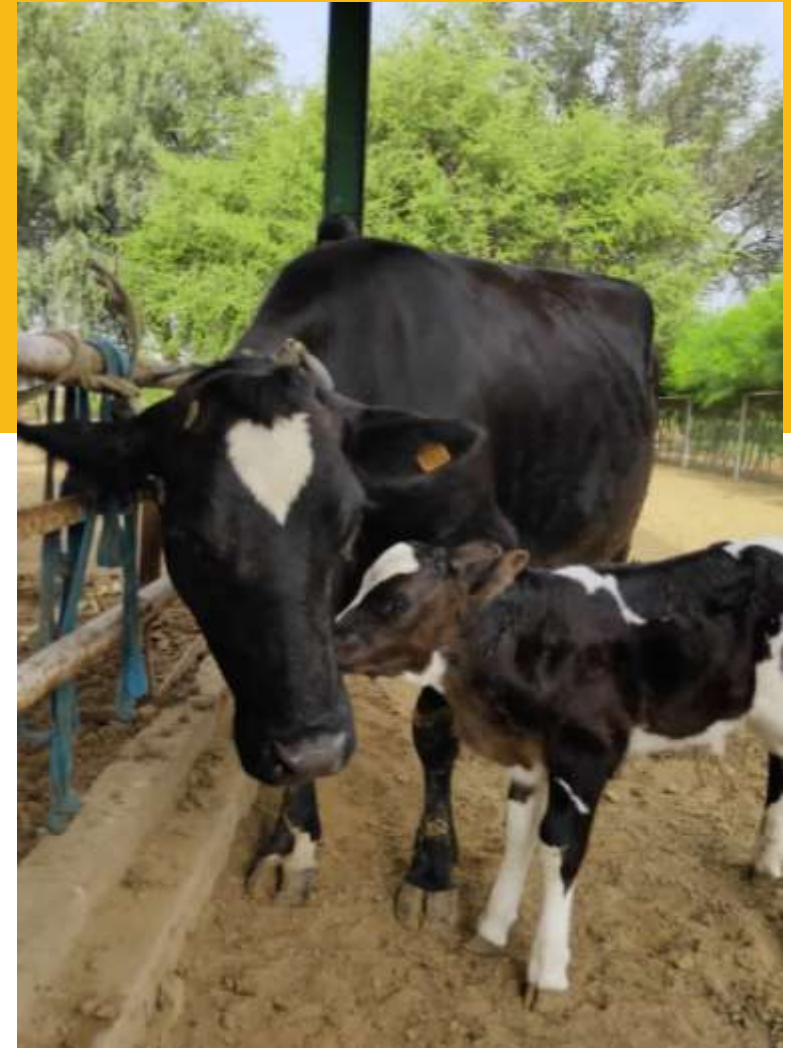


Stages of Parturition

Stage – 01. Initiation of myometrial contractions & cervical dilation

Stage – 02. Abdominal contractions & fetal expulsion

Stage – 03. Expulsion of fetal membranes & involution of uterus



Preparatory changes (48 to 72 h prior to calving)

Relaxation of sacro-sciatic ligaments

Tail head appears raised

1. Sunken gluteal muscle
2. Relaxed pelvic ligament

Cloudy white discharge

Liquefied cervical seal of pregnancy

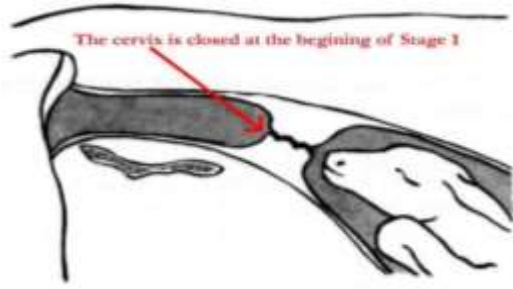
Udder enlargement

- Teat engorgement
- Heifers some time develop s/c edema in front & behind udder.

