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The Foaling Mare

This NebGuide outlines the foaling process and appropriate actions to take during both normal and abnormal foaling.

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The ultimate goal of any breeding operation should be both maximal foaling and a high survival rate of foals. Most mares will have a normal parturition if left unattended, however, the value of broodmares and their progeny can make leaving parturition to nature an expensive gamble. As the value of mares and foals rise, it becomes more desirable to have someone present during foaling, allowing for immediate assistance to both mare and foal if needed.

Being present when a mare foals can be more difficult than expected. The mare seems to prefer solitude and quiet during parturition. Observers have noted that 75 to 85 percent of foals are born between 6 pm and 6 am. Some mares, if continuously "checked," will delay delivery for several hours or days, until left in solitude.

Gestation Length

The average gestation length (duration of pregnancy) of mares is 335 to 340 days, but can range from 320 to 370 days. There may be much variability among mares, but most individually follow similar patterns year after year. Foals are considered premature if delivered at less than 326 days of gestation and usually require **immediate** veterinary attention. Mares foaling before 310 days are considered to have aborted. Many breeders will calculate the expected foaling date at 11 months following the last breeding date. Most mares will gestate longer than 11 months; however, this allows for fewer "surprise"

foalings in undesirable conditions.

There are various traits which can influence length of a mare's pregnancy. Studies have shown colts tend to gestate 2 to 7 day longer than fillies. The nutritional plane of a mare also has been shown to have some influence on gestation length. Additionally, mares foaling during the late spring and summer months (long days) tend to have a shorter gestation length than those foaling in January or February. Exposure of bred mares to artificially lengthened days during the latter third of gestation has been shown to shorten gestational length by about 10 days.

Early Signs

The signs of impending parturition are about as variable as gestation length. Although there is a tremendous amount of variation among mares, many individuals do repeat their foaling behavior year after year. Therefore, it is recommended to keep accurate records on each mare to aid future deliveries.

The classical signs of approaching parturition include udder development beginning 2 to 6 weeks before foaling, then milk let down into the teats (teat distension) 4-6 days prior to parturition. Due to oozing out of some of the colostrum, the ends of the teats become covered over and the mare is said to be "waxing", which occurs 1-2 days before foaling. At this time, some mares will have occasional dripping or streaming of colostrum. If this streaming is continuous, the colostrum should be collected and stored for possible use with the newborn foal. In addition to changes associated with the mammary gland, muscular relaxation in the pelvic region occurs progressively during the last 7-14 days of gestation and the mare's vulva begins to relax during the final days of gestation.

Many mares will show these "classic" signs of approaching parturition and make it fairly easy to determine their foaling time. On the other hand some mares will break all the rules and these signs may not be present, or may appear at varied times.

Predicting Foaling Time-Water Hardness Test

For mares with unknown foaling history, or for mares which are unpredictable for some reason, there is help available. Several commercial kits to estimate foaling time have recently come onto the market. These test kits are based on the fact that in most mares, calcium and magnesium concentrations in prepartum mammary secretion rise progressively during the latter portion of gestation to the time of foaling. A majority of mares show a significant rise in calcium and magnesium concentration just prior to parturition. This allows foaling attendants to estimate time of foaling within 12 to 24 hours.

The kits have been most useful in determining when the mare will **not** foal. In other words, if the test shows no changes in the calcium concentration, the mare probably will not foal within the next 24 hours, and thus would not need to be watched as closely. When a rise in calcium is indicated, the foaling attendant could then direct more attention to the mare which is close to foaling.

These test kits, available from veterinarians, are simple to use and fairly inexpensive (.25 to \$1.00 per test). All kits require taking 1-4 cc; of milk daily once the classical signs of approaching parturition are observed. Generally, samples should be taken for approximately 10 days. Recent research has shown daily samples collected during the early evening hours were adequate for detecting the prepartum calcium rise.

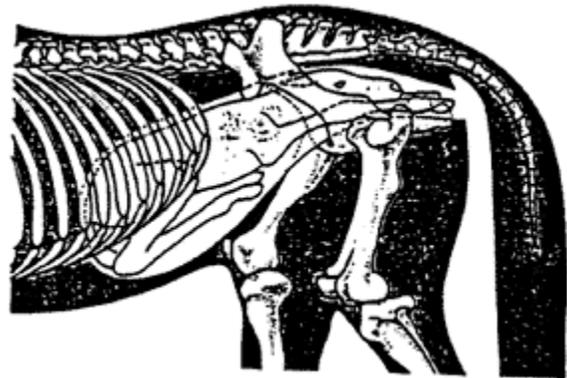
Parturition-Stage I

Parturition is typically broken down into three stages. Stage I, normally lasting 1 to 4 hours, reflects the initial uterine contractions and final positioning of the foal for delivery. These contractions will make the mare appear nervous and uncomfortable. Typically the mare will exhibit the following behavior:

1. Restlessness, indicated by frequent interruptions in eating. She may stop chewing feed already in her mouth or she may pace the stall.
2. Pawing the bedding or ground in different places as if looking for something, and switching her tail.
3. Getting up and down frequently.
4. Sweating in the flanks.
5. Urinating frequently.

