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Tail Docking in Dairy Cattle

While many pet owners purchase pure-bred dogs with docked tails, the idea that dairy cows would have their tails docked may be considered unsightly, inhumane and unnecessary. How did this practice get started? Why is there controversy over this practice?

The practice of docking tails in dairy cattle started in New Zealand for a number of well-intentioned reasons: (1) To reduce the chance of urine-spread leptospirosis to milkers, (2) To improve cow hygiene, and (3) To improve milk quality through the reduction of mastitis and somatic cell counts in the milk (a measure of milk quality). Tail-docking was "exported" to the United States because of the experience and *beliefs* that the practice contributed to worker health and better quality milk for the consumer. Recent research has shown that the practice, when done correctly, produces short-term signs of pain. However, the believed benefits to the practice have not been observed in recent research trials.

Veterinary groups, such as the American Veterinary Medical Association (AVMA) have developed position statements that are opposed to the practice. "The AVMA opposes routine tail docking of cattle. Current scientific literature indicates that routine tail docking provides no benefit to the animal, and that tail docking can lead to distress during fly seasons. When medically necessary, amputation of tails must be performed by a licensed veterinarian." (Available at: http://www.avma.org/issues/policy/animal_welfare/tail_docking_cattle.asp)

The practice of tail-docking *appears* to be on the decline in the United States, but actual numbers are difficult to obtain. Based on *recent* research, there is no longer justification for tail-docking dairy cattle. To assist you with understanding the current science behind recommendations you might make, the following research abstracts and web-links that discuss the issue of tail docking in dairy cattle are provided (*from a PubMed search January 21, 2010*).

1. J Dairy Sci. 2008 Apr;91(4):1686-92.

Survey of dairy management practices on one hundred thirteen north central and northeastern United States dairies.

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The objective was to conduct a broad survey of dairy management practices that have an effect on animal well-being. Dairies were visited during the fall and winter of 2005 and 2006 in Wisconsin, Minnesota, Indiana, Iowa, and New York. Data were collected on 113 dairies on colostrum feeding, dehorning, tail-docking, euthanasia methods, producer statements about welfare, use of specialized calf-raising farms (custom), level of satisfaction with calf-raising by producers, and cow behavior. Calves were raised by the owner on 50.4% of dairies; 30.1% were raised on custom farms during the milk-feeding period, 18.6% were custom raised after weaning, and 1% sold calves with the option to buy them back as first-lactation heifers. A total of 51.8% of producers were very satisfied with their current calf-raising methods. Three feedings of colostrum were fed to the calves on 23.9% of dairies, 2 feedings on 39.8% of farms, 1 feeding on 31.0% of farms, and colostrum replacement products were fed on 5.3% of farms. Many farms (61.9%) provided 3.8 L at first feeding. Calves were dehorned at different ages by various methods. By 8 wk, 34.5% of calves were dehorned. By 12 wk, 78.8% of calves were dehorned. The majority of calves were dehorned by hot iron (67.3%). The remainder were dehorned by gouging (8.8%), paste (9.7%), saw (3.5%), or unknown by calf owner (10.6%). Anesthetic use was reported by 12.4% of dairy owners and analgesia use by 1.8%. **Tail-docking was observed on 82.3% of dairies**. The most common reported docking time was pre- or postcalving (35.2%). The second most commonly reported time was d 1 (15.4%). **Rubber band was the most common method (92.5%)**, followed by amputation (7.5%). Three dairies amputated precalving, 1 at 2 mo and 3 at d 1 or 2. Cow hygiene was the most common reason given to dock (73.5%), followed by parlor worker comfort (17.4%) and udder health (1.0%). Producers reported 2.0% of cows obviously lame. Gun was the preferred euthanasia method (85.7%), followed by i.v. euthanasia (8.0%), live pick-up (1.8%), and nondisclosure (3.5%). Most producers (77.9%) stated that cows were in an improved environment as compared with 20 yr ago, whereas 8.0% stated conditions were worse, and 14.2% were undecided. Dairies with higher percentages of cows that either approached or touched the observer had lower somatic cell counts. The survey results showed management practices that were important for animal welfare.

2. J Dairy Sci. 2006 Aug;89(8):3047-51.

Short communication: behavioral and physiological indicators of sensitivity or chronic pain following tail docking.

