



Investigation of the Effects of Different Surgical Techniques on Behavior in Self-Sucking Cows in Modern and Individual Family Farms

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Abstract

Self-sucking or sucking other animals in the herd, which has an abnormal behavior disorder, and it is an important problem in dairy cattle farms. Surgical treatment is mostly recommended as a treatment for this disease, which causes economic problems. In this study, which was carried out on self-sucking cows, it was aimed to investigate the effects on different surgical treatment techniques in modern and individual family farms. While the surgical treatment of self-sucking behavior disorder in family farms has been successful, the operation results of this behavior disorder in modern farms have been unsuccessful. It was concluded that surgical treatment was unsuccessful in modern farms due to herd management problems. Surgical treatments for this visually acquired behavioral disorder of cows are insufficient. It has been concluded that environmental factors cause this behavior disorder and taking them into consideration while performing the operation will increase the chance of success.

Key Words: Minimally invasive, self-sucking cow, tongue surgery, ventral glossectomy

Modern ve Aile İşletmelerindeki Kendini Emen İneklere Uygulanan Farklı Operasyon Tekniklerinin Davranış Üzerine Etkileri

Öz

Kendi kendini ya da sürüdeki diğer hayvanları emme, süt sığırcılığı işletmelerinde karşılaşılan önemli bir davranış bozukluğudur. Ekonomik sorunlara neden olan bu davranış bozukluğunun tedavisi olarak çoğunlukla operatif tedavi önerilmektedir. Kendi kendini emen inekler üzerinde gerçekleştirilen bu çalışmada, modern ve bireysel aile işletmelerinde farklı cerrahi tedavi teknikleri üzerindeki etkilerinin araştırılması amaçlandı. Aile işletmelerindeki ineklere uygulanan operatif tedavilerin sonuçları olumlu olurken, modern işletmelerdeki ineklerin operatif tedavisinde aynı başarı sağlanamamıştır. Modern işletmelerde yapılan operatif tedavilerde istenilen sonuçlara ulaşılamaması sürü yönetimindeki sorunlara bağlandı. Operatif tedavilerin yetersiz kaldığı bu davranış bozukluğunu inekler görsel olarak edinmelerine rağmen etiolojisinde çevresel etmenlerinde rol oynadıkları ve tedavi sürecinde bunlarında göz önünde bulundurulmasının başarı şansını arttıracakları kanaatine varıldı.

Anhtar Kelimeler: Dil cerrahisi, kendini emen inek, minimal invaziv, ventral glossektomi

INTRODUCTION

Self-sucking is a behavioral disorder, but it can lead to visual behavioral disorders as other animals in the herd may also be affected by this behavior disorder. Self-sucking creates big problems in terms of herd management (1). Another problem seen in cows with this behavioral disorder is tongue-playing disease, and it is known that they usually showed together. It has been reported that various causes are involved in the etiology of tongue-playing disease. While some researchers emphasize that it may occur especially from manganese (Mn) and copper (Cu) deficiency (2), others argue that trace elements do not cause this problem (3). It is thought that this self-sucking behavior is mostly caused by multifactorial reasons. These can be listed as genetic factors,

diet, nutritional deficiency, and shelter systems (4,5). Self-sucking causes serious economic losses in terms of dairy industry and total farm expenses, as it leads to a decrease in milk production, resulting in calf malnutrition, udder injuries and increase in veterinary expenses (6). Several conservative methods (such as pointed nose rings, weaning rings, neck collars) are used to overcome this problem (figure 1). However, these methods may be insufficient to eliminate this behavior disorder (7). Surgical treatment is the most reliable treatment method in this behavioral disorder, as it provides a radical solution. Among these, invasive methods such as the ventral/lateral glossectomy technique (figure 2) (1,8,9) and recently some apparatuses are used in the ventral part of the tongue. In addition to these, less invasive tech-

niques have been started to be used that prevent the formation of grooves formed by the tongue during sucking with suture applications (figure 3) (10,11). There are studies for self-sucking treatment in the literature review about this behavior disorder. However, no study has been found on the reasons for the relationship between this situation, which is a behavioral problem, and the farms structure and management. Therefore, in this study, it is aimed to investigate whether farm structure and management methods are effective on the success of surgical treatment in cows with self-sucking behavioral disorder.



