Caustic paste disbudding: wound healing and sensitivity

Alycia M. Drwencke¹, Sarah J.J. Adcock², Cassandra B. Tucker¹, ¹Center for Animal Welfare, Department of Animal Science, University of California, Davis, CA, ²Department of Animal and Dairy Sciences, University of Wisconsin, Madison, WI; amdwrwencke@ucdavis.edu

Management of calves, including disbudding, is an important area covered by dairy cattle welfare assurance programs, such as National Milk Producer’s Federation FARM initiative. Caustic paste is increasing in popularity on commercial dairy farms, but little research is available on the associated pain and wound healing. Studies have shown it takes 6-13wks (mean=8.3) for hot-iron disbudding wounds to re-epithelialize. We aimed to describe wound healing and sensitivity following caustic paste disbudding. Jersey and Holstein female calves were disbudded using Dr. Naylor’s caustic paste at 3d of age (n=18) while controls received a sham procedure (n=15). Before disbudding, calves received a local block and systemic pain relief. Calves ≥34kg and <34kg had 0.3ml or 0.25ml of paste applied per unshaved horn bud, respectively. Following disbudding, wounds were scored 2x/wk for the presence/absence of 8 tissue categories including the final stages: new epithelium and fully healed. Mechanical Nociceptive Threshold (MNT) measures were collected weekly to evaluate sensitivity through wk6. Wounds were slow to re-epithelialize (mean=14.1; min-to-max: 6.3-19.0wks; n=23 horn buds) and to fully contract and be considered healed (mean=15.2; min-to-max: 8.7-19.6wks; n=27 horn buds). Indeed, these data only represent a subset of the entire sample size (n=36 horn buds) because the remaining calves still have unresolved wounds. Compared to non-disbudded controls, paste calves exhibited lower MNT values during wk6, the last timepoint where both groups were measured (mean ±SE, Control:1.44±0.07; Paste:1.12±0.04 N; P<0.001; t-test with equal variance). These data indicate that wounds from caustic paste disbudding are more sensitive than undamaged tissue for at least 6wks and take twice as long to heal compared to cautery methods described in the literature. Further, these data suggest risk mitigation is not being achieved by welfare initiatives as calves experience pain beyond when relief is currently available.