Method and Timing of Castration Influences Performance of Bull Calves

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Story in Brief

Suckling bull calves (n=162) were used to determine the effects of banding of the scrotum or surgical castration on growth rate. At 2 to 3 mo of age, bulls were randomly assigned to one of three treatments: banded, surgically castrated, or intact. All calves were implanted with 36 mg of zeranol (Ralgro®) at treatment. Calves were weighed at treatment and at weaning (7 to 8 mo of age). Weight gain from treatment to weaning was not influenced by treatment. At weaning, intact bulls were banded (Callicrate Bander™) to determine the effects of late castration on weight gain after weaning. All animals were reimplanted with 36 mg zeranol at weaning. Fifty days after weaning, all calves were weighed, and calves banded at weaning were examined to determine if testes were absent. Treatment tended to alter weight gain during the 50 d after weaning. Bulls that were banded at weaning gained less weight than bulls that were banded or surgically castrated at 2 to 3 mo of age. When suckling calves were given an estrogenic growth stimulant, intact bulls had no advantage in weight gain to weaning compared with bulls that were banded or surgically castrated at 2 to 3 mo. Banding bulls at weaning may reduce post-weaning gain.

Key Words: Bulls, Castration, Banding, Growth, Weaning Weight

Introduction

In the United States, more than 17 million bulls between 1 d and 1 y of age are castrated annually. However, many producers still do not castrate even though calves marketed at weaning as steers have a $3.56/cwt advantage compared with bulls (Smith et al., 2000). Bulls that are castrated and given an estrogenic growth stimulant have similar weight gain compared with bulls (Bagley et al., 1989), yet producers often cite fear of reduced weaning weights as a reason for not castrating. Castration decreases aggressive behavior and increases carcass quality (Seideman et al., 1982). Bulls that were castrated at weaning had decreased weight gains compared with bulls castrated at 150 lb (Worrell et al., 1987; Chase et al., 1995), and castration of bulls that are older and heavier causes stress (Fisher et al., 1996). Castration of bulls 6 to 9 mo of age decreased weight gain by 50% compared with intact controls (Faulkner et al., 1992; ZoBell et al., 1993). Bulls can be castrated by surgical removal of the testes, banding of the scrotum with rubber bands, or crushing of the testicular chords with a burdizzo. Minimal information is available on the effect of method or timing of castration on performance. The objective of this experiment was to determine the effects of banding and surgical castration of 2- to 3-mo-old bull calves on pre-weaning growth rate, and to compare post-weaning growth of bulls castrated by banding at weaning with bulls castrated or banded at 2 to 3 mo of age.

Materials and Methods

Fall born Angus x Red poll bull calves (n=162) at 2 to 3 mo of age and weighing 120 ± 2 kg were used to determine the effects of method of castration on pre-weaning growth. Bulls were

randomly assigned to one of three treatments: banded (n=52), surgically castrated (n=56), or intact (n=54). Bulls were examined at treatment to determine if both testes had descended into the scrotum. For banding, both testes were pushed to the bottom of the scrotum and two rubber bands were placed around the upper scrotum. For surgical castration, the lower scrotum was removed, the testes exposed and the spermatic cords cut. All calves were implanted with 36 mg of zeranol (Ralgro®) at treatment. Calves were weighed at treatment and at weaning (7 to 8 mo of age). Cow-calf pairs were maintained on native grass range and were fed a 40% CP supplement, when needed.

At weaning, intact bulls were banded (Callicrate Bander™) to determine the effects of late castration on growth after weaning compared with post-weaning growth of bulls surgically castrated or banded at 2 to 3 mo of age. Testes were pulled to the bottom of the scrotum, a latex rubber band was placed around the upper scrotum and tightened by ratcheting the banding instrument. A grommet was applied by crimping to fasten the rubber band (Figure 1). All three treatment groups were reimplanted with 36 mg of zeranol. All calves were weighed at weaning and again 50 d later. Calves were maintained on native grass pasture.

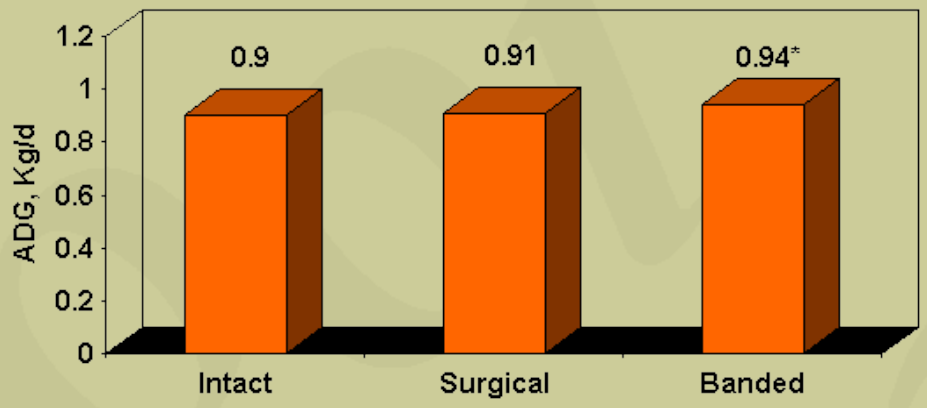
Least squares analyses of variance were used to determine the effects of treatment on weaning weight and average daily gain. Cow-calf pairs were maintained in four separate pastures with treatments assigned across pastures equally. The model included treatment, pasture, and their interaction. There was no significant treatment x pasture effect, and only main effects are presented. Means were separated with Fisher's LSD when there was a significant ($P<.05$) treatment effect.

