Signs of approaching parturition

Some externally visible changes do occur in animals when parturition is approaching. The most important external changes of approaching parturition are seen in the **udder, vulva and pelvic ligaments** and to some extent in the behavior.

The symptoms are inconsistent between individual animals, and between consecutive parturitions. The symptoms therefore, do not permit an accurate prediction as to the exact time of parturition in a certain animal but are only useful indications as to the approximate time parturition can be expected.

Clinicians must therefore refrain from tow positive statements concerning the exact time of parturition.

- Animals like sow, dog and cat attempt to segregate themselves from the other animals to make a suitable nest or bed. Cats often hide in some isolated places when kept as a pet, and so do bitches attempt to hide.
- In the cow, buffalo, sheep and goat the pelvic ligaments, especially the sacro-sciatic ligaments become progressively relaxed as parturition approaches, causing a sinking of the croup ligaments and muscles and raising of the tail head . These changes occur because of the changing hormonal milieu including estrogen and relaxin. The changes are most marked in the cow and presence of very relaxed ligaments indicates that parturition will probably occur in 24-48 hours.
- The vulva becomes progressively edematous, flaccid and enlarged (2 to 5 times normal size) as parturition approaches in most domestic animals.
- The udder becomes enlarged and edematous. In heifers, udder enlargement may be initiated at 4months of pregnancy but this may not be noticeable in pleuriparous cows 2 to 4 weeks before parturition.

- Edema in the udder may sometimes be extensive(towards abdominal floor even up to the xiphoid region)and may create difficulty in walking. Caudally this may extend up to the vulva.
- Just prior to parturition the udder secretion changes from a honey like dry secretion to a yellow, turbid, opaque cellular secretion called colostrum which may sometimes dribble down. In mares, the udder becomes distended with colostrums 2 days before foaling and oozing of colostrum from teats, called waxing is usually observed in most mares 6 to 48 hours before foaling .The udder development is less marked in the ewe and doe. In bitches, cats and sows mammary enlargement may be evident a few days before, parturition and milk let down may occur in sows 24 hrs before farrowing.
- Because of the liquefaction of the cervical seal in the cow tenacious vaginal mucus discharge may be seen. Similar discharges may be seen in the sheep, goat, buffalo, sow, female camel and bitch. Some vaginal discharge is seen in the cow from the seventh month of pregnancy but this is scanty, however near parturition the discharge may be profuse (24 hours before calving).
- In the cow a drop in body temperature may occur before parturition, but this is most marked in the bitchin which there is drop of 1°C body temperature 24hours before whelping.
- As animals approach the first stage of labor the symptoms of restlessness, abdominal discomfort and anorexia become prominent and mares may roll down. Dogs may show little vomiting.

Stages of parturition

Although, the events resulting into the delivery of fetus are a continuous process, however, for the sake of understanding the process of parturition, it has been divided into three stages referred as the stages of labor.

The stages of labor defined previously are :

1) The first stage of labor (Dilation of cervix)

2) The second stage of labor (Expulsion of fetus)

3) The third stage of labor (Expulsion of fetal membranes)

First stage of parturition

The first stage of parturition comprises the initiation of contractions and the dilation of the cervix. The first stage of labor is presumed to have culminated with the delivery of the first water bag the allantois-chorion. This is usually grayish white in cattle and reddish in the mare.

The initial stages of the first stage of labor are characterized by active contractions that occur in both the longitudinal and circular muscles of the uterine wall, dilation of the cervix and assumption of the birth posture by the fetus.

When both the oss externus and oss internus are fully dilated the cervix becomes continuous with the vagina and is palpable only as a small frill like structure.

Uterine muscle contractions are greatly increased the last 1 to 2 hours before birth basically because of the high levels of estrogens in some species. The oxytocin is seldom released from the maternal hypophysis before the second stage of labor in many species. In the cow the contractions occur about every 10 to 15minutes and last 15 to 30 seconds. They progressively become intense, more frequent and of greater duration such that they occur about every 3 to 5 minutes in the late stage of labor.

