

PRACTICAL OBSTETRICS

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INTRODUCTION

It has long been recognised that the work of a veterinary practitioner can be divided into what is usually referred to as "fire brigade" practice and preventative veterinary medicine. Over the years more and more emphasis is being placed on the latter.

This does not mean, however, that we can disregard the emergency calls altogether. They always have, and always will have, their own place in dairy cattle practice and they are used by the farmer to measure the competence of the veterinarian to a certain degree.

The following article is clearly restricted to the assisted delivery by traction. It was not intended to write a complete review about bovine obstetrics with all possible abnormalities and the various techniques for foetotomy and caesarian section.

Emphasis has been placed on how to use the functional anatomical features of the maternal pelvis and foetal dimensions.

The use of various drugs in certain stages of the delivery is purposely omitted. Uterusrelaxants, tranquillisers and local anaesthetics all have advantages as well as disadvantages and their use will, to a great extent, be determined by personal preference.

ASSISTED DELIVERY OF THE CALF BY TRACTION

Per definition, dystocia means abnormal birth. Normal birth is a continuous process, often divided into three arbitrary, but fairly well defined stages.

1. Cervical dilation; starts when the uterus begins to contract and ends when the cervix is dilated and foetal parts enter the birth canal. Visible signs of labour are at best scanty.
2. Foetal expulsion; begins when foetal parts enter the birth canal and stimulate the abdominal press. After rupture of the chorioallantoic sac, the usually unbroken amniotic sac appears at the vulva. Delivery should be completed within two hours after that. Characteristic of this stage of labour is a series of frequent presses followed by a short period of rest. The greatest frequency and force occur when the foetal head is being forced through the vulva.
3. Expulsion of foetal membranes; sometimes these are expelled, or freed, from their maternal attachment before delivery of a dead foetus.

Dystocia occurs when any stage is slow to develop or fails to progress normally. When progress of labour is interrupted or tedious, intervention may be necessary.

If the cow has been in first stage labour longer than six hours and does not show an abdominal press, she should be examined.

If the cow has been in second stage labour for two hours (heifers up to three hours) and progress is very slow or absent, she should be examined.

With dystocia in the cow, health and fertility of the dam and survival of the calf are the important objectives of treatment. Careful examination is necessary for a well founded prognosis and for the course of treatment.

The initial examination should include a history and thorough examination of the reproductive tract and foetus.

Parity, duration of labour and previous attempts to assist delivery should be determined. The birth canal is to be examined for dilation and size of the pelvic opening, with specific attention being given to cervical dilation and strictures in the vestibular region. A thorough search should be made for prior damage to the uterus or birth canal, especially in cows in prolonged labour or those in which earlier assistance has been attempted.

The decision of which obstetrical procedure to use will be influenced by the vital signs of the foetus. The live foetus should usually be delivered by reposition and forced extraction or by caesarian section, the dead foetus by reposition and forced extraction or by foetotomy.

Some guidelines to allow the obstetrician to quickly decide which method to use for delivery of the calf.

- GUIDELINES FOR ATTEMPTED REPOSITION

Abnormalities in presentation, position or posture should be diagnosed and corrected before traction is applied if the calf is alive. When the calf is dead and reposition is difficult or dangerous, partial foetotomy should be performed.

- GUIDELINES FOR EXTRACTION OF AN OVERSIZED CALF IN ANTERIOR POSITION

Dystocia, due to foetal oversize, can easily be mishandled by application of excessive traction or by application of traction before the birth canal is properly dilated.

The prognosis for extraction is unfavourable:

- when a cow has not managed to deliver the head of the calf in normal position completely into the birth canal after protracted labour;
- when the calf is wedged in the birth canal at the level of the humeri the front legs are frequently crossed;
- if the pelvic inlet is narrow, the elbows are pressed together, causing the claws to be rotated with their volar surfaces medial.

To judge whether extraction is possible, the following criteria can be used.

With the head completely in the pelvic cavity and one person pulling on both front legs during straining of the cow, one should be able to place a hand between the cranium and the sacrum and feel the points of both shoulders 10cm or less cranial to the pelvic inlet in the standing animal.

In the recumbent animal the points of both shoulders should be 5cm or less cranial to the pelvic inlet.

- GUIDELINES FOR EXTRACTION OF AN OVERSIZED CALF IN POSTERIOR POSITION

The same principles for delivery of the points of the shoulders in the anterior position are true for the greater trochanters in posterior position, but palpation of the greater trochanters is usually impossible because of the thickness of the hind legs. So whether or not it is possible to extract the calf can only be determined with the pull of two people on the hind legs of the calf, while the cow is recumbent and straining. It must be possible to expose both hocks, with traction applied in a slightly dorsal direction after the hindquarters of the calf have been rotated approximately 90°. The hips of the calf are widest between its greater trochanters. The maternal pelvic inlet has a wider dorsopubic than bisiliac diameter; therefore the calf must be rotated so its greatest hip diameter corresponds to the greatest diameter of the maternal pelvis. When the greater trochanters have passed the pelvic inlet, the hocks protrude about one hand's width beyond the vulva. If it is impossible to extract the hocks so that they are visible, traction should be discontinued and other delivery methods used.

