

**G**estation ends with parturition, or birth. Because both the mother and the newborn may experience a number of complications associated with parturition, it is important for a producer to be able to recognize the signs that signal birth will soon take place, as well as problems associated with parturition. He or she will then be able to see that appropriate care is taken during and after the birth to maintain the health of both the mother and her offspring.

### Parturition

Parturition is the act of giving birth. It begins after gestation has ended and is the final stage in reproduction. Hormones and mechanical factors are both at work during the birthing process.

During parturition, contractions occur to move the fetus out of the female's body. Labor involves the dilation of the cervix and the passage of the fetus and the placenta, or afterbirth. The contractions force the fetus and then the afterbirth from the uterus through the birth canal, which consists of the cervix and vagina, and then out of the body through the vulva.

Parturition is given special names when referring to different species. In cattle, for example, parturition is referred to as calving. It is called farrowing in swine, lambing in sheep, foaling in horses, whelping in dogs, and kindling in rabbits.

### Physical Signs of Parturition

Certain physical signs will allow the observant producer to determine when parturition will soon occur. Some signs are common to many species, while others are unique to a particular species.

Cow – An early physical sign of parturition in the cow is a swollen udder. The hips or tail head of the cow may have a sunken appearance, and the abdominal area may be enlarged or dropped. The vulva will be swollen and reddened. As birth approaches, the female will separate from the herd and locate a place to give birth. Very close to birth, the teats will swell and leak milk. Increased mucus discharge will appear from the vulva. The cow may become restless and nervously switch back and forth from a standing to a resting position. The time of birth is

near when a portion of the embryonic membranes called the water bag appears from the vulva.

Sow – Signs of approaching parturition in the sow include an enlarged abdominal area, restlessness, and attempts to build a nest. A swollen vulva and teats indicate that the sow will farrow soon.

Ewe – The first physical sign of parturition that may be observed in sheep is that the teats are swollen with milk. The vulva will swell and become slack. As lambing approaches, a mucus discharge will appear from the vulva, and the ewe will become restless, changing position by standing, lying down, and then standing again.

Mare – As in the cow, early physical signs of parturition in the mare include a swollen udder and sunken hips with a dropped abdomen. The teats will swell and a waxy substance will appear in the nipples; closer to birth the wax will disappear and milk will leak from the teats. The vulva will become swollen and relaxed. The mare will seek a spot away from other horses if possible. It may exhibit a raised tail, urinate frequently, and sweat excessively. The mare will restlessly shift from a standing to a lying position. Birth should occur soon after the water bag breaks, discharging its fluid.

Bitch – One physical sign of whelping in dogs is that the bitch will refuse meals within 24 hours of the birth. As birth approaches, the dog's body temperature will fall slightly below normal. Vomiting may also occur before whelping. A few hours before the birth, a mucus discharge will appear from the vulva.

Doe – The doe signals that birth is approaching by pulling out its fur to line its nest. It will exhibit a loss of appetite before kindling. The doe will also become nervous and excitable a few days before the birth.

### Hormones and Parturition

Hormones trigger parturition. Toward the end of gestation, the corpus luteum reduces its production of progesterone. As progesterone levels in the blood decrease, the levels of the hormones estrogen, oxytocin, and relaxin increase. Relaxin is produced by the corpus luteum in most species. It relaxes the pelvic muscles, cartilage, and ligaments. The birth canal then opens due to



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increased levels of estrogen from the ovary. The estrogen acts together with oxytocin from the pituitary to cause contractions in the uterus.

The hormone prolactin is also produced before birth by the anterior pituitary gland. It stimulates the production of milk for the newborn.

## Problems During Parturition

Because successful parturition depends on many factors, problems sometimes arise during the birthing process. These problems may be associated with either the mother or the fetus.

Some of the problems associated with parturition are due to the size of the fetus in relation to the mother's birth canal and pelvic opening. For example, a very large fetus may be too big to pass through the female's birth canal. A similar problem may occur with a normal-sized fetus if the female's pelvic opening is smaller than average. Problems with size arise due to the selection of animals for breeding. Parturition may be difficult if a large male of a particular breed is bred to a small female of the same breed. Similar problems occur if a male of a larger breed is bred to a female of a smaller breed.

A young mother may also have difficulty with the passage of the fetus. The lack of both birthing experience and physical development is the source of the difficulty.

During the birth, damage may be done to the reproductive system. The mother can tear the cervix, vagina, and vulva. After the birth, a prolapse may occur, with the organs of the reproductive system being pulled out of the mother's body.

Other complications may also arise. The fetus may be positioned abnormally, or malpresented, which can create birthing problems. Uncontrollable fetal bleeding can be a problem if the fetus is injured during parturition. The mother or newborn may also become infected from the actual birthing process.