These indicators are far from infallible and in some mares, the appearance of the water bag (the outer membranes surrounding the foal) may be the first signs of parturition observed.

During this stage, the mare can be prepared for foaling, if desired. This could include washing the mare's vulva and udder with warm water and wrapping her tail with a clean bandage. If a veterinarian is readily accessible, this is a good time to notify them of the approaching parturition so they can be prepared in the event of any problems.



Parturition-Stage II

Stage II is the most critical time, as this is when the foal actually appears. If foaling is proceeding normally, the mare should be left on her own. What is normal? This second stage, hard labor and foal delivery, is usually completed in 10 to 30 minutes. Close observation, without interference unless absolutely necessary, is important throughout this stage. Some mares object to assistance during this time. A viewing window or video camera system out of the mare's sight is preferred to avoid disturbing the parturition process.

Figure 1. Normal position of a foal during foaling. The forelegs are extended and the head and neck rest on the forelegs. The hindlegs are extended backward as the body passes outward. (From Evans, *The Horse*, 1990.)

The mare will experience heavy abdominal contractions and lie flat on her side. Her water bag will appear and should break on its own during the first part of Stage II.

Although dystocia (foaling difficulty) is uncommon in mares (<10%), it is important the foaling attendant be familiar with both normal and abnormal foal presentations. In a normal presentation, both front feet with heels down will appear first, and usually one foot will be slightly ahead of the other (*Figure 1*). The feet are followed by the nose and head resting between the knees; the back of the foal is toward the back of the mare. If this is not what is observed, call a veterinarian immediately. The foal could suffocate if birth is delayed. If the foal is delivered, except for the hips and rear legs, gently pulling in a **downward** direction toward the mare's heels will usually relieve this "hip lock".

Figure 2 illustrates various abnormal foal presentations. Some abnormal presentations are life-threatening both to mare and foal, and require surgical removal of the foal. Fortunately, not all abnormal presentations are life-threatening and many are easily corrected by a qualified attendant. Owners should visit with a veterinarian prior to the foaling season regarding procedures to be used in the event of an

abnormal foal presentation.

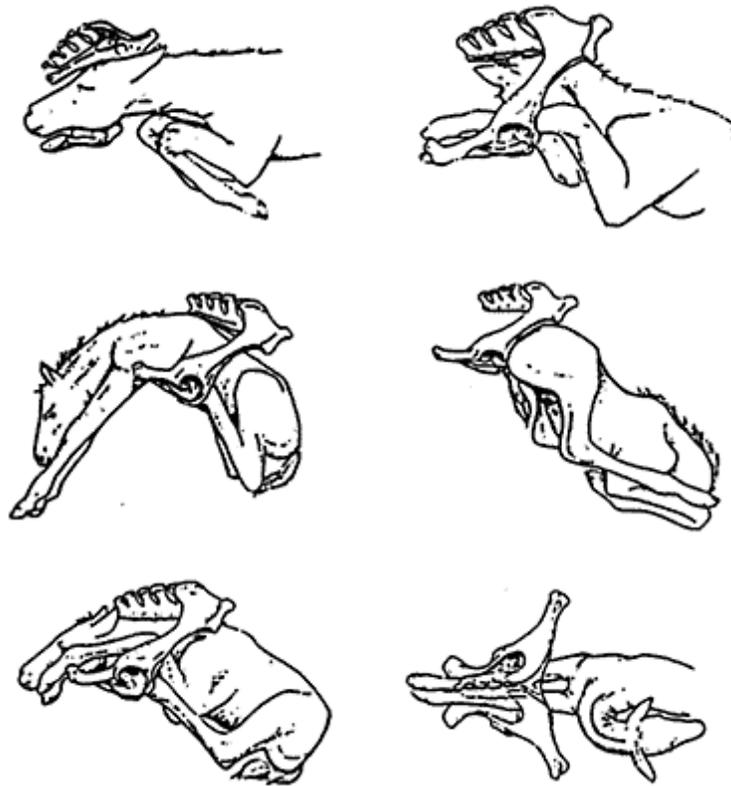


Figure 2. Various abnormal positions of a foal during foaling. (From Evans, *The Horse*, 1990.)

Following birth, the mare may rest, allowing the foal's hind legs to remain in the birth canal for a period of time before they are pushed out. Once the foal is born, patience is critical. The inexperienced horseperson has a tendency to rush into the stall, causing the mare to stand and prematurely rupture the umbilical cord. It is important to allow the mare to lie as long as possible to prevent early cord rupture, as the foal receives several pints of blood via the umbilicus if left undisturbed. Stage II ends following birth when the umbilical cord is broken as the mare stands or foal struggles.

