

# Pain Case of the Month: Ellie

## Dog Bite Wound with Necrotic Tissue

by Anita Parkin, RVN, AVN, Dip (Surgery & ECC), VTS (Anesthesia & Analgesia), CVPP

### Signalment and History

Ellie is an eight-year-old, female spayed Chihuahua cross weighing 6.4 kg with a body condition score of 6/9. She had been attacked by a rottweiler breed five days prior. The bite had been treated at the referring practice, where the wound was debrided, flushed, and sutured. A passive drain was placed and her pain was managed with a fentanyl patch (12 mcg), and she was discharged to the owner's care. At day five, she re-presented with lethargy and wound breakdown and was referred to Veterinary Specialist Services for specialty treatment.

### Physical Exam and Diagnostics

Ellie had a full dermis defect over the dorsal-lateral aspect of her flank region that was approximately 15 × 20 cm. This was a previously sutured wound that had dehiscid in regions, and in other regions the skin appeared necrotic and was black. The wound was painful, and a pain score of 10/20 was given based on the Glasgow short-form pain scale. Methadone was administered at 0.2 mg/kg intravenously (IV). Routine biochemistry and hematology revealed leukopenia, thrombocytopenia, hypoalbuminemia, and hypoproteinemia with a mild increase in alkaline phosphatase. No abnormalities were detected on conscious radiography of the



Ellie receives a dressing change after debridement of the dehiscid wound.

Things don't always go well with the first treatment, as was the case for Ellie.



Ellie after applying a new dressing and a subcutaneous infusion device.

thorax and spine. No abnormalities were detected on abdominal ultrasonography.

**Diagnosis: Necrotic, partially dehisced, infected wound.**

### Treatments

Ellie was anesthetized with alfaxalone for induction and isoflurane for maintenance. The necrotic tissue was debrided, the remaining sutures were

removed, and the wound was flushed with 8 L of warmed saline. The wound was left open and a tiedown dressing was applied. This was composed of a primary layer of manuka honey covered with melonin, then padded cotton wool tied to the surrounding sutures (Jull, Rodgers, and Walker 2008). The goal was to manage the open wound until a healthy bed of granulation tissue was present, then delayed primary repair.

Ellie was placed on a constant rate infusion (CRI) of lignocaine [lidocaine] 2 mg/kg/hr and fentanyl 2 mcg/kg/hr for recovery and the Glasgow short-form pain scale was used to assess her pain levels every two hours to see if the CRI rate needed increasing or decreasing. Antibiotics (metronidazole 10 mg/kg by mouth IV, amoxicillin clavulanic acid 20 mg/kg subcutaneously [SQ] q 24 hr, and enrofloxacin 10 mg/kg SQ q 24 hr) were continued parenterally until she started eating, at which point these antibiotics were given orally at the same doses.

For the next four days, Ellie's dressing was changed daily using sedation with 3 mcg/kg IV medetomidine. Definitive surgery was then performed under general anesthesia and a rotational advancement flap was performed to close the wound. A closed suction drain was inserted before closure to close the dead space.

For analgesia after surgery, Ellie was continued on a fentanyl CRI at 2 mcg/kg/hr (lignocaine was discontinued) and the dose was altered according to her pain scores. Ellie was bright and responsive on recovery and was ambulatory and eating well. Day one after surgery, Ellie was sedated with medetomidine 3 mcg/kg IV to facilitate a bandage change; the wound appeared healthy. It was given a gentle clean, and a subcutaneous infusion device was attached to Ellie to deliver fentanyl at a dose of 2 mcg/kg/hr for the next 48 hours. This seemed to be an adequate dose for her—i.e., adequately analgized without dysphoria. The wound was then redressed.

## Outcome

Ellie was ready to go home two days after surgery—however, the owner elected to keep her in the hospital for another three days, as she could not cope with the thought of home care after her previous experiences of Ellie being at home with her initial wound. Ellie continued to eat well for us, and her antibiotics and analgesia protocol were continued. A new infusion device at the same dose was applied once the first device had expired. As the wound was almost healed at time of discharge, the closed suction drain was removed and the subcutaneous analgesia was discontinued.

Ellie presented three days after discharge for a recheck appointment. The wound had healed well. Ellie was bright and alert, and the owner was happy with the progress Ellie had made.

## Conclusions and Comments

Although this case went well, there are a few things that I would consider

changing next time if a similar case was presented.

I would like to have added an NMDA antagonist like ketamine into the infusion mix, as Ellie had been in pain for at least five days before being presented to us at the clinic and her windup pain could have made it difficult to get her pain levels under control (Goldberg and Shaffran 2015, 61).

I chose to use lignocaine as an adjunct to the fentanyl as a free radical scavenger. As a CRI, lignocaine can help decrease the opioids that are required and provide another level of multimodal pain relief (Goldberg and Shaffran 2015, 96).

Medetomidine was chosen as the sedative to assist with bandage changes and to give additional analgesia within the multimodal plan, targeting the transmission and modulation aspect of the pain pathway (Goldberg and Shaffran 2015, 96). If Ellie were displaying a higher pain

score at initial assessment, I would have added this as a CRI at the dose of 0.5–1.0 mcg/kg/hr and titrated to effect. Nonsteroidal anti-inflammatory drugs were contraindicated in this case. ✖

## References

- Goldberg, M. E., and N. Shaffran. 2015. *Pain Management for Veterinary Technicians and Nurses*. Chichester, UK: Wiley.
- Jull, A. B., A. Rodgers, and N. Walker. 2008. "Honey as a Topical Treatment for Wounds." *Cochrane Database of Systematic Reviews* 8 (4): CD005083.



Anita Parkin has been working in a Veterinary Specialist Services in Queensland, Australia, for the past 19 years. She gained her VTS (Anesthesia & Analgesia) in 2009 and her CVPP in 2011. Anita loves anything to do with anesthesia, pain management, and critical care. She is currently on the board of directors of the Veterinary Nurses Council of Australia (VNCA), is serving on the CPD committee with the VNCA, and also serves on the exam committee for the Academy of Veterinary Technicians in Anesthesia and Analgesia.

## Discussion by Mike Petty, DVM, CCRT, CVPP, DAAPM

Things don't always go well with the first treatment, as was the case for Ellie. The more aggressive wound therapy not only helped heal the injury, but the faster healing reduced the duration of pain as well.

When we are looking at an animal in obvious pain, it can be hard to take the time to administer an acute pain scale, as was done here. The compassionate part of us looks at an animal in agony, and we say, "Yes, it hurts, let's give her something." But having the results of the Glasgow short form enabled the veterinary team to assess the response to therapy and adjust their therapy,

in this case a CRI, up and down as needed. It is much harder to chase after pain than to anticipate it. The use of a validated pain scale like the Glasgow short form allowed for informed therapy decisions and not over- or undermedicating.



Mike Petty, DVM, CCRT, CVPP, DAAPM, is in private practice in Canton, Michigan. He is a frequent national and international lecturer on topics related to pain management. Petty offers commentary on each Pain Case of the Month.