

## **CARDINALS OF PREGNANCY DIAGNOSIS IN BOVINES WITH DIFFERENT METHODS: AN OVERVIEW**

**Amit Khatti\*, Sushobhit Kumar Singh, Dayanidhi Jena, Shiv Varan Singh,  
Tanmay Mondal and Shyam Sundar Choudhary**

Indian Veterinary Research Institute, Izatnagar, Bareilly (U.P.)-243122

E-mail: amikhatti@gmail.com (\*Corresponding Author)

**Abstract:** Pregnancy diagnosis is essential farm practice. There are different methods for pregnancy diagnosis in cattle and buffalo but still, transrectal palpation is most widely accepted at field level. Essentials of pregnancy diagnosis respect to various methods explained in this article.

**Keywords:** Pregnancy diagnosis, Cattle, Buffalo, Transrectal palpation.

### **Introduction**

The diagnosis of pregnancy has been sought since long by farmers for curiosity however, it is essential for profitable animal husbandry especially in the productive animal species. For an economical dairy farm, cows must calve every year, and to maintain this sequence, identifying pregnant animals at an early date seems imperative.

### **Methods of Pregnancy Diagnosis**

The methods of pregnancy diagnosis have been classified into three categories i) Visual methods, ii) Clinical methods, iii) Laboratory tests.

#### **(i) Visual methods**

Following the mating, non-return to estrus is also a considerable sign of pregnancy in farm practice. Anestrus and the rare occurrence of gestational estrus in cattle and buffaloes can affect the reliability of non-return to estrus as a method of pregnancy diagnosis (Dransfield et al. 1998; Lucy 2001). Moreover, difficulty in estrus detection and silent estrus render this method of pregnancy diagnosis unsuitable for the buffalo. Non-return rates usually over estimate true pregnancy diagnosis (Kidder et al. 1954; Foote 1974). In addition to, increase in the size of the abdomen, development of the udder specially in dairy heifers (4 months onwards), pluriparous cow (last 2-3 weeks of gestation) slight vaginal discharge (from 4-5 months onward) and movements of the fetus visible externally (especially in fed cows on the right side of abdomen 6 months onwards). However, the accuracy of these visual diagnostic symptoms is always low and a clinician must use them as a supplement to clinical diagnosis.

**(ii) Clinical methods**

Clinical methods of pregnancy diagnosis: a) Recto-genital palpation, b) Ultrasonography.

**(a) Recto-genital palpation**

Transrectal palpation is the oldest and most widely used method for pregnancy diagnosis in dairy cattle and buffalo (Cowie 1948). In large domestic animal recto-genital palpation (with some limitations) is the easiest, cheapest and fastest method of pregnancy diagnosis with little or nil harm to the animal and its fetus when performed carefully.

***Basic principle***

Two constraints appear to be significant while performing rectal palpation, peristalsis that occurs in the rectal musculature and ballooning of the rectal wall due to entry of air inside. The palpator must stop making movements of arm during a peristaltic wave, wait for 1-2 minutes and then start palpation again when the peristalsis has subsided. To subside ballooning, catch hold pinch of rectal mucosa and move hand back and forth (known as back racking) without completely taking it out.

***Palpable findings******Location of pregnant uterus***

The early pregnant uterus lies in the pelvic cavity in heifers, and just ahead of the pelvic brim in pluriparous large sized cows. As it grows in size, its growth is forward so it starts descending into the abdominal cavity (approx. 3½ - 4 months). At approximately 4½-5 months it reaches the abdominal floor and at this time only cervix is palpable within the pelvic cavity which is also drawn forward. The growth is then forward and then again upwards. The entire uterus or the fetus is therefore barely palpable during the 4-6½ months period and diagnosis has to be dependent on other features of pregnancy (placentomes and fremitus).

***The amniotic vesicle and fetal membranes slip***

The amniotic vesicle can be palpated with due care between 30-50 days of gestation as a movable oval object within the uterine lumen. The vesicle is turgid, early in pregnancy but becomes flaccid with advancing gestation until days 65-70 when it is difficult to detect at all (Roberts 1985). The fetal membrane slip can be felt between 35-90 days of gestation (Zemjanis 1970).

***Palpation of placentomes***

Placentomes can be detected from about 75 days to term. The period of pregnancy (4 to 6.5 months) when the uterus has descended into the abdominal cavity and the fetus is not

palpable, palpation of a placentome is the surest indication that the cow/buffalo is pregnant. It appears as soft, thickened lumps in the uterine wall.

