

ADVANCED REPRODUCTION SYMPOSIUM

Dog Owners and Breeders Symposium

University of Florida

College of Veterinary Medicine

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PYOMETRITIS

Pyometritis has long evoked fear in the hearts and minds of purebred dog breeders. This disease should be approached with not only the patient's well being in mind, but also with equal attention to the client's desires for future breeding of the affected females.

Signalment

Pyometritis normally occurs when the bitch's uterus is under the influence of progesterone. Though often seen in older bitches, the clinician should always consider the possibility of uterine infections in the diestrus bitch showing septic signs.

Even though estradiol cypriopropionate is no longer considered a treatment for bitches that have been mismated, this treatment is still used in some practices. Questions involving the bitch's breeding history and treatment should always be included when examining an intact bitch.

Diagnosis

The typical bitch presented with pyometritis will show a variety of signs, including:

- Fever
- Elevated White Blood Cells
- Polyuric/polydipsia
- Elevated kidney & liver serum values
- Vomiting & dehydration
- Vaginal discharge – if open cervix

The presence or absence of vaginal discharge is not the key factor in the diagnosis of pyometritis. Bitches may be presented with a tentative diagnosis based on discharge at the vulvar opening that is not uterine in origin or related to pyometritis. Many bitches, very ill with pyometritis, will have a "closed cervix" pyometritis and show minimal vaginal discharge.

The key factors in diagnosing pyometritis consist of recognizing the signs of a bacterial toxemia and demonstrating an enlarged or fluid filled uterus on radiograph or ultrasound.

The primary diagnostic rule-outs for this condition include pregnancy, other bacterial infections, urinary tract problems (including the kidneys) and vaginitis. The standard testing for diagnosing pyometritis in a bitch should include CBC, SMAC, urinalysis, vaginoscopy and radiography or ultrasound.

Once the diagnosis of pyometritis is made, the mode of treatment should be evaluated as to the owner's future breeding desires and the condition of the bitch. The most common organism isolated from the uterus in pyometritis is *E. coli*. Appropriate antibiotic therapy should be started immediately. A culture and sensitivity should be performed to assure the efficacy of the chosen antibiotic. Once thought of as primarily a surgical disease, pyometritis is now also readily treated medically.

Surgical Treatment of Pyometritis

If the owner has no future breeding desires and the bitch is a good surgical candidate, ovarian-hysterectomy is successful in curing the disease.

The bitch is started on an I.V. infusion of the veterinarian's choice. Anesthesia is achieved using an appropriate anesthetic determined by the surgeon. Intubation is essential due to avoid reflux and aspiration of acid gastric secretions.

The bitch is placed in a dorsal recumbency and an incision is made through the skin, subcutis and muscle from the pubis to four centimeters (4 cm) cranial to the umbilicus. The uterus is identified and gently packed off with moistened laparotomy pads. Care is taken to not tear or puncture the uterine wall.

The ovaries are located and the ovarian vessels are ligated using the appropriate suture or vessel-clips. When the ligation of the ovaries is completed, the uterine body is isolated. Each uterine vessel is tied individually. The uterine body is ligated in a manner comfortable to the surgeon. The remaining uterine stump is flushed and treated with a topical antiseptic.

If there is concern about abdominal contamination or evidence of peritonitis, the abdomen should be routinely flushed with a warm saline. Abdominal drains should be inserted if deemed necessary; closure is routine.

The I.V. fluids are maintained until the patient is ambulatory and able to take oral nutrition. The antibiotics are continued for seven to ten days.

Medical Treatment

Patients with future breeding potential, patients too ill for surgery or where surgery is best delayed (i.e., older dogs), can be successfully treated medically with prostaglandin $F_{2\infty}$ (Lutalyse, -Upjohn).

The patient is started on an antibiotic of the veterinarian's choice; I.V. fluids are administered to maintain blood volume.

The bitch is started on prostaglandin F_{2∞} (Lutalyse, Upjohn) injected subcutaneously, three times a day at a dose of .1 mg per pound of body weight or 1 ml Lutalyse per fifty (50) pounds of body weight. This dose is given until the clinician sees no vaginal discharge (bloody or pus) within one hour post-injection or until no fluid filling is seen in the uterus through ultrasound examination.

Prostaglandins are associated with the following side effects:

Salivation	Trembling
Vomiting	Panting
Diarrhea	General Weakness

The side effects are short term, usually less than thirty (30) minutes. Walking the bitch after giving the injection tends to reduce the side effects of the medication.

Follow-up Therapy

If the bitch has been treated surgically, routine suture removal should take place at the surgeon's normal post-surgical interval. Care should be taken to assure that no vaginal discharge is present, as occasionally pyometritis can persist in the uterine stump.

If the bitch was treated with prostaglandin F_{2∞}, a follow-up injection of Lutalyse should be given seven (7) days after the last daily treatment to confirm that the uterus is empty and that refilling has not occurred.

If the bitch was treated medically, she should either be subjected to ovariohysterectomy before her next heat cycle, bred on the next estrous cycle or be started on Mibolerone (Cheque Drops, Upjohn) to delay the next estrous until such time as breeding is desirable.

