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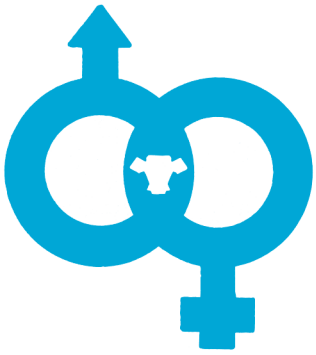
Recognizing and Handling Calving Problems



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Recognizing and Handling Calving Problems

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Calving difficulty (dystocia) is a concern of every cattleman because it is a major cause of calf deaths and is second only to rebreeding failures in reducing calf crop percentages. Cows that have difficulty during calving have significantly lower fertility at rebreeding.

Prevention through good heifer management and proper bull selection is the best treatment for calving difficulties. Even with the best management, though, a certain percentage of young heifers will experience difficulty to some degree, and even older cows occasionally have difficulty. Watching a good heifer or cow go through the agonies of a problem birth is not an uncommon experience for anyone in the cattle business. Probably the most frustrating aspect is trying to decide when and how to assist and whether or not professional attention is needed.

Many cattlemen attempt to correct problems that they have neither the instruments nor the knowledge to handle, while others refuse to intervene in even the simplest dystocia problems. Neither approach is good. The rancher and veterinarian should cooperate to deal with problems.

All cattlemen should be able to recognize early signs of dystocia and determine when or if professional help is needed. Time lost waiting for help may jeopardize the calf's life. The following guidelines can help cattlemen reduce calf losses when dystocia problems occur.

NECESSARY EQUIPMENT

Veterinarians use a variety of instruments and drugs in handling severe calving problems, but certain basic supplies are needed by all cattlemen. Having the proper equipment may mean the difference between saving or losing a problem calf.

Use a maternity stall when available. This is an enclosed area approximately 4 x 8 feet, preferably with side and rear exits. It should be well bedded and sanitized thoroughly between calvings. Following delivery, move calves directly to clean pasture areas. If calves are allowed to stay in or near the delivery area, scour problems may develop. Also, move cows to clean pastures after calving since constant contact of the fetal membranes to contaminated premises may lead to serious uterine and general infections.

Other basic equipment includes obstetrical chains for use when traction is needed to extract the calf and obstetrical handles that attach to the chains to aid in applying traction (Fig. 1). Mechanical calf pullers also can be used; they may be attached to the chains in forced extractions (Fig. 2).

Obstetrical chains are preferred for applying traction because they are cleaned and sanitized more easily. Disinfect chains between uses by boiling in mineral oil. This prevents the spread of disease. After boiling, wrap the chains in a clean cloth until they are needed again.

Figure 1. Obstetrical chains and handles used in forced extractions of the calf. Chains are available in 10-, 21-, 30- and 60-inch lengths.

Boiling chains in water or placing them in a pressure cooker is satisfactory, but causes rusting. Chains also may be disinfected by placing them in a brown paper bag in a 400 °F oven for 30 minutes. Nylon obstetrical straps of varying lengths may be used in place of chains or in combination. Nylon straps may be easier to manipulate than chains; however, as with chains, clean and disinfect the straps after each use. Cotton rope is not recommended unless the rope is discarded after use. Used repeatedly, rope becomes contaminated and can be a source of infection to other cows.

When manipulations are necessary, heavily lubricate the fetus, birth canal and operator's arms. Various obstetrical soaps are available, but a satisfactory lubricant can be made by dissolving a mild soap in warm water. The solution forms a gel when cool, but can be shaken and poured into a bucket for use. Keep a fresh supply of lubricant separate and uncontaminated. Use other lubricants such as mineral oil or mild soaps for a substitute; however, avoid detergents as they can cause severe irritations.

Keep some drugs on hand, including 1 to 3 grams of a broad-range antibiotic such as oxytetracycline or chlorotetracycline in a 200- to 500-milliliter solution of physiological saline. Or, furacin boluses may be used. Both preparations are used as intrauterine medications. Most authorities feel that sulfa drugs are of questionable value. Have tincture of iodine (2 1/2 percent) available for treating the navel cord of the calf following delivery.

Keep surgical needles and suture material available, but cases requiring extensive surgical attention become quite complex and should be handled by a veterinarian.

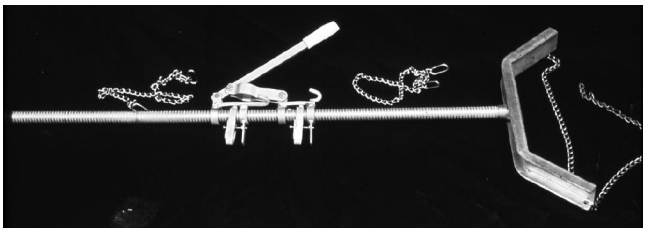


Figure 2. A mechanical calf extractor or puller which permits additional traction in pulling the calf in difficult births. It is designed to span the rear of the pelvis and insures pulling the calf at the correct angle and tension to avoid unnecessary injury to the cow and calf.

