

## **Equine obstetrics: Mutation and delivery by traction\***

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### **Introduction**

Successful intervention in equine dystocia requires an adequate understanding of normal parturition and a thorough knowledge of the causes of dystocia. The clinician must first accurately diagnose contributing fetal and/or maternal abnormalities in order to properly formulate a therapeutic plan. Judgment and experience are paramount in performing obstetrical procedures so that unnecessary injury to the dam and/or fetus is avoided and the mare's subsequent fertility is maintained.

Parturition is typically divided into three characteristic stages (1 to 3): Stage 1, the preparatory phase, usually lasts 30 minutes to four hours. During this stage the fetus rotates into dorsosacral position and uterine contractions force the foal and surrounding fetal membranes into the dilating cervix. Stage 2, the most active stage of parturition, involves passage of the foal through the birth canal and usually requires only 20-30 minutes. This phase begins with fetal passage into the birth canal, is accompanied by vigorous abdominal straining and rupture of the chorioallantoic membrane, and ends with delivery of the foal. Stage 3 involves passage of the fetal membranes and uterine involution.

If either the first or second stage of parturition is prolonged, dystocia should be suspected. The reported incidence of dystocia in the mare is 1-4%. Most equine dystocias are attributed to abnormalities in fetal presentation, position and posture, with postural abnormalities being the major contributor, due to the long fetal extremities. Fetal oversize appears to be rare in horses. Maternal contribution to equine dystocia, such as defects in the abdominal wall, occasionally occurs.

Prompt examination of the birth canal and fetus is indicated when dystocia is suspected. The equine fetal membranes separate rapidly from the endometrium during parturition thereby depriving the fetus of oxygen if it is not promptly delivered after the onset of second stage labor. Early intervention maximizes the chances of delivery of a viable foal with no injury incurred by the dam.

**Keywords:** Dystocia, obstetrics, parturition, mare

### **Obstetrical equipment**

High quality obstetrical equipment, kept clean and sterilized between uses, should be readily available for obstetrical intervention. Minimal equipment should include materials necessary to cleanse the hindquarters of the mare, obstetrical chains or straps with handles, sleeves, lubricant, and fetatome with saw wire and Krey hook.

A clean bucket, cotton, tail wrap, and disinfectant are used to clean and prepare the mare's hindquarters and perineal area for examination. Proper lubrication is required to protect the genital tract during manipulative procedures. Water-based lubricants, such as Lubrivet™ (Butler Schein Animal Health, Dublin, OH) or other carboxymethylcellulose solutions are generally preferred. Good protection is provided for the fetus and genital tract with such lubricants, and large volumes can be pumped into the uterine lumen and around the fetus through a sterile stomach tube when necessary. If fetotomy is necessary, petroleum jelly can be applied to the fetus and birth canal for additional protection. However, if the obstetrician anticipates that a cesarean section will be necessary, petroleum jelly should be avoided since it is not water soluble and, if spilled into the abdominal cavity, can induce peritonitis.

### **Examination of the mare**

The mare should be standing during the initial examination when possible. Restraint should be the minimum required to protect both the clinician and mare from injury. Caudal epidural anesthesia

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(1.0-1.25 ml 2% lidocaine/100 kg body weight) is occasionally necessary to minimize straining and facilitate examination of the fetus and birth canal. Slowly walking the mare during the examination is usually sufficient to control straining. Sedation is avoided whenever possible because of associated disturbances in fetal respiratory and cardiac function. If sedation is necessary, intravenous injection of 0.07 mg/kg acepromazine maleate or an initial injection of 0.44 mg/kg xylazine followed in 4-8 minutes by intravenous injection of 0.044 mg/kg butorphanol tartrate will usually reduce straining and provide more pronounced sedation and analgesia. Rarely, it is necessary to induce general anesthesia and elevate the mare's hindquarters to provide room for examination and manipulation.

Strict sanitation and effective lubrication should always be maintained whenever the genital tract is invaded. The obstetrician's hands and arms should be scrubbed with a disinfectant soap prior to examination. The fetus and birth canal are thoroughly examined for evidence of previous trauma and the viability, presentation, position, and posture of the fetus are determined. The fetus is also evaluated for deformities, and the amount of room available for manipulation is assessed.

### **Obstetrical operations**

Mutation of abnormal presentation, position, and posture of the fetus, followed by delivery with traction, is the most common method of relieving dystocia in mares. In order to permit passage of a fully developed fetus, the extremities must be extended. To accomplish mutation it is helpful to first repel the fetus from the maternal pelvis into the uterus where more space is available for manipulation to correct fetal malposture or malposition. Such maneuvers are sometimes facilitated by first pumping 4-8 liters of lubricant into the uterine lumen and around the fetus. An alternate form of delivery should be selected if the uterus is devoid of fetal fluids and contracted tightly around the fetus, since repulsion in such cases is likely to result in uterine rupture.

To correct flexion of an extremity, the proximal end should be repelled while the middle portion is rotated laterally. Traction can then be applied to the distal end of the extremity, either by hand or by traction on a chain or strap placed around the pastern, until the limb is fully extended. This reduces the longitudinal arc the foot must go through in the birth canal, effectively increasing room for limb extension. Extreme care should be taken to protect the genital tract from injury when applying traction on the distal end of a flexed extremity. Uterine rupture is commonly associated with this manipulation, particularly when correcting hock flexion in posterior presentation, as more room is required to extend a flexed hindlimb than a flexed forelimb. The operator should always cup the hand over the foal's hoof as it is brought forward.

To correct lateral or ventral head posture, the fetal limbs and/or body are repelled while the muzzle or jaw is grasped and pulled toward the pelvic inlet. It is sometimes easier to correct abnormal head or neck posture with one of the forelimbs flexed at the carpus, giving more space than that offered when the forelimbs are extended. If the fetus is in a transverse ventral position, it is often easier to extend the two hindlimbs and proceed with delivery of a posteriorly presented fetus than to convert the fetus into anterior presentation with the forelimbs and head and neck extended.

Once the fetus is presented normally (i.e., anterior longitudinal presentation; dorsosacral position; with the extremities, including the head and neck, extended), delivery can proceed. If the fetus is presented posteriorly, delivery can proceed once the hindlimbs are extended. Obstetrical chains or straps are placed around the fetlocks, and an additional loop is placed in a half-hitch around the pasterns, with the eye of the straps or chains on the dorsal aspect of the limb. Traction devices should not be used on the head of a live fetus, except where necessary to direct the head into the pelvic inlet. Extractive force should never be applied to the head as this may result in injury to the bones of the skull or cervical spine.

The amount of traction applied to the equine fetus should not exceed the force that can be applied by the pulling of two or three persons. This amount of traction is seldom necessary since relative fetal oversize is uncommon in the equine. Traction should only be applied during the dam's abdominal press. If delivery does not progress rapidly once traction is applied, the obstetrician should examine the birth canal to ensure that a flexed limb is not situated between the fetal body and the maternal pelvis. Delivery should be as prompt as possible since the umbilicus may become compressed in the maternal pelvis,

reducing blood supply to the fetus. This is particularly important with delivery of the fetus presented posteriorly, as rupture or compression of the umbilicus commonly occurs and quickly leads to fetal anoxia.

The reader is referred to various veterinary obstetrics textbooks for indepth study of mutation procedures and delivery by traction.

### **References**

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### **Additional reading**

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