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Review Article

Dystocia in Domestic Animals and its Management

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ABSTRACT

Dystocia is difficult for parturition that requires assistance for helping delivery. The causes can be maternal factors (uterine inertia, inadequate size of the birth canal) and/or fetal factors (oversized fetus, abnormal orientation as the fetus enters the birth canal). Improper cervical dilation appears to be a more frequent maternal cause of dystocia in cattle. The usual clinical signs are the onset of labor without delivery of fetus or fetal membranes and later regression of parturition signs. An incorrect diagnosis of dystocia may result in an unnecessary cesarean section. It most commonly occurs in heifers than mature cattle. The factors which influence the likelihood of dystocia include infection, heredity, nutrition, calf sex, exercise, cow age, and gestation length. Although dystocia cannot be eliminated from a herd; the incidence can be greatly reduced by management decisions made before the breeding season and during gestation. No clear boundaries exist between dystocia and eutocia (normal birth), but guidelines based on progress and duration of the delivery may aid the veterinarian and the producer in deciding when to interfere with the birth process. In the last century, a lot of improvement occurred in the techniques used to deliver and resuscitate calves. Although it is not possible to eliminate dystocia, improvements in the management of heifers during their development and observation of cows and heifers during the calving season are critical for reducing calf losses.

Keyword: *Cesarean section, Dystocia, Farm animals, Risk factor, Treatment*

INTRODUCTION

Reproduction is an important consideration in the economics of cattle production. In the absence of regular breeding and calving at the appropriate time, the dairy enterprise will not be profitable. A healthy calf each year is the usual goal of reproduction. This is possible only by increasing the reproductive efficiency of the animals. Successful reproduction encompasses the ability to mate, the capacity to conceive and nourish the embryo and deliver the viable young ones at the end of a normal gestation period (Ball & Peters, 2008). Reproductive disorders negatively affect their productive and reproductive performances in dairy cows (Fesseha & Ayele, 2020).

Dystocia is one of the reproductive problems that occur when the first or second stage of labor is prolonged and assistance is required for delivery.

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Dystocia comes from the Greek dys (difficult) and tokos (birth). Dystocia also called calving difficulty, is defined as prolonged and difficult parturition with assistance frequently being required. The incidence of dystocia in cattle has been widely studied because of its effects on productivity (Youngquist & Threlfall, 2006) and the overall incidence varies with the species and with breeds within the species. Dystocia in small ruminants is considered of low incidence worldwide (<5%) (Brounts et al., 2004; Purohit & Mehta, 2006).

Dystocia has a direct negative impact on calves (e.g., prolonged hypoxia, significant acidosis, vigor, increased stillborn calves, etc.) and dams (e.g., trauma, paresis, metritis, endometritis, etc.). Dystocia or difficult parturition represents a true emergency faced by the veterinarian, and effective management is essential for the survival of both calf and dam and the dam's subsequent fertility. Dystocia is most commonly caused by abnormalities of fetal presentation (the portion of the fetus that enters the vaginal canal first), position (the relationship of the fetal spine to the dam's pelvis), or posture (the relationship of the fetal extremities to its body), but can also result from fetal oversize or maternal factors such as pelvic abnormalities or uterine inertia. The incidence of dystocia has been reported to be anywhere from 4% to 10% of all births. Dystocia should be approached systematically, to deliver a live calf as quickly as possible with minimal complications (Abera, 2017; Moges, 2016).

Amongst all domestic animals, cattle, and buffalo are considered the species in which the incidence of dystocia appears to be highest (Noakes et al., 2018; Purohit et al., 2011). The incidence is around 5 percent overall but reaches almost 100 % in some breeds of dogs and 20% in some breeds of cats (Linde-Forsberg and Eneroth, 2000). The bovine species are most often affected with dystocia (Noakes et al., 2001). It is apparently higher in dairy than beef cattle. Besides, consideration must always be given to the effect of breed, age, and parity in the interpretation of results. The incidence of dystocia appears higher in the larger breeds such as Holstein, Brown Swiss, and Hereford (Mee, 2008).

The usual clinical signs are the onset of labor without delivery of the fetus and/or fetal membranes and later regression of parturition signs. The animal may show signs of mild discomfort. The animal may adopt a rocking horse stance and show mild colic pain (Fesseha and Ayele, 2020; Fossum et al., 2007). Partial anorexia, dullness, and depression may be evident. One or both lips of the vulva are pulled in because of the torsion of the birth canal. When the cervix is fully dilated it is not palpable as a separate structure and is continuous with the vagina. The incompletely dilated cervix is palpable through per rectum examination (Purohit et al., 2011).

