



There are many factors to consider before breeding a mare back on her foal heat.

To Wait *or* Not to Wait?

Breeding a mare on her foal heat can be a vexing question.

By Tonya Ratliff-Garrison

IT'S A TOUGH DECISION – WHETHER OR NOT TO BREED YOUR mare back on her foal heat.

There are advantages to doing so, the principal of which is next year's foal will arrive earlier in the season.

However, there are disadvantages, including a higher incidence of embryonic death.

Before making a choice, it's important to understand the mare's reproductive condition between birth and her first heat as well as the alternatives available.

What's Going on Inside

UNLIKE MANY DOMESTICATED SPECIES, HORSES ARE UNUSUAL IN that they return to a fertile state within two weeks of birth. This first estrus, known as "foal heat," is usually five to eight days following birth but can be as many as 20 days later.

The condition of the uterus is paramount in deciding whether to cover a mare on foal heat, said William B. Ley, D.V.M., M.S., Dipl. A.C.T., an equine reproduction specialist and the veterinarian in charge of Regional Equine Associates



Sometimes it is better to wait until the second postpartum heat before breeding a mare back.

Central Hospital in northern Virginia. After delivering a foal that is 10 percent to 15 percent of her weight, a mare's uterus might be inflamed, contains fluid and needs to contract and repair itself before it is ready to accept another pregnancy.

If the mare is bred on foal heat, the embryo will arrive in the uterus 16 to 18 days post-foaling. It is a huge effort to have the uterus ready in this time frame.

Uterine shrinkage (uterine involution) is the first step in ensuring a suitable environment for the new embryo. Uterine involution helps expel residual placental fluid and debris (lochia) as the uterus prepares itself for the next pregnancy.

Any delay to uterine involution can thwart foal heat breeding plans, Ley said.

The Effects of Embryonic Death

In the early 1960s, a study on Quarter Horses showed 50 percent of the mares conceiving on their foal heat carried the foal to term. In Thoroughbreds, this figure dropped to as low as 20 percent.

"In my experience, the conception rate (at foal heat) is quite similar to the second heat after foaling, which is around 30 days," Ley said. "The conception rate is considered lower by many because there is a higher embryonic death rate."

An embryonic or early fetal death can have detrimental effects on next year's foal crop. The longer the mare carries before aborting, the greater the chance that she will not produce a foal the following year.

"What happens is that between 35 and 42 days of gestation, the endometrial cups of the placenta invade into the uterine wall of the mare, and these endometrial cups produce eCG (equine chorionic gonadotrophin)," Ley said. "This hormone prevents the mare from cycling back in as any other mare might if she lost her pregnancy earlier. The hormone eCG has a long lifespan, so it can prevent her from cycling for 30 to 90 days."

If uterine involution is delayed or decreased, the fluid is retained longer in the uterus, creating an unsuitable environment for the next pregnancy. A delay of the uterus returning to its normal size and health is usually a complication of dystocia (difficult delivery), abortion, placentitis (inflamed placenta) or the placenta retained longer than three to four hours after birth.

Ley uses rectal palpation and ultrasound to assess the uterus before proceeding with a foal heat breeding.

"If there is any mild to moderate amount of uterine fluid or the uterus is not an acceptable size, which is based on experience, size of mare and number of previous foals she has produced, then I do not attempt to breed on the foal heat," he said.

To help promote uterine shrinkage and clearance, Ley said, the foal should suckle often. This action stimulates the release of the hormone, oxytocin, which triggers not only milk letdown but also uterine contractions.

Ley also suggested providing the mare plenty of exercise after foaling.

"Mares that are exercised have dramatically better involution and better evacuation of fluids than mares confined to a small area or stall."

Another method is administering oxytocin or prostaglandin analogues to promote uterine contractions, which help eliminate fluids and debris and shrink the uterus.

Ley published a study in 1988 that evaluated this method to see whether it would enhance conception rates in mares bred during foal heat. Eighteen mares were injected with 1 milligram of prostalene twice daily, beginning the day of foaling and continuing for 10 days or until the mare was bred at foal heat. Twenty-two control mares were injected with sterile saline.

Of the treated mares, 77 percent were diagnosed pregnant after breeding versus 44 percent of the control mares.

"Any management technique that can improve or promote uterine contraction and clearance is a benefit," Ley said.

Flushing the uterus (uterine lavage) before a mare is bred at her foal heat can also improve the chances of a successful pregnancy, Ley said.

"It helps to get the uterus as clean as possible before breeding. You can either use warm saline or hypertonic saline, which will promote contractions even more."

Other Things to Consider

THERE ARE SEVERAL FACTORS TO KEEP IN MIND BEFORE ATTEMPTING to breed a mare on her foal heat.

On the first postpartum estrus, Ley prefers live cover or artificial insemination using fresh extended or cooled semen rather than artificial insemination using frozen semen.

"Conception in the mare is a numbers game, basically," he said.

