Comparing Spaying Techniques and Performance of Heifers Grazing and In the Feedlot

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Several different techniques for spaying have been developed recently and these have sparked the interest of veterinarians and cattlemen alike. The most dramatic advancement in the area of spaying came with the development of the Kimberling-Rupp technique. Research conducted comparing the K-R method with the conventional flank spaying method suggests that heifers undergo less stress and that performance is slightly improved. The main advantage is that the K-R technique is fast with less likelihood of infection, and hide damage is eliminated.

More recently other techniques of spaying have been developed and are now being evaluated in research trials throughout the United States. The rumen-autograft technique developed in North Dakota received extensive media coverage when it was reported that heifers spayed with this technique performed superior to steers. The rumen-autograft technique involves flank spaying the heifer in the conventional manner and then implanting or grafting a small piece of ovary tissue between the outer layer of serosal tissue that surrounds the rumen and the rumen wall. The theory behind this technique is that the ovarian tissue attached to the rumen wall will be nourished by the extensive blood supply to this area, will grow and produce naturally occurring female hormones. That initial report of increased performance has not been substantiated, however. Additional research on this method will be discussed later in this report.

Other new spaying methods have combined the procedures of the K-R technique and the rumen-autograft. These involve spaying heifers using the K-R instrument or a similar device and allowing the ovaries to drop into the peritoneal cavity. The theory behind these methods is that the ovary will graft on to the abdominal cavity wall and produce female hormones as in an intact heifer. This theory has not been proved as yet, however.

Considerable research has been conducted with spayed heifers over the years. Some of the early work dates back to the late 1800's and early 1900's; however, limited research has been reported on the newer techniques being developed and promoted at this time.

Two K-State trials were initiated to compare the performance of heifers spayed by the Kimberling-Rupp technique with those flank spayed and receiving the rumen ovary autograft. The results of these trials are reported in Tables 1 through 4. In trial 1, Table 1, 481 heifers were randomly allotted to three spaying treatments: intact, K-R technique, and flank spay with rumen graft. Neither of the spaying methods resulted in performance different from that of the intact heifers. The flank spayed, rumen grafted heifers did, however, gain 5.1% faster than the K-R technique spayed heifers. All heifers in this trial were implanted with Ralgro and grazed in the same pasture north of Ashland, Kansas, for 169 days.

TABLE 1. Grazing Performances of Spayed Heifers; Trial 1.

		Surgical Treatment	
Item	Intact	Kimberling-Rupp Technique	Flank Spayed Rumen Graft
No. Heifers	65	133	283
Begin Wt., lb.	446	436	426
Final Wt., lb.	683	667	671
Daily Gain, lb.	1.41[ab]	1.36[b]	1.43[a]

[a,b] Values in the same row with different superscripts differ (P=.048)
Kansas state University — 1985.

In trial 2, Table 2, 137 heifers were spayed to compare the same surgical treatments as in trial 1 with the exception that no heifers were left intact. Unlike trial 1, trial 2 showed no difference in performance between the K-R technique and the flank spayed rumen grafted heifers. These heifers grazed the same pasture as those in trial 1 for 156 days.

TABLE 2. Grazing Performances of Spayed Heifers; Trial 2.

	Surgical Treatment	
Item	Kimberling-Rupp Technique	Flank Spayed Rumen Graft
No. Heifers	64	73
Begin Wt., lb.	391	367
Final Wt., lb.	602	581
Daily Gain, lb.	1.35	1.37

Kansas State University — 1985.

One objective of the previously discussed KSU trials was to compare the response of spayed heifers to various implants. The flank spayed rumen, grafted heifers in trial 2 were randomly implanted with Ralgro, Synovex-H or Synovex-S at the time they were spayed. The Kimberling Rupp technique spayed heifers in trial 2 were implanted with Synovex-H or Synovex-S. Results from the implant comparisons are reported in Tables 3 and 4. In the flank spayed, rumen grafted heifers, there was no significant difference in response to Ralgro, Synovex-H or Synovex-S. Similarly, there was no

TABLE 3. Grazing Performance of Rumen Grafted Flank Spayed Heifers Implanted with Ralgro, Synovex-H or Synovex-S.