The causes of dystocia are categorized into maternal and fetal origin to formulate a clinical management plan for an individual animal (Kebede et al., 2017; Youngquist and Threlfall, 2007). Maternal Causes: Dystocia, which arises in the mother due to maternal factors, is caused either by constriction of the birth canal or by a deficiency of expulsive forces. The constrictive forms of which the most important are pelvic inadequacies, incomplete dilation of the cervix or ring womb, and uterine torsion (Linde-Forsberg and Eneroth, 2000). The most common fetal-related causes of dystocia are head deviation, forelimb flexion, breech presentation, dog sitting position, and fetal malformations (Bhattacharyya et al., 2012; Bhattacharyya et al., 2015).

Fetomaternal disproportion is not only a factor by itself but a relationship between maternal and fetal factors and can be defined as an obstruction of calf expulsion originated by the calf size/birth weight or pelvic dimensions of the dam, that may have several factors in its origin (Mee, 2008). The dimensions of the bony pelvis are too small to allow passage of the fetus. This is most commonly caused by maternal immaturity and often occurs as a result of young being served

at too young an age. A small pelvis is a component in dystocia due to fetopelvic disproportion and is exacerbated in cases where the fetus is larger than normal (Jackson, 2004).

The consequences of dystocia are numerous, ranging from increased stillbirths and perinatal mortality to severe trauma to the offspring or its mother. Moreover, dystocia affects both the welfare of the dam and offspring. Also, it results in an increased chance of sterility in the dam, increased likelihood of puerperal disease in the dam, and subsequent culling of the dam and also increased mortality rate of the dam. Furthermore, dystocia reduced productivity of the dam and reduced subsequent fertility (Abera, 2017; Frame, 2006; Noakes et al., 2018). Accordingly, Dystocia is so important in the farm economy since it frequently occurs in a different farm of cattle and the major factor in calf mortality at or near birth (Mekonnen & Moges, 2016). So, this is to highlight the cause, risk factors, signs, management, and prevention.

2. Causes of Dystocia

Generally, dystocia can be caused as a result of maternal and fetal causes (Abera, 2017). Only in the last three decades, however, has the research been effectively directed toward the causes and management of dystocia. This may be associated with the more widespread implementation of herd health programs and the use of computers to facilitate data management. The incidence of dystocia varies but generally is more common among first-calf heifers, because they have not yet reached their mature size, and then decreases with age (Bhattacharyya et al., 2015; Frame, 2006).

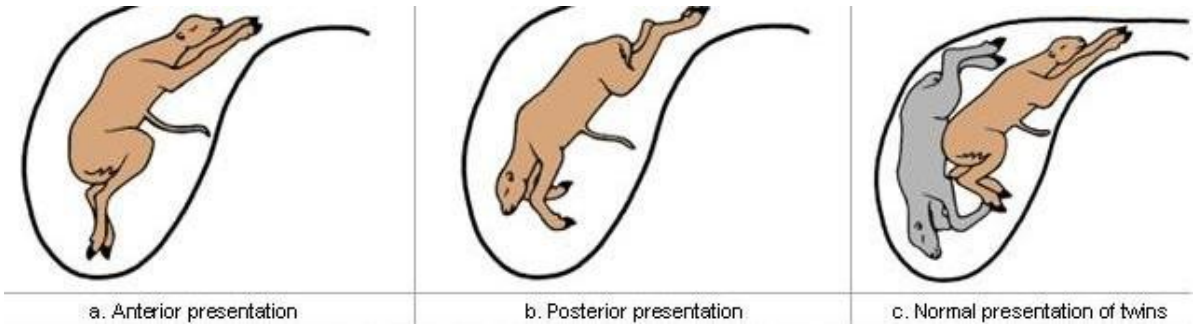

Fig. 1: Normal presentation of the fetus during parturition

Dystocia of maternal origin

Dystocia of maternal origin may be caused by uterine inertia, small pelvic size, failure of cervical dilation, and uterine torsion. Failure of cervical dilation and uterine torsion is the most common cause of dystocia of maternal origin. Failure of cervical dilation is associated with long-term progesterone supplementation during pregnancy (Mekonnen & Moges, 2016). Dystocia caused by the small size of the dam is rarely seen if females are bred for the first time when they reach at least 65% of adult weight and height. Narrowing of the birth canal may be caused by space-occupying lesions or masses. Uterine inertia, arising from weak or absent uterine contractions, is occasionally seen in older animals or animals with prolonged pregnancy. Hypocalcemia may also be involved in secondary uterine inertia (Fossum et al., 2007; Megahed, 2018; Moges, 2016).

Dystocia of fetal origin

Broadly, the fetal origin of dystocia can be divided in general to the abnormal 3P's (P1-presentation, P2-position, and P3=-posture) and excessive fetal size relative to the maternal pelvis (Feto-pelvic-disproportion) (Kebede et al., 2017; Noakes et al., 2018). Dystocia caused by an oversized calf in a normal anterior longitudinal presentation is common in beef cattle. The calf's muzzle and forefeet are presented at the cow's vulva. Presentation is the relation between the long axis of the foetus and the maternal birth canal; position

indicates the surface of the maternal birth canal to which the foetal vertebral column is applied and posture refers to the disposition of the movable appendages of the foetus and involves flexion or extension of the foetal neck or limbs. The normal delivery is made longitudinal, in the anterior presentation, dorsal sacral position; with bilateral foreleg extension (Anderson, 2012; Pearson et al., 2014a).

