**Fertility in Mares**

**The non-pregnant Mare**

Ultrasound Examination of the Reproductive Cycle

- **Transitional Phase**
  - Multiple large follicles on both ovaries, edema in uterus can vary due to differences in follicular activity and estrogen concentration.

- **Anestrus**
  - Ovaries small and inactive, uterus very soft, flattened without edema.

- **Diestrus**
  - A corpus haemorrhagicum and later corpus luteum can be visualized. Functionality of the CL can be determined by Doppler ultrasound. The uterus is small, firm, round and homogenous.

- **Estrus**
  - Dominant follicles at midstage of estrus. Depending on the stage of estrus and the individual pattern of the mare, various grades of edema can be visualized in the uterus.

**Varying stages of edema of the uterus**

- Flattened, no edema
- Moderate edema
- Obvious edema
- Extreme edema

**The pregnant Mare**

Ultrasound Examination Time Line

- **Day 11**
  - Yolk sac is first visible by ultrasound. Functional CL(s) on one or both ovaries are visible by ultrasonography. Scanning for cysts before pregnancy is important, to avoid confusion.
- **Until day 16**
  - Mobility phase: embryo migrates through the entire uterus.
- **Day 14-16**
  - First US examination: ensure presence of one or two embryonic vesicles. Examine the ovaries for multiple luteal structures. Multiple conceptuses can still be separated and crushed. After crushing: examine the mare again 2-3 days later.
- **Day 25-35**
  - Second ultrasound examination: confirm diagnosis of pregnancy. Conceptus can be distinguished from an endometrial cyst by presence of an embryo proper. Heart beat becomes visible from day 23.
- **Day 35**
  - Formation of endometrium cups: fetal cells migrate to endometrium and produce Equine Chorionic Gonadotrophin.
- **Day 40-120**
  - Endometrium cups act autonomically and produce eCG. eCG has predominantly an LH function and supports the maintenance of the primary CL and the development of secondary CL.
- **Day 55-80**
  - Fetal sex can be determined by rectal ultrasound.

**Common Abnormalities on Ultrasound**

- **Endometritis and Endometrial Cysts**
  - Differences in the amount of uterine fluid, echogeniety and edema.

- **Endometrial Cysts**
  - Looks like a pregnancy. Can obstruct the uterine lumen leading to failure of maternal recognition of pregnancy, or can lead to early embryonic death.

- **Granulosa Cell Tumor**
  - Due to inhibit production of the affected ovary, the contralateral ovary will be very small. GCT can produce estrogens or testosterone leading to behavioural changes.