

Updates on Canine Reproduction

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I. Disease Management

a. Brucellosis

- i. Dx: Rapid Card Agglutination Test (RCAT) or tube agglutination test (TAT) → good screening tests
Negative = true neg OR early exposure (<8 wks)
Positive → add 2-mercaptoethanol (2-ME)
Still positive → AGID at Cornell for confirmation
- ii. Tx: neuter + antibiotics, often unrewarding
- iii. Control: quarantine kennel, ID positive animals, cull
- iv. Zoonotic

b. Herpesvirus

- i. Dx: Serology unreliable if negative because rises and falls within 4-8 wks following exposure
- ii. Tx: Unrewarding
- iii. Control: Expose young bitches to older animals prior to breeding. Isolation is critical 3 wks pre- and 3 wks post-whelping

II. Semen Options

a. Fresh

- i. Longevity: 5-7 (up to 11) days
- ii. Evaluation: Motility = 70%
Morphology = 80%
Concentration = TSE should be 300 mill – 2 billion
- iii. Extension: 1:2 - 1:4

b. Cooled, shipped

- i. Longevity: Overnight shipment is best; 50% motile up to 4 days later if good quality and properly handled
- ii. Extension: 1:2 – 1:4, 20% egg yolk extender
- iii. Ovulation timing of bitch is recommended

c. Frozen

- i. Longevity: ~12 hours
- ii. Breeding dose depends on concentration at time of freezing; usually 1-2 straws

- iii. Ovulation timing must be precise
- iv. Must place into uterus; vaginal AI ineffective

III. Breeding Management of the Bitch

a. Review of Cycle

i. Proestrus

- 1. Avg 9 days (0-27)
- 2. Serosanguinous discharge, swollen vulva, attracting males
- 3. Cytology: parabasal → superficial → cornified
- 4. Elevated estradiol

ii. Estrus

- 1. Avg 9 days (4-24)
- 2. Discharge lessens and lightens in color
- 3. Cytology: >90% cornified cells
- 4. Estradiol drops, P4 rises rapidly, LH surge occurs

iii. Diestrus

- 1. Avg 60 days
- 2. Discharge lessens and disappears
- 3. Cytology: >50% parabasal and intermediate cells, rapid change; usually WBCs early
- 4. Estradiol low; P4 peaks at 3-4 wks, then declines

iv. Anestrus

- 1. Avg 4 months
- 2. Estradiol and P4 low
- 3. Cytology: >90% parabasal and intermediate cells

b. Vaginal cytology

- i. Helpful as an aid, but not reliable alone
- ii. Most helpful in determining beginning of diestrus for timing of parturition. The first day of cytologic diestrus occurs 8-9 days after the LH surge. (20-50% change from cornified superficial cells to parabasal cells)

c. LH testing

- i. ELISA (Status-LH, Synbiotics); simple to run
- ii. If using alone, must be run every day, exactly 24 hrs apart; costly if used alone

- iii. Best use is in combination with ELISA progesterone testing (Synbiotics); when P4 begins to rise, run LH samples daily to confirm day of LH surge

d. Progesterone testing

- i. ELISA (Synbiotics); gives subjective measurement range
- ii. RIA (Antech Diagnostics, human labs); gives precise measurement (ex: 1.2 ng/ml)
 - 1. 2 ng/ml = Day of LH surge
 - 2. 4-10 ng/ml = Day of ovulation (~2 days post-LH surge)
 - 3. >10 = Post-ovulation, need earlier samples for comparison

IV. Insemination Choices

a. Vaginal

- i. Acceptable method for fresh or cooled, shipped semen that is of excellent to good quality.
- ii. Angle is important; correct syringe/pipette; non-spermicidal lube; cleanliness; elevate hindquarters

b. Surgical

- i. For frozen semen or poor quality fresh or cooled semen
- ii. Similar approach to OHE, but smaller incision
- iii. Exteriorize uterine horn, examine each horn; assistant thaws semen (carefully!)
- iv. 20 or 22 ga, 1.5" IV catheter is ideal; Air-Tite syringe
- v. Change gloves after handling semen
- vi. No closure of uterus; routine closure of abdomen
- vii. Vaginal swab → DiffQuick → spermatozoa present

c. TCI

- i. Transcervical Insemination using rigid endoscope
- ii. Preferred method for frozen semen or poor quality fresh or cooled semen
- iii. Cystoscope ideal; 29-30 cm working length
- iv. Catheter w/stylette (Minitube); Air-Tite syringe
- v. Absolute sterility
- vi. Crenulation (shrinkage) noted in vaginal mucosa during estrus compared to the edematous folds seen in proestrus

V. Gestational Landmarks

a. Diagnosis of pregnancy

i. Ultrasonography

1. 25-30 days (20?) post-LH surge
2. Difficult to determine # of fetuses

ii. Radiographs

1. 45 days (43-46) post-LH surge

iii. Relaxin

1. 20-30 days of gestation
2. Witness Canine Pregnancy Test (Synbiotics)
 - a. Day 22 or later
 - b. Distinguish pseudopregnancy

b. Gestational length

- i. 63 days (+/- 1 day) from ovulation
- ii. Counsel owners