Review Article

MANAGEMENT OF DYSTOCIA IN BOVINES: A REVIEW

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Abstract

Dystocia is the difficulty in delivering the fetus by the dam on its own effort. Any delaying or disturbances in this process of natural parturition due to maternal or fetal causes induce dystocia. It is a most common cause of calf losses. Timely intervention is needed to save the life of dam and fetus. The use of specific ecobolic drugs such as oxytocin, calcium or glucose therapy may be required in cases where a deficiency is suspected. Sometimes obsteritical operation is needed to save the life of dam when the dam becomes unresponsive to medical management. Depending upon the type of dystocia, the obsteritical operation may be mutation, forced extraction, fetotomy or embryotomy and cesarean section or laparohysterectomy. Occurrence of dystocia on the dairy farms is strongly associated with increased morbidity and mortality of newborn calves, treatment costs and diminished productivity of the dam and sometimes even death also. Producers must be well trained to intervene appropriately in dystocia and recognize when to call a veterinarian. Early intervention and maintenance of balanced nutritional program also minimizes the effect of dystocia. Appropriate feeding management and exercise should be accustomed by cattle rearing groups. Selection of appropriate sire and proper age of dam is important aspect of animal breeding that helps to minimize the incidence of dystocia due to fetopelvic disproportion.

Keywords*:* Bovine Dystocia, Management, Intervention, losses

Introduction

Delayed or difficulty in parturition is called Dystocia. It is the inability of the dam to deliver its young through its own effort (Jackson, 2004) .The recognition of dystocia comes first from a basic understanding of normal calving. As the fetus matures and the uterus enlarges, the capacity of the placenta to respond to additional demands of the fetus may be surpassed. The placenta may begin to function less efficiently due to limiting morphologic changes, which occur during the latter part of pregnancy. These or other undefined stimuli cause a fetal stress reaction. In cattle, this results in an increased production of glucocorticoids such as cortisol and steroid precursors to estrogens from the fetal hypothalamo pituitary adrenal systems. These steroids in turn enable the feto-placental unit to produce estrogens and prostaglandins. Endometrium layer in the uterus may also produce prostaglandins. Concurrently, production of progesterone is decreased, probably at least in part due to the luteolytic effect of the prostaglandins on the corpus luteum of the ovary. The estrogens and prostaglandins in turn stimulate maternal release of oxytocin, sensitize the uterus to the effects of oxytocin, and cause the cervix to dilate. The uterus is thus released from inhibition by progesterone and made sensitive to the stimulatory effects of prostaglandins and oxytocin, and to stimulation mediated through the autonomic nervous system. Uterine muscles, which have increased contractility in late pregnancy due to stretching, begin to contract regularly as the cervix dilates. When the cervix is dilated, fetal parts are forced into the birth canal. These produce point pressure in the vagina, further stimulating release of oxytocin and initiating the abdominal press. The process appears to have a cascade effect and is irreversible.

Any delaying or disturbances in this process of natural parturition due to maternal or fetal causes induce dystocia. It is a most common cause of calf losses. Timely intervention is needed to save the life of dam and fetus. Calving difficulties increase the risk for infectious diseases. The more difficult the calving, the harder it is for the calf to maintain its body temperature following calving. Dystocia increases maternal deaths, treatment costs and diminished productivity of the dam. The successful management of calving difficulty is achieved when we optimize calf survivability and dam reproductive performance. Thus, the goal of providing assistance is to minimize stress on the calf and dam. . This review summarizes the intervention

guidelines, medical management, and obstetrical operation and prevention strategies of dystocia in bovine husbandries.

Management and Treatment of Dystocia:

Intervention guidelines:

Stage 1 - If you suspect the cow has been in stage 1 of labor for over 8 hours, intervention is indicated. Some abnormal deliveries do not allow the cow to progress into a normal stage 2 of labor. In other cases, the cow may be in a state of uterine inertia and will not go into stage 2 of labor.