Spontaneous delivery with other fetal presentation, position, or posture is unlikely unless the fetus is quite small or the dam's pelvis is unusually large (Abera, 2017). Deviation of the head and flexion of the various joints in anterior presentation, flexion of both hind limbs (Breech) in posterior presentation, or twins may cause dystocia (Hillman & Gilbert, 2008). The most common cause of dystocia in cattle is feto-pelvic disproportion. The situation is most common in heifers where the fetus is of normal size for its breed but the maternal pelvis is of insufficient size (Relative oversize) or the fetus may be unusually large and cannot be delivered through a pelvic canal of normal size (Kebede et al., 2017).

Fetomaternal disproportion is mostly caused as a result of the large fetus and fetal abnormalities, or abnormal presentation, position, or posture. Carpal flexion and lateral or ventral deviation of the head and neck are the most common fetal malposition and caused by the long neck and limbs of the fetus in these species (Pearson et al., 2014b). Unilateral or bilateral hack or hip flexions (breech) occur in posterior presentation. Schistosoma reflexus, ankylosis, and anomalies (hydrocephalus, fetal anasarca, and emphysematous fetus) are also cause of dystocia in cattle. Even though presences of twins are rare in cattle but should always be considered in cases of dystocia (Frame, 2006; Hillman and Gilbert, 2008; Purohit et al., 2012).

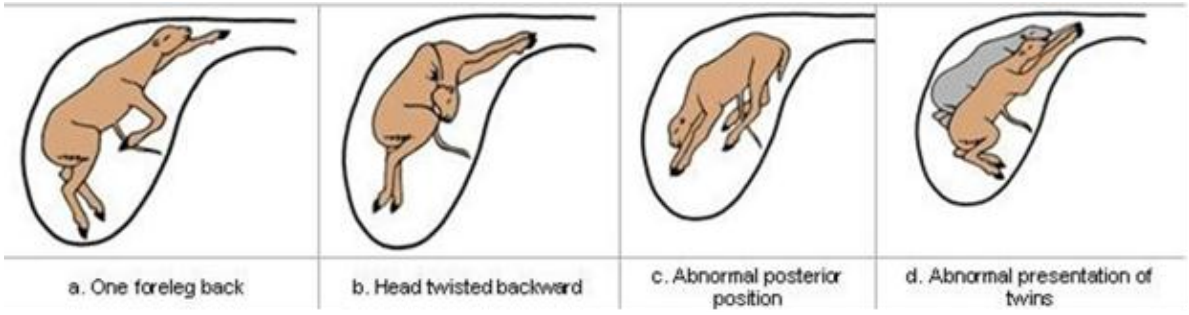

Fig. 2: Abnormal presentation of the fetus during parturition

In addition, Dystocia can also be classified as functional or obstructive. Functional dystocia usually is termed inertia and can be classified as primary or secondary (Jackson, 2004).

Primary uterine inertia

It is the most common cause of dystocia in dogs and cats, with a reported incidence of up to 91% of cases (Jackson, 2004; Mee, 2008). In primary uterine inertia, the myometrium produces weak, infrequent contractions resulting in a failure to deliver the fetuses. Primary uterine inertia can be further classified as complete or partial. In complete primary inertia, second stage labor does not start; whereas in partial primary inertia, second-stage labor starts but labor ends prematurely in the absence of obstructive causes (Pearson et al., 2014a).

Secondary uterine inertia

It occurs following a prolonged second stage of labor and may be associated with obstructive dystocia. Obstructive dystocia may result from relative or absolute fetal oversize. Absolute fetal oversize refers to a fetus that is too large to pass along a maternal birth canal that is of normal dimensions. Relative fetal oversize refers to a fetus of normal size that cannot pass along the maternal birth canal because the latter is abnormally small or restricted in some way. Relative fetal oversize

is equivalent to maternal obstructive dystocia (Jackson, 2004; Pearson et al., 2014a).

3. Risk factors associated with the prevalence of Dystocia in farm animals

Risk factors for dystocia include abnormal size and position of the fetus, abnormal maternal pelvis shape as affected by prior trauma, metabolic bone disease, dysfunctional uterine action, cervical or vaginal stricture, and macrosomal anomalies such as gestational diabetes, hydrocephalus, and fetal hydrops. Multiparity may also predispose animals to dystocia, especially in species where single births are the norm (Al-Amin, 2018; Fossum et al., 2007; Frame, 2006).

