

# Clinical Methods For Diagnosis Bovine Pregnancy

by

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## Introduction

In examining the genital organs of the cow *per rectum*, it is advisable to grasp the tail with the left hand and hold it straight up in the air. (It is presumed that the operator is using his right hand to make the examination). When the right hand is introduced into the rectum, the tail should be turned to the left side and then the assistant should stand on the right side of the cow holding the tail over the back of the animal.

If the cow is restless, the assistant may control her by holding her in the nose. This can be easily done with specially-constructed tongs to which a rope is attached. It is very important at the beginning of the examination to remove all dung out of the rectum. This should be done if possible in such a way that the hand remains in the rectum during the whole process, so that the entrance of air is prevented. If, inspite of this procedure, air enters, the rectum will become ballooned and it will be impossible to carry out any examination. By moving the fingers of the hand in the rectum, however, along the rectal wall, dorsally from the anterior to the posterior part, it should be possible to empty the rectum of the air.

Very fat animals are often difficult to examine, because their sexual organs are embedded in fat. In Sweden, we sometimes find herds in which the cows have a predisposition for becoming fat, and in such cases pregnancy examination and infertility treatment may sometimes be difficult.

The risk of causing damage to the rectal wall is relatively small in the bovine, if necessary precautions are taken. In young animals with a narrow rectum, there can occur rupture of the mucous wall and, at the same time, of the musculature of the wall. In spite of this damage, actual perforation of the rectum is very uncommon. If any more important in the rectal wall has been

done, any further investigation should not be undertaken for a few days. If the rectum has been perforated, the animal should be immediately slaughtered. If you have long nails, you will cause small lesions in the mucous wall of the rectum, resulting in bleeding. This will occur in spite of the use of rubber gloves. The cattle owners do not like to see this bleeding and it may cause them to have some fears of the examination. Therefore, you must take care while training in this work.

In the clinic, where the teacher and the students are working, it will not be possible to do any real examination after the rectal mucous membrane of the cow has been damaged. Thus, care must be taken that both teacher and students have pared their nails and have smoothed them with sandpaper. Sometimes, it is quite useful to rub the nails on hard soap. It is also very important that people who are starting to train in such work do not insert the hand abruptly into the rectum; if the cow is straining very hard, it is necessary to be patient, perhaps waiting for a few minutes before starting again.

### **Pregnancy Examination**

It is absolutely necessary to record the findings of the examination for pregnancy, otherwise the cattle owners may later blame you for wrong diagnosing in the cattle you have not examined. On large farms, you may get accurate information about the breeding time but in other cases the owner will give you only oral information. Please remember that you cannot always rely on such information. The cow might have been bred without this fact having been recorded. Fairly frequently, a pregnant cow will come into heat and be served. When a cow is pregnant, oestrus will not usually occur. There will be a drop in the milk yield and after some time, the abdomen will increase in size. During the last stage of pregnancy, you will sometimes detect the foetus by palpating the right flank, about ten inches anterior to the patella (stifle joint). This method of examination is commonly used by cattle owners and with the help of his fist, he tries to push the uterus and feels a bump of a hard mass. Movements of the foetus will be detected from the abdominal wall in the right flank. This will be observed more easily when the animal is hungry or when it has drunk cold water; the milkman will easily detect these movements while milking, if he keeps his head against the right flank.

**From the practical point of view, the rectal method of investigation is the only sure method of pregnancy diagnosis in cattle**

Every veterinarian engaged in cattle practice must thoroughly learn this diagnostic method. In this work you can never guess or bluff. If you are not quite sure of yourself or your diagnosis tell the owner the truth and record your finding as your probable diagnosis (For example, pregnant right horn? Will be investigated later, pregnant but the foetus may have died?? Pregnancy or metritis?).

When you are palpating the genital organs rectally, you have to take consideration the following:

- 1- Changes in the size of the ovaries
- 2- Increase in the size of the uterus.
- 3- Asymmetry of the two horns
- 4- Wall of the uterus (which will be felt thinner at least in early pregnancy)  
The uterus will be distended with fluid and fluctuation will be felt.

**This fluctuation is a very important indication**

- 5- The pregnant horn of the uterus will lose the ability to contract, but only in early pregnancy
- 6- You will be able to feel cotyledons and some parts of the foetus in more advanced pregnancy.
- 7- You will be able to feel at quite an early stage, when putting your hand in the rectum, that the foetus is retreating from the hand: this is called the "foetal bump"
- 8- You will be able to palpate the foetal membranes
- 9- You will detect "frimitus" while examining the uterine arteries.

