

# An Investigation of the Effects of Ketoprofen Following Rumen Fistulation Surgery in Lactating Dairy Cows

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Although pain relief for rumen fistulation surgery is sometimes used, it is not always a common practice. This is the first study to investigate post-operative pain management following rumen fistulation surgery. The aims of this study were to evaluate the effects of the first stage of a 2-stage fistulation surgery on physiological and behavioral outcomes, and to investigate the effectiveness of ketoprofen as a post-operative analgesic compared with saline in lactating Holstein cows (n=18). Immediately following surgery, animals were randomly assigned to receive an intramuscular injection of ketoprofen (3 mg/kg BW, 1x/d for 2 d), or saline. Daily outcome measures examined pre-surgery (for 7 d), on surgery day (d 0), and again 24 h later (d 1) were dry matter intake, milk production, and lying behavior. Other measures taken on d 0 pre-surgery and again on d 1 prior to the second treatment injection included heart rate, respiration rate, infrared temperature around surgical site, and serum haptoglobin levels. Behavior from video analysis was recorded on d 0 after surgery and on d 1. Regardless of treatment, there was a significant decrease in dry matter intake, milk production and in time spent lying on the left side (the side of the surgical site) in the days immediately following the first stage of fistulation surgery (d 0 and 1) compared to levels observed before surgery. There was also a significant increase in heart rate, in infrared temperature readings around the surgical site and haptoglobin levels associated with surgery. The administration of ketoprofen was associated with significantly more time spent lying on the left side, and less tail flicking behavior.

**Implications:** The results provided clear evidence that the surgery was painful and that ketoprofen alleviated some, but not all, of the post-surgical pain. Scientists should include pain mitigation when performing rumen fistulation surgery in cattle used for research, and analgesics should be considered following abdominal surgery in cattle.