

One-Year Survival of Cows with Left Displacement of the Abomasum Corrected with the Role-and-Toggle Procedure

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Introduction

LDA can be treated successfully using the right flank, left flank, ventral paramedian, or roll-and-toggle methods. Several reports are available regarding the success of surgical correction of abomasal displacement,¹⁻⁶ and roll-and-toggle suture correction.^{7,8} Economic comparisons of the pyloro-omentopexy versus the roll-and-toggle procedure for treatment of the left displacement of the abomasum (LDA) have been made, and the reports demonstrate that the closed repositioning and stabilization techniques are generally less expensive and have comparable results with open (surgical) repositioning and stabilization techniques.^{9,10} The purpose of this study was to assess the long-term survival of cows following roll-and-toggle LDA correction and to determine the percentage which successfully calved following their LDA correction.

Materials and Methods

Traditional surgical LDA correction and the roll-and-toggle procedure both function by purposefully creating a permanent adhesion between the abomasum and the abdominal wall. Such an adhesion, produced by the roll-and-toggle procedure approximately 10 months previously, is seen in Figure 1.

Since the fall of 1992, every roll-and-toggle procedure performed by a Danish veterinary practice was entered into a computer record. Concurrent diseases such as mastitis, metritis, and ketosis were not recorded in this study. The post-correction care of all cases was IM procaine penicillin G 10 mill IU and 10 mg given immediately following LDA correction. No subsequent supportive treatment was administered. Toggle sutures were left in place and fell out without assistance.



Figure 1.

On December 16, 1996, production and animal events records were retrieved from the Danish Cattle Data Base (DCDB) for the 74 cows having received the roll-and-toggle procedure since the fall of 1992. Cows with LDA correction less than 1 year previously were not included for study. The average herd cull rate was available for 24 of the 33 herds contributing at least one LDA case to the study. As such, the herd culling rate was available for 53 of the 74 LDA cases.

The data were analysed to compute the average days post-calving and average lactation number (parity) of the 74 cases. Each cow was followed forward in time for at least one year to determine survival in the herd (absence of culling or death) and presence of subsequent calving. The overall 1-year survival rate for the

LDA cases was compared with a weighted average of the herd 1-year survival rates. For example, the survival rate of a herd which contributed 4 LDA cases was given twice the weight as a herd contributing only 2 LDA cases. This weighted average herd survival rate was then compared with the survival rate of the LDA cases by the binomial test for comparing a proportion to a known standard.¹¹

Results

Computerized records from the DCDB were available for 59 of the 74 LDA cases. Data regarding the remaining 15 cows were obtained by interviewing the dairy producers. All but 3 cows were Holsteins. The parity of the LDA cases ranged from 1 to 6, with a mean of 2.7. LDA correction occurred between 2 and 280 days post calving, with a mean day post-calving of 34 days. Only 4 cows had LDA correction at greater than 100 days post-calving.

The 1-year survival rate in the current study was 59.5% (44/74), which is equivalent to a 40.5% (30/74) 1-year cull rate. The weighted average of 1-year survival rates for the herds contributing the LDA cases was 61.3%. The binomial test for comparing a proportion to a standard indicated that the probability of our observing 44 or less surviving cows (or 30 or more culls) was .41 (41%). On this basis, we accept the null hypothesis that our LDA cattle had the same cull rate as did their herdmates. The survival curve (Figure 2) shows a relatively higher rate of departure from the herd in the 50 days immediately following LDA correction, with an approximately linear rate of survival thereafter.

Of the 30 cows which left their herds before a year had elapsed, 8 died, and the rest were culled. Two of the cows which died had chronic diarrhea prior to surgery, one was chronically lame, and the rest died of unknown causes. Fifty percent (26/52) of the cows for which subsequent calving information was available had at least one calving following their LDA correction. Many cows had multiple subsequent calvings.

Discussion

Kelton *et al.*¹² reported a 42% removal rate (cull rate plus death rate) within 2 months following roll-and-toggle correction of 31 cattle with LDA. This is considerably higher than the 11% 2-month removal rate found in the current study (Figure 2). In this same study, Kelton reported a 50% 2-month removal rate for LDA cases corrected with an open surgical technique. Ehrlich¹³ reported a 30% 1-year removal rate among 37 LDA cases corrected with a ventral paramedian abomasopexy technique.

