Standard Operating Procedure for

Rumen Fistulation in Dairy Cattle

1. Pre-operative Care

- Cows should be examined to be sure there is sufficient space for the cannula between the last rib and the tuber coxae.
- Feed and water are not withheld prior to surgery.
- First-stage surgical procedures are conducted in the REDACTED INFO

2. Surgical Preparation

- The left paralumbar fossa is prepared for aseptic surgery by clipping with a #40 blade, followed by two to three scrubs with Betadine surgical scrub prior to the administration of regional anesthesia.
- Regional anesthesia is obtained by administering 2% lidocaine in a paravertebral block to T13, L1, L2 and L3.
- The skin in the surgical area is then scrubbed with Betadine surgical scrub and swabbed with Betadine solution and 70% alcohol.

3. Surgery

- The diameter of the plastisol cannula is roughly measured using suture material attached to a cutting edge needle. The site for the fistulation is chosen so that the flange of the cannula does not impinge on the transverse processes of the lumbar vertebrae, the tuber coxae and/or the last rib. The skin incision is mapped with the suture needle to the correct circular diameter.
- The circular section of skin is removed. A circular incision is made in the external abdominal oblique muscle, slightly smaller diameter than the skin incision and this section removed. All blood vessels are ligated for hemostasis. Hemostasis in this area must be strictly maintained. The internal abdominal oblique and transversus abdominal muscles are separated in the direction of their fibers by blunt dissection. The peritoneum is incised. The rumen is elevated into the incision. The caudal dorsal sac of the rumen is identified and a site chosen for fistulation based on vascular pattern of the rumen. The rumen wall is sutured to the skin using four horizontal mattress retention sutures and simple interrupted sutures using non-absorbable, non-capillary suture material.

4. Post-operative Care

Cattle will receive 1 dose of Flunixin meglumine immediately following surgery. The animal is monitored daily for appetite, body temperature and condition of the incision.
5. Placement of the Cannula

- At day 4-6 post-operative, when the adhesion of the skin and rumen wall is judged to be firm, the wound is cleaned and the retention sutures removed. A circular section of the rumen wall is removed and a 3" plastisol cannula placed in the fistula.

- The incision is examined and cleaned as needed until healing is complete. As soon as healing permits, a 4" plastisol cannula is placed in the fistula.

6. Long Term Maintenance

Upon completion of the healing process, care of the animals and cannulas become the responsibility of the principal investigator in accordance with IACUC Guideline XII.

Appendix 1 is used to monitor the status of fistulated cattle.

**Appendix 1**

| Animal I.D.: | __________ |
| Date: | __________ |

**Fistulated Animal Assessment Sheet**

| Leakage of Fistula: | None | Mild | Moderate | Severe |
| Condition of Cannula: | New | Unchanged from previous exam |
| Dirty | Clean | Cracked | Hard | Needs to be replaced |

**Status of Animal:**

- **Appetite:** Normal  Abnormal (describe) ___________________________
- **Behavior:** Normal  Abnormal (describe) ___________________________
- **Body Condition:** Normal  Abnormal (score) _________________________
- **Production:** Normal  Abnormal (describe) _________________________
- **Current Medical Conditions:** Mastitis  Lame (which foot) __________________
  Ketosis  Respiratory Problem  Abomasum (describe) __________________
  Reproductive Problem (describe) ________  Other (describe) ___________

None Observed
Brief Description of what was done during this assessment:

__________________________________________________________

__________________________________________________________

Name and work telephone number of person performing this assessment:

__________________________________________________________

__________________________________________________________

**Diagram of Rumen Fistula**

(Looking at the left side of the cow)

dorsal

cranial  caudal

ventral

Draw location and size of any observable lesions. If possible, make comparison to any previously observed lesions. If lesions are present, are they smaller, the same, or larger than previously observed? Make sure to make clear as to whether the lesion is on the rumen mucosa, the rumen/skin junction, or the skin.