THE CALVING PROCESS

To reduce calving losses, cattlemen must understand the progressive stages of birth and the time interval of each stage. This knowledge can be gained by frequently observing the birth process. Familiarity with each stage of birth as well as the skeletal structure of the cow (Figs. 3 and 4) helps one to determine when and how assistance may be provided.

Parturition is best described by stages:

STAGE 1 OR PREPARATORY STAGE starts when the uterus begins contracting and the cervix dilates, ending with the movement of fetal parts into the birth canal. Generally, few signs of labor are evident at this time, but the positioning of the calf causes discomfort to the cow.

Early labor symptoms vary greatly in cows during this stage. Many older cows that have had several calves may show almost no signs of labor, and only close observation and attention may give any indications of approaching birth. Subtle signs of this stage in older cows might include the animal lying in a slightly abnormal position or the fact that the cow is a little more alert than other cows. Conversely, heifers may be very restless and show signs of abdominal pain up to 24 hours before cervical dilation is detectable. Signs of approaching birth may include standing with the tail raised and back arched, tail twitching and general restlessness and discomfort which may include kicking at the stomach area. In a normal labor, this period lasts from 2 to 6 hours, but may be only 30 minutes or as long as 24 hours. Stage 1 is normally longer in heifers.

Uterine contractions during this stage recur at about 15-minute intervals and push the water-filled allantochorion (Fig. 5) against the cervix, causing it to dilate. As the cervix dilates and uterus contracts, the allantochorion water bag passes through the cervix and often ruptures. In about half of normal births the allantochorion membrane passes through the vagina and reaches the vulva

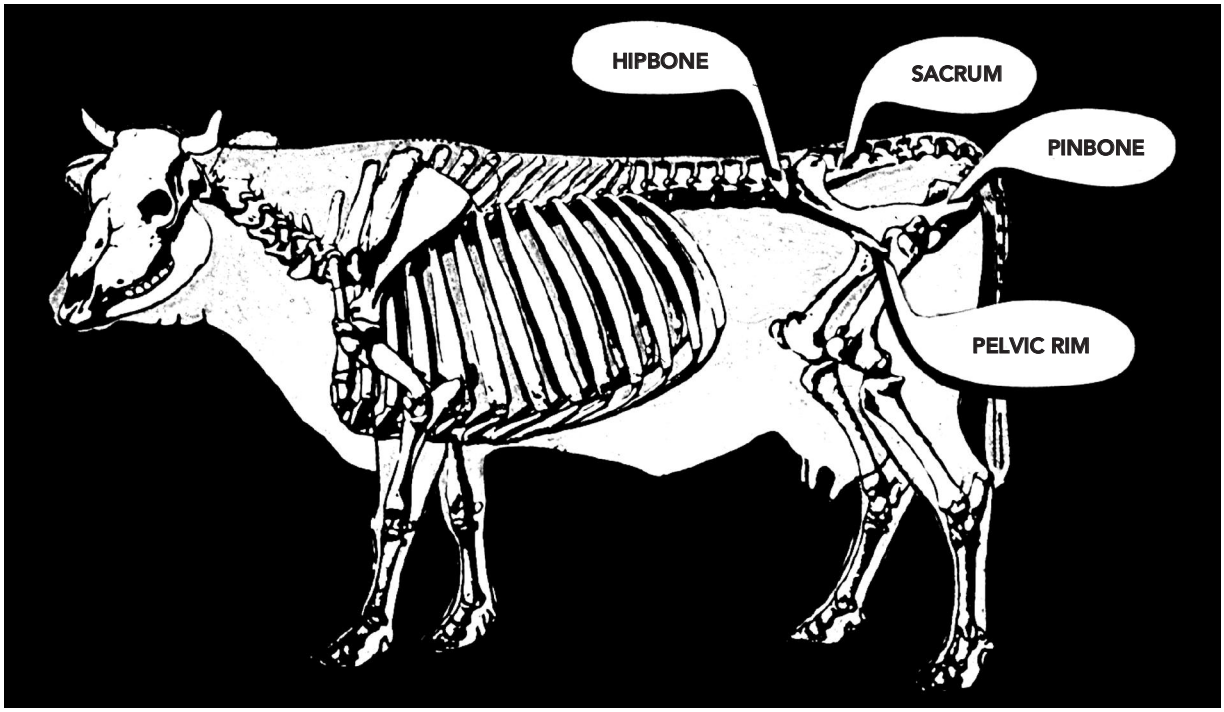


Figure 3. Skeletal structure of the cow.

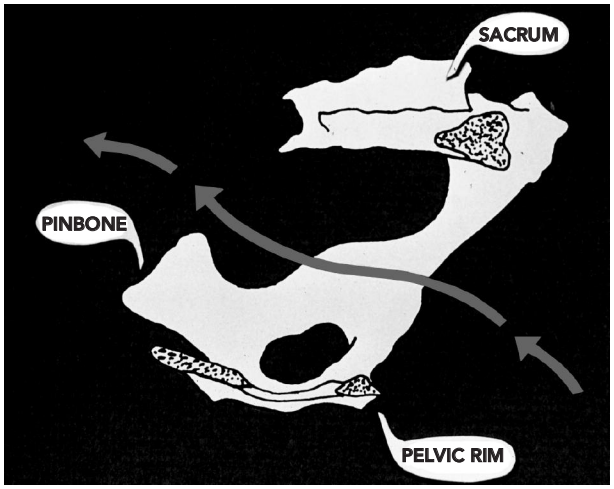


Figure 4. Side view of the pelvic bone of the cow. Arrows indicate the guiding line or pelvic axis followed by the calf at birth.

