Dystocia Management (21-Nov-2003)
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1. Introduction
Dystocia in the broodmare is one of the few true emergencies that equine practitioners encounter, where minutes make a difference in the survival of one of the patients (the foal). Duration of dystocia also influences the degree of reproductive tract trauma that occurs during resolution of the dystocia. There are four procedures used to resolve dystocia in the mare: assisted vaginal delivery (AVD), where the mare is awake and is assisted to a small or large degree in vaginal delivery of an intact foal; controlled vaginal delivery (CVD), where the mare is anesthetized and the clinician is in complete control of delivering an intact foal vaginally; fetotomy, where the dead fetus is cut into more than one piece for removal from the uterus per vagina in an awake or anesthetized mare; and cesarean section, where the fetus is removed through an incision in the uterus. Most dystocias are resolved at the farm by personnel experienced in foaling mares. If a dystocia is not resolved quickly, sending the mare to a referral hospital may be a better option for the mare than waiting for the farm veterinarian to come to the farm and help deliver the foal. The equipment and training of the personnel would usually make a referral hospital a better environment for CVD, fetotomy, C-section, and for neonatal resuscitation and care. The decision to refer the mare should be based on the position of the foal, duration of the dystocia, distance to and preparedness of the referral hospital, and the experience of the farm and referral hospital veterinarians involved.

When faced with dystocia, the goal should be to deliver a live foal in a manner that does not impair the career of a reproductively sound mare. If the foal is dead, the obvious concern becomes the mare. To achieve these goals, the approach to dystocia in the mare should follow a continuum of potentially changing strategies, providing the best method possible to resolve that particular situation. There is no one procedure that is right for every situation. Ideally, the AVD, CVD, C-section, and fetotomy procedures are employed as needed to yield the most favorable result. Financial concerns may influence which procedures are used.

2. Hospital Approach To Dystocia
The approach to dystocia used at our hospital is as follows. On notification of a dystocia referral, the on-call dystocia and neonate teams are quickly assembled. Immediately after arrival, the mare is walked into the induction stall and a very brief physical examination is performed. Assisted vaginal delivery is rarely attempted at the hospital prior to anesthetizing the mare. Skilled personnel have attempted AVD at the farm, and further attempts are generally considered a waste of time. Sedation is achieved with xylazine, and anesthesia is induced with diazepam and ketamine. Anesthesia is maintained with halothane and oxygen. Once the mare is recumbent, hobbles are placed on the hind pasterns and hooked to a hoist. The mare is hoisted upward until the pelvis is approximately three feet from the floor. The position and posture of the fetus is determined, and the fetus is then repelled and repositioned to allow vaginal delivery. Rotation of the fetus to resolve dystocia has been well described by Frazer and others, thus is not included here. Copious amounts of lubrication are used to help the delivery. When the head and distal forelimbs are exteriorized, the mare is lowered into lateral recumbency and traction is applied to the foal until delivery is accomplished. The umbilical cord is clamped and transected. The neonatal team quickly places the foal on a nearby, well-equipped mobile neonatal bed for resuscitation and stabilization. The mare is placed on a thick foam mat for recovery. Occasionally, the placenta can be removed during recovery.
Simultaneously to the controlled vaginal delivery, the ventral abdomen is clipped and partially prepped for a C-section. The elapsed time from the start of CVD is watched closely. If the foal cannot be delivered within 15 min, or if it is determined
before 15 min that the foal is in a position to preclude delivery within 15 min, a C-section is performed. If the foal is known to be dead, the surgeon uses their best judgment regarding continued CVD, fetotomy, or C-section. If a C-section is to be performed, the mare is quickly transferred to a surgery table, placed in dorsal recumbency, and the final sterile prep is applied to the ventral abdomen. The C-section is performed through a caudal ventral midline incision, with the mare in dorsal recumbency, tilted slightly towards the surgeon. The foal's hind limbs are found within one of the uterine horns, and this horn is exteriorized. An incision is made through the uterine horn, the hind limbs are grasped, and the foal is extracted from the uterus as rapidly and safely as possible. The umbilicus is clamped and ligated. The foal is then transferred to the neonatal team in an adjacent room for resuscitation. The chorioallantois is separated from the endometrium along the edges of the incision. Uterine hemorrhage is controlled by ligation of significant bleeding vessels and a hemostatic simple continuous suture applied to the incised edge of the uterus. It is uncommon to be able to remove the chorioallantois from the uterus during surgery. The uterine incision is then closed using two inverting layers with absorbable suture material. On completion of uterine closure, oxytocin is administered to assist in uterine contraction and placental expulsion. The abdomen is lavaged and closed in routine fashion. The placenta is usually expelled within 6 - 12 h postoperatively, often requiring more oxytocin. Further postoperative care is similar to that after an exploratory celiotomy.

3. Results of Retrospective Study
Byron recently published a retrospective study of the methods of delivery used at our hospital. Some of the results of that study are as follows. During the period 1986 - 1999, 247 cases of dystocia were admitted, with 83% thoroughbreds. These dystocias were resolved by CVD (71%), C-section (25%), and fetotomy (4%). Controlled vaginal delivery was initially attempted in all mares. Of the 247 cases, 226 (91%) resulted in survival and discharge of the mare. Mare survival and discharge by method of resolution was 94% for CVD, 89% for C-section, and 56% for fetotomy. Delivery of a live foal was accomplished in 104 (42%) of the cases, with 73 (30%) surviving to discharge. Hospital discharge of a live foal occurred following 32% of the dystocias resolved by CVD and following 31% of the C-sections performed post-CVD attempt. The elapsed times between hospital arrival and foal delivery was examined. Based on available data, the mean time for 144 CVD cases was 21.5 min and for 32 C-sections 38.7 min. The elapsed time between chorioallantoic membrane rupture and delivery was determined as accurately as possible. Based on available data, the mean time for 63 CVD cases was 101.3 min and for 18 C-sections 129.2 min. The relationship between these time periods and foal survival rates was examined. The elapsed time from hospital arrival to delivery for foals alive at discharge (23.0 +/- 14.1 min) was not significantly different than for foals not surviving (24.8 +/- 10.6 min) (P > 0.05). The elapsed time from chorioallantoic rupture to delivery for foals alive at discharge (71.7 +/- 34.3 min) was significantly less than for foals not surviving (85.3 +/- 37.4 min) (P < 0.05). The above information strongly supports what equine practitioners have known for years, i.e., duration of dystocia plays a large role in foal survival. Although not examined in Byron's study, clinical experience would also suggest that duration of dystocia has a direct relationship with reproductive tract trauma, which in turn affects subsequent fertility in the mare.

References


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