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Stages of parturition..... Continued from previous class

## SECOND STAGE OF PARTURITION

### STAGE OF EXPULSION OF FETUS

1. It is called as stage of expulsion of foetus.
2. This stage is characterized by the entrance of the fetus or foetuses into the dilated birth canal, rupture of the allantoic sac, abdominal contractions, or labor, and the expulsion of the fetus through the vulva.
3. In the cow abdominal contractions occurred only after the feet of the fetus were in the cervix or vagina.
4. Breaking of the allantoic sac caused a sudden increase in abdominal contractions that were superimposed on the crest of each uterine wave with amplitude of 80 to 320 cm H<sub>2</sub>O, average 180 cm of H<sub>2</sub>O.
5. In the cow following the rupture of the allantoic sac, the amnion is pushed through the cervix and may appear at the vulva as a translucent distended membrane.
6. During the second stage of labor, uterine contractions occurred in the cow about 4 to 8 times every 10 minutes and lasted 80 to 100 seconds.
7. Intermittent tenesmus or straining continues and the feet of the foetus appear at the vulva.
8. As the feet pass through the vulva the amniotic sac usually ruptures.
9. Point pressure rather than diffuse pressure such as that exerted by the allantoic sac is the stimulus to abdominal contractions.
10. Passage of the head, shoulders and hips of the fetus through the pelvis caused an increase in abdominal contractions.
11. The fetal head starts through the vulva and at this point the greatest and strongest abdominal straining in the birth process usually occurs.
12. In the larger uniparous animals as the head is being forced into the vulva, the chest is entering the pelvic canal.
13. Often after the head passes the vulva the dam will rest for a few minutes before beginning straining again with strong abdominal efforts as the chest passes through the birth canal and vulva.
14. The hips usually follow through the birth canal fairly rapidly but occasionally the hind limbs may remain in the vagina until the fetus or dam moves.
15. That during the passage of the fetus through the birth canal and when the vagina was dilated there was a great increase in the levels of oxytocin in the jugular blood over that present during the first and early second stages of labor when in general it was similar to the very low blood levels present during pregnancy.
16. The release of oxytocin during most of the second stage of labor was continual in contrasts to spurts in the release of oxytocin during the milking act.
17. The levels of oxytocin in the blood plasma of goats, sheep and cows during the second stage of labor was 77 to 381, 3000 and 400 to 1000 microunits per ml, respectively.
18. The half life of oxytocin in the blood is one to one and one half minutes.
19. In the goat the posterior pituitary gland contains about 9 to 13 units of oxytocin and about one-tenth that amount is released during parturition.

20. Almost all animals, as soon as straining commences, lie down.
21. Occasionally the foal or calf may be born with the dam standing.
22. The mare and the sow usually lie out flat with the legs extended, whereas the cow, bitch, and ewe are more likely to lie on their sternum.

Observations in mares for second stage of parturition

1. In the mare straining is usually characterized by several, 2 to 5, strong expulsive efforts followed by 2 to 3 minutes of rest.
2. This procedure is repeated at fairly regular intervals.
3. In the mare one foreleg of the foetus precedes the other by 6 inches as the foetus passes through the birth canal.
4. This indicates that one elbow and shoulder enters the birth canal before the other.
5. The foal's cheek is usually lying on the limbs with its muzzle mid-way between the knee and fetlock joints.
6. Although parturition is quite rapid in the mare it is accompanied by such great expulsive efforts that the mare is usually exhausted and will lie on her side for 15 to 30 minutes before rising.
7. Since the umbilical cord in the mare is long it often does not rupture as the fetus passes through the birth canal.
8. It will remain attached to the fetus for an average of 8 to occasionally 30 minutes until the mare or foal moves, when it breaks at a point about 2 inches from the foal's body.
9. Pulsation can usually be felt in the umbilical artery for one to nine minutes. If the umbilical cord is separated immediately 400 to 1500 ml of blood is lost to the fetus.

Observations in cows and ewes for second stage of parturition:

1. The straining in cows and ewes is not as forceful and or as frequent as in the mare.
2. During the early part of the labour the cow may remain standing.
3. Its body temperature may increase to a high normal level and the pulse and respiration rate will rise due to the exertion, as is observed in other animals.
4. In the ewes the second stage of birth is similar to that in the cow.
5. Once the second stage in sheep begins the abdominal contractions develop with gradually increasing frequency and intensity until birth has occurred.
6. If these contractions become reduced in number or intensity usually assistance will be necessary to deliver a live fetus, as this condition does not occur in normal deliveries.
7. Once the feet have been passed through the vulva they should stay there and not appear and disappear at each abdominal contraction.

Observations on bitches for second stage of parturition:

1. The amnion as it appears at the vulva before the first pup is usually broken by the bitch as she licks the vulva.
2. In the bitch the delivery of the head through the vulva requires the greatest expulsive efforts.
3. The umbilical cord, which is still intact at birth, is usually broken by the bitch.
4. After the birth of each pup the bitch rests, licks the pup and her vulva.
5. When the fetal membranes are expelled in about 10 minutes after the birth of the pup, they are eaten by the bitch.
6. It is probably best to let the bitch eat only 2 to 3 placentas and then remove the rest, as consumption of too many placentas may cause vomiting and diarrhoea.