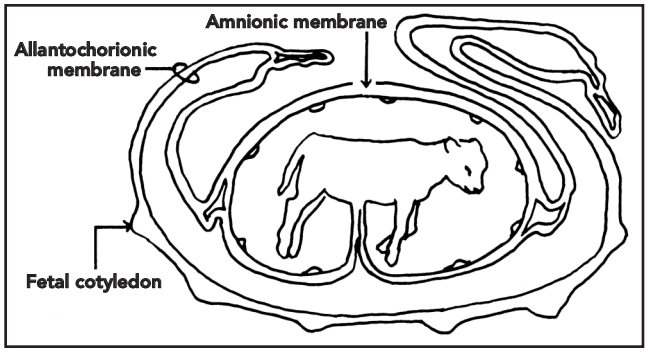


Figure 5. A young calf enclosed in the complete fetal membranes. Note the amnion immediately surrounding the calf and the allantochorion which covers the amnion and extends throughout both horns of the uterus. Spots on the surface of the allantochorion are villi of the fetal cotyledons which pull away from the maternal caruncles when the fetus is removed from the uterus.

intact. It may protrude as a water bag filled with dark amber fluid. Occasionally the membrane breaks before it becomes visible. Then it is observed simply as a sudden and large expulsion of straw-colored fluid rushing from the vagina. This is followed by the amnion or water sac, which is the membrane immediately surrounding the calf. The amnion is a white, clear membrane, in comparison with the allantochorion which is a darker color. Appearance of the amnion or feet beginning to protrude through the vulva marks the beginning of the delivery stage. Ordinarily, birth occurs within 30 minutes to 4 hours after the amnion or feet are first visible. Although the time limits specified for stage 2 are accepted norms, remember that if a cow is moved during early labor or in the early stages of active labor she may actually delay calving. Excitement and nervousness in cows may temporarily weaken uterine contractions. Thus, when observing cows during stage 2, consider any movement or undue excitement of the cows when determining the length of delivery.

STAGE 2 OR DELIVERY STAGE is the time of expulsion and actual delivery of the calf. In normal deliveries, this stage lasts from 30 minutes to 4 hours, but may be longer in young heifers. Early symptoms are recognized easily. The second stage begins with the movement of the calf's head and feet into the birth canal and the entrance

of the calf into the cervix. During this time, uterine contractions occur at about 2-minute intervals and each contraction lasts about 1 1/2 minutes. When the calf enters the cervix, abdominal straining, commonly called the abdominal press, occurs. At this time the behavior of the cow changes markedly from being alert to becoming almost oblivious to her surroundings and concentrating on the uterine contractions.

The cow may be lying down or standing, but definite and prolonged periods of straining are demonstrated. After the straining, the amnion or, in some instances, the calf's feet appear within 1 to 2 hours. It is important not to hurry the cow at this time, but be prepared to help. The extra time allows the vulva to dilate further and prevents tearing of the tissues. Pressure of the fetal parts further stimulates contractions that push the calf out. The calf's life usually is not in danger at this point, since the membranes remain attached to the uterus of the cow until after the calf is born. In the mare and sow, there are few points of placental attachment; these are broken soon after fetal expulsion begins. Thus, birth must be rapid or the newborn will suffocate. In the cow there are numerous points of attachment (placentomes, commonly called buttons), and since the membranes remain attached, there is a continuous supply of oxygen from the cow even if labor is prolonged. A calf can survive in the uterus for 8 to 10 hours if delivery does not progress beyond the early phases of stage 2. However, delivery should be completed within 2 hours after the water sac or feet first appear.

STAGE 3 OR MEMBRANE EXPULSION STAGE is the final expulsion of the fetal membranes after the calf is born. The fetal membranes or placenta usually are expelled without complication within 30 minutes to 8 hours following delivery. If membranes are retained more than 12 hours, they are considered pathological and may require attention.

EXAMINING THE COW

If problems arise, they generally show up after the water sac appears. Should labor go on for 2 to 3 hours with no apparent progress, or if the water sac appears and delivery is not complete within 2 hours, a pelvic examination is in order to determine the problem. Although it is difficult to actually determine if a cow will calve within the next 12 hours without performing a pelvic examination, there is one external indication that may be used with some reliability to predict the actual time of birth. The most useful external evidence is the texture of the posterior or back border of the sacro-sciatic ligament. This ligament is located on either side of and below the tailhead where it joins the pelvic bone. When the edge of this ligament becomes very relaxed one can reasonably predict that birth will begin within approximately 12 hours. Several studies have demonstrated that the softening of this ligament, which often coincides with some elevation in the tailhead, occurs simultaneously with the relaxation and dilation (enlargement) of the cervix.

