

There are numerous causes of equine abortion to consider; the more common causes covered in this PowerPage include placentitis, viral abortions, and non-infectious causes of abortion. The reader is referred to the first reference at the end of this PowerPage for a review of causes of abortion in multiple species.

Key Points

- **Placentitis is a common cause of abortion** in the horse and is commonly caused by bacteria including *Streptococcal* species and *E. coli*. Treatment includes the use of antimicrobials, anti-inflammatory drugs and medications to maintain uterine quiescence.
- The most commonly incriminated viral cause of abortion in horses is **equine herpesvirus type 1 (EHV-1)**, which typically causes abortion in the latter part of gestation. A relatively efficacious vaccination is available for EHV-1 and is typically administered at 5, 7, and 9 months of gestation.
- The most common cause of non-infectious abortion is **twin fetuses in the horse**; the mare's placenta does not lend itself to maintaining two fetuses, which are typically aborted during gestation; however, occasional twin fetuses will be born alive.



Aborted foal in the earlier stages of gestation.

Placentitis

- Placentitis is a major cause of abortion in mares during the latter stages of pregnancy.
 - a. The most common route in which bacteria are introduced to the uteroplacental unit is via ascending infections, which result in inflammation and placental detachment at the cervical star region.
 - b. Hematogenous infections are also possible. Bacteria such as *Streptococcus zooepidemicus*, *Escherichia coli*, *Pseudomonas aeruginosa*, and *Klebsiella* are some of the more frequent bacterial isolates from mares with placentitis, but fungal infections (*Aspergillus*) have also been reported.



Evidence of placentitis in the non-gravid uterine horn; note the discoloration of the placenta.

Placentitis (Cont.)

- c. Placental thickening occurs along with separation from the endometrium, possibly resulting in abortion from uteroplacental insufficiency. The infection also results in inflammation, which may promote uterine activity.

Treatment and Outcome

- Treatment options for mares with placentitis include:
 - a. Antimicrobial therapy.
 - b. Non-steroidal anti-inflammatory drugs (Flunixin meglumine) to suppress inflammation.
 - c. Altrenogest (progesterone) to promote uterine quiescence (unknown efficacy).
 - d. Clenbuterol (sympathomimetic) to suppress uterine motility (unknown efficacy).
 - e. Pentoxifylline to decrease inflammatory mediators and increase uterine blood flow (unknown efficacy).

The outcome of placentitis is variable, ranging from abortion to birth of a healthy foal to birth of a septic foal. Early detection and therapeutic intervention helps improve outcome.

Viral Abortions

- Viral infections in horses are another prevalent cause of abortion in the horse.
- The most common virus incriminated is **equine herpesvirus type 1 (EHV-1)**, but EHV-4 and equine viral arteritis (EVA) may also cause abortion.
- Currently, the use of vaccination programs against EHV-1, administered at 5, 7, and 9 months of pregnancy, has reduced the incidence of EHV-1 induced abortions.
- EHV-1 can also result in subclinical to clinically relevant respiratory infections.
- Abortion may occur soon after the mare is infected or may occur several weeks after maternal infection.
- When the fetus is infected during a viremic episode, abortion may be induced by rapid placental detachment.
- The fetus can become infected by the chorionic vasculature or by inhalation of infected amniotic fluid.

Diagnosis

- Examination of an aborted fetus infected with EHV-1 may reveal small necrotic foci on the liver, necrotizing bronchiolitis, and intranuclear inclusion bodies on histologic examination.
- Some fetuses may be born alive and have neonatal herpesvirus infection.
 - a. Many of these EHV-infected foals do not survive for more than a few hours or days and demonstrate signs of respiratory distress, icterus, fever, and lethargy.
- Virus neutralization tests, indirect immunofluorescence, PCR, and virus isolation are available for confirmation of EHV infection.

Treatment

- There is no direct treatment of EHV infection in the mare or infected neonatal foal, although antiviral medications such as acyclovir and valacyclovir may theoretically be of benefit.
- Most practices revolve around prevention by the use of stringent vaccination protocols against EHV.



A rare case in which both twin fetuses were born alive. Note that one foal is much smaller than the other.

Non-Infectious Causes of Abortion

Twin Fetuses

- Diffuse microcotyledonary placentation of the mare makes it very unlikely that a twin pregnancy will be carried to full-term because of the limited endometrial surface that is available for the allantochorion to attach.
- The two fetuses are forced to compete for adequate nutrition and placentation.
- If the twin pregnancy is maintained to the latter stages of pregnancy, fetal growth becomes more rapid and demanding on the mare until one, or both, of the fetuses become progressively emaciated and die; death of one, or both, of the fetuses is commonly followed by abortion.
- If twin fetuses are carried to full term, often one, or both, of the fetuses are stunted in growth and size from intrauterine growth retardation.
- Although it is possible for both twins to survive, it is not uncommon for one or both of the foals to have disorders of development.

Umbilical Torsion

- Umbilical torsion is a relatively uncommon cause of abortion in the mare.
- Fetus is able to rotate within the amniotic sac and can result in excessive twisting of the umbilical cord.
- This results in constriction of the normal flow through the umbilical cord along with edema, hemorrhage and thrombosis

References

- Givens MD, Marley MS. Infectious causes of embryonic and fetal mortality. *Theriogenology* 2008;70(30):270-85.
- Lunn DP, Davis-Poynter N, Flaminio MJ, et al. Equine herpesvirus-1 consensus statement. *J Vet Intern Med* 2009;23(3):450-61.
- Wolfsdorf KE. Management of postfixation twins in mares. *Vet Clin North Am Equine Pract* 2006;22(3):713.