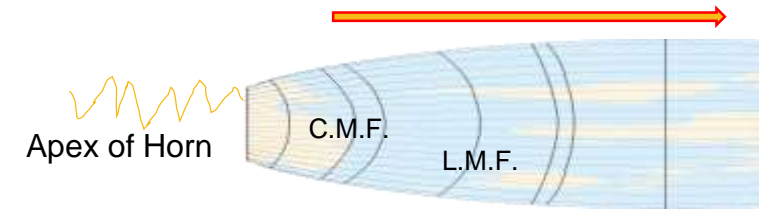


Changes in vulva

- ❖ Slightly tumefied and edematous vulva
- ❖ Slight increase in vulval length



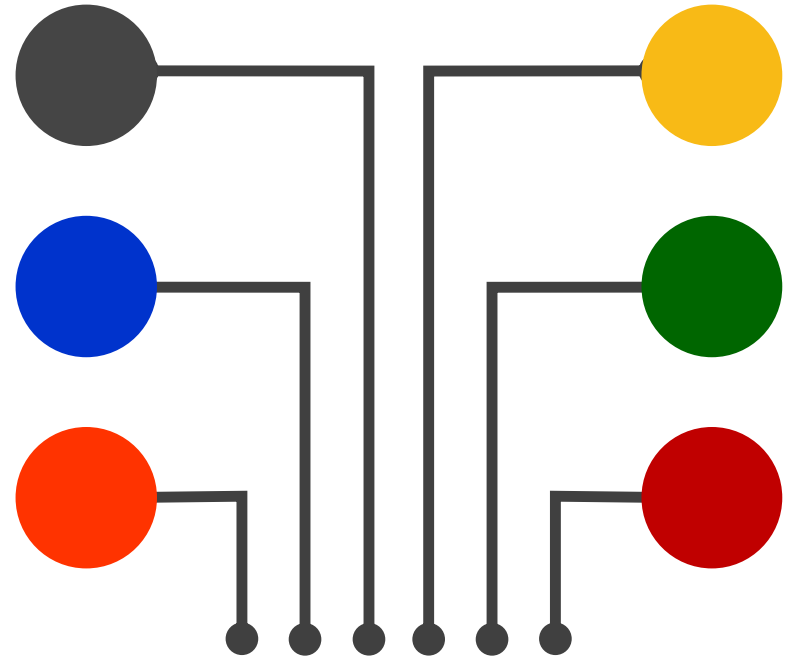
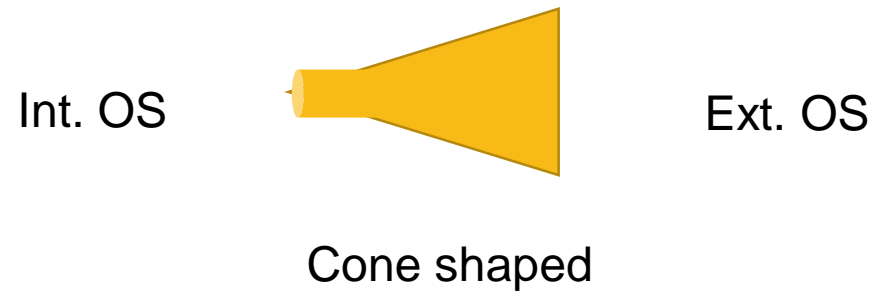
First stage calving



The changes of this stage of parturition are **invisible externally**.

Preparation the birth canal

Structural changes in cervix (softening) for dilation. Extern Os dilates first



Initiation of myometrial contractions – Discomfort and colic

Dispositioning of fetus for expulsion

1. Rotation of fetus to its longitudinal axis
2. Extension of fetal extremities



Forces

1. Uterine contraction
2. Abdominal contraction with closed glottis
3. Diaphragmatic force


First stage calving

Contractions

- ❖ Uterine contraction of **low amplitude and short duration**
- ❖ Generally occurs **24-48 hours** before parturition

Duration

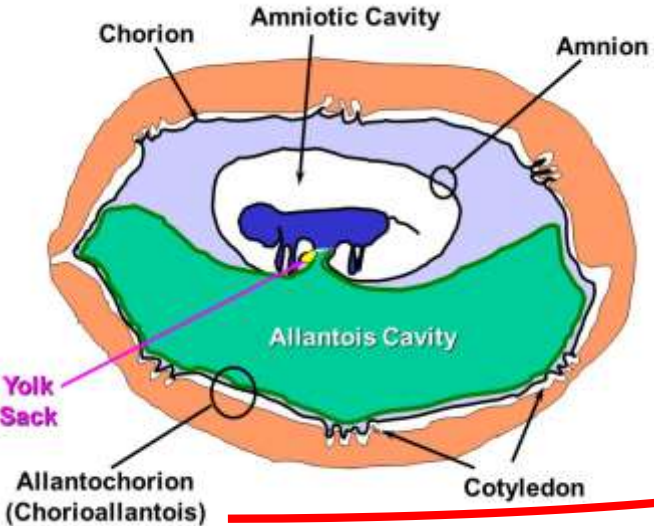
- Every 12 minutes in cow & lasts for 15-30 Sec.
- More obvious in recumbent animal