Assuming labor has continued for 2 to 3 hours with no progress, make all decisions based on an actual pelvic examination. Since the presence of the calf's feet and head in the birth canal stimulates abdominal pressing, a normal press will not occur in abnormal deliveries. If the calf's head and/or feet are turned back or if it is a breech birth (Fig. 6), contractions may be weak or nonexistent. Thus, it is imperative that cows making little progress be examined as early as possible to determine the problem. This allows time for repositioning the calf.

A careful examination of the cow is possibly the most critical step in assisted deliveries. Before the examination remember that sanitation is of utmost importance to prevent the introduction of infectious organisms into the reproductive tract and that the arm should be well lubricated to facilitate the examination and minimize the trauma to delicate reproductive tissues.

The first step in examining the cow is to examine the cervix for dilation. If the cervix will admit only two to three fingers, the case is probably one of nondilation of the cervix or possibly uterine torsion. At this point one must have some idea of how long the cow has been in active labor. If the cervix has not dilated, one may be interfering too soon; if labor has been going on for 2 to 3 hours with no progress, professional help may be needed. Dilation of the cervix begins on the internal extremity of the cervix and continues toward the external extreme over a period of 6 to 12 hours. When the cervix is dilated completely it is approximately 6 to 7 inches wide. At this time the cervix and the vagina become a continuous canal and in most instances are tightly engaged by the stretched fetal membranes.

The next step in examining the cow is to check for life signs in the unborn calf, because this determines the urgency and type of assistance needed. If the calf is alive, pulling or pinching the foot causes movement of the leg, pinching the eyes causes movement of the head, and placing the fingers in the calf's mouth elicits sucking or movement of the tongue. With posterior or breech presentations, inserting the finger into the anus causes constriction of the anal sphincter. Absence of the vital signs,

sloughing of the hair or foul odors may indicate the calf is dead.

As the next step in the examination, determine the presentation, position and posture of the calf.

Presentation describes the relative direction of delivery. The calf may be presented frontwards, backwards or crosswise to the pelvic opening.

Position describes how the calf is lying. The calf may be upside down, right side up, or have its back to either side of the pelvic canal of the cow.

Posture indicates the location of the legs, head and neck. If the calf is presented frontwards, one or both forelegs may be turned back or the head may be down and the feet in correct position. A fetus in a backwards presentation may have one or both hindlegs flexed at the hock or hips.

Figure 6. Posterior presentation with rear legs extended under the calf's body (breech presentation). May be corrected by pushing the calf forward and grasping the legs one by one. As each leg is drawn into the birth canal, keep the hock pointed toward the cow's flank and the hoof to the midline (see detail in Figure 9).

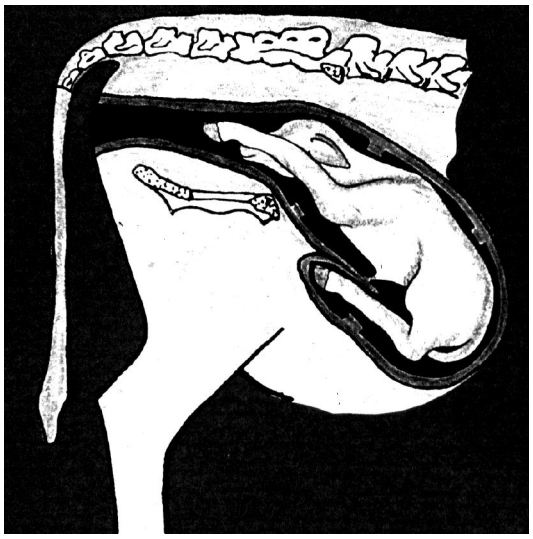


Figure 7. Normal anterior presentation, position and posture of the calf before delivery.

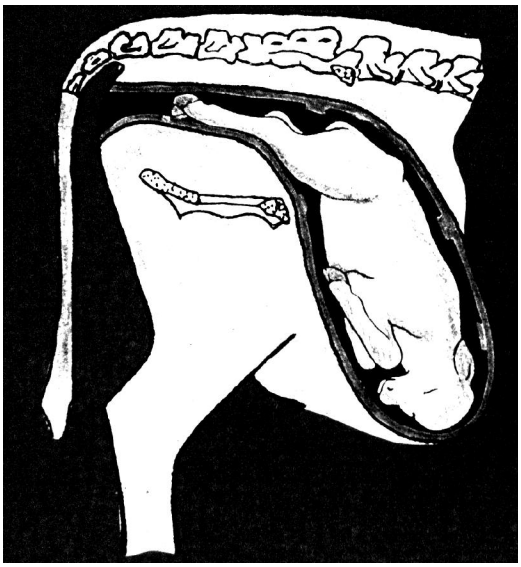


Figure 8. Posterior presentation of the calf. Delivery may often proceed without complications. Assistance may be important if labor is prolonged. Death of the calf can occur due to rupture of the navel cord and subsequent suffocation.