The challenge of early detection of dystocia in animals relates to housing conditions and the environment as well as their ability to delay labor and hide signs of distress until late in the disease process. Dystocia is more easily observed for indoor animals than those housed in large outdoor enclosures and free-range naturalistic environments. In these environments, it may not be until the situation has progressed to a critical stage that signs of dystocia become apparent, even to the most experienced observer. It is due to these factors that animals presenting with dystocia are often in critical condition and requires immediate treatment (Mortimer, 2009; Pearson et al., 2014b; Purohit et al., 2012).

Incomplete Cervical Dilatation

Failure of the cervix completely to dilate is a relatively common cause of dystocia in the dairy bovine. It may occur in the heifer, multiparous cows, and other species. Improper cervical dilation appears to be a more frequent maternal cause of dystocia in cattle (Benesch and Wright, 2001). Formation of scar tissue due to injuries sustained at previous calving in aged animals, improper relaxation during parturition, congenital stenosis of the vagina, vaginal obstruction by fibrous bands, perivaginal abscess or cysts can occlude the genital passage and hinder with the delivery of the fetus (Purohit et al., 2011).

Uterine Torsion

Torsion of the uterus usually occurs in a pregnant uterine horn and is defined as the twisting of the uterus on its longitudinal axis. Uterine torsion is relatively common in cattle. It is often associated with an oversized foetus. Uterine torsion, from 180 to 720°, prevents entry of the foetus/fluids into the twisted vaginal lumen such that the animal shows no sign to indicate the end of first stage labour. Failure of the cervix to dilate fully is a common consequence (Pearson et al., 2014a).

Rotation of the uterus on its long axis with twisting of the anterior vagina is a common cause of bovine dystocia, less common in small ruminants and small animals. Uterine torsion is a complication of late first-stage or early second stage labour. It is probably due to instability of the uterus which results from the greater curvature of the organ being dorsal and from the uterus being disposed anteriorly to its subilial suspension by the broad ligaments (Abera, 2017; Beagley et al., 2010).

Uterine Inertia

Uterine inertia is a condition where the uterine expulsive forces fail to deliver a fetus. This condition is common in dairy cows and older beef cows with clinical hypocalcemia (milk fever). Parturition does not progress beyond the end of first stage labour. Vaginal examination reveals the cervix to be fully dilated with the foetal membranes intact. Often the calf is already dead. There may be other signs of hypocalcemia including recumbency and inability to rise, and free gas bloat (Pearson et al., 2014b).

Uterine inertia is classified conventionally into primary and secondary uterine inertia. The most common cause of primary uterine inertia in dairy cows is considered to be hypocalcemia, with the animal showing signs of milk fever as calving is about to begin. When the uterine musculature becomes exhausted after the failure of the delivery of a maldisposed or oversized fetus or due to obstruction in the birth canal, then the condition is known as secondary uterine inertia. The contractions in the uterus then stop or become weak and transient. The animal shows no progress in parturition after the second stage of labor (Purohit et al., 2011).

It is produced by a lack of tone or failure of the uterine muscles to contract. Primary uterine inertia is a failure of uterine muscle to contract normally at parturition which may occur due to failure of the muscle to respond to hormonal stimuli and disease of muscle or lack of failure to release hormones such as estrogen and possibly oxytocin, that initiate uterine contraction in normal muscles (Ghuman, 2010).

Hernia of the Gravid Uterus

Occasionally hernia of the gravid uterus occurs through a rupture of the abdominal floor. The accident is one of the advanced pregnancy, occurring from the seventh months onwards in large animals. It is probable that in the majority of cases a severe blow on the abdominal wall is the exciting cause although many observers have stated that it may occur without traumatic influence; the abdominal musculature becoming in some way so weakened that it is unable to support the gravid uterus. The site of the original rupture is the ventral aspect of the abdomen, at the right side in the case of cows. Ventral displacement of the uterus is an uncommon cause of dystocia in cows. It is seen in animals with a ventral hernia or rupture of the prepubic tendon where the pregnant uterus passes downward into the point of the hernia (Benesch and Wright, 2001; Ghuman, 2010; Pearson et al., 2014b).

Fetal Oversize

A large number of studies conducted on dairy and beef cows point out that the calf birth weight, especially in 2-year old first calving heifers, significantly affects the difficultly in calving (Purohit et al., 2011).

Fetal Maldisposition

Although abnormal presentations are thought to be repeatable (Cows that have an abnormally presented fetus once are more likely to do so again), there is little that can be done to reduce the relatively small percentage of calves that experience dystocia due to abnormal presentation. Various diseases of the fetus can result in the altered shape of the fetus and dystocia in cattle (Anderson, 2012; Kebede et al., 2017).