Stage 2 - Intervention is indicated if any of the following conditions of stage 2 exists:

- If the water sac is visible for 2 hours and the cow is not trying.
- If the cow has been trying for over 30 minutes and making no progress.
- If the cow has quit trying for over a 15-20 minute period of time after a period of progress. Breaks normally should not exceed 5 to 10 minutes unless fatigue or uterine inertia is involved.
- If the cow or calf is showing signs of excessive fatigue and stress—like swollen tongue of the calf or severe bleeding from the rectum of the cow.
- If from an observational stand point, you determine that you have an abnormal delivery from the presentation, position, and posture standpoint.

Stage 3 - If the cow has not passed fetal membranes within 12 hours of calving, intervention may be necessary. If they are retained, treatment may be indicated. In no instances, however, is manual removal of the fetal membranes advocated, as this is detrimental to subsequent reproductive performance (Mortimer R. G., 2009).

Medical Management

The use of specific ecobolic drugs such as oxytocin, calcium or glucose therapy may be required in cases where a deficiency is suspected. For the case of uterine torsion, antibiotic and non-steroidal anti- inflammatory drugs are provided. Prostaglandin F2alpha and its analogs are used mainly for their luteolytic effects to induce predictable onset of estrus in a variety of species. They cause marked uterine contractions which may be useful for expulsion of uterine contents (Beagley, 2010).A deficiency of estrogen is considered to be one important cause of failure of cervical dilation hence, injection of estrogens like estradiol valerate 20—30 milligrams intramuscularly can be helpful and however, estrogen should be given with care in a completely closed cervix because of the dangers of uterine rupture that may follow because of violent contractions. Likewise, injections of oxytocin 20 – 40 international units, intravenously or intramuscular can be given to promote uterine contraction to effect cervical dilation when it is partially dilated (Purohit, 2011).

Obstetrical Operations to Relieve Dystocia

In handling dystocia there are numerous operations or procedures that the veterinarian should be able to perform or use. The principal purpose of obstetrical operations is to deliver a viable fetus and to prevent injury to the dam. The obstetrical operations may be divided into four major classifications: mutation, forced extraction, fetotomy or embryotomy and cesarean section or laparohysterectomy (Benesch, Veterinary Obstetrics, 2001).

Mutation

Is defined as those operations by which a fetus is returned to a normal presentation, position and posture by repulsion, rotation, version and adjustment or extension of the extremities. Normal birth will proceed in uniparous animals only with the fetus in anterior or posterior longitudinal presentation, dorso-sacral position and with the head and neck and limbs extended. Most multipara can have a normal birth with the fetal limbs folded alongside of or beneath the body, since the limbs are small and flexible. In multipara, fetuses may be in a dorso-illial or dorso-pubic position and be born without difficulty (Roberts, 2004).

Forced extraction/traction

The withdrawal of fetus from birth canal of the darn by application of force is called forced traction. Such a force may be developed by cords, hooks and forceps. Lubrication of the genitalia is important for forced traction (Kurnar, 2009). A very important consideration is the magnitude of the supplementary force which may be used, since excessive force

inappropriately applied can cause severe trauma to the dam and fetus (Noakes, 2001).

Fetotomy: It is sectioning of a fetus into two or more parts within the uterus and vagina. Its purpose is to reduce the size such that delivery through the birth canal becomes possible (Noakes, 2001).Fetotomy should be considered only when the fetus is known to be died. By using the instrument called embryotome or fetotome, the fetus in anterior presentation first remove the head, then the foreleg and also remove the thorax and finally division of the pelvis (Jackson, 2004).

Hysterectomy or Caesarian Section

The delivery of the fetus usually at parturition by laparohysterotomy is called caesarean section (Kurnar, 2009). The cesarean operation is a routine obstetric procedure in cattle practice which has high maternal and fetal survival rates and is less exhausting, speedier and safer than fetotomy. The need for urgent intervention is indicated if there is evidence of fetal hypoxia as shown by hyperactive movements of the fetus expulsion of meconium, identifiable in the amniotic fluid (Noakes, 2001). The indications for this operation are for delivering the foetus when normal delivery is difficult or not desirable. Paravertebral or lumbar epidural anesthesia is recommended in the recumbent state. There are many sites for this operation: between the mammary vein and the midline, oblique flank incision, downward and forward from a little below external angle of ilium, vertical incision in the paralumbar fossa (Preferably of the left side to avoid the omentum and intestines. Analysis of published cases shows that the following six major indications account cumulatively for 90% of all caesarean operations: fetomaternal or fetopelvic disproportion (Either relative or absolute fetal oversize); incomplete dilatation of the cervix; uterine torsion that cannot be corrected otherwise; fetal monsters; faulty fetal disposition (Presentation, position or posture); fetal emphysema (Venugopalan, 2009).