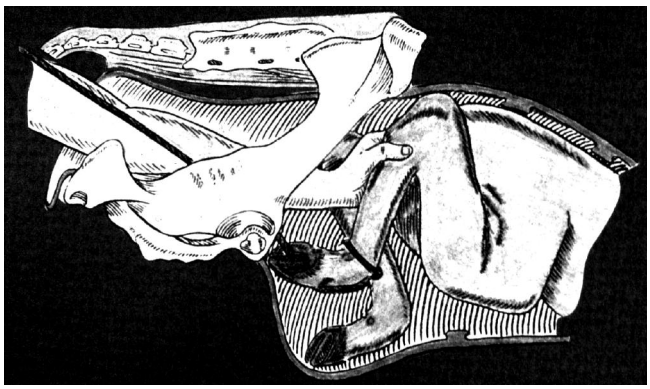


Figure 9. Correction of the hock flex in posterior presentation. The calf is first pushed forward. The hand grasps and cups the calf's foot, then draws it back as the hock is flexed. The foot in the cupped hand is lifted over the pelvic rim and into the vagina. An alternated method in more difficult cases is to place a snare around the pastern, attached at the front of the leg. The snare is then pulled between the digits of the foot so that when traction is applied the fetlock and pastern are flexed. The calf is pushed forward and the foot is guided over the pelvic rim as an assistant pulls the snare.

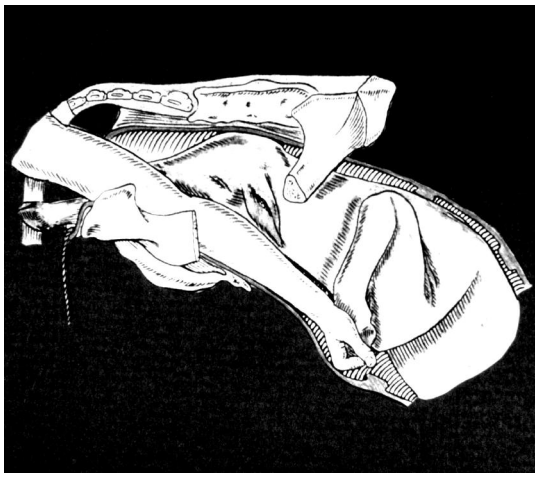


Figure 10. Correction of a simple leg flexion in an anterior presentation. The calf is first pushed forward and the retained foot is grasped in the cupped hand. The foot is carried outwards and then forward in an arc over the pelvic rim. More difficult cases may require that a snare be attached to the retained fetlock to help extend the leg.

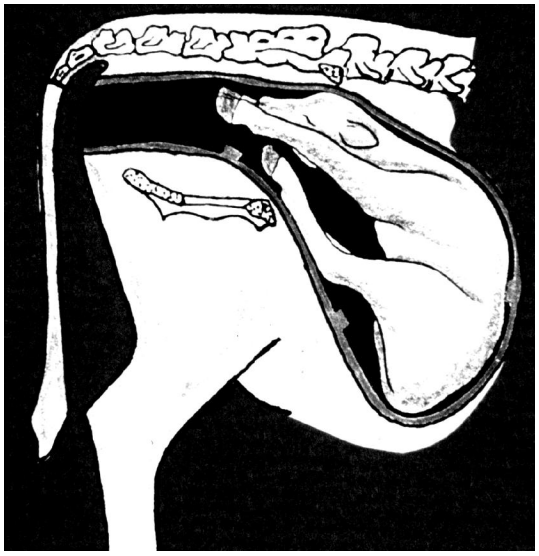


Figure 11. Anterior presentation with the rear legs extended beneath the body (dogsitting posture). A very serious type of malpresentation. If allowed to progress into advanced labor, fetal death may result. Early professional attention may be required.

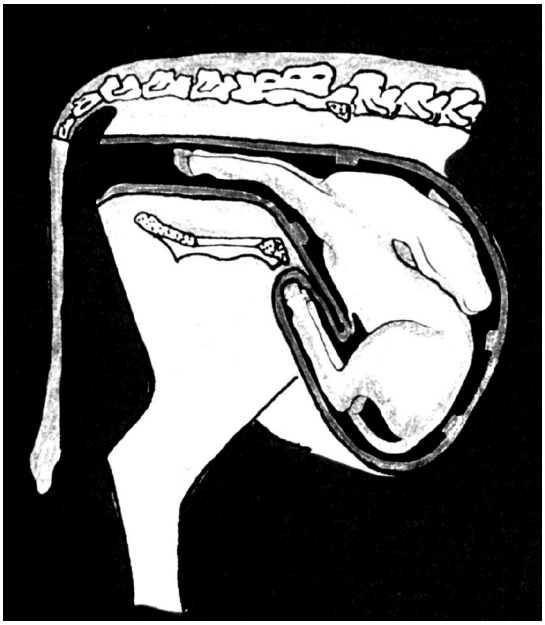


Figure 12. Anterior presentation with the head and neck turned back over the body. Secure the legs with chains. Push the calf back into the body. This often brings the head into normal position (see Fig. 13).