Figure 1. Latex rubber bands were used to castrate bulls at weaning. A grommet was applied by crimping to fasten the rubber band.

Results and Discussion

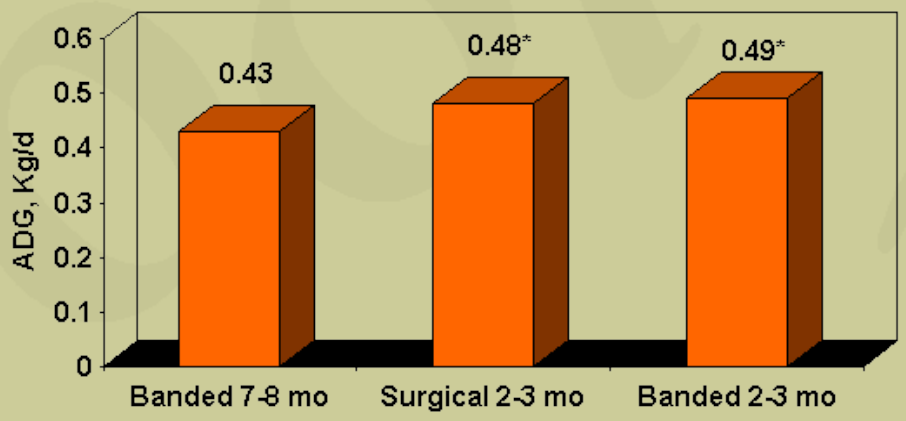
At treatment, body weights were similar for treatments (P>.1) and averaged 120 ± 2 kg. Bulls that were banded at 2 to 3 mo of age had greater (P<.05) average daily gains than bulls that were surgically castrated or left intact (Figure 2). This may be due to less stress. Intact bulls implanted with an estrogenic growth stimulant at 2 to 3 mo of age had no advantage in growth rate before weaning compared with bulls that were castrated at 2 to 3 mo of age and given an estrogenic growth stimulant. Bagley et al. (1989) found that bulls castrated at birth performed similarly to bulls castrated at 4 mo of age, indicating that leaving bulls intact for a period of time did not increase gains. Implanting intact bulls with an estrogenic growth stimulant may have caused the down regulation of pituitary secretion of luteinizing hormone, which in turn may have reduced androgen production by the testes. Implanting suckled bull calves with estrogenic implants decreased secondary sex characteristics and testicular weight at 4 mo of age (Bagley et al., 1989).

Figure 2. Effect of type of castration of bulls at 2 to 3 mo of age on preweaning average daily gain (ADG; *P<.05; SEM ± .01)



Bulls that were castrated by banding at weaning tended (P<.1) to have decreased average daily gains during the 50 d after weaning (Figure 3). Bulls castrated at birth had greater weight gains than bulls castrated at 320 kg (Worrel et al., 1987), and banding bulls at 20 mo reduced performance during feeding (Chase et al., 1995). Castrating 8 mo old bulls decreased weight gain by 50% during the next 28 d compared with intact controls (ZoBell et al., 1993). Reduced weight gains are probably attributable to stress of late castration. Banding the scrotum of bulls can cause abnormal posture (Robertson et al., 1994) and increase plasma concentrations of cortisol (Chase et al., 1995). In addition, late castration decreased carcass quality (Worrel et al., 1987), and could not be overcome by implanting animals with estrogenic growth stimulants (Vanderwert et al., 1985). In the current experiment, all bulls that were banded at weaning lost their scrotum within 52 d.

Figure 3. Effect of banding of bulls at 7 to 8 mo of age compared with castration of bulls at 2 to 3 mo of age on post-weaning average daily gain (ADG; *P<.1; SEM ± .02)



Implications

Our results indicate that leaving bulls intact prior to weaning and implanting with an estrogenic compound provides no advantage in weight gain compared with castration at 2 to 3 mo of age and implanting. In addition, calves marketed in Oklahoma at weaning as steers have a $3.56/cwt advantage over bulls (Smith et al., 2000). Castrating bulls at weaning decreases post-weaning performance and may reduce carcass quality. We recommend that bulls should be castrated as early as possible and implanted with estrogen to decrease stress and eliminate negative effects of late castration on growth rate.

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