Figure 1. Some methods applied by the patient owner to prevent self-sucking

Deterrent methods:

- A. A collar made from a drum
- B. Wrapping the cow's mouth with a piece of cloth
- C. Special nosepiece made of pointed iron
- D. Thread tying method resulting in an open wound

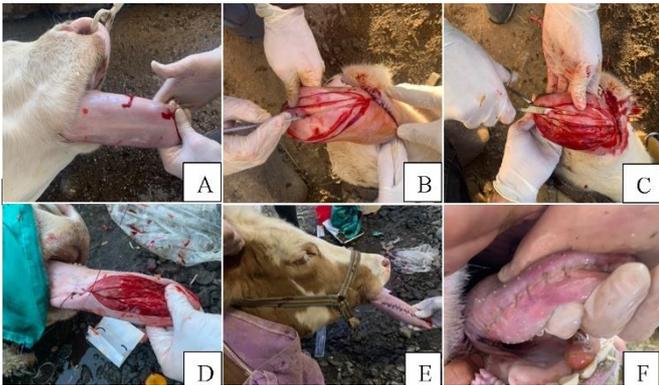


Figure 2. Ventral glossectomy stages

- A. Infiltration anesthesia (6- point injection locally)
- B. Incision shape
- C. Separation of mucosa
- D. Stitching application
- E. The final state of the suture application
- F. Wound healing on the 7th postoperative day

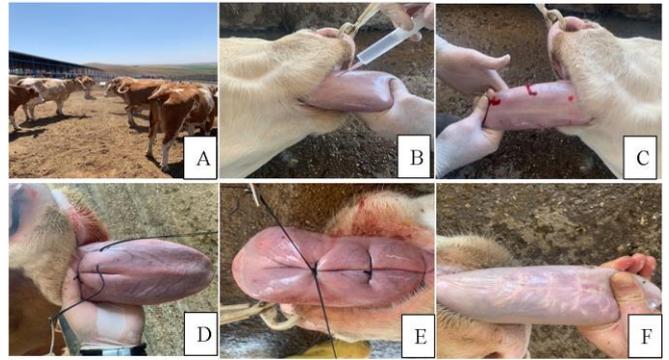


Figure 3. Minimally invasive suture application

- A. Paddock image of self-sucking cows of modern farms
- B. Local infiltration injection
- C. After local infiltration injection
- D. Minimally invasive suture application
- E. Final of minimally invasive suture application
- F. Recovery period 2 weeks post operative

MATERIALS AND METHODS

Total of 190 cows constituted the material of the research. In the study, ventral glossectomy (n=46) and a minimally invasive surgical method, ventral suture (n=40) were performed on 86 cows sucking themselves or another cow in traditional family farms. Ventral glossectomy (n=7) and minimally invasive suture (n=7) were performed on cows in a modern dairy farm with 14 self-sucking cows. In addition, 90 healthy cows without any behavioral problems in modern and family farms were followed up regularly for six months to observe how and to what extent they were affected by animals with self-sucking problems.

Operative Process

Before starting the operation, the physiological parameters of the animals such as heart rate, respiratory rate, rectal temperature, and rumen movements were examined and recorded. As a result of clinical examinations, cows suitable for the operation in animals were included in the study. For anesthesia, each cow was restrained by the Rueff method using 0.02 mg/kg xylazine HCl (Rompun 2%, Bayer, Türkiye) as preanesthetic. An assistant manually grasped the head and tongue over the mouth by pressing on the basal septum, and the tongue was pulled out and inverted. Tourniquet was applied by placing a gauze strip at the root of the tongue, and this bandage was tied over the head to keep the tongue out. After applying 10-15 ml of lidocaine HCl (Vilcain, Vilsan, Türkiye) for local infiltration anesthesia from 4 or 6 points depending on the size of the tongue, the operation was completed with ventral glossectomy and minimally invasive suture method. In the post-operative period, ceftiofur sodium (Excede, Zoetis) 1.5 ml/45 kg SC was administered as antibiotherapy for 5 days. For postoperative analgesia, a single dose of 0.5 mg/kg meloxicam (Boehringer Ingelheim, Metacam 20 mg/ml) was administered as SC. Postoperatively, 10% glycerine iode was applied for oral antisepsis.

RESULTS

Management

The number of animals in the family farms was 3-6 cows and they were fed with a tied system. The diet of the cows was grazing all day long in the pasture and supplemented with a tied system in the barn. It was learned that the cows with this abnormal behavior in family farms were fed only with milk for one month during the calving period and then fed only with feed two months after the milk was reduced and feed supplements were made. It was learned that the calf was tied up next to its mother during milking, and after milking was over, the calf was allowed to suckle the milk allocated to it, and during this period, it was fed with milk from both udder of its mother for the first month and with milk from one udder of its mother after 1 month. It was learned that all animals in the family farms were fed this way and the cows showing this abnormal behavior had not shown such behavior before, but after one cow showed this behavior in the farm, this problem started in other cows if they were not treated in the farm. In the modern dairy farm, there were over 400 cows and all of them were fed on a free system. Cows were kept side by side and in groups of 15 in each paddock. Neighboring cows were constantly seeing each other.

