

Predicting Infection in Acute Traumatic Wounds

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In the literature

Hamil LE, Smeak DD, Johnson VA, Dow SW. Pretreatment aerobic bacterial swab cultures to predict infection in acute open traumatic wounds: A prospective clinical study of 64 dogs. *Vet Surg.* 2020;49(5):914-922.

FROM THE PAGE ...

Infection development in wounds is common in veterinary patients. Predicting time of infection occurrence can assist in judicious antibiotic use. This study examined bacterial culture results in dogs with wounds caused by bites or other acute cutaneous trauma. Cultures were taken before and after wound lavage with lactated Ringer's solution.¹

The primary objective of this study was to assess the type and quantity of bacteria present in the wound before and after lavage. The secondary objective was to evaluate whether culture results were useful for predicting ultimate wound infection. Size, type, and treatment of wounds by closure were examined in 64 dogs.

The rate of positive culture results significantly decreased from 76.6% before lavage to 56.3% after lavage, with an 86% reduction in the number of bacteria after irrigation. The species of bacteria grown in cultures were the same in 70.3% and different in 29.7% of wounds after lavage. Typical bacteria were *Staphylococcus* spp, *Streptococcus* spp, and *Pasteurella* spp. Although all dogs received a β -lactam antibiotic, 21.9% of wounds developed at least 1 sign of clinical infection during the 30-day follow-up. Postinfection cultures predominantly yielded *Staphylococcus* spp, *Escherichia coli*, and *Pseudomonas* spp, of which 69.2% were resistant to the prescribed prophylactic β -lactam antibiotic.

No relationship was found between development of clinical infection and prelavage culture, postlavage culture, number of bacteria cultured, or the wound size, type, or treatment. Although the reduction in bacteria after wound lavage was encouraging, the lack of reliable predictable factors for developing wound infection is a good reminder of the unpredictable nature of these cases.

... TO YOUR PATIENTS

Key pearls to put into practice:

- 1** Wound lavage with lactated Ringer's solution is effective for reducing bacterial load.
- 2** Cultures collected either before or after lavage do not appear to be helpful in predicting whether a wound will become infected or with which bacteria.
- 3** Resistance to prophylactic antibiotics is common in infected wounds.
- 4** Wound size, cause, and treatment after lavage do not seem to be useful in predicting infection.

Reference

1. Buffa EA, Lubbe AM, Verstraete FJ, Swaim SF. The effects of wound lavage solutions on canine fibroblasts: an in vitro study. *Vet Surg.* 1997;26(6):460-466.