



Repro Tracks

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Induced calving is useful tool if used carefully

Induced parturition can be a useful tool for controlling the timing of calving. Calf delivery can be induced up to two weeks prior to term without detrimental effects on calf viability. However, cows induced to calve early are more likely to retain the placenta after calving and need to be monitored closely.

Introduction

Induced parturition can be a useful tool to control the time of calving. The calving process can be induced by administering a corticosteroid (e.g., dexamethasone, flumethasone or betamethasone) or a prostaglandin (e.g., prostaglandin $F_2\alpha$ or analogue) prior to the time of expected calving. Parturition can be induced up to two weeks prior to the full term of pregnancy (283 days) without detrimental effects on the viability, immune status or growth of the calf. However, calves born prior to Day 270 of gestation show signs of prematurity, including weakness, inability to stand and failure to nurse. Calves born this premature will be lost.

Cows induced to deliver up to two weeks prior to term exhibit normal maternal behaviors, and overall milk production levels are similar to those of cows carrying calves to

full term. At the onset of lactation, milk levels may be lower than following natural calving, but overall production levels and calf weaning weights in most studies have been similar for cows induced to calve and those calving naturally.

The ability of calves born one to two weeks early to absorb antibodies in colostrum is not reduced and serum antibody levels are likely to be normal.

Cows induced to calve between one and two weeks early often (>75%) retain their placenta. Cows induced to calve less than a week early are less likely (10%-50%) to exhibit a retained placenta.

Placental retention makes cows more susceptible to postpartum uterine infections, and some investigators have reported a longer interval to first estrus and a lower first-service pregnancy rate in induced cows with retained placentas. However, in most research trials,

cows with retained placentas did not have reduced pregnancy rates at the end of the next breeding season.

Breeder question No. 1:

Can induced calving treatments be used to specifically time when cows are going to calve?

Response: The most commonly used drugs for inducing parturition during the last two weeks of pregnancy are dexamethasone (20 mg) or flumethasone (10 mg). Single intramuscular treatment with either corticosteroid is successful in inducing the onset of labor within 96 hours posttreatment about 95% of the time. The average cow calves approximately 48 hours after injection, but the interval from injection to calving can vary from 24 hours to 96 hours.

Unfortunately, the timing of calving following administration of a corticosteroid is not extremely precise. We injected a group of crossbred beef cows with dexamethasone between Days 270 and 280 of gestation. By 30, 40, 50 and 80 hours after injection, 23%, 34%, 79% and 100%, respectively, had calved. Although more than 70% calved during the 30-hour interval from 20 to 50 hours following treatment, the timing was still not synchronized enough to limit observation to a single short period.

In an effort to more closely synchronize the timing of calving following dexamethasone treatment of cows, we combined the use of dexamethasone and prostaglandin $F_2\alpha$ ($PGF_2\alpha$). Cows between Days 268 and 283 of gestation were injected intramuscularly with dexamethasone (20 mg). Any cow that failed to calve by 40 hours after dexamethasone administration was injected with $PGF_2\alpha$ (30 mg) at that time.

Of the 42 cows that received both dexamethasone and $PGF_2\alpha$, the average calving time was 4.6 ± 1.6 hours after the $PGF_2\alpha$ injection. Hence, the $PGF_2\alpha$ injection hastened the onset of calving in those cows that had not responded in 40 hours. However, it is important to note that five cows treated with both drugs failed to calve within 120 hours after treatment and were considered to be nonresponders.

Breeder question No. 2:

Will inducing parturition reduce the calf's birth weight and increase calving ease in cows or heifers?

Response: The potential of reducing calving difficulty was a factor that encouraged research on methods of inducing parturition in cattle. Most beef calves gain 1 to 1.5 pounds (lb.) per day *in utero* during the last few weeks of pregnancy. Obviously, shortening gestation reduces the birth weight of a calf, with the greatest reduction in weight

being in those calves that are induced earlier in gestation.

Despite the reduction in birth weight observed when cows are induced to calve early — as great as 7.7 lb. in one group induced to calve five days early — there have not been consistent reports that induced early calving increases calving ease.

Conversely, inducing parturition to avoid calving difficulty and calf losses in cases where gestation has been prolonged beyond 285 days is a common practice.

In the 1970s, several Continental breeds were introduced to the United States. Producers using exotic sires to “grade up” to purebred reported it was common for gestation length to extend beyond the normal 283 days. Rather than allow gestation to be prolonged, smaller-framed cows bred to exotic sires were routinely induced to calve if gestation progressed beyond 285 days. In those cases, inducing parturition reduced dystocia and calf losses by preventing fetal oversize.

These data suggest that there may not be improvement in calving ease when pregnancy is shortened, but it may be advantageous to prevent prolonged gestation, especially in matings where calf birth weights are expected to be high.

Breeder question No. 3:

If we use corticosteroids or prostaglandins to induce calving and some of our cows have a retained placenta, how should we treat them?

Response: This is a difficult question to answer without more information about the health of the animal with a retained placenta. Nonetheless, the best advice I ever received from a veterinarian regarding treatment of retained placenta was, “first of all, do no harm when initiating therapy.”

Cows with a retained placenta are more susceptible to acquiring a uterine infection than cows that “clean.” The retained placenta hanging from the reproductive tract acts as a pathway for pathogenic organisms to enter the uterus. Therefore, it poses a threat to the animal.

There are two methods of managing retained placenta when the cow shows no signs of sickness: 1) manual removal and 2) natural separation of the placenta.

Manual removal was a common practice in the past, but is no longer recommended because of possible injury to the lining of the uterus. If the membranes are not removed manually, uterine contractions and the weight of the placenta usually cause it to detach without damage. Natural separation is currently the recommended procedure, and it fits the “do no harm” strategy.

The other piece of advice my veterinarian friend gave was, “Cattle with retained

placenta should be monitored closely. Your best tool is your thermometer and observation of the cow at the feedbunk.”

If you choose to induce parturition in your cows, your “best friend” may be your veterinarian — keep him or her informed. If a cow with retained placenta shows signs of sickness, fails to come to her milk, develops an elevated temperature and/or goes off feed, she will need aggressive systemic antibiotic treatment. Your veterinarian can help you devise appropriate antibiotic therapy.

For a technical report on induced parturition see larounds.ca/crus/laveng_0206.pdf



Editor's Note: Bill Beal is a beef cattle reproductive physiologist and professor emeritus at Virginia Tech. He conducts research involving estrus synchronization, artificial insemination, embryo transfer and the use of ultrasound technology. This column is designed to provide answers to questions about reproductive management commonly posed by commercial and purebred breeders. If you have questions or comments related to the reproductive management of cows or bulls, e-mail them to wbeal@vt.edu.