Twinning

Twin gestation in cattle often culminates in dystocia. Twin dystocia is of three types: both fetuses present simultaneously and become impacted in the maternal pelvis, one fetus only is presented but cannot be born because of defective posture. position or presentation; posture is often most at fault, the lack of extension of limbs or head being due to insufficient uterine space; uterine inertia, defective uterine contractions are caused, either by the excessive fetal load or by premature birth. When inertia is present, the birth of the first or second fetus does not proceed although the presentation is normal (Noakes et al., 2018; Pearson et al., 2014a).

Malposition of fetus

Further causes of obstructive dystocia are faulty fetal disposition such as transverse presentation, lateral or ventral deviation of the head, or breech posture (especially if the first fetus in a primiparous dam is concerned). Dead fetuses may occasionally cause obstructive dystocia, especially if the first fetus to be delivered is dead or if massive emphysema formation has already taken place. Furthermore, obstructive dystocia may also be caused by pathological alterations of the soft or bony tissue of the birth canal (pelvic fractures, tumors, vaginal prolapse, congenital malformations of the uterus, the vagina or the vestibulum) (Kebede et al., 2017; Pearson et al., 2014a).

4. Clinical presentation and Diagnosis of Dystocia

Clinical signs of Dystocia

Dystocia requiring major obstetric intervention and early diagnosis of dystocia is very important because it may evolve rapidly to a critical situation endangering the life of both the fetus and the dam (Divers and Peek, 2019; Kebede et al., 2017). The diagnosis and treatment of dystocia require a good understanding of normal parturition, sensitivity to the welfare of both dam and offspring, and good practical competences. However, identifying the exact point at which normal birth ceases and dystocia occurs is not easy. Any apparent or suspected departure

from normal birth should be investigated (Al-Amin, 2018; Moges, 2016; Pearson et al., 2014a).

Specific signs of dystocia are: prolonged, non-progressive, first stage labor; the cow standing in an abnormal posture during first stage labor-in case of uterine torsion the cow may stand with a dipped back in the sawhorse posture and failure of the calf to be delivered within 2 hours of the amnion appearing at the vulva. Obvious malpresentation, malposture, or maldisposition-like the appearance of the fetal head but no forelimbs, the tail but no hind limbs, the head, and a single forelimb, the appearance of detached chorioallantois, fetal meconium or blood-stained amniotic fluid appears at the vulva (Kumar, 2015).

Dystocia should be considered in any of the following situations: 1) animals with a history of previous dystocia or reproductive tract obstruction, 2) parturition that does not occur within 24 hr after a drop in rectal temperature to <100°F (37.7°C), 3) strong abdominal contractions lasting for 1–2 hr without passage of a puppy or kitten, 4) active labor lasting for 1–2 hr without delivery of subsequent puppies or kittens, 5) a resting period during active labor >4–6 hr, 6) a bitch or queen in obvious pain (eg, crying, licking, or biting the vulva), or 7) abnormal vulvar discharge (eg, frank blood, dark green discharge before any neonates are born (Hillman and Gilbert, 2008; Pearson et al., 2014a).

Additionally, the usual clinical signs are the onset of labor without delivery of the fetus and/or fetal membranes and later regression of parturition signs. The cow may show signs of mild discomfort. The animal may adopt a rocking horse stance and show mild colic pain (Abera, 2017; Benesch and Wright, 2001). Partial anorexia, dullness, and depression may be evident. One or both lips of the vulva are pulled in because of the torsion of the birth canal. When the cervix is fully dilated it is not palpable as a separate structure and is continuous with the vagina. The incompletely dilated cervix is palpable through per rectum examination (Purohit & Mehta, 2006; Purohit et al., 2012).

Diagnosis of Dystocia

The diagnosis of dystocia is based on history and physical examination (Mortimer, 2009). Before starting the clinical examination, focusing on the following: physical condition and body condition score of the cow; is the cow standing or recumbent; brief physical examination; if there are any membrane or fetal part visible in the vulva; if so, identify the membrane and its condition or the fetal presentation and position; is there any vaginal discharge that may indicate, for example, fetal death (Megahed, 2018; Noakes et al., 2018).

Upon arrival at the farm, this information is completed by inquiring for additional details about the clinical history to obtain as much pertinent history as possible and this should include: the expecting calving date (Gestation length); information about the sire; if the cow is first calving or not and, if pluriparous, if the previous calving evolved easily; for how long is the cow in labor; if there was any progress in calving; if some assistance has been given so far and which measures were undertaken. Some other questions about the recent health of the cow should also be asked (Moges, 2016; Mortimer, 2009).

In cases of fetomaternal disproportion vaginal examination is often difficult. However, when called for acting on a dystotic labor, one must remember that all kinds of dystocia are possible and that during the clinical approach, some steps must be followed (Abera, 2017; Noakes et al., 2018). Moreover, dystocia should be suspected if the first stage of labor exceeds 6 hours with increasing signs of discomfort or if the second stage of labor does not progress normally within 10 minutes of the rupture of the amniotic sac. Dams may show signs of distress, with frequent alternation between the standing and sitting positions, side to side rolling, and excessive vocalization and straining. Abnormal (bloody or purulent) discharge in a term female warrants immediate obstetric evaluation. One rule that we always observe is to attend immediately to any parturient female that the owner says is not

acting normally (Kumar, 2015; Linde-Forsberg and Eneroth, 2000; Noakes et al., 2018).