**I. OVARIES**

At the time of conception, in the ovary in which ovulation has taken place, a corpus luteum will be present: in most cases it will influence the size of the ovary. In the pregnant animal, there is usually no sharp border line marking off the corpus luteum from the rest of the ovary. The whole of the ovary will be enlarged. In most cases, no ovarian cysts will be present if the cow is pregnant, but you have to make a careful examination because sometime it happens that there is a corpus luteum in one ovary and a fairly large follicle or cyst in the

other, even although the cow is pregnant. When the pregnancy is more advanced, the uterus will go deep into the abdominal cavity and then you will not be able to reach the ovaries. In most cows which are pregnant for more than 3½ months, the ovaries cannot be reached nor palpated. If the right ovary is the bigger, if the cow is pregnant, the pregnancy may be in the right horn. When carrying out rectal examination, it may be of some help to know on which side the corpus luteum is present.

## II. SIZE OF THE UTERUS

When examining bovines, the age of the animals must always be taken into consideration. In addition, it is essential to know how many calves an animal has already produced. If the cow has had four to six calves, the uterus, from the physiological point of view, may be three times larger than that of a well-developed heifer. You must even take into consideration that endometritis may cause the uterus to be large, especially when pyometra is present.

## III. ASYMMETRY OF THE CORNUA

The uterus may be asymmetrical even if the cow is not pregnant. If she has had a previous calf and for that pregnancy, was pregnant on the right side and you are investigating her two to three months after that calving, the right horn will be larger than the left. This asymmetry is more pronounced if the cow has been pregnant always on one side and never on the other,

## IV. FLUCTUATION

Fluctuation in the cornua is a very important indication of pregnancy. With more training and experience in pregnancy diagnosis, one is able to feel this fluctuation in the pregnant cornua at a very early stage: it can be felt if the cornua is palpated between the thumb and the finger. When the pregnancy is about 7-8 weeks advanced you only need to put your hand over the pregnant cornu after you have pulled the uterus back. It has to be remembered that there may be so fluid in the uterus even if the cow is not pregnant. There may be slight endometritis or some mucous pyometra or hydrometra. It may happen that pyometra and the presence of corpus luteum in the ovary may lead to a wrong diagnosis.

In most cases of pyometra, both horns are quite well developed but there, asymmetry may also occur. In such cases, it may be very difficult to differentiate even if one is well trained. The history of previous calvings, the condition of discharge from the vagina, information about placental membranes, etc. are very important in arriving at a decision in the diagnosis of pyometra; there may be other contents in the uterus, e.g. water or pus (hydrometra or pyometra). In pyometra, the uterine wall is thicker and in hydrometra the feeling of asymmetry may lead one to think that the animal is pregnant. Vaginoscopy may sometimes help in such cases. Sometimes in cases of pyometra, there may be a mucous plug in the cervix. This mucous plug may remain there for 8 days. The cervix may be open and exuding pus. When there is a mucous plug in the cervix, nothing will be seen when the vaginoscope is used. Then you will have no help from vaginal inspection. **Mummification and endometritis may also lead to wrong pregnancy diagnosis**. The left kidney may also be mistaken sometimes for the head of the-developing calf by inexperienced investigator.

## V. Contraction of the Uterus

As a rule, contraction of the pregnant uterus usually occurs only in the early stages of pregnancy. When contraction has occurred, palpation is more difficult and therefore pregnancy diagnosis is also difficult. It is better to wait and examine the animal again after some time.

### The technique for rolling-up the uterus

In a pregnancy of 6-10 weeks duration, it may be difficult to palpate both the cornua of the uterus and detect the fluctuation because the cornua are rolled in and it is possible only to palpate the parts of the cornua just anterior to the body of the uterus.

In such cases the uterus must be rolled-up before one is able to palpate the cornua up the apex.

The technique for rolling-up is carried out as follows:

- 1) Touch both ovaries with the finger tip and judge which is the bigger. If the cow is pregnant the calf will be in the horn corresponding with the bigger ovary.
- 2) Fix the cervix with your hand and, if possible, pull the uterus up and back into the pelvis, then quickly get hold of the intercornual ligament with the finger and pull the uterus higher up dorso-caudally in the pelvic cavity.