#### *Palpation of the fetus*

The whole of the fetus is palpable only during early gestation (2 to 4 months). The size of the fetus is approximately that of a mouse or rat at 2 to 3 months and it increases to the size of a small cat at 4 months, a large cat at 5 months and a beagle dog at 6 months respectively. Usually, in the second trimester (4 to 6.5 months) fetus is beyond the reach of palpator's hand. Beyond 8 months of gestation, fetal parts (legs, head) are palpable within the pelvic cavity or just cranial to the pelvic brim.

#### *Palpation of uterine artery (fremitus)*

Enlargement of the uterine artery ipsilateral to the pregnant horn is detectable after 80 to 90 days of gestation. By approximately 120 days, the blood flow within the artery increases to a point where the blood flow is palpable as a buzzing sensation, also called "thrill" or "fremitus".

#### *Precautions*

Ruthless movements of the hand in the rectum and palpations during peristaltic wave should be avoided (White et al. 1989). Examiners must trim their nails and avoid using dirty soiled sleeves. Rectal examination without a sleeve must be avoided to prevent from diseases and odors. Rectal palpation in buffaloes must be gentle as the rectal mucosa is more fragile and bleed easily.

#### **(b) Transrectal Ultrasonography**

The animal to be examined is properly restrained, the feces are evacuated from the rectum and the perineum washed with water. The transducer is covered with a condom with coupling gel put inside or a full arm disposable sleeve is used to cover the transducer. The operator keeps the transducer (7.5 MHz) in his arm and takes it inside the rectum. The uterine horn on one side is scanned to the entire length. If the pregnancy is advanced the operator may have to take his hand deeper. The amount of fluid and thickness can also be measured. Fluid filled structures appear black (anechoic), hard structures (like the bone) appear white (hyper echoic) and other structures with their structure midway between the bone and fluid appear grey (hypo echoic). Amniotic vesicle/fetal fluid is visible in between days 18-22, fetal heart beat can be seen between day 24-30 and the fetus itself between days 25-30. The cotyledons are visible between day 30-40 and fetal extremity/bone by day 57-60 in cattle.

**(iii) Laboratory tests**

These are less accurate and indirect methods of pregnancy. High progesterone concentrations in maternal blood at 18 to 24 days post breeding can predict that the animal is pregnant. Urine of pregnant cows which inhibits germination compared to urine of non-pregnant cows which stimulate germination is known as Punyakoti test. The differential germination is considered to be because of the presence or absence of estrogens in the urine.

**Conclusion**

Sustainable production and economy of dairy, as well as a farmer, is highly influenced by pregnancy diagnosis at right time. It is imperative to proper reproductive, feeding and housing management of the herd. Trans rectal palpation is highly valuable and cheap technique for pregnancy diagnosis but it require keen observation and experience. Visual assessment and laboratory tests work as supportive but ultrasonography is certainly noteworthy for early diagnosis of pregnancy as well as it gives detail description related to fetus or pregnancy.

**References**

- [1] Cowie AT (1948). Pregnancy diagnosis tests. A review Commonwealth AgricBureaux Edinburg.
- [2] Dransfield MBG, Nebel RL, Pearson RE, Warwick LD (1998). Timing of insemination for dairy cows identified in estrus by radiotelemetric estrus detection systems. *J Dairy Sci* 81: 1874-82.
- [3] Foote RH (1974). Estrus detection and estrus detection aids. *J Dairy Sci* 58:248-256.
- [4] Kidder HE, Black WG, Wiltback JN et al. (1954). Fertilization rates and embryonic deaths in cows bred to bulls of different levels of fertility. *J Dairy Sci* 37:691-697.
- [5] Lucy MC (2001). Reproductive loss in high producing dairy cattle: Where will it end? *J Dairy Sci* 84:1277-93.
- [6] Roberts SJ (1985). *Veterinary Obstetrics and Genital Diseases*. Indian edition CBS Publishers New Delhi.
- [7] White ME, LaFauce N, Mohammed HO (1989). Calving outcomes for cows diagnosed pregnant or non pregnant by per rectum examination at various intervals after insemination. *Can Vet J* 30: 867-70.
- [8] Zemjanis R (1970). Pregnancy examination. In: *Diagnostic and Therapeutic Techniques in Animal Reproduction*. 2nd ed, 29: Baltimore: Williams and Wilkins.