Distal teat amputation in lactating dairy cows with injury to the distal teat and streak canal

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Introduction

When a streak canal injury occurs, there may be subtle or no external signs of damage. The first sign a producer notices is it takes longer for the injured quarter to empty or milk flow is impaired during milking. Given that a dairy cow with 4 efficiently functioning teats is essential to dairy production systems, an economically feasible procedure, such as distal teat amputation, to treat these injuries is necessary. The objectives of this study were to describe the distal teat amputation procedure and determine the short- and long-term outcomes of dairy cows treated with a distal teat amputation. The hypothesis is that dairy cows with internal damage to the streak canal and subsequent difficulty milking will have improved milking efficiency with the machine following surgical treatment with a distal teat amputation.

Materials and methods

This retrospective study examined medical records from the Centre Hospitalier Universitaire Vétérinaire, Université de Montréal from 2015 to 2021. Medical records were included if the cow had a distal teat amputation performed surgically under local anesthesia. Data collected included age, breed, quarter affected, duration of milking issues, California Mastitis Test (CMT) and milk culture results on admission and after surgery, length of passive milking and hospitalization, complications and medical treatment during hospitalization. Long-term follow-up information was collected from the Canadian Dairy Network (CDN) and telephone interviews with producers. Data recorded included how long the cow remained in the herd, if she was bred back after her surgery lactation, reason for removal from the herd, milk leakage from the distally amputated teat, if she developed mastitis on the farm, complications with the distally amputated teat, and producer satisfaction. Short-term outcomes were defined as discharged from the hospital with a functioning distally amputated teat. Long-term outcomes were defined as a success if the cow had a subsequent lactation following her surgery with a functioning teat. Descriptive statistical analyses were performed to look for trends in short- and long-term outcomes.

Results

The medical record search yielded 23 cases fitting the inclusion criteria. All 23 cows were Holsteins with a mean age of 3.7 years (range: 2-8 years). Three cows had injuries involving 2 teats requiring distal amputations. The 2 hindquarters were most often affected (21/27) with just 6 distal amputations performed on front teats. Duration of injury prior to presentation ranged from under 24 hours to 1 month. The majority of cows presented with signs of mastitis or a CMT value of 1 or higher (15/23). Most of the affected quarters had a positive milk culture (19/23) on admission. Internal injury to distal teat structures was diagnosed via ultrasound and found 65% (15/23) of teats had either a partial or complete rupture and/or damage to the streak canal. Distal lacerations or wounds interfering with the streak canal or milking efficiency were found in 43% (10/23) of distal teats. Post-operative complications included development of mastitis (10/23), swelling of the affected quarter (2/23), and a second surgery (2/23). All cows were discharged from the hospital. Long-term follow-up ranged from 1 to 7 years after surgery. Lactation information from the CDN was available in 16 out of 22 cows. Of these 16 cows, 10 had lactation information recorded, indicating they remained in the herd for a portion of their lactation. Six of these 10 cows produced more milk in their subsequent lactation than the lactation of surgery by an average of 1,872.5 kg by the standard 305-day benchmark. Of the 22 cows in this study, follow-up producer interviews were possible for 10 (43%), of which, 6 remained in the herd for their next lactation following surgery. Producers reported 4 of the 6 remaining cows produced an equal amount or more milk during their subsequent lactation. Reasons cows were removed from the herd included mastitis either in their surgery teat or another quarter, had an injury to another teat, or had reproductive issues (being bred back or uterine torsion). Producers reported milk dripping either right before milking or constantly from the distally amputated teat as a complication in 3 of the 10 cows. Overall, producer satisfaction was good, with many stating they would consider this surgical procedure again for other cows with similar injuries but would reserve this option for higher value and high-producing cows.

Significance

Distal teat injuries in lactating dairy cows can be a source of economic loss for the producer. Distal teat amputations to re-establish efficient milk flow is a practical procedure with moderate post-operative care.