- 3) Take the non-pregnant horn in your hand and, if possible, pull both horns back in the pelvis. After that procedure, you will, in most cases, be able to palpate the pregnant horn and detect the asymmetry and the fluctuation in the foetal bag.
- 4) If it is not possible to roll-up the uterus by this method, try with your finger, to fix the broad ligament on the side where there is the small ovary and try to pull the uterus back. After that, try to fix the uterus horn of the same side (the non-pregnant horn) and pull all back. It may now be possible to palpate the other horn and detect asymmetry and fluctuation.
- 5) **Bimanual method.** If you have not been able to roll-up the uterus with the method described above, clean the vulva and your left hand which is then inserted into the vagina; try to fix the external os with your finger or with vaginal forceps (Alberechsens forceps) and pull the uterus back with the other hand. You then may be able to palpate both the cornua which are rolled-up in the pelvis.

## VI. COTYLEDON

In the 3rd month of pregnancy, cotyledons may be felt and at three to four months, part of the foetus. Sometimes one feels "foetal bumps" if the hand is merely placed on the pregnant cornu. This bump resembles the foetus going away and coming back again. From four months pregnancy onwards, the cotyledons can be very clearly felt. From five to six months, is lying on the floor of the abdominal cavity and is difficult to palpate. The cervix is difficult to feel and seems like a flat band going over the brim of the pelvis down into the abdominal cavity. You may be able, at this time, to feel the left kidney, which may be floating into the abdominal cavity or may sometimes be mistaken for the head of the calf.

If it is known that the date of the last service was six months back, one often is tempted to go deep into the abdominal cavity in order to feel the uterus. It must be remembered that one should always examine the pelvic cavity first to locate the uterus. For this purpose, you must palpate up to the brim of the pelvis.

## VII. PALPATION OF THE UTERINE ARTERIES

In most cases, palpation of the uterine arteries is not necessary and serves no useful purpose. It was used in former times when the veterinarians were not able to make early pregnancy diagnosis.

**Very Important:** It is extremely important to realise in pregnancy examination that you cannot be sure of non-pregnant diagnosis before you have been able to palpate the cornua right up to the apex after rolling-up the genital organs and at this palpation, have found no evidence of pregnancy.

**Pregnancy diagnosis at various stages**

Ist period	from	implantation	to	2½	months
2nd	„	„	2½	months	to 4½ „
3rd	„	„	4½	„	„ 6 „
4th	„	„	6	„	„ 9 „

During the first period, pregnancy diagnosis in an old cow may be difficult but in a heifer it is mostly very easy after 5 weeks. During this period, from about the 6th week, diagnosis is based on the enlargement of one of the ovaries that the uterus is sinking and that there is asymmetry. In most cases there is pronounced fluctuation in the pregnant horn. All these factors must be combined together to be sure of pregnancy diagnosis. Examination of the vagina shows that it is drier and that there is a mucous plug in the cervix. During the second period from 10 weeks to 4½ months, it is usually very easy to diagnose pregnancy. During this period, the indications are very similar to those in the first period, e.g. asymmetry of the uterus and fluctuation. At the same time you will feel, when the hand is placed on the uterine wall, the foetus as if it were escaping, i.e. the foetal bump.

During this time, the uterus is somewhat large and it goes down into the abdominal cavity. The cotyledons will also be felt as well as some part of the foetus, from approximately 3½ months.

During the third period, from 4½ months, the uterus has sunk very deeply into the abdominal cavity. Neither the ovaries nor the asymmetry between the cornua can be felt. In most cases you will be able to feel the cotyledons and some parts of the foetus. In the latter part of this stage, in some cases all the uterus will have sunk so deeply that it is not possible to reach cotyledons or any part of the uterus. You will only feel a hard band, i.e. the cervix, over the pelvic brim, going down deeply into the abdominal cavity. At the same time you may be able to feel the rhythmic thrill of the uterine arteries.

During the fourth period, 6-9 months, the foetus will have developed so much that it is filling up the whole space between the floor of the abdomen

and the rectum. At this stage, you have to observe that sometimes, the large head and the legs of the foetus are up in the pelvis. You may touch the left kidney and in some cases the rumen wall may be felt, which may be very hard and may be thought to be the back of the calf. During this time, the owner may ask if the calf is dead or alive. The calf may be alive although the cow is sick and the farmer thinks that the calf is dead. If you feel the movement of the calf then you may be sure, but if there is no movement at all, it is impossible to say whether the calf is dead or not. The calf may remain immobile in the uterus for a long time and you have to be very careful in giving your diagnosis. From the age of  $4\frac{1}{2}$  months you can feel the movement of the foetus.

Pregnancy diagnosis with the help of vaginal inspection is of very little importance in cattle. At times, use of vaginal investigation may be made, but should always be in combination with rectal examination.