1. PURPOSE

This Standard Operating Procedure (SOP) outlines the pre- and post-operative procedures and long-term care for dairy cows that have undergone rumen fistulation surgery.

2. RESPONSIBILITY

2.1 Farm students and staff
2.2 Dairy Manager and Technician
2.3 Herd Veterinarian

3. MATERIALS

3.1 Antibiotic (Depocillin®)
3.2 Anti-inflammatory drugs (e.g. Metacam®, Anafen®)
3.3 Disinfectant (e.g. Endure®)
3.4 Insecticide (e.g. Vetolice®)
3.5 Paper towels
3.6 Antibiotic card
3.7 Red leg bands
3.8 Latex/ Nitrile gloves
3.9 4” cannula
3.10 Treated cow logbook
3.11 Dairy logbook

4. GENERAL

4.1 A fistulated cow is a cow with a passageway (Cannula) connecting the cow’s rumen (stomach) to the outside. By creating this opening into the cow’s stomach, one can learn, for example, how a cow’s stomach works, about the microflora in the cow’s stomach, and how fast certain foods are digested.

4.2 Immature cows are not ideal candidates because the cannula site expands in size as the cow continues to grow, causing leakage and drainage around the fistula.

4.3 The veterinarian will select the best candidates for surgery in consultation with the Dairy Manager. Cows selected must be needed for teaching/research, mature, healthy and have excellent feet, legs, and mammary system. The goal is to keep them in the herd as long as possible.

5. PROCEDURE

5.1 PRE-OPERATIVE CARE

5.1.1 Food and water restriction:
5.1.1.1 Place a card on front of cow’s name card (facing feed aisle) with feeding instructions.
5.1.1.2 24 hours pre-op: Remove hay.
5.1.1.3 12 hours pre-op: Remove all feed.
5.1.1.4 6 hours pre-op: Remove water.

5.1.2 Day of surgery: Move cow into a clean box stall, where the surgery will be performed.
5.1.3 Dust surgical area prior to surgery

5.2 SURGERY:

5.2.1 Administer antibiotic (e.g. Depocillin) just prior to the surgery. Get approval from the Herd Veterinarian for dosage.

5.2.2 Surgical preparation, induction of sedative and anesthesia and surgical procedure is performed by the herd veterinarian in accordance to Macdonald Campus Animal Use Protocol #5309.

5.3 POST-OPERATIVE CARE

Post-operative procedures apply immediately post-surgery and continue when the animal has returned to a tie stall.

5.3.1 Monitor the cow a minimum of 4-6 times per day from Day 0 to day 3 post-op.
5.3.2 Place red leg bands on cow’s hind legs, and antibiotic card over cow’s name card.
5.3.3 Update the “Milker Action Sheet” by adding cow’s name and number under treated cows.
5.3.4 Log all medications given pre- and post-surgery in the Dairy logbook.
5.3.5 Log medications with milk withdrawals in the green “Treated Cows” log in the pharmacy.
5.3.6 Administer antibiotic (e.g. Depocillin), intramuscularly twice daily for 7 days or per veterinarian’s instructions.
5.3.7 Administer anti-inflammatory treatment (e.g. Metacam) once daily for 3 days or per Veterinarian’s instructions.
5.3.8 Add treatment instructions to the blue treatment binder the dairy office.

5.3.9 Wound Care:

5.3.9.1 Wear clean latex/ nitrile gloves.
5.3.9.2 Wipe-clean the surgical wound site daily, for at least 7 days, with a clean paper towel soaked with Endure and warm water.
5.3.9.3 Pat dry with clean paper towel.
5.3.9.4 Observe the wound for signs of infection (e.g. purulent discharge, necrosis, redness, swelling, foul odor). Report any abnormalities to the Lead Technician or Dairy Manager and the veterinarian will be consulted.

* NOTE: Some swelling (1-2 inches) around the cannula edge and superficial purulent discharge and necrosis is expected. The degree of necrosis can be gauged by lifting the edge of the cannula and observing the surgical site.

5.3.10 Spray cow on the back with VetoPrime if presence of flies. Avoid the surgical wound.
5.3.11 Return the cow to a tie stall after 24 hours.

5.3.12 Re-introduce feed and hay, gradually over 3 days. Place a card on front of cow’s name card (facing feed aisle) with feeding instructions.

- Day 1 = ¼ ration + 2nd cut hay
- Day 2 = ½ ration + 2nd cut hay
- Day 3 = ¾ ration + 2nd cut hay
- Day 4 = Full ration + 2nd cut hay

5.3.13 Refer to SOP DC-612: Milking Antibiotic Treated Cow for milking instructions.

5.3.14 Observe the animal daily for signs of abnormal behavior (e.g. depression, restlessness, and inappetence). Refer to SOP DC-310: Cow Health Monitoring.

5.3.14.1 Take rectal temperature.

5.3.14.2 Record observations and temperature in dairy log book.

5.3.14.3 Notify dairy manager or lead technician of any abnormalities.

5.4 CHANGING CANNULA (3 weeks post-surgery):

5.4.1 Under light sedation, the Herd Veterinarian replaces the 3” cannula with a 4” cannula because the 3” cannula will loosen around the surgical site:

5.4.1.1 Remove the cannula.

5.4.1.2 Remove the necrotic ring that forms around the surgical site.

5.4.1.3 Wash the site with Endure.

5.4.1.4 Insert the new, 4” cannula.

5.4.1.5 Administer a treatment of anti-inflammatory (e.g. Anafen).

5.4.2 Cow can remain in tie stall unless veterinarian recommends transferring her into a box stall.

5.4.3 Continue to feed normally.

5.4.4 Wash and monitor surgical wound as per section 5.3.8.

5.5 Once the cow has fully recovered, she can be assigned to an approved research protocol.

5.6 LONG-TERM CARE:

5.6.1 House the animal indoors if the flies are problematic.

5.6.2 Additional care is not required if the cannula is in good condition and not leaking.
5.6.3 If the plastic/ rubber of the cannula becomes cracked, dry or leaks:

5.6.3.1 Contact the Herd Veterinarian to replace the cannula.

5.6.3.2 Keep the fistula clean by wiping off the rumen fluid and washing with Endure until the cannula can be replaced.

5.6.3.3 Heavy leaking requires daily cleaning with Endure to prevent skin irritation.

1. REFERENCES


Document Status and Revision History

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