Common Problems
- Anovulatory follicles
- Persistent anovulatory follicles
- Hemorrhagic/Luteinized follicles
- Persistent corpus luteum
- Premature luteolysis
- Parovarian cysts

Less Common Problems
- Ovarian tumors
- Ovarian hematoma
- Failure of follicular development
- Acyclic mares
- Chromosomal abnormalities
- PPID
- Post-partum anestrus
- Etc.

Failure of follicular development

- Advanced age (Ovarian senescence)
- Postpartum anestrus
- Exogenous hormone therapy
- GnRH vaccine administration
- Pituitary pars intermedia dysfunction
- Chromosomal abnormality
- Idiopathic

Low dose deslorelin (or histrelin)
- 50 µg deslorelin, BID for 3 to 7 days
- When follicle ≥ 35 mm, coast for 24 hours
- Administer hCG to induce ovulation

4 to 8 % ovulation failure rate during the physiologic breeding season

Subtypes
- Persistent Anovulatory Follicles (15 %)
  - Progesterone < 1.0 ng/ml
- Hemorrhagic/Luteinized Anovulatory Follicles (85 %)
  - Progesterone > 1.0 ng/ml

Initial growth patterns in follicles destined to become anovulatory are usually normal

Preceded by development of normal endometrial folds in most (78.3 %) cases
ANOVULATORY FOLLICLE FORMATION

**Luteal Type:**
- Initial recognition when multiple echogenic particles noted in follicular lumen on ultrasonography

**Hemorrhagic/Luteinized Anovulatory Follicles**

Potential cause(s):
- Insufficient gonadotropin stimulation
- Gonadotropin receptor issue within follicle
- Altered local prostaglandin production/effect
- Adrenal steroid alteration of gonadotropin production*

Treatment:
- Spontaneous regression
- Prostaglandins - very effective if follicle has luteinized; wait 9 to 10 days after initial observation of echogenic particles/strands
- hCG or GnRH are not effective in luteinizing 'follicular-type' structure

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ANOVULATORY FOLLICLES

**Potency cause(s):**
- Excessive hemorrhage into follicle after ovulation
- Opposite ovary active; mare continues to cycle
- Regress in size over time
Corpus luteum that fails to regress in a nonpregnant mare 14 to 15 days after ovulation

Mare fails to return to estrus

Duration: up to 2 to 3 months

Causes:

- Inadequate prostaglandin release (idiopathic)
- Ovulation late in diestrus
- Embryonic loss after maternal recognition of pregnancy (i.e. loss after day 14-16)
- Chronic uterine infections (pyometra)
- Incidence rate
  - Reported to be more common in Thoroughbreds
  - Less common in Quarter Horses (< 5 %)

Be aware of large follicles in diestrus

Be aware of small functional CLs

Diagnosis:

- Teasing history
- CL detected on ultrasound
- Palpation: uterine/cervical tone
- Elevated progesterone (> 1 ng/ml)
- Response to prostaglandins

Treatment:

Prostaglandin administration

Endogenous prostaglandin release (secondary to endometritis)

Results in premature luteolysis

Endometritis should be suspected in any mare that returns to heat within 10 days after going out of heat

Due to endogenous prostaglandin release

Endometritis should be suspected
FAILURE OF MATERNAL RECOGNITION OF PREGNANCY

<table>
<thead>
<tr>
<th>Day 12</th>
<th>Day 14</th>
<th>Day 16</th>
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<td><img src="image2" alt="Day 14 Image" /></td>
<td><img src="image3" alt="Day 16 Image" /></td>
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- P4 7.8 ng/ml
- P4 2.5 ng/ml
- P4 0.7 ng/ml

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ENLARGED OVARIES

- Tumor (unilateral enlarged ovary)
  - Granulosa-theca cell tumor*
    - May be associated with stallion-like behavior
  - Other ovarian tumor
- Hemorrhagic follicle/Ovarian hematoma
- Pregnancy* (secondary corpora lutea)
  - Bilaterally enlarged ovaries

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GRANULOSA CELL TUMOR

- Most common ovarian tumor
- Origin: ovarian stroma
- Generally benign and slow growing
- Metastasis rare
- Hormonally active

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GRANULOSA THECA CELL TUMOR

- Origin: ovarian stroma
- Generally benign and slow growing
- Metastasis rare
- Hormonally active

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ULTRASONOGRAPHY:

- Unilaterally enlarged ovary
- Contralateral ovary small and inactive
- Multicystic or ‘honeycomb’ appearance*
Granulosa Cell Tumor (GCT or GTCT)
- Unilateral enlarged ovary; small inactive contralateral ovary
- Hormonally active; ± behavioral changes

Hormone Profile:
- Anti-Müllerian Hormone: 90 to 95%
- Inhibin: 85 to 90%
- Testosterone: 50 to 60%
- Progesterone: < 1%

Pathophysiology:
- Production of inhibin and other hormones by the GCT suppresses pituitary FSH secretion
- Low FSH levels limit follicular development on the contralateral ovary
- Eventually becomes small and inactive

Treatment:
- Surgical removal
- Ovulation from the contralateral ovary usually occurs 6 to 8 months after surgical removal of the tumor, depending on season
- No success (to date) with stimulating development of follicles in remaining ovary with GnRH or equine FSH

Other Ovarian Tumors
- Cystadenoma: Surface epithelium tumor
- Teratoma: Germ cell tumor

Epithelial Inclusion Cysts
- Cluster of cysts near ovulation fossa
- Origin is the surface epithelium
- Common in older mares
### Parovarian ('Fimbrial') Cysts
- Arise from remnants of embryonic Wolffian ducts
- Can be confused with ovarian follicle

### Chromosomal Abnormality
- Primary infertility (i.e., never had a foal)
- Gonadal hypoplasia (small inactive ovaries)

### Ovarian Abnormalities
**Summary:**
- Some ovarian issues are physiologic and transient
  - Persistent corpus luteum
  - Anovulatory follicles
- Some are permanent or pathologic
  - Chromosomal Abnormalities
  - Ovarian tumors
- Appropriate diagnostic tests are required to differentiate between conditions