

Lesion Rates and the Effects of Location of Subcutaneous Clostridial Bacterin-Toxoid Vaccination on Performance of Newly Received Feedlot Calves

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Abstract

Study objectives were: 1) to determine the effect on growth of administering a clostridial vaccination at the base of the ear, versus in the neck; 2) determine the relative risk of developing an injection site reaction and(or) being mis-diagnosed with bovine respiratory disease (BRD); and 3) determine the percentage of subcutaneous neck injection-site reactions that are removed during hide pulling. Newly received calves (n = 170) were assigned randomly to one of two clostridial vaccination location treatments, 1) base of ear or 2) neck. Mean daily gains for ear vaccinates for the feeding pe-

riod were 1.28 kg, and gains for neck vaccinates were 1.25 kg ($P = 0.45$). Power ($\alpha = 0.05$, $\beta = 0.20$) was adequate to detect an 8% change in gain. Risk of BRD mis-diagnosis was not related to either vaccination site. Ear vaccinates were at a higher risk of having an injection site reaction at day 57 or 62 and(or) at slaughter. Of the injection-site reactions in the neck, 89% (95% CI = 52 – 100%) could not be located on the carcass after the hide was pulled. Clostridial vaccination location has no clinically significant effect on health or gain performance, and the majority of subcutaneous injection site reactions are removed with the hide.

Unilateral Castration in Bulls: 20 Cases (1989-1999)

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Introduction

Surprisingly little data is available regarding productivity of bulls following unilateral castration. Heath *et al* (1996) published a study on 8 bulls which demonstrated a productive return to pasture breeding after unilateral castrations. The purpose of this retrospective study was to review a large number of bulls with uni-

lateral castration to describe techniques used, post-operative complications and return to semen production or breeding soundness.

Materials and Methods

A computer assisted search was made of medical records of all bulls examined due to scrotal disease. All

bulls which under went unilateral castration were included. Data collected included signalment, history, physical examination, ultrasonography, semen analysis, surgery, histopathology, microbial culture, complications and follow-up information.

Results and Conclusions

The study included 20 bulls, of which 10 were Holstein, 2 Simmental, 2 Hereford, 2 Limousin, 1 Angus, 1 Shorthorn, 1 Salers, and 1 Maine Anjou. The bulls ranged from 1 to 7 years old. The group included sixteen bulls with a history of scrotal swelling and 4 bulls with poor semen quality or asymmetrical testicles. Duration of clinical signs ranged from 1 to 365 days. Palpation of external genitalia revealed unilateral scrotal swelling in 15 bulls, bilateral scrotal swelling in 1, presence of an inguinal hernia in 5, and pain on palpation in four. Epididymal abnormalities were present in three bulls, and 3 had testicles that were not movable. Ultrasonography revealed fluid in the testicular parenchyma in 8 bulls, hyperechoic tissue surrounding the testicle in 7, fluid surrounding the testicle in 6, hyperechoic tissue within the testicle in 3, cystic structures within the testicle in 3 epididymal enlargement in 3, and bowel loops within the spermatic cord in 3 bulls. Two bulls also had abnormalities in the contralateral testicle.

Unilateral castration was performed under general anesthesia in 13 bulls and local anesthesia, with or without sedation, in 7. Complete closure of the scrotal skin was performed in 11 bulls and partial closure was performed in 9 bulls. Histopathologic examination was done on 15 testicles and found tubular atrophy (n=6), interstitial orchitis (n=5), epididymitis (n=3), epididymal fibrosis (n=2), lymphosarcoma (n=1), sertoli cell tumor (n=1), epididymal sperm granuloma (n=1), hemorrhage with necrosis (n=1), and granulation tissue (n=1). Microbial culture yielded *Escherichia coli*, *Enterococcus fecalis*, and coagulase-negative *Staphylococcus* sp in 1 bull each. Excessive scrotal swelling was observed in 14 bulls after surgery. Of these 2 bulls had the incision dehiscence and 5 had the incision re-opened. Follow-up data was available for 5 natural service and 5 semen collection bulls. All natural service bulls had satisfactory breeding ratios, bulls returned to 72% of their sperm cell output before onset of disease.

Conclusion

Based on the results of this study, sperm cell output after unilateral castration is expected to return to sufficient concentrations to allow continued profitable use of these bulls in semen collection centers.

New Mutations in Beef Cattle

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Mutation rates are estimated in the range of 10^4 - 10^6 per generation. This suggests that mutations recur at regular intervals, and inherited phenotypes are likely to emerge or recur in unique breeding populations. In spite of these probabilities, recurrent mutations are not often documented. Syndactyly is a recent example of two mutations that emerged independently in Holstein and Angus cattle. In syndactyly, cattle are born with fused claws. Crossbreeding trials demonstrated the mutation to be allelic but the phenotypes are distinct, suggesting unique mutations.

During the 1999 calving season, two new mutations were reported to the Nebraska Bovine Congenital Disease Investigation Program. Tibial hemimelia was recognized simultaneously in Shorthorn calves from one Canadian and two Nebraska herds. The six calves were from three herds, and traced to a common ancestral sire paternally and maternally within six generations. Pedigrees demonstrated a mechanism by which a recessive allele, identical by descent, could be occurring in a homozygous state and be responsible for the disorder. The lesions: missing patella, shortened or missing tibia,