The normal presentation of the calf (Fig. 7) is frontwards. Although a calf can be pulled in a backwards presentation (Fig. 8), there is some danger. The normal position of the calf is back side up. Never pull a calf in any other position because the chances of killing both the cow and calf are great. The correct posture of the fetus is with both front legs outstretched in the birth canal and with the head and neck extended along the legs. Correct any deviation from this posture before the calf is extracted (Figs. 9 through 16). About 95 percent of all births occur with normal presentation, position and posture.

Determining the relative size of the calf and birth canal is the next step in examination. This is a critical judgment and requires some experience. Forcing a large calf through a small pelvic opening almost invariably results in death of the calf as well as injury, paralysis or even death of the cow. If it is fairly certain the cow will have serious calving difficulties, call a veterinarian. Once

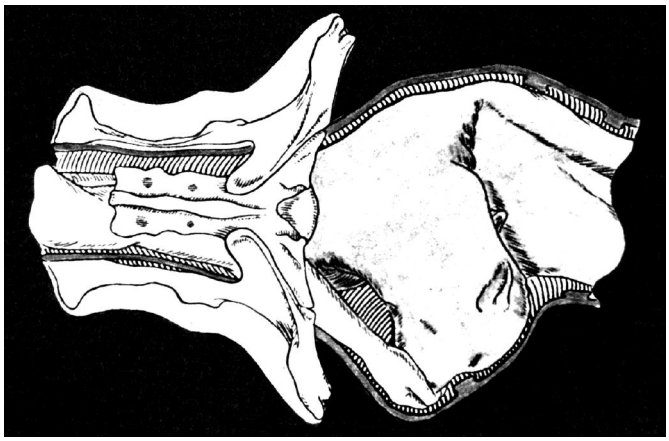


Figure 13. Correction of head and neck deviation in anterior presentation. Correcting difficult cases may require pulling the head and neck around with the hand. The calf is first pushed forward and the hand quickly moved to grasp the calf's muzzle. The head is pulled around and in line with the birth canal. In some cases it may be necessary to apply a snare to the lower jaw for additional traction. Avoid excessive pressure, as the jaw is not strong and will fracture easily. A safer and more common practice is to loop the obstetrical chain around the poll, under the ears and through the mouth in a "war bridle" manner (see Fig. 14).

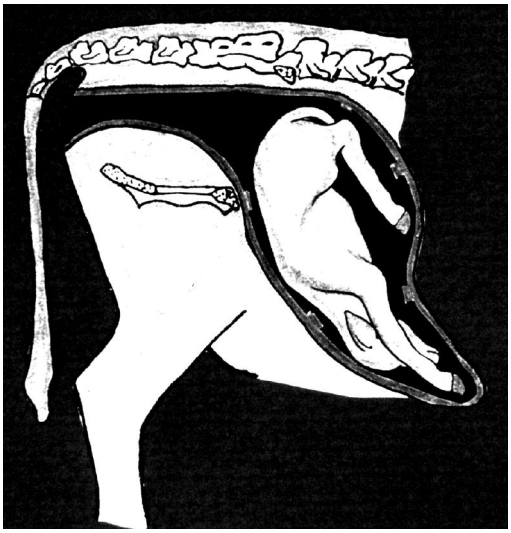


Figure 15. Posterior presentation with fetus in an upside down position. This situation can be caused by twisting of the uterus or rotation of the calf. Never attempt delivery in this position. Professional assistance often is required.

Figure 14. An alternate means of correcting a head and neck deviation in an anterior presentation. In difficult extractions, a safe and more common practice is to loop an obstetrical chain around the pole of the calf under the ears and through the mouth in a "war bridle" manner. This attachment permits greater traction than can be used in the jaw snare. Exercise care, however, since this arrangement permits the calf's mouth to gape and can cause the calf's sharp incisor teeth to cut the birth canal. To avoid this, guide the hand underneath the calf's jaw as traction is applied.

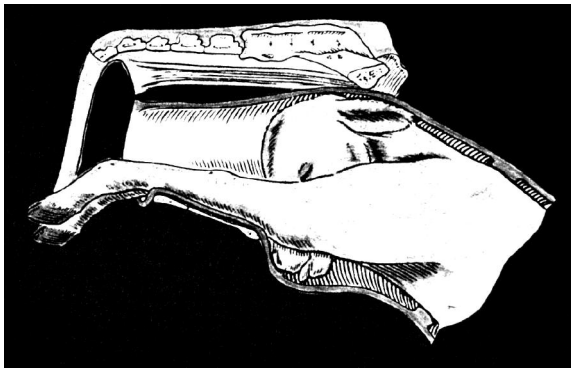


Figure 16. An anterior presentation with a vertex posture of the head. The vertex posture occurs when the bridge of the nose is impacted against the floor of the cow's pelvis. This causes the pole of the calf to be presented first. Repelling the body of the calf usually makes sufficient room to correct the problem. In such cases of dystocia, the fetus is often dead; a living fetus usually moves enough to prevent this type of entrapment of the head.