Figure 1. Maternal pelvic inlet.
The sacro-pubic diameter (A) is greater than the dorsal trans-ilial diameter (B), which in turn is greater than the ventral trans-ilial diameter (C).

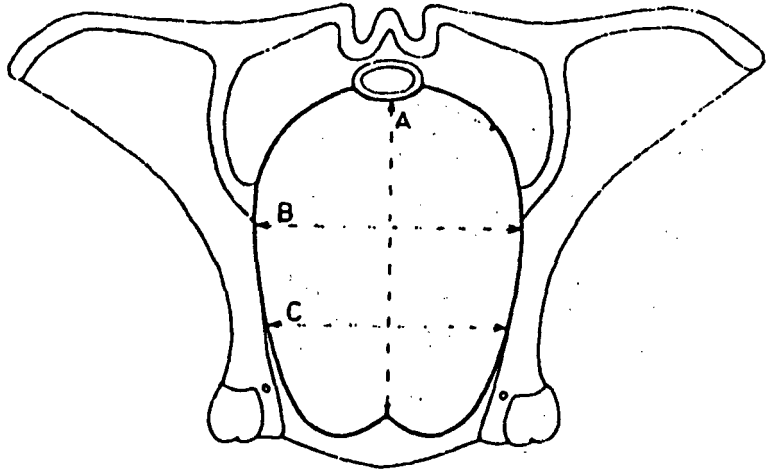
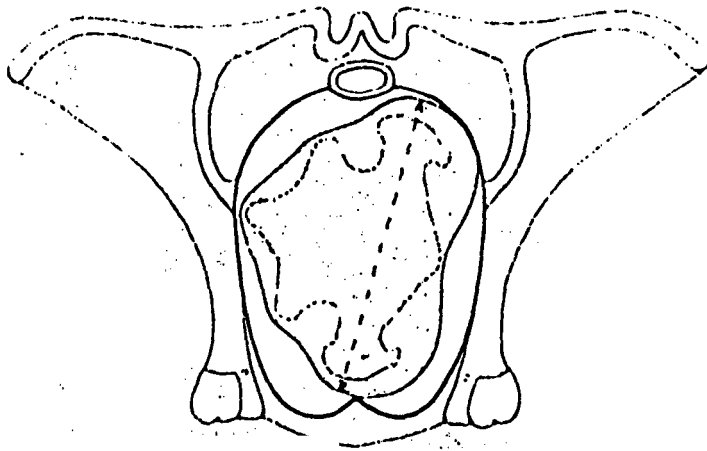


Figure 2.
Rotation of the calf by about 90° allows its hips to be extracted through the maternal pelvic inlet at its greatest diameter.



FORCED EXTRACTION OF A CALF IN ANTERIOR PRESENTATION.

Relaxation and dilation of the vagina, vulvovaginal sphincter, vulva and cervix is necessary before extraction can be begun. If not, dilation should be completed by manual methods. Especially when the cervix is not properly dilated a head rope can be of great assistance. A noose is placed behind the ears of the calf, with the knot in its mouth. The obstetrician can now pull the head as far as is possible with gentle traction in the cervix and with the other hand massage the cervix over the head. Once this is achieved the calf is pulled slightly further caudal and the dilation of the cervix is completed, now using the shoulders and thorax of the calf as fixed points. Hard traction is applied by means of obstetrical chains placed around the pasterns, with their eyelets on the dorsal surface of the front feet. Before hard traction is applied the cow should be cast on her right side. Traction is only applied when the cow presses.

Figure 3. Extraction of the calf in anterior presentation. Phase 1.

The direction of traction is slightly ventral until the head is outside the vulva.

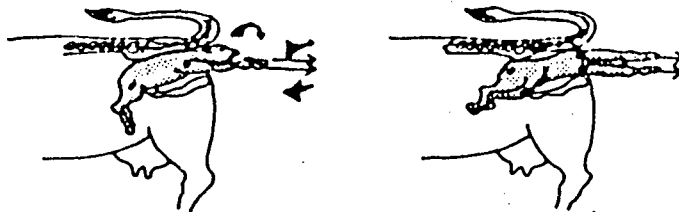


A rotating force is applied to the calf as soon as its head, neck and front legs are through the vulva. This should produce the dorso-ilial or dorso-sacral-ilial position, before the hips of the calf engage the pelvic inlet. This is critical because of the angle the sacro-pubic pelvic inlet makes with the spine. If half of the thorax of the calf is outside the vulva, it means that in order to achieve the desired rotation one of the hips of the calf has to move to the (cranial) sacral side of the maternal pelvic inlet.