Frequency & strength increases

 Until every 3-5 Mins

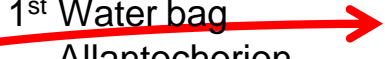
Other clinical signs

- Restlessness and elevated pulse and respiration rate
- 1°C drop in body temperature (few cases)

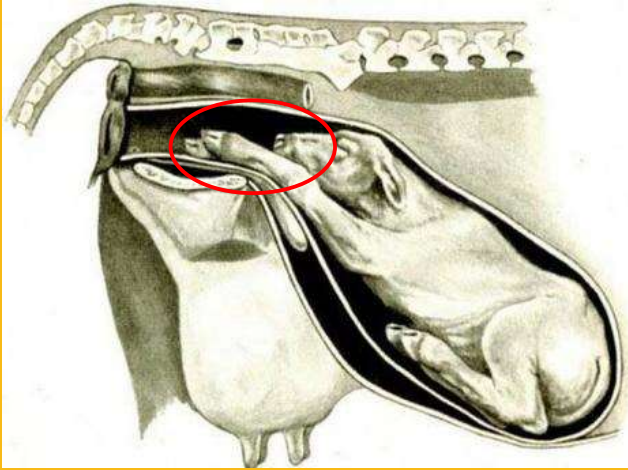
Force to push towards cervix & vagina



1st Water bag
 Allantochorion




Second stage, Abdominal contractions & fetal expulsion



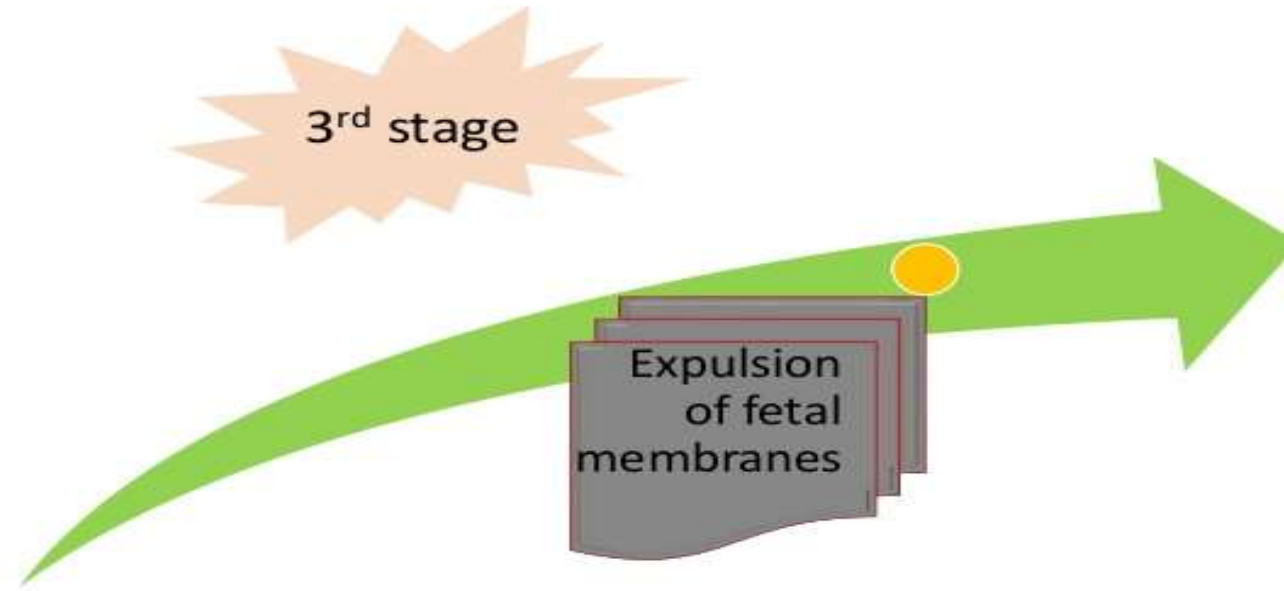
- ❖ Appearance of abdominal contraction marks the beginning of 2nd stage
- ❖ Each myometrial contraction is superimposed by 10-12 abdominal contractions
- ❖ Amniotic sac along with fetal part now reaches Pelvic inlet – Pelvic reflex
- ❖ Pelvic reflex initiates powerful abdominal contractions
- ❖ Abdominal contractions – pushes fetus towards ant. Vagina → 2nd Water bag
Amnion
- ❖ Presence of fetal part in cervix and vagina - Ferguson's reflex
- ❖ Ferguson's reflex leads to strong myometrial contractions