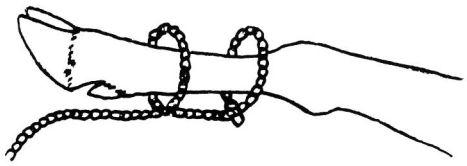


Figure 17. Correct application of an obstetrical chain to the foreleg. Position the first loop of the chain about 4 inches above the ankle joint and dew claw. Close and secure the chain at the back of the leg to avoid injury. Form a second loop (half hitch) 2 to 3 inches below the first loop above the ankle joint. Positioning the second loop below the ankle joint and dew claws may result in breaking the ankle or pulling the hoof off. Using the double loop, as described, distributes pressure from the chain and avoids excessive pressure at any one location as would occur with a single loop.

the calf's feet and head are outside the cow's body, the veterinarian has lost the option of doing a Caesarean section.

GIVING ASSISTANCE

If it is determined that professional help is not needed, but that the calf requires adjustment and/or extraction, there are some important points to remember. If, after giving assistance for 30 to 40 minutes, no progress has been made in the delivery, the situation has probably been misjudged and professional help is needed.

Assistance is first begun by attaching the obstetrical chains to the front legs. Don't put a single loop of the chain around both front legs. Instead, use a double loop on each leg (Fig. 17). Place the first loop about 4 inches above the ankle joint and dew claws. Next, form a half hitch about 2 to 3 inches down the leg, but above the ankle joint. If the chain is around the ankle below the dew claw a leg may be broken or a hoof pulled off. Be sure to position the loops so that one pulls from the back of the legs. A chain on the front or sides causes a twisting action that may break bones. Normally in forced extractions, the force exerted by one or two persons in pulling a calf is safe and sufficient. Never use fence stretchers, tractors, trucks or other devices which may apply extreme force. If additional extractive forces are necessary, a mechanical calf extractor is the only safe means.

It usually is best to pull both legs with even pressure. If the pelvic opening of the cow or heifer is small, pull the legs alternately until the shoulders are eased through the birth canal. Then continue applying pressure to both legs. Don't hurry the cow. As the calf moves through the birth canal, the cow's natural body mechanisms are helping by letting this area dilate.

One cause of calf deaths and damage to heifers is hiplock. This is a situation in which the calf's hips won't pass through the cow's pelvic opening. Some cases of hiplock may require veterinary assistance. Proper traction often prevents or eases this problem by keeping the calf's hips high as they pass through the pelvic opening, thus taking advantage of the widest horizontal part of the cow's pelvis. Pull the calf out and down at a 45° to 60° angle. As the front legs come through the vulva, increase the traction in a downward direction with the calf's legs practically parallel with the cow's legs.

If this does not help, release the calf puller or tension on the chains and push the calf back far enough to relieve the lock up. Then rotate the calf clockwise or counter-clockwise to get a new angle for the hips to pass through the cow's pelvis. This technique works because the vertical axis of the pelvis is greater than the horizontal axis (Fig. 18).

Another method used for hiplock is to rotate the calf and then swing the shoulders and front feet to the cow's side. Put the pulling chains around the calf's barrel and pull gently to avoid injuring the calf's spinal cord. This procedure often allows one hipbone at a time to ease through the cow's pelvis. In this procedure the barrel of the calf is pulled to the rear and down while the front feet are swung up and to the side.

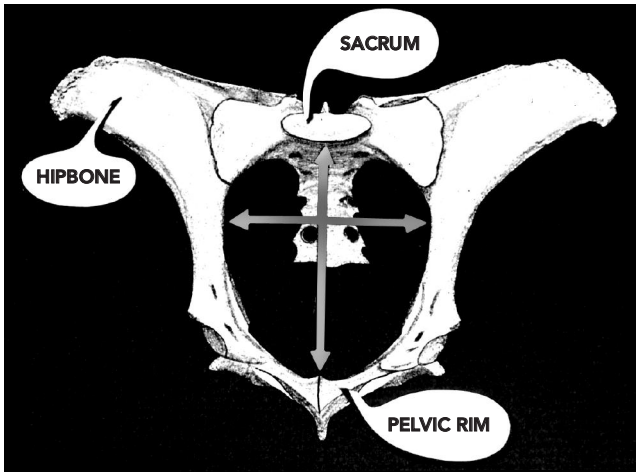


Figure 18. Front view of the pelvic bone of the cow. Notice that the vertical width exceeds the horizontal width of the birth canal.

HELPING THE CALF

As the calf is delivered, it passes through the vulva and the short umbilical or navel cord usually breaks. Survival is then dependent upon functioning of the calf's lungs and initiation of body activity. Once the navel cord is broken, the placental supply of oxygen is cut off. Oxygen in the blood of the calf drops rapidly and the carbon dioxide level increases. These changes stimulate the respiratory centers of the brain and cause the calf to struggle and gasp. As the calf gasps, the lungs fill with air and oxygen deficiency is rapidly overcome.