Rotation allows the hips of the calf to come through the pelvic inlet at its widest diameter and helps to prevent hiplock.

Figure 4. Extraction of the calf in anterior presentation. Phase 2.

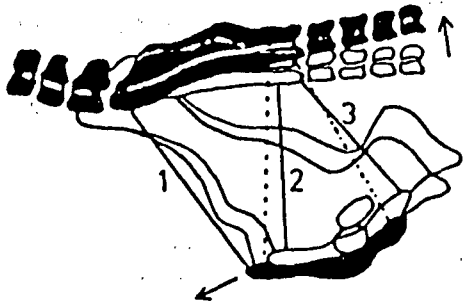
The direction of traction is straight backward as soon as the head is outside the vulva. The calf is rotated about 90°.



When hiplock does occur, traction is discontinued and the calf induced to breathe. Traction is only applied when the cow presses. Continuous traction is generally unproductive and prevents the calf from breathing enough to stay alive. Also, the act of pressing pulls the pelvic inlet more nearly perpendicular to the spinal column of the cow. This has the practical effect of making the pelvic inlet functionally larger.

Figure 5.

When a cow presses, the pubis is pulled forward, enlarging the vertical pelvic diameter. The pelvic inlet and outlet diameters remain relatively unchanged.



- Pelvic position during abdominal press and expulsion
- Normal pelvic position
- 1 Sacro-pubic pelvic inlet diameter does not enlarge
- 2 Vertical pelvic diameter is almost as large as sacro-pubic pelvic inlet diameter during the abdominal press
- 3 The height of the pelvic outlet remains about the same during the abdominal press as during resting periods

The direction of traction is adjusted, so that the pull is caudal and somewhat dorsal; this direction of pull is more perpendicular to the pelvic inlet. The calf is kept rotated and hard traction is applied only during periods of abdominal press and as long as the calf is alive.



Figure 6.

Extraction of a calf in hiplock in anterior presentation.

FORCED EXTRACTION OF A CALF IN POSTERIOR PRESENTATION.

Proper dilation of the soft tissues of the birth canal are even more important. Stretching during the extraction frequently leads to tearing and delay of the delivery.

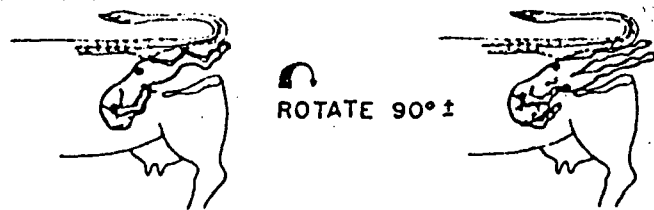
Another complication can be the umbilical cord. It may be wrapped around a leg or the trunk of the calf or it can enter the birth canal in a loop next to the calf. Abnormal location of the cord can be handled in three ways:

- repulsion of the calf or the cord, without placing it under excessive tension. One should never pull on the umbilical cord, because this results in reflex contractions of the arterial vessels, which diminishes the blood supply to the calf, thus compromising its oxygen supply.
- very rapid extraction of the calf.
- caesarian section.

The extraction is done in reverse order to the anterior presentation. The cow is cast in lateral recumbency. During the preliminary examination the calf will have been rotated to the dorso-iliac position and its hips brought through the pelvic inlet by applying traction on the back legs in a caudal, slightly dorsal direction.

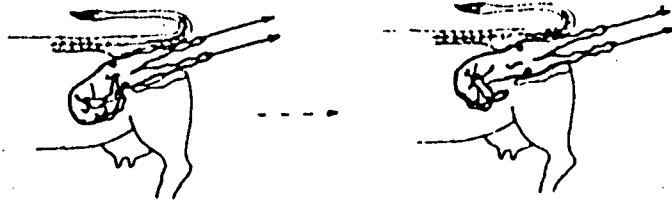
Figure 7.

Extraction of a calf in posterior presentation. Phase 1.



When dilation is adequate and the hips have passed the pelvic inlet, the hindquarters are rotated back to the dorso-sacral position by application of caudal, slightly ventral traction.

Figure 8. Extraction of a calf in posterior presentation. Phase 2.



Once its hips are through the vestibule, the calf should be extracted as quickly as possible to prevent asphyxiation. However, traction should only be applied when the cow is pressing to prevent damage to or fracture of the foetal spine at the lumbo-sacral junction, broken ribs or diaphragmatic hernia.

The relief that accompanies the delivery of a calf following dystocia should not divert attention away from the cow. Assisted delivery increases the risk of trauma to the soft tissues of the birth canal. All assisted deliveries, even in the absence of haemorrhage require an immediate manual examination and systematic evaluation of the vulva, vagina, cervix and uterus. The presence of a remaining calf should always be ruled out. Even after twins! The veterinary obstetrician bears responsibility for evaluation of the cow and for initiation of therapy when it is needed to maximise subsequent fertility, lactation or, at least, salvage status.

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