Second stage of calving



- ❖ The allantochorionic sac ruptures as a fetus moves front whereas sac movement remains restricted due to its placental attachments
- ❖ Amnion reaches to vulva and appears as Water bag
- ❖ Fetal limb first occupies the vulva – generally one limb earlier than other
- ❖ Fetal head is next to occupy vulva - abdominal and uterine muscle contraction reaches max efforts
- ❖ When the head is born, the mother may rest for a bit

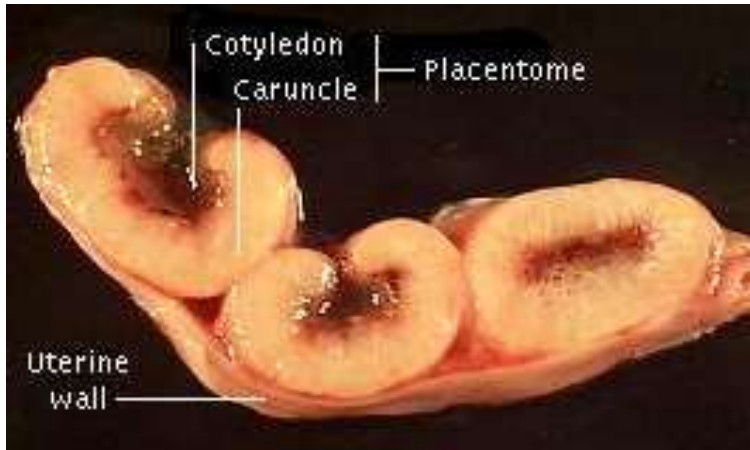


- ❖ Regular abdominal contraction - largely **ceases**
- ❖ Myometrial contractions – **Persist** with **LOW** amplitude and **HIGH** frequency
- ❖ Helpful in dehiscence and expulsion of placenta

Expulsion of fetal membranes

Shrinkage of fetal villi

Sudden **loss of turgidity** due to **escape of blood from fetal side of placenta** when umbilical cord ruptures.



Maturation changes

- ✓ Collagenisation of placentomes
- ✓ Flattening and loss of maternal crypt epithelium
- ✓ ↑ Infiltration & activity of leucocytes

Myometrial contractions

- ❖ Weak but more frequent
- ❖ “Opening up” of endometrial cups

Complete Uterine involution takes – upto 30 days

Parturition in Mare (Foaling)

General considerations

Average gestation 315- 400 days
(340 days)

Jan –Mar foaling (long gestation)

April – Jul foaling (short gestation)

Discomfort more pronounced
in primiparous

Leaking of teats - prominent



First stages of foaling

Relaxation of pelvic ligament
and gluteal muscle

➤ Waxing of teats

Vulvar swelling &
elongation of vulvar cleft



Patchy sweating behind elbow
and on flank (4 hours before)

Best indicator of beginning of
first stage

Nervous signs

Restlessness,
Kicking on belly

Anorexia

Slapping of tail against anus

Stages of foaling – first stage

➤ At terminal stage

- ✓ Crouching
- ✓ Straddling of the hind limbs
- ✓ Going down on the knees or sternum and rising again
- ✓ Glancing at the flank.