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Docking the tails of dairy cattle causes mild to moderate behavior changes and physiological indicators of acute pain, but no studies have investigated the possibility that tail docking may lead to chronic pain. In human amputees, an incidence of increased limb surface temperature is associated with phantom limb pain, a central nervous system representation that survives peripheral loss. The objectives of this study were to assess indicators of sensitivity or chronic pain in heifers by using behavioral indicators and thermography. We tested 14 Holstein heifers, 7 docked and 7 intact, from a previous neonatal tail-docking experiment. All 14 animals were videotaped during a test sequence of alternating cold (-9 degrees C), hot (54 degrees C), and neutral packs applied to the underside of the tail. Packs were placed approximately 30.5 cm from the tail head on all animals. A thermal image of the tail was taken using infrared imagery prior to and after temperature sensitivity testing. Docked heifers tended to have greater changes in surface temperatures following the test sequence than did nondocked heifers. In docked heifers, temperatures on the underside of the tail were higher than those at the tip of the tail, both prior to and following the test sequence. Docked heifers also showed substantially higher stomping activity following application of the cold pack. Shifting increased in intact heifers after application of the hot pack, but shifting of the docked heifers did not change. Greater changes were observed in the tail surface temperatures of the docked heifers following temperature manipulation, similar to human amputees who are experiencing phantom limb pain, indicating that similar mechanisms are present in the stump of the docked tail. **The behaviors of docked heifers indicated changes in their sensitivity to heat and cold.**

3. J Dairy Sci. 2002 Dec;85(12):3287-96.

Responses to tail docking in calves and heifers.

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The primary objective of this study was to determine the behavioral and physiological effects of tail banding and atrophy using rubber rings 2 to 4 mo before first parturition in dairy heifers either with or without the use of epidural anesthesia. The secondary objective was to determine behavioral responses to tail banding using rubber rings in calves 7 to 42 d of age. Preparturient heifers (n = 24) were randomly assigned to one of four treatment groups: 1) tails were cleaned and handled; 2) tails were cleaned, handled, and an elastrator band was applied to the tail; 3) an epidural was administered 15 min before cleaning and handling; and 4) an epidural was administered 15 min before application of an elastrator band. Behavioral observations and physiological responses were collected for 6 wk. Additionally, behavioral responses to tail banding were recorded for 10 d on Holstein heifer calves that were 1 to 6 wk of age (n = 40). No significant differences in behavior were observed among treatment groups of preparturient heifers at any time during the 6-wk

observation period. **Preweaned calves that were 21 to 42 d of age demonstrated significantly more restlessness after application of tail bands compared to younger calves or control calves of the same age. Plasma cortisol values of preparturient heifers remained within limits previously described for nonstressed animals and no significant differences were detected among groups.** Hematological values remained within the reference values for cattle, and there were no significant differences between groups except for relatively more eosinophils in the heifers that received epidurals. No significant differences in heart rate or body temperature were detected among groups.

4. J Dairy Sci. 2002 Oct;85(10):2503-11.

Effects of tail docking on milk quality and cow cleanliness.

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The objective of this study was to determine the effect of tail docking on somatic cell count (SCC), intramammary infection (IMI), and udder and leg cleanliness in commercial dairy herds. Lactating dairy cows (n = 1250) from eight Wisconsin farms were blocked by farm and randomly allocated to tail docked (D) or control (C) groups. Milk samples, somatic cell counts, and hygiene scores were collected for 8 to 9 mo. The prevalence of IMI was determined for each of the five occasions when milk samples were obtained. Udder and leg cleanliness were assessed during milk sample collection. Docked and control animals were compared by logSCC, prevalence of IMI, and leg and udder cleanliness score. Variables were analyzed according to all treatment, period, and farm interactions. At the end of the study period 76 (12.2%) and 81 (13%) of cows were culled in the D and C groups, respectively. There were no significant differences in the initial data for parity, daily milk yield, logSCC, or DIM between treatment groups. Effects significant to farms were identified for all variables over all periods. Period was significant for all variables except for the prevalence of environmental pathogens, but no period x treatment interactions were detected. **There was no significant difference between treatment groups for somatic cell count. The prevalence of contagious, environmental, or minor pathogens did not differ significantly between treatment groups. This study did not identify any differences in udder or leg hygiene or milk quality that could be attributed to tail docking.**

5. J Dairy Sci. 2002 Sep;85(9):2257-65.

Effects of tail docking using a rubber ring with or without anesthetic on behavior and production of lactating cows.

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Production and behavioral measures were recorded to determine the level of stress and pain associated with tail docking adult dairy cows with a rubber ring. The possible advantages of using an epidural anesthetic were also examined. Sixty-four lactating, mixed-parity, Holstein cows were randomly assigned to one of four treatment groups. The treatments were rubber ring docking with epidural anesthetic (RRA), rubber ring docking without anesthetic (RR), control with epidural anesthetic (CA), and control without anesthetic (C). Behavior was examined on d 0, +1, +2, and +6. Milk production and feed intake were monitored. Cows exhibited subtle behavioral changes following application of rubber rings, as well as after epidural administration on d 0 and tail amputation on d +6. After treatment on d 0, the RR, RRA, and CA groups displayed less tail shaking than the C group. The RR and RRA cows continued to exhibit less tail shaking on d +1, +2, and +6. Also on d 0, the RR and RRA groups held their tails in the raised position less than the C and CA groups. After amputation on d +6, the RR and RRA groups spent longer with their tails pressed to their bodies than the C and CA groups. No significant differences in milk production or feed intake were found. **Results suggest that tail-docking adult dairy cattle with rubber rings causes, at most, mild discomfort and that there is no benefit in using an epidural anesthetic.** However, long-term effects need to be investigated.