## Malpresentations

The fetus should be positioned in the uterus in order to pass through the birth canal with the least resistance. The

normal presentation for cattle, sheep, horses, dogs, and rabbits is with the head positioned between the front legs to leave the birth canal first. Fetal pigs, however, do not orient themselves in any one position for birth.

Any variation from the normal position is called a malpresentation. For example, one malpresentation occurs when the fetus is positioned backward with both hind legs extended to pass into the birth canal first. While birth may proceed without assistance and occur without difficulty, the birth process must go quickly or the fetus may suffocate if the umbilical cord breaks. See Figure 5.1 for illustrations of the ideal presentation and malpresentations.

Other malpresentations require intervention in order for the birth to proceed. Often the fetus can be straightened to exit the birth canal and pulled from the mother. While some malpresentations can be corrected by the producer, many require the assistance of a veterinarian. Some of the common types of malpresentations and ways to assist with each are listed below.

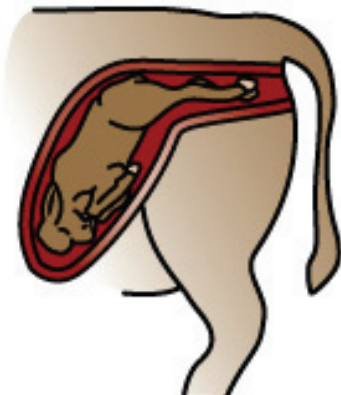
1. The fetus may be turned backward with its legs retained, or bent back into the uterus. If this malpresentation occurs, straighten the hind legs to enter the birth canal. The fetus must then be delivered quickly to avoid suffocation, as explained above.
2. The fetus may be positioned to leave the birth canal headfirst but have one or both forefeet retained. If a foot is retained, pull it forward in order for the calf to exit the birth canal in the normal position.
3. The head of the fetus may be bent backward. To assist with the birth, reposition the fetus by pushing it back into the uterus and bringing the head forward between the legs. Pull the legs forward to allow the fetus to exit the birth canal.
4. The fetus may be presented abnormally by being turned upside down. Turn the fetus to the normal position or deliver it upside down.



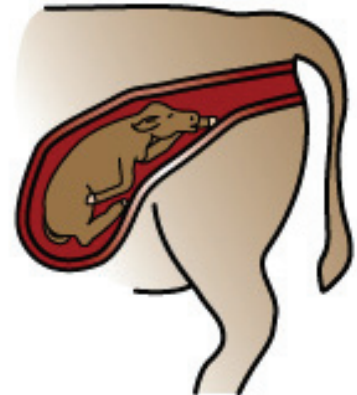
Figure 5.1 - Parturition Presentations of a Calf



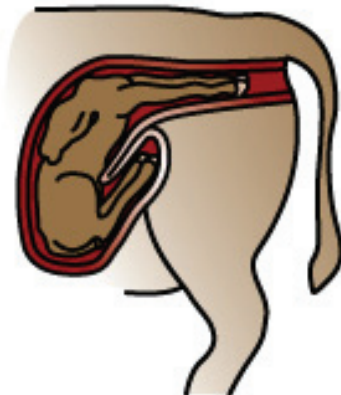
Normal Presentation



Hind Legs Extended



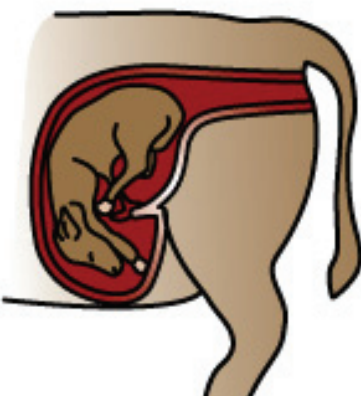
Foreleg Retained



Head Bent Backward



Upside Down



Backward with Feet Retained



Backward and Upside Down



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5. The fetus may be turned upside down and backward. Turn it to the normal position.

Occasionally, some births are so problematic that the fetus may require additional assistance. If pulling the fetus is not appropriate, a cesarean may be performed. In this procedure, a veterinarian makes an incision in the mother's abdomen to deliver the fetus.

If the fetus is no longer alive, dismemberment of the dead fetus by a veterinarian may be an alternative to remove it from the mother. Dismemberment is done to provide the least resistance for the mother.

### Postpartum Management Factors

Once the birth process has been completed, the producer still has work to do. In the postpartum period, or the period that follows immediately after parturition, both the mother and the newborn need to receive care in order to ensure that they are healthy.