7. The greenish-black fluid that is discharged following the fetal membranes is normal and is due to the breakdown of blood resulting in the presence of bile-like pigments, uteroverdin, around the edges of the placental zone of attachment.
8. Straining begins again after 0.5 to 1 hour or more and another pup is expelled.
9. Although it may take about 1 hour of labour for the first pup to be born, the period of straining for the second and third pups are usually progressively shorter.
10. The rate of expulsion of the foetuses is very irregular.
11. Some bitches may not expel the second fetus for several hours after the first.
12. Then the next 2 or 3 may be expelled rapidly followed by another delay.
13. Rarely are the pups expelled rapidly, in a short time.
14. They may also be expelled at somewhat regular intervals.

Observations in sows and cats in relation to 2<sup>nd</sup> stage of Parturition:

1. The sow and cat have a second stage of birth similar to that in the bitch.
  2. The period of time between the expulsion of pigs varied from 3 to 45 minutes or rarely longer.
  3. The longest intervals were observed between the first and second pig and before the last pig.
  4. About three-quarters of the pigs were born with the umbilical cords intact and it took 2 to 6 minutes average time before rupture.
  5. After farrowing the sow usually urinates copiously.
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1. In multipara the foetuses are expelled in an irregular manner from each horn, that is, one fetus may be expelled from one horn and then 2 or 3 from the other and then 2 from the first and one from the second, and so forth.
  2. The presence of dead fetus may delay the emptying of that horn.
  3. Occasionally in the mare, bitch and cat, and only rarely in the other domestic animals, the foetus may be born with the amnion or a portion of it wrapped around its head.
  4. In the mare this may cause suffocation of the foal if not promptly removed.
  5. In carnivora, death is not likely from this cause since in the bitch and cat the dam promptly licks and eats the amnion if it is around the fetal head.
  6. During this stage the contracting and shortening uterine walls force and direct the foetus into the birth canal and pelvic and abdominal contractions, or labour, drives the fetus through the birth canal.
  7. The intra-uterine pressure in the cow was 66 mm of Hg between uterine contractions during the second stage of labour.
  8. The pressure reached about 170 mm of Hg at the time of abdominal contraction or about what one man could apply by traction on the fetus.
  9. The intra-abdominal pressure, caused by contraction of the abdominal muscles and diaphragm and closure of the glottis, is equal in all directions.
  10. The uterus is necessary to direct the fetus into the path of least resistance-the pelvic canal. If a large hernia is present abdominal contractions could force the uterus into the hernia.
  11. Not uncommonly traumatic gastritis or displacement of the abomasums may occur as a sequelae to parturition, due to the abdominal pressure.
  12. A healthy fetus, intact abdominal walls and a healthy uterus are necessary for normal birth.

13. In uniparous animals the large foetuses pass through an arc from the abdominal cavity upward into and through the pelvis and then downward again as they pass through the vulva.
14. In the cow the fetus must pass over the high ischial tuberosities.
15. This arc like direction of the fetus as it passes through the pelvis causes stretching of its dorsal and pelvic muscles and a relaxation of the linea alba and abdominal muscles.
16. The later is important because it allows the pelvis to be extended backward on the fetal sacrum, thus reducing the sacro-pubic diameter of the fetal pelvis.
17. The downward direction of the cranial portion of the fetus as it passes the vulva tends to push the fetal pelvis high in the maternal pelvis, where the bisiliac diameter is greater. This helps prevent a hiplock condition frequently encountered when traction is incorrectly applied.
18. In hip lock the greater trochanter fail to pass between the shafts of the ilia.
19. The time for this second stage of birth in the cow is from 0.5 to 3-4 hours. In pluriparous cows this second stage usually requires 0.5 to 1 hour. Primipara may take longer, up to 3 hours or more.
20. In ewes and goats the second stage of labor is completed in about 1 hour, range 0.5-2 hours or slightly longer if twins or triplets are present.
21. In mares this second stage is normally completed in 5 to 40 minutes with an average of 20 minutes.
22. In rare cases it may extend slightly longer, possibly up to 70 minutes.
23. In multiparous animals the length of the second stage of birth is variable, often depending upon the number of foetuses in the uterus.
24. In the bitch the expulsion of the first pup may take up to 1 hour and a variable time for each foetus thereafter.
25. The average total time for the second stage of parturition in a bitch is 3 to 6 hours. Twelve hours would certainly be a maximum.
26. In the sow the second stage is usually completed within 1 to 5 hours but occasionally may last up to 8 hours normally.
27. In the cat the time is similar to that in the dog.
28. When the umbilical cord ruptures, the two umbilical arteries together with the urachus retract into the abdominal cavity of the foetus. By the contraction of the arteries into the body tissues, provision is made for the prevention of bleeding from the naval.
29. The umbilical vein collapses, the blood drains from it and the fluids in the umbilical cord drain from it and the fluids in the umbilical cord drain out, often aided by the licking of the cord by the dam, the umbilical cord becomes necrotic, dries up and drops away in 7 to 21 days.