



Is modified Forssell's operation superior to cribbing collar in preventing crib-biting in horses?

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Crib-biting (wind-sucking) might be a coping response of the horses to the challenges of uncontrolled environmental events. Prevention of this stereotypic behaviour evokes physiological responses consistent with increased stress. Reducing the incidence of cribbiting, however, is important in order to prevent undesirable physical and behavioural consequences (tooth erosion, altered gut function, gastric inflammation/ulceration, colic, etc.).

Common treatment of crib-biting is the application of a cribbing collar, which limits the flexion of the neck making this stereotypic movement uncomfortable and difficult. Another method, the modified Forssell's operation, is becoming more and more popular amongst the horse owners. It is based on the removal of the muscles used in crib-biting (m.omohyoideus, m.sternohyoideus, m.sternothyrohyoideus) and the ventral branches of the spinal accessory nerves. Surveys on the success of this surgical procedure have revealed inconsistent results, and, contrary to the cribbing collar, its effect on the stress level have not been studied either.

The aim of our study was to determine whether the modified Forssell's procedure is superior to the cribbing collar treatment. Differences in stress management was tested by a crib-biting provoking test, in which

surgically treated horses, crib-biting horses, crib-biting horses with cribbing collar, and normal horses (those showing no stereotypies), altogether 56 horses were compared. In this test, a food bucket had been placed out of the reach of the animal, from which titbits were given 3 times. Behaviour and heart rate variability (HRV) of the horses were recorded and analysed throughout the test. Hypotheses were tested by linear mixed model.

According to our results, both prevention methods (collar or surgery) inhibited crib-biting successfully though not totally. Regarding behaviour and heart rate variability, horses prevented from crib-biting (by collar or surgery) differed significantly from crib-biting and normal horses but not from each other. Normal horses were usually trying to reach the food-bucket while present and were standing still afterwards, whereas the other three groups had not really made efforts to reach the bucket, spent less time with resting, and performed or tried crib-biting. During the stress-test, normal and crib-biting horses had shown good stress-adaptation to the challenge since their HRV, after an initial increase, returned to the basal value by the end. On the contrary, HRV of the two prevented groups remained elevated and showed large oscillations throughout. They

had not found a successful coping behaviour either. Our results suggest that since prevention may significantly increase distress, the treatment in itself, without changing the motivation of the horse to perform the replacement behaviour - it seems to be unsatisfactory and insufficient. After prevention the motivation of the horse to perform crib-biting should be addressed. In addition, considering that prevention by collar and

surgery had not resulted in any significant behavioural or physiological differences, the superiority of the modified Forssell's procedure might be questioned. However, the surgery might be recommended if treatment with collar is ineffective.