End of stage -I

- ❖ Rupture of the allantochorionic Membrane
- ❖ Escape of urine-like fluid from the vulva

Second stages of foaling

Onset of 2nd stage

- ❖ Appearance of the amnion

(Transparent bluish-white water bag)

- ❖ The commencement of forcible straining.



Stage -II

- ❖ Appearance of digit
- ❖ 3-4 powerful strains followed by 3 minutes rest
- ❖ One forelimb proceed another by 7 to 8 cm till head born
- ❖ Expulsion of head – Greatest & longest efforts

Third stages of foaling

- ❑ Expulsion of placenta by the myometrial contractions
- ❑ Straining is not a feature of the third stage





Stages of lambing

First stage :

- Udder enlargement and teat engorgement with colostrum
- Relaxation of pelvic ligament
- Vulvar swelling
- Separation from herd with nesting habit
- Circling , pawing the straw and frequent lying down
- Sniffing and licking of vaginal/uterine discharge
- Straining with head raised



Stages of lambing

Second stage :

- ❑ Second stage is represented by expulsion of foetus(es)
- ❑ The amnion and foetal parts are then engaged in pelvic inlet.
- ❑ Average **duration of the stage : 1 h**
- ❑ Multiple pregnancies : **2 h, average** delivery of first lamb **<30 min**

Third stage :

- Third stage is represented by expulsion of placenta
- Usually takes 2-3 hours after 2nd stage



Stages of kidding

First stage :

- ❖ Udder enlargement and engorgement with colostrum
- ❖ Relaxation of pelvic ligament
- ❖ Vulvar swelling
- ❖ Pawing the bedding and frequent lying down
- ❖ Urinate and defecate frequently
- ❖ Discomfort is more in primipara
- ❖ Thick, tenacious, yellowish brown discharge





Stages of kidding

Second stage :

- ❑ Second stage is represented by expulsion of foetus(es)
- ❑ Most kidding occurs in lateral recumbancy
- ❑ Average duration of the stage : 1-3 h



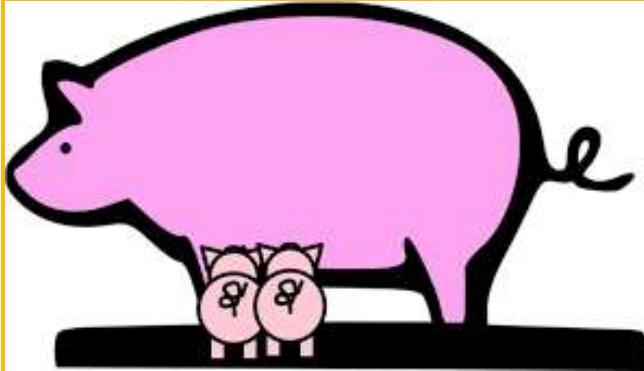
Third stage :

- Third stage is represented by expulsion of placenta
- No demarcation in twins/triplets

Stages of farrowing

First stage :

- Udder enlargement and colostrums leaking
- Reddening and swelling of vulva
- Pawing and nest building
- Restlessness
- Defecation and urination
- Increased respiration (very strong)
- Farrow in lateral recumbency
- Meconium of fetus comes out from the vulva before the birth of first piglet





Stages of farrowing

Second stage :

- ❖ Piglet born with anterior and posterior presentation in 50:50 ratio.
- ❖ Farrowing duration : 1-5 h
- ❖ Intervals between 2 piglets : 15 minutes (> time reflect stillbirth)
- ❖ Unlike other animals Sow **DO NOT** lick its piglets



Stages of farrowing



Third stage :

- ❖ Fetal membranes expelled as 2 or 3 masses of joined allantochorions with placental stalks of umbilical cords.
- ❖ No. of placental stalks indicates no. of fetuses in that mass
- ❖ After expulsion of all piglets, sow stands up and micturates profusely

Duration of stages of parturition in different species

Stages of parturition	Cow	Buffalo	Sheep/goat	Pig	Horse	Dog
First stage	2-6 h	2-6 h	2-6 h	2-12h	1-4h	6-12h
Second stage	0.5 – 1 h	0.5 – 1 h	0.5 – 2 h	2.5 – 3 h	17 minutes	3 – 12 h
Third stage	8-12 h	8-12 h	.5 – 8 h	1 – 4 h	1 h	Immediately after birth of each fetus. Some times 15 minutes