Cattle – Make sure that the calf is breathing properly. It may be necessary to remove mucus from the respiratory tract or provide some form of stimulation to trigger breathing. Make sure the calf has been licked dry by the mother, or dry it by rubbing it with a cloth. The newborn calf should nurse soon after birth in order to receive colostrum, a special milk secreted for only a short while after birth that passes vitamins, minerals, and antibodies to the calf; it may be necessary to hand or force feed the calf. The navel should be dipped in iodine to reduce navel infections. The calf should be identified with an ear tag. Check to make sure that the cow has expelled the afterbirth. If the placenta has been retained, serious infections can result. The cow should also be checked for signs of milk fever. Milk fever is associated with low levels of calcium in the blood and causes partial paralysis of muscles. It may appear shortly before calving and make it difficult for the cow to give birth; it may also appear after calving. Signs of milk fever are a limp tail and dragging hind feet. A veterinarian must be contacted to treat the animal with calcium injections. If untreated, the cow may become paralyzed, collapse, and die in a relatively short period of time.

Swine – Check the newborn piglet's breathing and remove mucus or provide stimulation if necessary. Dry the piglet with a cloth. Make sure that the pig nurses to receive colostrum. Remove the umbilical cord, and treat the navel with iodine. Clip the needle teeth with side cutters to protect the sow's udder. Dock the piglet's tail, and then notch the ears for identification. Make sure that the afterbirth is expelled by the sow.

Sheep – Observe the lamb's respiration. Place the lamb and its mother in a clean pen. Dry the lamb with a cloth, and make sure it is warm. It may be necessary to use heat lamps or warm water to warm the lamb, since lambs may die from becoming chilled. Check that the lamb nurses to get colostrum, and force feed if necessary. Cut the umbilical cord and treat it with iodine. Monitor the ewe to make sure the afterbirth is not retained. Check for signs of milk fever.

Horses – Check the foal's breathing. Make sure the foal nurses in order to obtain colostrum. The umbilical cord should break by itself, but if it has not broken after five minutes, it may be necessary to cut it with a pair of clean, dull scissors. However, cutting the cord may cause excessive bleeding. Once the umbilical cord has been broken or cut, dip the navel in iodine. Make sure the afterbirth is expelled within three hours; if not, call a veterinarian. The afterbirth should be closely examined to make sure the entire placenta is expelled by the mare due to the high risk of infection. Check to make sure that the foal has a bowel movement in the first 24 hours; if not, an enema may need to be administered.

Dogs – Monitor the whelp's breathing. Dry the whelp and make sure that it nurses for colostrum. Dip its navel in iodine. Make sure that the afterbirth is not retained by the bitch. The bitch also needs to be observed for a condition called eclampsia, which is caused by a calcium deficiency and occurs mostly when large litters requiring a high level of milk production are produced. If left untreated, the bitch may experience convulsions and die. Physical signs of eclampsia are panting, restlessness, whining, trembling, weakness, and fever. If these signs are observed, consult a veterinarian to obtain calcium injections.



**Rabbits** – Examine the new litter for 24 hours after the birth. Check the doe's nest for any dead newborns and remove them to keep the nest clean and free of infection. Also remove any afterbirth. Make sure that the newborn rabbits are nursing by examining their stomachs. Check that the nest is warm, well-drained, and well-ventilated.

### Fowl and the Hatching Process

Fowl do not experience parturition, since they lay eggs instead of giving birth to young. Birds go through their own birthing process called hatching, which involves breaking through the egg's shell. In order for an egg to hatch properly, temperature, humidity, and air velocity around the egg all need to be monitored during incubation. Cool or hot temperatures, low humidity, and too low or too high a velocity of fresh air may also impair hatchability.

Like mammals, the fowl fetus may be malpresented. In fowl, the normal hatching position is with the fetus lying on its side along the longest axis of the egg. The head, which is turned to the egg's larger end, is tucked under the right wing. A malpresentation is any variation from this position.

As in the case of the young of other species, newly hatched fowl need special attention. The temperature of the brooder, which houses the young chicks, needs to be highest right after hatching. A brooder guard should be placed around the brooder for the first few days to ensure that the young birds remain where they can receive enough warmth for health and growth. Humidity and space need to be adequate, and the amount of lighting should be carefully controlled. Make sure the new fowl have proper and sufficient feed and water and are eating and drinking.

### Summary

Parturition is the birth process. It is a mechanical process that occurs under the influence of hormones and is signaled by observable physical signs. A number of problems connected with the birth process may occur, including those arising from abnormal fetal presentation. After the newborn enters the world, proper postpartum management must be carried out for the mother and her young to ensure their health. Parturition does not occur in fowl, which go through the process of hatching instead, but the newly hatched chicks also need special care to remain healthy.

### Credits

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