To determine the appropriate therapy, the cause of dystocia (obstructive vs nonobstructive) must be determined and the condition of the animal assessed. A thorough history regarding breeding dates, previous parturitions, pelvic trauma, etc, is desirable. The animal should be examined for signs of systemic illness that, if present, may necessitate an immediate cesarean section. The normal vaginal discharge at parturition is a dark green color; abnormal color or character warrants immediate attention. A sterile digital vaginal examination should be performed to evaluate the patency of the birth canal and the position and presentation of the fetus(es). Radiography or ultrasonography can determine the presence and number of fetuses, as well as their size, position, and viability (Frame, 2006; Jackson, 2004; Youngquist and Threlfall, 2007).

5. Treatment of Dystocia

Dystocia in cattle can be relieved by different obstetric methods, including the caesarean operation and fetotomy. Nowadays, the caesarean operation is one of the most common surgical procedures performed by veterinarians in cattle practice and is considered a routine obstetric technique. It has high maternal and fetal survival rates and often is less exhausting, speedier, and safer than fetotomy. There are three main goals: (1) survival of the cow; (2) survival of the calf; and (3) maintenance of fertility. A prompt decision to perform a caesarean operation is important for optimum success. Ideally, it is carried out when a live calf cannot be delivered after 15-20 minutes of manipulation (Abera, 2017; Benesch and Wright, 2001).

The cow is a good surgical risk, provided that the environment is suitable for aseptic abdominal surgery. The need for urgent intervention is indicated if there is evidence of fetal hypoxia, as shown by hyperactive movements of the fetus and expulsion of the meconium, identifiable in the amniotic fluid. A successful prognosis depends on several factors, such as the skill and speed of the surgeon, duration of dystocia, the physical condition of the dam, surgical environment, concurrent disease, and presence of a live calf (Fossum et al., 2007; Frame, 2006; Noakes et al., 2018).

Assisted Vaginal Delivery

Before manipulation is attempted, it is often necessary to repel the fetus back into the uterus. Sedation, intravenous administration of clenbuterol, and installation of warm fluids and lubricants into the uterus facilitate this process. The uses 1 L of a nonsterile lubrication product containing sodium carboxymethylcellulose in 10 L of warm water is recommended. A more extreme version of this technique has been described in which the uterus is filled with water from a hose to "flat" the fetus and aid in its manipulation. As a general rule, if no progress has been made with 15 minutes of obstetric manipulation, an alternate approach should be considered, such as fetotomy, controlled vaginal delivery (CVD), or cesarean section (Abera, 2017; Frame, 2006; Jackson, 2004).

When manipulations are successful and the fetus is in the normal dorsosacral position for delivery, traction should be applied carefully, in conjunction with the dam's contractions. The fetal ropes should be looped above the fetlocks, with a half hitch placed below the joint. Head ropes should only be used for positioning, not for traction. The incidence of retained fetal membranes and also uterine prolapse is higher following dystocia. To prevent this, the membranes should be carefully tied up and the dam gave a low dose of oxytocin (e.g., 20 units, IM). To minimize the risk for uterine, prolapse, the uterus should be palpated per vagina to ensure there is no invagination of either of the uterine horns, which can progress to uterine prolapse if not corrected (Frame, 2006; Pynn, 2015).

Moreover, Medical management may be considered when the condition of the dam and fetuses is stable, when there is proper fetal position and presentation, and when there is no obstruction. Oxytocin (3-20 U in bitches, 2-5 U in queens) given IM up to 3 times at 30-min

intervals, with or without 10% calcium gluconate (3-5 mL, IV slowly) may promote uterine contractions. If no response follows, a cesarean section should be performed (Fossum et al., 2007; Kumar, 2015; Mekonnen and Moges, 2016).

Cesarean Section

Surgery is indicated for obstructive dystocia, dystocia accompanied by shock or systemic illness, primary uterine inertia, prolonged active labor, or if medical management has failed. Caesarian section, also called laparohysterotomy, means the extraction of the fetus or foeti from the mother animal, through a surgical opening in the abdominal wall and the uterus. It is commonly indicated in cases of dystocia when a calf cannot be delivered by normal parturition cascade (Fesseha and Ayele, 2020; Noakes et al., 2018; Pynn, 2015). There are different available surgical approaches for bovine caesarean section: the standing left paralumbar celiotomy, standing right paralumbar celiotomy, recumbent left paralumbar celiotomy, recumbent right paralumbar celiotomy, recumbent ventral midline celiotomy, recumbent ventral paramedian celiotomy, ventrolateral celiotomy, and the standing left oblique celiotomy. Each has its own advantages and disadvantages. The selection of an approach should be based on the type of dystocia, the cow's condition, the environmental conditions, the availability of assistance, and the surgeon's preference (Fesseha et al., 2019; Kumar, 2015; Newman, 2008; Newman and Anderson, 2005).