CESAREAN SECTION

Because prolonged labor, hypoxia and dystocia are primary causes of neonatal death, cesarean sections are a commonly encountered surgical procedure in the veterinary clinic. Performed properly, the surgery can be rewarding to both the client and the veterinarian.

Reasons for Cesarean Section

- Pelvic problems
- Uterine inertia
- In-utero fetal death
- Colored vaginal discharge, pre-partum

Timing of Cesarean Section

Sixty-three (63) days post-ovulation
Temperature less than 99.5 degrees
Progesterone less than 5 ngm
Active Labor

Anesthesia

Since all anesthetics cross the placenta, it is a challenge for the veterinarian to choose an appropriate drug for maternal control and comfort, but not so depressive as to cause puppy lethargy or even death. For an anesthetic to be considered, it must be:

- A) An even, rapid induction
- B) Safe for the bitch
- C) Safe for the puppies
- D) Rapid, smooth recovery
- E) No lingering side effects

Anesthetic drugs available include:

Tranquilizers
Local/Epidurals
Disassociatives
Opiates
Inhalants
Propofol
Barbiturates

Surgery

Once the bitch is in an appropriate surgical anesthetic plane, she is placed in dorsal recumbency. Care should be taken not to tip the table as is often done in abdominal surgery, as this forces the gravid uterus against the diaphragm, inhibiting respiration. An incision from the pubis to the umbilicus should initially be made. The incision may need to be extended if the uterus is overly distended with puppies. Care should be taken to not expose too large a surface area of the uterus to the air, as this can cause hyperthermia, especially in small bitches.

Incisions in the uterus are made to allow quick removal of the puppies. The surgeon should be very sure that all puppies have been removed from the uterus. Any placental tissue still left in the uterus should be removed before closing.

An inverting pattern of the surgeon's choice, with an absorbable suture material, is used to close the incision sites. If the uterus is slow to contract, an injection of oxytocin should be given intramuscularly. The muscle and skin closure is routine.

The bitch is removed from the table and once the abdomen is cleaned, the puppies are allowed to nurse. If proper fluid perfusion and blood pressure have been maintained, the milk flow should not be compromised by the surgical procedure.

INSEMINATION PROCEDURE – FRESH COLD SEMEN
DR. R.V. HUTCHISON
NOREEN KYLE, RVT

PROCESS SEMEN IN VIALS SHOULD BE PLACED IN THE REFRIGERATOR UPON ARRIVAL...DO NOT FREEZE.

1. Examine one drop of the shipped semen on a warmed slide. Leave the rest of the semen refrigerated. Evaluate the semen drop looking for sperm motility gradually changing from a slow, sideward movement to rapid forward motility.
2. Place rod on syringe and draw up the contents of vial, without warming the semen. We let the bitch's body warm the semen.
3. When ready to proceed with the insemination, stand bitch comfortably with assistant or owner holding head and supporting the hindquarters with arm, or on a ramp. Insert rod in the vagina and slowly depress syringe. Use only ½ cc of air to empty rod. AVOID USE OF TOO MUCH AIR!
4. Withdraw rod and immediately insert index finger into vagina, simulating tie, raise rear of dog using a ramp if necessary for six minutes.
5. If possible, crate bitch for ½ hour after insemination and do not allow urination for one hour after insemination. Do not let the bitch jump up for several hours.
6. If you have any questions or problems, please give us a call at (440) 327-8282.

INTERNATIONAL CANINE SEMEN BANK-OHIO
34910 CENTER RIDGE ROAD
NORTH RIDGEVILLE, OH 44039
(440) 327-8282 OR 327-7599

INSTRUCTION FOR SUCCESSFUL SHIPPING OF FRESH CANINE SEMEN

In preparation for shipping fresh canine semen, have on hand a refrigerated shipper (obtained from ICSB:OHIO). Place both of the cold packs in your freezer (at approximately minus 20°F – a refrigerator freezer will do) overnight. Leave the shipping media (in the screw cap tube) at room temperature.

When you plan the semen collection and shipping, make sure the media is room temperature (no lower than 65°F). Make the collection and estimate the percentage of moving sperm cells. If you have a microscope slide warmer, place on drop of well-mixed semen on the slide warmer, (calibrated to 98-99°F) for one minute with a cover slip placed on the drop. Quickly transfer the slide to the microscope and observe if the sperm cells are showing a rapid forward movement.

Centrifuge the semen on the blood setting for five minutes. Draw off the prostatic fluid until there is approximately one half to 1 ml left. Very slowly add the extender into the tube. Place the cap on the tube and be sure it is screwed on tightly. Very slowly invert the tube twice so the semen and media are mixed well.

To prepare the shipping container, place the small styrofoam box with the tube of semen, make sure the tube is upright in the middle of the box. Place an ice pack on each side of the semen box. Pack with packing material (newspaper is fine).

Place the lid on the shipping container, tape securely, and fill in the mailing label. Ship Federal Express overnight service or counter to counter air. Be sure to check schedules before you plan the collection, so you can minimize the time the semen has to sit.

