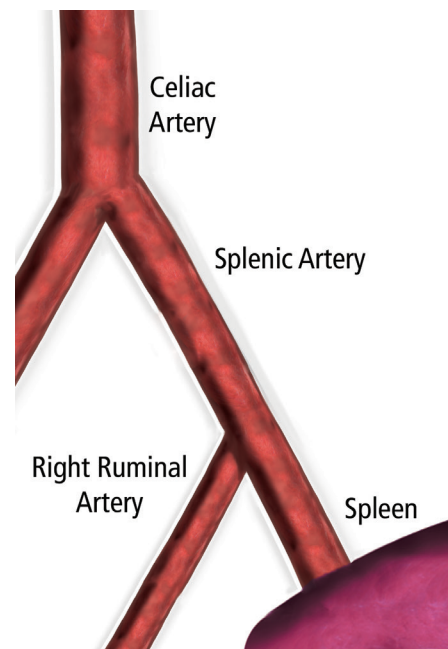
### ACKNOWLEDGEMENT

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### REFERENCES

Barnes RJ, Comline RS, Dobson A, Drost CJ, "Further Analysis of the Timecourse of the Changes in Blood Flow in Response to Feeding in the Ruminoticulum of the Sheep," International Union of Physiologists Society Satellite Conference on "Comparative Aspects of the Physiology of Digestion in Ruminants," Physiology Department Veterinary College, Univerity of Sydney, Australia.

Barnes RJ, Comline RS, Dobson A, Drost CJ, "An Implantable Transit-Time Ultrasonic Blood Flow Meter," J Physiol 1983; 35: 2-3P.



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