"I think that conception rates will be less inseminating lower sperm numbers as with the use of frozen semen because it is a larger uterus for the semen to traverse to get to the uterine tube for fertilization. So a natural service tends to provide the mare with larger doses of viable sperm and a larger volume of semen. Then sperm have a better chance of reaching the site of fertilization."

Ley also does not attempt to breed on foal heat if it is to be an embryo transfer.

"Personally, I would prefer not to do that because the uterus is so large, and it is much more difficult to flush the embryo out," he said.

Older mares are another consideration.

"In my experience, if I have an older mare, I would much rather get her pregnant at foal heat rather than wait," Ley said.

"A lot of times an older mare might have some physical problems, such as poor weight and body condition. If she is nursing a foal, a lot of her energy is going into lactation, and, therefore, she may ovulate at foal heat but then may not ovulate at any other heat after that."

Alternatives to Breeding at Foal Heat

THE LONGER THE UTERUS HAS TO SHRINK AND REPAIR ITSELF, THE better chance of a successful pregnancy.

"Mares that are bred after day 10 (following birth) will usually have a much higher conception and pregnancy retention rate than mares bred prior to day 10," Ley said. "For example, a mare that is bred and ovulates by day eight or nine

Foal Heat Breeding Criteria

Ley will not attempt to breed any mare on foal heat unless these criteria have been met:

- Normal live foal delivery with no evidence of dystocia, and placenta was passed in three hours or less, and was intact.
- Upon exam, no vaginal or cervical bruising or discharge.
- Uterine involution has not been delayed or decreased, and there is no evidence of residual uterine fluid. Also, the uterus must be of an acceptable size, especially after day nine.
- No contamination of the uterus and no subclinical infection present.
- There is no evidence of laminitis resulting from complications of the birth or post-foaling.
- Mare is in heat and has a large follicle present that does not appear ready to ovulate until after day nine or 10 post-foaling.

would be a higher risk for either failure to conceive or higher risk for embryonic death."

In a study published in 1988, equine reproductive expert Angus McKinnon, BVSc, MSc, Dipl. A.C.T., A.B.V.P., found delaying the first postpartum estrus and ovulation with progesterone improved the uterine environment and increased the rate of conception.

He treated 15 mares beginning on the day of foaling with altrenogest (0.044 mg/kg of body weight) for eight days. On day nine, mares were treated with prostaglandin. Most of the mares did not ovulate until 16 to 18 days postpartum. Compared to the control group of untreated mares, this was a difference of about four days.

Pregnancy rates were higher in the treated mares, with 92 percent of the mares conceiving compared to 60 percent of the untreated mares.

Although McKinnon's study found no higher incidence of retained uterine fluid, it is something that should be considered.

"It is a concern," Ley said. "The uterus is a very big muscular organ and progesterone does tend to inhibit its ability to contract and expel its contents. So when placing a mare on altrenogest, there is a risk that it would delay her uterine involution as it delays her ovulation."

Another option, Ley said, is to short cycle mares by administering prostaglandin five days after the foal heat ovulation.

"Many times mares will respond to this method very well," he said. "It allows the mare to go through the first cycle after foaling, and that is a benefit to help promote uterine clearance and involution. Then, rather than waiting until 30 days after foaling when most mares come into heat the second time, you short cycle them with prostaglandin so that they are back in heat by day 15 to 17 after foaling." ■

Tonya Ratliff-Garrison is the Internet manager/staff writer for The American Quarter Horse Journal. She can be reached at tonyag@aqha.org.

BIO

WILLIAM B. LEY, D.V.M., M.S., DIPL. A.C.T., received his bachelor of science and doctor of veterinary medicine degrees from Colorado State University, College of Veterinary Medicine. After completing an internship in equine medicine and reproduction at the University of California at Davis, he did his residency program training in Large Animal Theriogenology (with emphasis in equine) at Texas A&M University in College Station, Texas, where he also received a master of science degree with his research and thesis on equine endometrial cytology.

Ley then spent two years in private equine practice in Iowa at Tri-State Veterinary Clinic from 1981-1983, and two breeding seasons as a resident veterinarian at Graham Farm's Southwest Stallion Station, Gardendale, Texas, from 1983-1984, standing Rocket Wrangler, Scott's Poppy and Mr Dark Jet.

He joined the faculty at Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, Virginia in 1984, where he was engaged in clinical teaching, equine research and service programs of the Veterinary Teaching Hospital in Equine Production Management Medicine (Equine Ambulatory and Reproduction). In August 1999, he moved to Stillwater, Oklahoma, and joined the faculty at Oklahoma State University, College of Veterinary Medicine, where he was head of the department of Veterinary Clinical Sciences and professor of equine reproduction.

In the summer 2002, he returned to private practice to become veterinarian in charge of Regional Equine Associates Central Hospital (REACH) in northern Virginia, an intermediate care referral clinic near Millwood, Virginia, and to establish a referral reproductive specialty practice in the same facility. Ley is also a diplomate of the American College of Theriogenologists.