Occasionally a calf has trouble breathing after delivery. In such instances it is important to quickly clear the mouth and nose of mucus. If the calf continues to have trouble breathing, pick him up by the hind legs and swing him back and forth or around to dislodge the mucus. This procedure may sound harsh, but can be very effective. Rubbing or scratching the inside of the calf's nostrils with a straw irritates the delicate tissues and often causes the calf to sneeze or cough, thereby clearing out the breathing passages.

Artificial respirators are available and can be of great assistance, especially for producers of valuable registered stock. If no respirator is available, clean off the calf's muzzle and blow your own breath into the calf's nostril. Another alternative is to place a short section of 3/4-inch garden hose in one nostril. The mouth and other nostril are then clasped so that air can enter and leave the calf only through the nose. Blow into the nose and allow the air to be exhaled. Repeat every 6 to 7 seconds until the calf starts breathing, or until his heart stops beating. It is important to remember that the baby calf's lungs are considerably smaller than a human's and care should be

taken not to over inflate and rupture the lungs. Results of these resuscitation methods can be very dramatic.

CARING FOR THE COW

One of the rancher's main concerns about the heifer or cow is the possibility of retained placenta. Usually the fetal membranes are expelled within 8 to 12 hours. Leave the cow alone until this occurs. Research shows that manual removal of the placenta, regardless of how professionally and carefully done, can cause complications that would not occur otherwise.

In one of several studies, cows that received antibiotic treatments without removal of the membranes had a 79 percent conception rate at first rebreeding. Manual removal of the membranes without any drugs dropped the figure to only 39 percent. When drugs were given and membranes removed manually, the rebreeding rate was also 39 percent. Cows receiving no drugs and no assistance increased to 50 percent. Thus, removal of the membranes seems to be the deterring factor in uterine recovery and rebreeding.

Reports indicate that retained membranes occur in 5 to 15 percent of births in healthy herds. Retained placenta is common in premature and multiple births and when birth has been induced. Research also indicates that retained membranes occur more frequently in cows producing bull calves. Once retention of the membranes has occurred, there is about a 20 percent chance of its recurring. A high incidence of retained membranes may be associated with disease conditions in the herd and may require professional attention. Most authorities agree that if a cow retains the membranes, you should not initiate treatment until 48 to 72 hours after birth, unless the cow loses appetite or has an elevated temperature or other signs of septicemia. Treatment generally consists of infusing the uterus with an inseminating pipette placed through the cervix. Uterine infusion of 50 to 100 milliliters of an oxytetracycline or chlorotetracycline solution is the preferred treatment. In addition, injections of penicillin/streptomycin are commonly given for 3 to 5 days. Females showing serious signs of septicemia should be treated by a veterinarian.

MAKING THE DECISION

When deciding whether or not to assist with calving, consider the circumstances. With mature cows it's better to wait than to start assistance too early because the cow usually takes care of her own problems. With heifers it may be different. Their immature bodies are not fully developed and pelvic openings may simply be too small. A minor problem may be created by assisting a heifer too early, but if one waits too long, any problem will be a major one.

Calving problems are most common in heifers giving birth to their first calves. Only about 3 percent of mature cows have any trouble, but for heifers the figure may be 50 percent or more. Table 1 illustrates the hourly return to ranchers for time spent observing and assisting at calving. Notice that observation frequency is the key to saving a high percentage of calves. A single check for problems is scarcely worth the effort, but returns per hour of time increase significantly as the cattle are observed more frequently.

In Texas, approximately 8 to 10 percent of all calves born in beef cow herds die at or soon after birth. Approximately three-fourths of these deaths are due to calving difficulties. Losses due to calving difficulty cost the cattle industry three to four times more annually than costs resulting from abortions, and are second only to losses from cows failing to conceive. The only way to reduce such losses is through good management of heifers from weaning until first calving, frequent observation, and being ready to help when problems arise.

Table 1. Cost and returns for checking a beef breeding herd at calving time for 50-cow herds.*

	Number of times checked each day			
	1	2	3	4
Total hours expended per cow	.8	.9	1.0	1.2
Returns from additional calves**	$153.60	$307.20	$460.80	$614.40
Total labor cost***	$240.00	$270.00	$300.00	$360.00
Returns per hour	(-$2.16)	$0.83	$3.22	$4.24

*Research data adapted from Ohio Agricultural Experiment Station Circular 103.

**Calf value at weaning – $384 for a 480-pound calf.

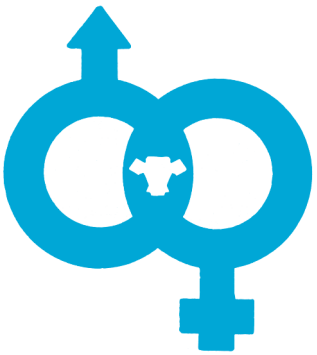
***Labor valued at $6.00 per hour.

SUGGESTED READING

B-1077 Determining Pregnancy in Cattle

B-1213 Management of Replacement Heifers for a High Reproductive and Calving Rate

(both available at the Texas AgriLife Bookstore, *http://agrilifebookstore.org*)



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