The options of patient positioning for caesarean operation are; standing (Suitable for left or right paralumbar fossa and lateral oblique approach); dorsal recumbency (Suitablc for ventral midline and pararnedian approach); sternal recumbency (Suitable for left or right paralumbar fossa); lateral recumbency (suitable for ventrolateral and low-flank approach). The choice depends on the surgeons' preference, demeanour of the animal, as well as available facilities. In a cow capable of tolerating surgery while standing, the left paralumbar fossa or flank approach is the standard technique for a viable or recently dead, uncontaminated fetus (Vermunt, 2008).

Economic Significance of dystocia

Direct Losses: Of the many factors affecting calf survival, dystocia is the most important (Bellows R. D., 1987). Dystocia results in death of calves and cows, production losses in both dam and calf and delayed reproduction rates (Dematawewa, 1997). Of all pre weaning deaths, 45.9% can be attributed to dystocia. In one study of certain California dairies, dystocia was responsible for 6.4% of all cow deaths and 24% of deaths of first-calf heifers (Bellows R. D., 1987). Dystocia may cause prolonged hypoxia and acidosis, which, if not resulting in the death of the full-term foetus, may result in weakness and prolonged recumbency after delivery. This may reduce colostral immunoglobulin intake, resulting in an increased short to medium-term mortality rate. In addition, forces exerted on the fetus during delivery may cause cardiopulmonary malfunction. All these factors will reduce the likelihood of survival of the neonate (Lombard, 2007).

Indirect Losses: In a study of beef animals, it was found that prolonged parturition resulted in a slightly delayed onset of oestrus post-calving, slightly more services/conception and reduced subsequent conception rate. This effect was particularly pronounced in heifers (Doornbos, 1984). Bovine dystocia is associated with a higher incidence of retained fetal membranes, uterine disease (Endometritis, metritis, pyometra, and uterine rupture) and per parturient hypocalcaemia in the cow. (Mee, 2008)

Prevention of Dystocia: Selection of appropriate sire and proper age of dam is important aspect of animal breeding that helps to minimize the incidence of dystocia due to fetopelvic disproportion. Early intervention minimizes the effects of dystocia on calves. Heifers should be monitored regularly and

provided with assistance promptly if stage II labor is prolonged. Producers must be well trained to intervene appropriately in dystocia and recognize when to call the veterinarian. A balanced nutritional program helps control losses associated with mineral deficiency (Kahn, 2005). If calving difficulty is a problem in your herd, feed heifers well enough to weigh at least 85% of their expected mature weight at first calving (Anderson, 2012). Maintenance of calcium homeostasis throughout transition is imperative for uterine health (Goff, 1997) (Martinez, 2012). The use of anionic salts can reduce the incidence of clinical hypocalcaemia (Milk fever) to <2% in multiparous cows and also reduce the incidence of subclinical hypocalcaemia in early postpartum (Goff, 1997).

Conclusion

Dystocia is most commonly occurring in primpara, heifers and larger breeds. Obstetrical operations such as mutation, forced traction, fetotomy and cesarean section are used to relieve dystocia. A specific ecobolic drugs like oxytocin and prostaglandins are used to cause a marked uterine contractions as to expel uterine contents. Occurrence of dystocia on the dairy farms was strongly associated with increased morbidity and mortality of newborn calves and loss of the dam. Producers must be well trained to intervene appropriately in dystocia and recognize when to call a veterinarian. Early intervention and maintenance of balanced nutritional program also minimizes the effect of dystocia.

Recommendation

Education of producers and farm owners on the management and in strategies to reduce dystocia and its effect on calves should be a priority. Appropriate feeding management and exercise should be accustomed by cattle rearing groups. Producers should know when and how to give assistance and when a veterinarian should be called. At the national level, genetic selection programs with adequate weighting for calving ease is recommended.

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