6. Prevention of Dystocia

Veterinarians endeavoring to prevent and reduce the incidence of dystocia. This can be prevented with proper reproductive management and good husbandry practices. This, in turn, helps to decrease the incidence of dystocia (Noakes et al., 2018). 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 (Anderson, 2012; Frame, 2006).

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. Maintenance of calcium homeostasis throughout the transition is imperative for uterine health (Anderson, 2012; Martinez et al., 2012). The use of anionic salts can reduce the incidence of clinical hypocalcemia (Milk fever) to <2% in multiparous cows and also reduce the incidence of subclinical hypocalcemia in early postpartum (Martinez et al., 2012; Pearson et al., 2014a; Pynn, 2015).

Cows and heifers should be fed to give birth in suitable body condition neither being thin nor fat because fat cows tend to experience more calving problems. Restricting food in the late stages of pregnancy does not prevent a large calf and leads to weak labour and increased dystocia rates and adequate exercise is good especially at late pregnancy. Not all dystocia can be prevented, such as mal-presentations and early intervention is paramount in ensuring a live birth. Farmworkers need to be trained to deal with dystocia and recognize when further help is needed. A delay in assisting may mean the loss of the calf or injury and even the death of the cow (Abera, 2017; Anderson, 2012).

CONCLUSION

Dystocia (difficult birth) occurs when the first or second stage of labor is prolonged and assistance is required for delivery. Dystocia cases are stressful events for both mother and offspring with potentially lifelong consequences and have a large economic impact on farmers due to calf death, injury or death to the cow, veterinary cost, as well as the decrease pregnancy rate of the cow after losing a calf and has a detrimental effect on the welfare of the cow and the calf. It has been caused by maternal and fetal factors. The incidence of dystocia varies but generally is more common among first-calf heifers, because they have not yet reached their mature size, and then decreases with age. The

diagnosis of dystocia is based on the history of the case, general clinical examination of the cow, and specific examinations like vaginal and rectal examinations. The diagnosis and treatment of dystocia constitute a large and important part of the science of obstetrics and require a good understanding of normal parturition. Obstetrical operations such as mutation, forced traction, fetotomy, and cesarean section are used to relieve dystocia. Uterotonic (ecbolic) drugs like oxytocin and prostaglandins are used to cause a marked uterine contraction as to expel uterine contents. Although it is not possible to eliminate dystocia, improvements in the management of heifers during their development and observation of cows and heifers during the calving season are critical for reducing calf losses. Accordingly, early intervention medical as well as surgical assistance and maintenance of a balanced nutritional program also minimizes the effect of dystocia.

REFERENCES

Abera, D. (2017). Management of dystocia cases in the cattle: A review. *Journal of Reproduction and Infertility* 8, 1-9.

Al-Amin, M. (2018). "Management of Fetal Dystocia Caused by Carpal Flexion in A Cow: A Case Report." Faculty of Veterinary Medicine (DVM) Chittagong Veterinary and Animal ….

Anderson, P. (2012). Cow/Calf Management: Minimizing calving difficulty in beef cattle. *University of Minnesota Extension. Americans with Disabilities Act*, 1-10.

Ball, P. J., & Peters, A. R. (2008). "Reproduction in cattle," John Wiley & Sons.

Beagley, J., Whitman, K., Baptiste, K. E., & Scherzer, J. (2010). Physiology and treatment of retained fetal membranes in cattle. *Journal of veterinary internal medicine 24*, 261-268.

Benesch, F., and Wright, J. (2001). Maternal dystocia. *Indian reprint]. Greenland Publishers, Lucknow, India*, 77-78.

Bhattacharyya, H., K. , Fazili, M., R. , Buchoo, B., A., & Akand, A., H. (2012). Genital prolapse in crossbred cows: prevalence, clinical picture and management by a modififi ed Bühner's technique using infusion (drip) set tubing as suture material. *Veterinarski Arhiv 82*, 11-24.

Bhattacharyya, H. K., Bhat, F. A., & Buchoo, B. A. (2015). Prevalence of dystocia in sheep and goats: a study of 70 cases (2004-2011). *Journal of Advanced Veterinary Research 5*, 14-20.

Brounts, S. H., Hawkins, J. F., Baird, A., & Glickman, L. T. (2004). Outcome and subsequent fertility of sheep and goats undergoing cesarean section because of dystocia: 110 cases (1981–2001). *Journal of the American Veterinary Medical Association 224*, 275-281.

