

# Growth Rate and Carcass Characteristics Of Hereford Steers and Hemicastrate-SS Bulls

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## Story in Brief

Hereford bulls between 1 and 3 months of age, were castrated or hemicastrate-short scrotum (SS) bulls were produced to determine the influence of the presence of one sterile testis on growth rate and carcass characteristics. Preweaning daily gain was similar for the two groups. During 219 days in the feedlot, hemicastrate-SS bulls had greater daily gain than steers. Carcass grade was reduced in hemicastrate-SS bulls compared to steers, and they had slightly greater rib eye areas.

These data suggest that although hemicastrate-SS bulls have increased gain compared to steers they have the undesirable carcass characteristics which have been reported for bulls and short scrotum bulls.

## Introduction

Increases in average daily gain and feed efficiency can be achieved by implanting cattle with commercial implants containing sex hormones such as estradiol, testosterone or progesterone. As a substitute for implanting, it would be desirable to allow a bull's natural testicular hormones (androgens) stimulate growth rate. Although intact bulls have increased daily gain and increased feed efficiency compared to steers, their carcasses are less valuable because of decreased marbling and quality grade. In addition, an intact fertile bull may breed heifers and cows with which they are associated.

Shortening the scrotum of bulls keeps the testes closer to the body and exposes the testes to higher temperatures. Bulls with short scrotums produce less normal sperm and the bulls are usually sterile. Although shortening the scrotum solves the problem of bulls breeding females, numerous studies have demonstrated that short scrotum bulls have growth and carcass characteristics similar to normal intact bulls.

The objective of the present experiment was to determine if removal of one testis and initiation of sterility of the other testis by placing it close to the body cavity (hemicastration-short scrotum) would create an animal with growth characteristics similar to bulls and carcass characteristics similar to steers.

## Materials and Methods

Hereford bulls between 1 and 3 months of age were allotted to one of the two treatments. Twelve steers were produced by cutting the bottom of the scrotum with a knife and removing both testes. Thirteen hemicastrate-short scrotum (SS) bulls were produced by locating one testis in the top of the scrotum next to the body wall and placing a tight rubber band below it with the remaining testis situated in the bottom of the scrotum. Within 7 to 10 days the lower part of the scrotum and the lower testis would necrose and fall off, leaving a short scrotum with only one testis in it.

Animals were weaned at 6 months of age and placed on a growing ration for 3 months. The animals were full fed for 219, until steers appeared that they would grade low choice.

**Table 1. Daily gain (pounds) of steers and hemicastrate-SS bulls during different growing periods**

Period	Age (mo)	Treatment	
		Steers	Hemicastrate bulls
Animals (no)	---	12	13
Prewearing	2 to 6	1.48±.33	1.46±.13
Growing	6 to 9	.98±.07	1.05±.07
Feedlot <sup>a</sup>	9 to 16	2.21±.05	2.40±.08

<sup>a</sup>Significantly different ( $P < .10$ ).

**Table 2. Characteristics of steers and hemicastrate-SS bulls during the feedlot phase**

Item	Treatment	
	Steers	Hemicastrate-SS bulls
Animals (no)	12	13
Feeding period (days)	219	219
Initial weight (lb)	437± 8	418±16
Final weight (lb)	919±12	943±23
Total gain (lb) <sup>1</sup>	468± 18 <sup>a</sup>	525±28 <sup>b</sup>
Hot carcass weight (lb)	592± 7	606±19
Carcass grade <sup>1,2</sup>	10.1±.4 <sup>c</sup>	8.9±.4 <sup>d</sup>
Yield grade <sup>3</sup>	3.2±.2	3.0±.2
Fat thickness (in)	.6±.1	.6±.1
Rib eye area (in <sup>2</sup> )	11.0±.3	11.6±.4

<sup>1</sup>ab: Values with different superscripts differ significantly ( $P < .10$ ).

cd: Values with different superscripts differ significantly ( $P < .05$ ).

<sup>2</sup>U.S.D.A. grade converted to the following numerical designations: 8=avg good, 9=high good, 10=low choice, 11=avg choice, 12=high choice

<sup>3</sup>1=highest and 5=lowest

## Results and Discussion

Daily gain for the steers and hemicastrate-SS bulls during the preweaning, growing and feedlot periods are listed in Table 1. Before weaning, steers and hemicastrate-SS bulls grew at similar rates. This would be expected since the testes of normal bulls would only produce small quantities of androgens during this age period. Growth rate was not significantly different during six to nine months of age although the hemicastrates gained slightly more than the steers (1.05 *vs.* .98 lb per day). During the feedlot phase, the hemicastrate bulls had greater daily gain ( $P < .10$ ) than the steers. This indicates the one testes close to the body cavity produces sufficient androgens to enhance growth rate. During this period, the hemicastrates developed some of the body characteristics that are typically associated with bulls.

Table 2 contains the feedlot performance data. Total gain during the 219 day feeding period was greater ( $P < .10$ ) for hemicastrate-SS bulls (525 lb) than for steers (468 lb). Carcass grade was reduced ( $P < .05$ ) in the hemicastrate-SS bulls. The average grade of the hemicastrates was slightly less than high-good; whereas, the steers were slightly above low-choice. Yield grade and backfat thickness were similar for the two groups. The rib eye area was slightly greater in hemicastrate-SS bulls than the steers but the difference was not significant.

The results of this experiment indicate that only one testis close to the body cavity (hemicastrate-SS) in bulls produces sufficient androgens to increase growth rate compared to steers. However, associated with the increased feedlot growth rate is a reduction in carcass grade.