6. J Am Vet Med Assoc. 2002 May 1;220(9):1298-303.

Evaluation of the scientific justification for tail docking in dairy cattle.

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(Summary paper available at: http://www.vetmed.ucdavis.edu/vetext/INF-AN/Tail-Docking-Dairy.pdf.)

7. J Dairy Sci. 2001 Jan;84(1):84-7.

Tail docking dairy cattle: effects on cow cleanliness and udder health.

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To determine whether tail docking would influence cow cleanliness and udder health in a free-stall system, we monitored milking cows after half the animals in a herd were docked. A sample of 223 docked and 190 undocked cows (reducing to 169 and 105 over the study as cows were dried off) were monitored for 8 wk. Cow cleanliness was scored in two areas: along the spine, and the rump adjacent to the tail at 1, 2, 3, 5, and 8 wk after docking. Cleanliness was evaluated by counting squares that were soiled (0 to 14 on a 5- x 17.5-cm grid) and judging soiling severity on a scale from 0 (clean) to 3 (thickly caked). Udder cleanliness was scored with the same scale (0 to 3) and by counting the number of teats with debris on them. Udder health was assessed by measuring SCC of two milk samples and the number of animals diagnosed as mastitic by the on-farm veterinarian. **No treatment differences were found in four measures of cow cleanliness, two measures of udder cleanliness, or udder health.** However, cow cleanliness did differ over time, and analysis of a subsample of cows illustrated individual differences in cleanliness.

8. J Dairy Sci. 2000 Jul;83(7):1456-62.

Tail-docking influences on behavioral, immunological, and endocrine responses in dairy heifers.

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Behavioral and physiological changes were measured following tail-docking in primiparous heifers. One month before projected first parturition, 21 heifers were assigned to control (nondocked), docked, or docked with lidocaine groups. Heifers were banded to initiate tail-docking and the necrotic tail was removed after 144 h. Physiological, immunological, and behavioral measures were taken for 240 h following banding. Cortisol was not different for control and treated heifers. Haptoglobin increased for docked heifers by 168 h postbanding (24 h postdocking). Alpha1-acid glycoprotein decreased as haptoglobin increased, and alpha1-acid glycoprotein increased until 240 h postbanding. Tumor necrosis factor-alpha increased only with lidocaine and did not show an effect of docking by 240 h postbanding. Lymphocyte phenotyping demonstrated increased CD4+ and CD8+ peripheral blood mononuclear cells for docked plus lidocaine heifers and gammadelta+ cells of those heifers tended to be reduced compared with docked heifers. **Eating was the only maintenance behavior affected by banding in both docked groups (increased with banding and decreased with docking). The initial banding procedure did not alter heifer physiology and altered only eating behavior, but the cutting of the tail (docking) increased haptoglobin in response to the tissue damage and returned eating behavior to baseline. The use of lidocaine to anesthetize the tail before banding affected lymphocyte phenotypes and TNF-alpha (banding alone did not alter these parameters).**

9. Aust Vet J. 1999 Nov;77(11):742-7.

Tail docking and beliefs about the practice in the Victorian dairy industry.

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OBJECTIVE: To determine the occurrence of tail docking and beliefs about the practice in the Victorian dairy industry. DESIGN: Survey responses were analysed using chi-square tests and by correlation and regression analyses to determine associations between husbandry practices and beliefs and to identify possible predictive variables in relation to docking. PROCEDURE: A survey of the occurrence of docking and beliefs about the practice was conducted in 1997 using face-to-face interviews of 313 respondents at 234 Victorian dairy farms. RESULTS: On average, **35% of dairy farms routinely docked cattle**. The practice varied from 11 to 63% in different regions and 12% of stud farms docked their cows. Rubber rings were used on 75% of farms and the average age of the cow at docking was 18 months. Twenty-two percent of cows were docked at a level above the top of the udder and 54% were docked level with the top of the udder. **Respondents that docked believed that milking was finished quicker, the risks of leptospirosis for the operator and mastitis for the cow were reduced, the cows were easier to handle, fly numbers were reduced and milk quality was improved. There was a general belief that intact tails could cause significant discomfort to the operator and that docking resulted in acute but not chronic pain.** CONCLUSIONS: Docking is an entrenched practice in the Victorian dairy industry. **Those farmers who docked generally believed that it was a highly desirable farming practice with particular benefits for the operator.**