These animals, whose diet was in the form of concentrated feed twice a day, completed the feeding period for 20 minutes each time and spent all other times of the day resting. It has been learned that the cows showing this behavior disorder in the nutrition system in modern farms are separated from their mothers as soon as they are born and fed with a bottle and then reared together in the paddock system during the calf period. The calves that were transferred to the paddock system were fed with udder milk given with a bottle for the first three days, and then started to be fed with milk replacer feeds and concentrated feeds.

Operation Findings

Ventral glossectomy operation took an average of 15 ± 4 minutes, while minimally invasive suturing took 8 ± 3 minutes. After the operation in all cows, the inability to put their tongues in the mouth and lying on the ground for about 10 minutes because of anesthesia. All the cows were able to stand up without any complications after the operation and this period lasted 34 ± 7 minutes. After approximately 1 hour, it was determined that the animals returned to their original state and physiological values (heart rate, respiratory rate, rectal temperature, and rumen movements) approached normal values. All operations were followed for six months, and no complications related to the operation wound occurred. In both techniques applied in the study, success was achieved in all cows operated in family farms, while success was achieved in only 1 of the 14 cows included in the study in a modern dairy farm where many cows were together. There was only one successful cow out of 7 cows who underwent ventral glossectomy, and this cow was pregnant for 6 months and passed into the dry period after the operation. No success was obtained from 7 cows that underwent minimally invasive suture technique. In the modern farm, it was decided by the owners to remove all the cows from the farm

because of the rapid weight loss in addition to the nutritional problems in the cows after the operation.

DISCUSSION AND CONCLUSION

Self-sucking or sucking another cow is a common problem in dairy farms and causes serious economic losses as it causes udder damage, mastitis and breeding animal culling as well as milk loss (12). It has been proven in Gaude's study that the amount of feed during the calf period, the duration of the milk drinking period and the crowded feeding phase are the most important risk factors for self or other animal sucking behavior disorder (13,14) stated that if the number of fed during the day is increased and the time between milk substitutes offered is reduced, the motivation for sucking and thus the probability of cross-sucking will decrease (15). Cross-sucking in motherless calf breeders is not considered a disorder but rather a natural behavior that occurs as an abnormality in individual animals under favorable environmental conditions such as a restrictive diet, absence of mother cows, or the presence of tolerances (15,16).

It is claimed that conservative practices made with traditional methods to prevent self-sucking of animals fail and that other cows in the farms are also affected by this behavior disorder and self or inter-sucking. It is known that surgical treatment is a more radical solution instead of traditional control methods for treatment and surgical procedures are more satisfactory (8). Surgical treatment is based on the excision of tongue tissues of different thickness, which prevents the tongue from curling, which is important for suction by disrupting the normal contour of the tongue. At the end of the surgical procedures, these procedures are a permanent and radical solution, as the tongue cannot grasp the breast, which is necessary for the sucking function. Although there are many surgical techniques, some advantages and disadvantages of these techniques are reported (10). Because mouth sores heal faster and with less scarring than skin wounds (17-19).

The etiology of the behavioral disorder is very important to eliminate this behavior disorder with deterrent, medical or operative methods (20). The success rates of invasive and minimally invasive operations performed by the same person in modern and family farms are very different; It has been the proof of the negative effect of calf nutrition of animals in modern farms on this behavior disorder.

It has been concluded that this behavioral disorder, which occurs later in family farms, can be treated with surgery. Even though all operations were performed by the same method and by the same person, the results were very different according to the type of operation, which is an indication that the behavioral disorder in these animals has become a habit. The success of the operations in terms of changing habits; It has been concluded that it depends on the environment of the enterprise and the animal, the shelter and nutrition of the animal. The completely positive results from both operations in family farms show that both operations can be performed in animals fed with the connected system. In addition to the diet in the farm management and the way of sheltering with other animals, especially in

the same paddock with the animals with behavioral problems or in the paddock next to it, the formation of this behavior disorder and its course like a contagious disease visually shows that the behavior patterns of the animals have changed.

In conclusion, with this study, it was revealed that mistakes in herd management were effective on behavioral disorders and some behavioral disorders in animals affected the behavior of other animals. In the postoperative period, animals attempt to suck themselves as they did before, but since their operated tongue cannot grasp their breasts, they accept that this attempt has failed, because of learned habit, and give up this behavior. However, if the stimulating factors are not removed, there may be a re-orientation to this behavior disorder. As a result of the observation of 90 healthy cows without behavioral disorder and included in the study for six months after the research; While there was no problem in family farms, this behavioral disorder was observed in modern farms after a certain period. Observation of cows showing this behavior disorder in the same paddock or side by side in modern farms suggested that this behavior is a visual acquired behavior disorder. Although the success rate of operations is high in individual family farms, the reason why this success rate is low in modern farms is that other animals in the herd are affected by self-sucking cows, especially in large enterprises. While the method of surgical treatment of self-sucking behavioral disorder does not matter, it is concluded that environmental factors affect the success.

CONFLICTS OF INTEREST

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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