Weight Changes and Estrous Cycles After Abortion in Beef Heifers

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Summary

Ninety-one pregnant, crossbred Angus heifers aborted after receiving an injection of a prostaglandin analog at an average of 50, 75, 100, or 122 days of gestation. Weight change in the first 3 weeks after abortion and subsequent estrous cycles were observed. No detrimental effects were noted in those heifers aborting at 50 or 75 days of gestation, and growth rate was not altered. Those heifers aborting at 100 days of gestation exhibited a decreased growth rate; those aborted at 122 days lost weight. There was more udder development, vaginal discharge, and retained membranes in heifers aborted later in gestation. Typically, heifers exhibited estrus within 5 days after abortion, then had 8- to 12-day cycles until a normal cycle occurred. Heifers aborted at 50 days of gestation required an average of 7.5 days prior to the estrus of their first normal cycle, 13.2 days if aborted at 75 days, 16.7 days if aborted at 100 days, and 24.7 days if aborted at 122 days.

Introduction

Prostaglandin F_2 alpha (PGF) and its analogs are abortifacients in several species. Injection of PGF will terminate pregnancy in cattle up to 150 days of gestation. Stage of pregnancy influences the effectiveness of PGF in inducing abortion, weight change after abortion, and time required for return of normal estrous cycles. These are factors to be considered by both feedlot and ranch managers.

The current study was designed to determine weight loss and time required for return of normal estrous cycles after abortion with PGF at various stages of gestation.

Experimental Procedure

One hundred three pregnant crossbred Angus heifers (average weight, 890 lb) were injected with a prostaglandin analog at either at 50, 75, 100, or 122 days of gestation. The range in days pregnant at injection for each group was 45-60 for the 50-day group, 71-79 for the 75-day group, 94-101 for the 100-day group, and 117-132 for the 122-day group. All heifers were being fed to gain about 2.5 lb/day. The initial weight was taken at time of treatment. A second weight was taken 1 week after treatment, and a third weight was taken 3 weeks after treatment. Heifers were observed twice daily for estrus and complications arising from the treatment. Heifers were also palpated weekly to detect other possible complications, and to follow changes in uterine tone and size. Cycles of less than 13 days were classified as "short", those of 16 to 24 days as "normal", and those more than 24 days as "long".

Results and Discussion

There was no difference in weight change between the 50-day and 75-day abortion groups, and their average daily gains were similar to heifers that were injected and did not abort (2.52, 3.1, and 2.76 lb/day respectively; Table 10.1). However, heifers treated at 100 days of gestation gained only 1.2 lb/day; and those treated at 122 days lost .24 lb/day for the 3 weeks following treatment.

Generally, membranes or fetuses were expelled 3 to 6 days after treatment. There were retained membranes (26.5%) and infection (8%) in heifers treated at 122 days of gestation; these problems did not occur in heifers aborted earlier. Heifers treated at 122 days also exhibited some udder development (20 of 49), vaginal discharge, and appeared uncomfortable and nervous during the first week after injection.

As days of pregnancy at treatment increased, time required for return of normal estrous cycles also increased (Table 10.2). The interval from injection to estrus ranged from 2.5 to 49 days, and averaged 5 days. The first cycle after treatment was typically short (8 to 12 days). A second short cycle or a normal cycle (16 to 24 days) then occurred. In general, heifers aborted at 50 or 75 days had no more than two short cycles prior to a normal cycle. Heifers treated at 100 or 122 days exhibited two or three short cycles, with a few heifers having five short cycles. The cycling pattern in heifers aborted at 50, 75, or 100 days appeared more predictable than those aborted after 100 days (Table 10.2).

Table 10.1. Comparison of Weight Change in Heifers Aborted at 50, 75, 100, or 122 days of Gestation.

Item	Average Day of Gestation at Treatment				Heifers Not Aborting
	50	75	100	122	
No. of Heifers	15[1]	14	13	49	12[2]
Initial Weight (lb)	830	839	885	943	878
Weight, 1 Week Post-treatment (lb)	850	858	898	916	901
Weight Change (lb)	20	19	13	-27	23
Weight, 3 Weeks Post-treatment (lb)	883	904	912	938	936
Total Weight Change (lb)	53	65	27	-5	58
Avg. Daily Gain (lb/day)	2.52	3.1	1.29	-0.24	2.76

[1] Weights not collected for one heifer that did abort; therefore, data are based on 14 heifers.

[2] Two heifers did not abort in the 50-day group, 4 in the 75-day group, 4 in the 100-day group, and 2 in the 122-day group.

These data indicate that heifers can be aborted up to 75 days of pregnancy without weight losses or serious effects on their ability to return to normal estrous cycles. However, reduction in weight gain, lengthened intervals to normal cycling, and complications such as udder development, retained placentas, and uterine infections can be expected after 100 days.

Table 10.2. Estrous Cycles in Heifers That Were Aborted at an Average of 50, 75, 100, or 122 Days of Gestation.

Item	Average Day of Gestation at Treatment 50	75	100	122
No. Heifers	15	14	13	49
Interval From Injection to Estrus (days)	3.6	4.2	3.7	6.7
Days to Estrus of First Normal Cycle	7.5	13.2	16.7	24.7[1]
First Cycle Length (days)	14.4	11.8	8.8	13.09[2]
Second Cycle Length (days)	17.7	20.7	15.6	13.15[3]
Number of Heifers With:				
Short First Cycles	7 (46.7%)	11 (78.6%)	12 (92.3%)	31 (63.3%)
Normal First Cyles	8 (53.3%)	2 (14.3%)[4]	1 (7.7%)	13 (26.5%)[5]
Repeated Short Cycles[6]	1 (14.3%)	3 (27.3%)	7 (58.3%)	25 (80.6%)

[1,2,3]Value does not include those heifers not exhibiting estrus.

[4]One heifer exhibited a long cycle (28.5 days).

[5]Two heifers exhibited long cycles (25 days, 32.5 days), and three heifers never exhibited a second estrus.

[6]Number represents those exhibiting a second short cycle following an initial short cycle.