Recent economic comparison of the pyloro-

omentopexy vs. the roll-and-toggle procedure for treatment of LDA showed that the roll-and-toggle procedure yielded a \$150 advantage over an open surgical repair.¹⁰ That study included the cost of the LDA correction procedure, the cost of culling, and the impact on daily milk production in the subsequent 120 days. Cases with surgical repair had a 4-month removal rate of 34% (12/35), estimated to have cost the producers an average of \$169 per LDA case. Cases with roll-and-toggle repair had a 4-month removal rate of 16% (6/37), estimated to have cost the producers an average of \$111 per LDA case. The 13.5% 4-month removal rate measured in the current study (Figure 2) compares very closely with the 16% measured by Bartlett *et al.*¹⁰ Ruegg and Carpenter¹⁴ used a decision-tree analysis and found that the cost-effectiveness of the open-surgical approach and the closed-suture techniques was similar. The relatively high long-term survival demonstrated in this study further supports the use of the roll-and-toggle procedure for correction of LDA.

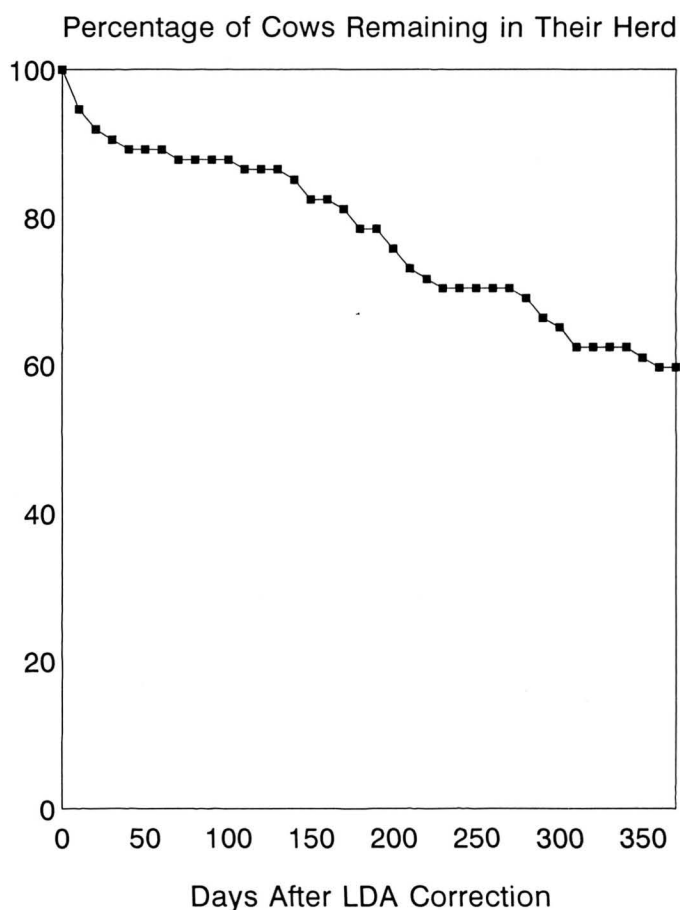


Figure 2. Survival of Cows with LDA Correction Followed for one year.

In the current study, minimal post-operative care was given to the 74 LDA cases. We suspect that at least

some of the 8 fatalities and 22 culls might have been avoided had additional supportive treatment been administered. One of the culls was a cow which was sold with the entire herd when the producer went out of business.

Summary

In most situations, LDA can be treated successfully using the right-flank, left-flank, ventral-paramedian, or roll-and-toggle methods. Following LDA correction with the roll-and-toggle procedure, 74 cows experienced no greater cull rate than did unaffected herdmates. This and other studies demonstrate that the roll-and-toggle procedure can produce roughly comparable survival results when compared with the more time consuming and expensive surgical interventions.

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Abstract

Increasing the efficiency of suckled calf production using embryo transfer technology

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The data reviewed in this paper illustrate the benefits of increased output that can be obtained from suckler herds using embryo transfer technology. The technology can be used within breeding schemes to increase the rate of genetic progress for selected traits or to transfer embryos of superior genetic merit and, in the future, embryos of predetermined sex to beef cows. The success of the technology is dependent on the achievement of good pregnancy rates. Experience gained on commercial farms suggests that the main reason for

poor success rates in some herds lies with the general level of management of such herds rather than with the reproductive technology itself. Much experience has been gained on the management of embryo transfer recipients and twin-bearing cows. In particular, the nutritional requirements of such animals during the early post partum period and during mid and late pregnancy, and the management of twin-bearing cows during the perinatal period, are discussed.