If you have any questions, please give our office a call at (440) 327-8282, ask for Kim Benko, Noreen Kyle or Dr. Robert V. Hutchison.

FROZEN SEMEN THAW AND ARTIFICIAL INSEMINATION INSTRUCTIONS

Below is described the procedure we use for artificial insemination of frozen canine semen. There are two critical steps in the procedure: first, in opening the vial of frozen semen, and second in thawing the frozen semen. The vials of semen are packaged in airtight containers and occasionally liquid nitrogen is contained in the vial. If the vial is removed from the liquid nitrogen with liquid nitrogen in it, it can explode, resulting in loss of the frozen semen. Since the semen is stored in a plastic vial, there is little danger of shattering, however, wear glasses and gloves in case you are splattered with liquid nitrogen. The second hazard is in thawing the frozen semen. If a rapid transfer and thaw is not made, a lower sperm recovery will result, which will lower the chance of conception. If you have any questions or difficulty in following the instructions, please contact Dr. Robert V. Hutchison at (440) 327-8282.

1. You will receive a dry shipping tank and the frozen semen. You will need to use sterile saline as a thaw media. When it arrives, first remove the lid to make sure there is vapor coming from under the cap, since there is no nitrogen in this tank you will not be able to check the level.
2. When you are ready to inseminate, have on hand a water bath at 37°C (99-100°F). If possible, have a slide warmer at this temperature also, to allow you to evaluate the sperm cell motility and progressive movement prior to the artificial insemination (AI).
3. Remove one of enclosed whirl-pak bags and remove the top piece. The wire neck can then be bent into a circle giving good access to the bag. Place 2-3 ml of sterile saline without preservatives into the whirl-pak bag.
4. You will need to lift the vial to the top of the canister. To open the vial, you will need a forceps (nine inch sponge forceps work well), and a pair of scissors. Grasp the vial with the sponge forceps about one inch below the crimp while still in the neck of the tank. With the scissors, cut off the crimp on the end of the vial.
5. Very carefully, lift the vial halfway out of the tank and grasp the crimped end with your fingers. Allow the crimp to open into a circular shape using your fingertips to warm the top of the vial until the opening is circular. This allows the pelleted semen to fall out of the vial without getting stuck inside. Quickly and briefly, touch the bottom of the vial against the palm of your hand. (Don't hold the vial too long against your skin as it can freeze the skin quickly). If you hear a sizzling, there is liquid nitrogen in the vial. With quick touches to the palm of your hand, listen until you do not hear the sizzling, which would indicate the liquid has evaporated. As soon as this occurs, rapidly invert the vial into the thaw bag so the pelleted semen drops into the media. Quickly reach into the water bath and massage the thaw bag until the media and semen are thawed and well mixed.
6. Don't leave the thawed semen in the water bath for longer than five minutes. If the AI is going to take longer than five minutes, remove the thaw bag and place it at room temperature (22-23°C, or 72-78°F).

7. The semen should be evaluated prior to AI to ascertain the quality. This should be performed with a body temperature microscope slide. Gently mix the semen and remove about 0.01 ml of semen and place it on a warmed slide and place a coverslip on the slide. Observe the semen at 100X and estimate the percent motility, progressive motility (based on a 0 to 5 scale, five being rapid forward progression, and percent bent sperm (evaluating only motile sperm cells this is seen as sperm cells swimming in a circle, swimming backward or forward with heads bent to one side).
8. Tip the thaw bag so that the semen flows into one corner of the bag then slowly draw the semen into the syringe (at least 10ml syringe), being careful not to draw air up through the semen. Leave the semen in the barrel of the AI rod and go back into the bag, sweep the liquid using the rod into the corner of the bag and draw this into the rod, followed by about one inch of air at the tip of the rod.
9. We have found that an intrauterine deposit of semen that has been frozen greatly enhances the conception rate. This simple procedure can be done with the bitch under a light general anesthesia with a midline incision located between the pubis and umbilicus. The body of the uterus is isolated and the semen previously thawed according the listed instructions is injected into the uterus via a 22 Ga. needle. If a surgical insemination is anticipated, the semen should be thawed in no more than 2 ml of physiological saline. If a vaginal insemination is anticipated, 5-6 ml of physiological saline is recommended. The best time of insemination of frozen semen is three days after the bitch has ovulated. The ovulation date can be determined by monitoring the bitch's progesterone level and anticipating the ovulation date as corresponding to the date that the bitch's blood progesterone is 5 ng. If two inseminations are anticipated, days two and four after the ovulation date have shown to be the best. Two surgical inseminations can be done through the same incision with no detrimental effects to the uterus.

We would appreciate your quick return of the tank as soon as you are finished. We have enclosed a Federal Express form, which is already filled out for you. The number of Federal Express is 1-800-238-5355. Call for a Standard Air, weekday delivery (there is no need to ship it to us or have us receive it on a Saturday or Sunday). If you have any questions or problems, do not hesitate to call us at (440) 327-8282.