Divers, T. J., & Peek, S. F. (2019). The clinical examination. *Medical Science* 155, 3-15.

Fesseha, H., & Ayele, A. (2020). Recurrent Prepartum Cervico-Vaginal Prolapse in a Crossbred Holstein Friesian Dairy Cow. *Vet Med Open J. 4*, 107-109.

Fesseha, H., Negash, G., & Gebrekidan, B. (2019). Caesarean operation in cow due to prolonged pregnancy. . *Vet Med Open J.* 4, 95-99.

Fossum, T., Hedlund, C., & Hulse, D. (2007). Surgery of the reproductive and genital systems. *Small animal surgery 3*, 702-740.

Frame, N. (2006). Management of dystocia in cattle. *In practice 28*, 470-476.

Ghuman, S. (2010). Uterine torsion in bovines: a review. *Indian Journal of Animal Sciences 80*, 289.

Hillman, R., & Gilbert, R. O. (2008). Reproductive diseases. *In* "Rebhun's diseases of dairy cattle", pp. 395-446. Elsevier.

Jackson, P. (2004). Dystocia in the dog and cat. *Handbook of veterinary obstetrics, second edition. Edinburgh: Saunders*, 141-66.

Kebede, A., Mohammed, A., Tadessse, W., Abera, D., & Nekemte, E. (2017). Review on Economic Impacts of Dystocia in Dairy Farm and Its Management and Prevention Methods. *Nat Sci. 15*, 32-42.

Kumar, P. (2015). "Applied veterinary gynaecology and obstetrics," International Book Distributing Co.,.

Linde-Forsberg, C., & Eneroth, A. (2000). Abnormalities in pregnancy, parturition and the periparturient period. *Textbook of Veterinary Internal Medicine 2*, 1527-38.

Martinez, N., Risco, C., Lima, F., Bisinotto, R., Greco, L., Ribeiro, E., Maunsell, F., Galvão, K., & Santos, J. (2012). Evaluation of peripartal calcium status, energetic profile, and neutrophil function in dairy cows at low or high risk of developing uterine disease. *Journal of dairy science 95*, 7158-7172.

Mee, J. F. (2008). Prevalence and risk factors for dystocia in dairy cattle: A review. *The Veterinary Journal 176*, 93-101.

Megahed, G. A. (2018). Dystocia due to a Dichephalus Monster Fetus in Egyptian Buffalo: A Case Report. *Int J Anim Sci 2*, 1031.

Mekonnen, M., & Moges, N. (2016). A Review on Dystocia in Cows. *European Journal of Biological Sciences 8*, 91-100.

Moges, N. (2016). Etiology, Incidence and Economic Significance of Dystocia and Recommendations for Preventive Measure and Treatment to Reduce the Incidence of Dystocia. *Journal of Reproduction and Infertility 7*, 24-33.

Mortimer, R. (2009). Calving and handling calving difficulties. *Calving management manual*.

Newman, K. D. (2008). Bovine cesarean section in the field. *Veterinary Clinics of North America: Food Animal Practice 24*, 273-293.

Newman, K. D., & Anderson, D. E. (2005). Cesarean section in cows. *Veterinary Clinics: Food Animal Practice 21*, 73-100.

Noakes, D. E., Parkinson, T. J., & England, G. C. (2018). Arthur's Veterinary Reproduction and Obstetrics-E-Book, Elsevier Health Sciences.

Pearson, L. K., Rodriguez, J. S., & Tibary, A. (2014a). Disorders and diseases of pregnancy. *Llama and Alpaca Care*, 256.

Pearson, L. K., Rodriguez, J. S., & Tibary, A. (2014b). Postpartum Disorders. *Llama and Alpaca Care-E-Book: Medicine, Surgery, Reproduction, Nutrition, and Herd Health*, 297.

Purohit, G., & Mehta, J. (2006). Dystocia in cattle and buffaloes: A retrospective analysis of 156 cases. *Veterinary Practitioner 7*, 31-34.

Purohit, G. N., Barolia, Y., Shekhar, C., and Kumar, P. (2011). Maternal dystocia in cows and buffaloes: a review. *Open journal of Animal sciences 1*, 41.

Purohit, G. N., Kumar, P., Solanki, K., Shekher, C., & Yadav, S. P. (2012). Perspectives of fetal dystocia in cattle and buffalo. *Veterinary Science Development 2*, e8-e8.

Pynn, O. D. (2015). Managing Dystocia in the Field. *In* "Robinson's Current Therapy in Equine Medicine", pp. 709-712. Elsevier.

Youngquist, R., & Threlfall, W. (2007). Current Therapy in Large Animal Theriogenology. 2nd Eds. *Saunders Elsevier, St. Louis, Missouri*.

Youngquist, R. S., & Threlfall, W. R. (2006). Current Therapy in Large Animal Theriogenology-E-Book, Elsevier Health Sciences.