	Implant Treatment		
Item	**Ralgro**	**Synovex-H**	**Synovex-S**
No. Heifers	34	35	38
Begin Wt., lb.	370	359	374
Final Wt., lb.	588	567	594
Daily Gain, lb.	1.39	1.33	1.40

Kansas State University — 1985.

TABLE 4. Grazing Performance of Spayed Heifers Implanted with Synovex-H or Synovex-S.

	Implant Treatment	
Item	**Synovex-H**	**Synovex-S**
No. Heifers	67	70
Begin Wt., lb.	376	380
Final Wt., lb.	585	596
Daily Gain, lb.	1.34	1.38

Kansas State University — 1985.

difference between Synovex-H or Synovex-S when used in the Kimberling-Rupp technique spayed heifers. When the data were analyzed to test the interaction between implant, Synovex-H and Synovex-S and spaying technique, the interaction was found to be non-significant. There would be no advantage to using Synovex-S in spayed heifers regardless of which spaying technique was used.

The second objective of the KSU trials was to compare the feedlot performance of these heifers. All of the heifers involved in the above two trials were finished at a feedlot where no MGA was fed. The results of this portion of the trial is summarized in Table 5. There was no advantage to either of the spaying techniques over controls in ADG, but the controls were not as efficient in converting feed to gain.

At slaughter, the flank spayed heifers did show some scarring in the left flank and some adhesions were trimmed by the inspectors.

TABLE 5. Feedlot Performance Data on Spayed Heifers.

	Control Synovex-H	K-R Synovex-H	Autograft Synovex-H	Autograft Synovex-S
Number	65	134	145	141
In Weight	676	661	669	667
Out Weight	1045	1036	1041	1045
Gain	369	375	362	378
125-day ADG	2.95	3.00	2.98	3.02
Feed intake	27.90	27.23	27.61	27.29
Feed/Gain	9.46	9.08	9.27	9.04

Kansas State University — 1986.

Several additional trials are currently being conducted in Kansas, Nebraska, and Texas to further evaluate the feedlot performance of spayed heifers. A recently completed trial conducted at Purdue University is reported in Table 6. In this trial, 30 heifers were randomly divided into three treatments: intact, flank spayed, and flank spayed with the ovary rumen graft. Heifers were spayed on the initial day of the trial. None of the heifers received a growth promotant and MGA was not fed to the intact heifers. The feedlot performance favored the intact heifers in both rate and efficiency of gain. These heifers were on feed for only 91 days and it is quite questionable whether any possible benefits of spaying could be recovered in this short period of time.

TABLE 6. Feedlot Performance of Spayed Heifers.

	Intact	Flank Spayed	Flank Spayed Rumen Graft
Number	10	10	10
In Weight	744	708	717
Out Weight	956	916	909
ADG	2.34	2.28	2.11
F/G	5.8	6.0	6.2

Purdue University, 1985 — 91 days on feed.

It is questionable that the performance response of spayed heifers discussed above will offset the expenses incurred by the stocker operator to spay heifers prior to going to pasture. These expenses include veterinary services, labor involved to run cattle through the chute, death loss or injury resulting from the surgical procedure or handling of the cattle, and in some instances, costs of transporting cattle to a veterinarian's facility. The stocker operator most likely will have to receive a premium for his spayed heifers from the feedlot operator to realize a monetary gain from his time and effort spent to have his heifers spayed. Figures compiled by Dr. Bill Bennett, Monfort Cattle Feeding Division, Greeley, Colorado, indicate that feeding losses on heifers, averaging 16.5% pregnancy when entering the feedyard, range from $1.25 or $2.35 per hundred pounds of purchase weight depending on how the heifers are handling in the feedyard. Pregnancy testing and abortion resulted in the lower figure, doing nothing but assisting those heifers calving, resulted in the higher figure.

It seems logical that a stocker operator offering spayed heifers for sale could ask to receive a premium for those heifers. Premiums paid by feedyards will likely range from $1 to $3 per hundredweight, depending on the management program developed in the feedyard to handle pregnant heifers. The stocker operator should present the feedyard with a certificate signed by the veterinarian performing the spaying operation stating the technique used, number of heifers spayed and date spayed. Feedyards purchasing spayed heifers should also negotiate a guarantee with the seller that all heifers are open at the time of purchase.

Editor's Note: For the question-answer session, please turn to page 46