Once the cord is broken, do not tie it off with sutures unless the foal is bleeding excessively. To avoid infection, dip the stump of the umbilical cord in 7 percent iodine solution repeat the process several times during the first few days of life. This will help prevent bacteria invasion into the body via the navel stump (navel-ill) which can lead to serious complications, such as neonatal septicemia and septic arthritis.

Parturition-Stage III

The final stage of parturition, Stage III, is the delivery of the placenta (afterbirth). These membranes, which surround the foal during gestation, should be expelled 3 to 4 hours after delivery. Once expelled, the placenta should be examined to determine if it is intact or if any portions may have been detached. Placenta retention can be a problem, leading to uterine infection (endometritis) and/or laminitis (founder). Under no circumstances should the placenta be pulled from the mare! Typically, the mare will stand with the placenta partially expelled while the foal struggles to stand and nurse. The foal's nursing

helps stimulate uterine contractions, aiding in placental release. Pulling the placenta could tear or prolapse the uterus or result in contamination of the uterus with pieces of torn placenta. In cases of retained placenta, treatment should be done under veterinarian supervision. This treatment typically includes administration of oxytocin to stimulate uterine contractions, and antibiotics and uterine infusion may be required. Mares which had a retained placenta may be poor candidates to be bred on foal heat.

After parturition, mares may experience some mild to moderate colic as her uterus and reproductive tract contracts and heals. During the first week postpartum, a reddish-brown discharge may be present. This discharge is normal. If a white discharge develops, however, this indicates a uterine infection and a veterinarian should be consulted for treatment.

Preparations for Foaling-Facilities

A foaling mare should not be placed in a strange environment or have a stranger act as night attendant immediately prior to parturition. Any sudden changes may delay foaling. Ideally, mares should be placed in the foaling environment 2 to 3 weeks prior to her expected foaling date.

Mares can foal in a variety of locations, depending on the weather and facilities available. Whatever the choice of foaling locations, the environment should be clean, have adequate space, and be reasonably quiet. Mares due to foal in the winter months will require a large (14' X 14' minimum), clean foaling stall. During warm weather, many producers choose to allow their mares to foal in grassy paddocks or pastures. Dirt lots should be avoided, if possible.

For mares foaling in a stall, the stall should be freshly bedded with clean, dry straw rather than shavings. An 8- to 10- inch-thick bed of straw will decrease dust, chances of infection, and is easier to clean. Safety to the mare and foal should be kept in mind when selecting a foaling stall. Stalls should be constructed to allow isolation of the mare and safety to the newborn foal. Thorough disinfection of the stall prior to bringing in the mare will help prevent disease. The mare should be allowed ample exercise up to foaling. Stall confinement for an extended period just prior to foaling may predispose the mare to impaction colic and abnormal swelling.

Mares foaling in paddocks or pasture should either be isolated or have sufficient space to separate themselves from any other horses in the pasture. Additionally, the pasture/paddock should be examined for possible hazards to the foal. A shelter should be provided in case of wet or cold weather.

Regardless of the place, the foaling area should be isolated and quiet. Safety of the mare and foal should be kept in mind when deciding where the foaling will occur. The cleanliness of the foaling area cannot be stressed enough. Foaling in contaminated areas can predispose the foal to bacteria invasion and neonatal septicemia via the navel stump.

Preparations for Foaling-Caslicks Removal

Early in gestation, some mares require a Caslicks operation to partially suture together the lips of the vulva. Caslicks are used to prevent problems in mares that have abnormal vulva conformation. Mares that have a Caslicks must have the lips of the vulva opened at least 30 days prior to foaling. If the Caslicks is not opened, there is the possibility of oblique tears to the vulva or vagina which are difficult to repair and may result in a deformity that leads to uterine infection.

Inducing Parturition?

With the great variability in determining the foaling time in mares, the question of labor induction frequently arises. Although it is possible to induce parturition in mares, it is not recommended. Only in extreme situations, such as a life threatening condition to the mare or foal or some type of medical emergency, is parturition induction recommended. If this procedure is used, it should be done under supervision of an experienced veterinarian. A mare improperly induced could result in severe complications to both the mare and foal.

If conditions warrant a mare to have labor induced, she must only be induced once certain criteria are met. First, the mare must have reached a gestation length of at least 330 days. Substantial mammary development with colostrum present is critical. Additionally, the cervix must be soft and dilated the width of one to two fingers. Finally, the foal should be in the correct position for a "normal" presentation. If these conditions are not in place, the mare may not be close enough to parturition for a safe induction.

There are various methods your veterinarian may choose to induce labor. It is important to remember that induction of parturition in mares should not be practiced routinely, due to the risks involved to both mare and foal.

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