By the end of first stage of labor the cervix is fully dilated and contractions occur rapidly. The allantochorion of the fetus enters the cervix and is ruptured here or

when it protrudes out of the vulvar lips forcing the fluids of the allantois to be released.

After the rupture of the first water bag the fetus wrapped in the amnion enters the birth canal and as the fetal legs enter the pelvis, there is reflex stimuli and release of high amounts of oxytocin from the pituitary. This is known as **"Ferguson's reflex"**. There are increased uterine and abdominal contractions. The first stage of labor is considered to be over by the rupture of first water bag, and the entry of fetus wrapped in amnion in the vagina or outside the vulvar lips indicates the start of the second stage of labor.

The externally visible signs of the first stage of labor in the cow, buffalo, ewe and goat include symptoms of mild abdominal pain, frequent getting up and lying down which are marked in the primiparous animals. Animals evidence anorexia, stand with an arched back and raised tail, strain occasionally and ruminate irregularly. In the mare, symptoms of restlessness, anorexia, colicky pains, slight sweating behind the elbows and around the flanks, lying down and getting up are observed. The elevation of the tail, repeated stretching as if to urinate, frequent bowel evacuations, and looking at the flank are characteristic of abdominal discomfort in the mare.

The second stage of labor:

This stage of labor is characterized by the entrance of the fetus/fetuses into the dilated birth canal, rupture of the amnion, abdominal contractions and the expulsion of the fetus through the vulva. In the cow, following the rupture of the allantochorion the fetus wrapped in the amnion is pushed through the cervix and may appear at the vulva as a grayish blue translucent distended membrane. Intermittent straining occurs, and the amnion usually ruptures as the feet passes through.

Abdominal contractions are stimulated and they become intense as the head, shoulders or hips of the fetus pass through the pelvis. The head creates greatest difficulty in passing through in the uniparous animals. Often, after the fetal head passes the vulva, the dam will rest for a few minutes before straining again as the chest passes through the birth canal and vulva. The hips then follow.

The fetus is delivered in an arc fashion. Almost all animals lie down as soon as straining commences. Although foaling is very rapid in the mare however, it is accompanied by great expulsive efforts and the mare is usually exhausted and will lie down on her side for15 to 30 minutes before rising. Since the umbilical cord in the mare is long it will remain attached to the fetus for an average 8 to 20 minutes until the mare or foal moves, when it breaks at a point 2 inches from the foals body.

Occasionally in the mare, bitch and cat and only rarely in other domestic animals, the fetus may be born with the amnion or portion of it wrapped around its head. This may cause suffocation and therefore should be promptly removed. The intra-abdominal pressure, caused by the contraction of the abdominal muscles and diaphragm and closure of the glottis is equal in all directions.

The third stage of labor:

The third stage of labor is characterized by the expulsion of placenta. After expulsion of the fetus the uterus continues to contract strongly for 48 hours and less vigorously, but more frequently thereafter.

The changes necessary for the expulsion of the placenta in cow, ewe, goat and buffaloes start a few days before, parturition and are completed post-partum. A weakening of the a cellular layer of adhesive protein the so called “glue line” between the cotyledons and the caruncular epithelium need to be lysed or weakened for placental separation .

The fetal villi shrink, owing mainly to the sudden loss of turgidity related to the loss of blood from the fetal side of the placenta when the umbilical cord ruptures. This is aided by the uterine contractions.

When a large portion of afterbirth becomes detached it forms a mass within the uterus which stimulates reflex contractions of the uterine and abdominal muscles and this straining completes the expulsion of the allanto-chorionic sac, which is seen to have its smooth, shining allantoic surface outermost .

The placental separation however, is rapid in the mare compared to ruminants. With the exception of the mare domestic animals may sometimes eat their after birth. In polytocous animals(bitch ,cat and pig) there are no third stage because the fetal membrane are expelled readily with each fetus .

Within an hour of birth it is normal for the young of all species to start suckling milk. This suckling stimulus initiates the release of oxytocin which potentiates the myometrial contractions and help in the expulsion of placenta.