

DOXIROBE™: A GOOD PRODUCT IF USED PROPERLY

As always, I feel it is important to disclose any relationship I may have with a company when writing or speaking about one of their products. I am about to tell you about a product I like. Some years ago, James Anthony and I were contracted by the Bureau of Veterinary Drugs to review the application for license of Doxirobe™. In that capacity, I had the opportunity to review several volumes of data on the existing research. My opinion of the product is based in part on this information as well as on information provided at the Annual Veterinary Dental Forum and my own experience with the product.

Because of my familiarity with the product and my standing in the field, Pharmacia Animal Health has consulted with me regarding the proper use of Doxirobe™. I have also provided my opinion (some of which they have acted on) on some of the marketing material used to promote Doxirobe™.

In consideration for my time, Pharmacia Animal Health has provided me with a supply of Doxirobe™. As with my previous endorsements, I made up my mind about the product BEFORE I was given any free supplies and I feel clear of conscience when I say that the benefit bestowed on me by Pharmacia Animal Health has in no way influenced my opinion of the product.

In February of 2002, Pharmacia Animal Health released Doxirobe™ Gel to the Canadian veterinary market. Since, then, I have had a number of enquiries about this product and my opinion of it. Rather than answering the same questions over and over, I thought it might be worth putting my thoughts on paper to share with those curious about this innovative product.

Doxirobe™ Gel has as its active ingredient doxycycline hyclate (44 mg/0.5ml). Doxycycline is a member of the tetracycline family and as such, has a number of beneficial properties:

At and above the Minimum Inhibitory Concentration (MIC), it has a broad spectrum of antibiotic (bacteriostatic) effect against many of the periopathogens found in dogs and cats.

It binds to calcium as found in alveolar bone and the cementum covering root surfaces.

Below MIC, the tetracyclines (and doxycycline in particular) have been shown to have an anti-collagenase effect. Collagenase is an enzyme (released by neutrophils) found in areas of active periodontal disease and which is responsible for the breakdown of the structural integrity of the gingiva, periodontal ligament and alveolar bone.

The other component of Doxirobe™ Gel is a polylactic acid polymer, which is used as the vehicle for the delivery of the doxycycline. This polymer is biocompatible, absorbable and can be found in many surgical devices such as absorbable suture material and bone plates.

Doxirobe™ Gel is indicated for the local delivery of doxycycline into properly prepared periodontal pockets. I cannot stress pocket preparation enough. If Doxirobe™ is placed in a dirty pocket with calculus and plaque covering the root and inflamed granulation tissue filling the space between root and bone, the results will be very disappointing. Some of the early studies seemed to compare the effect of surgical treatment (root planing, subgingival curettage) versus using Atridox™ (the human product) in pockets without surgical treatment. The suggestion from this study is that Doxirobe™ might be a substitute for surgical debridement of the pocket. However, it must be noted that the test subjects were ongoing human periodontal patients who were on a three-month recall schedule. They were having their teeth professionally treated by a periodontist every three months, so their pockets were already in far better shape than our patients' pockets.

Simplified, periodontal disease is the result of the interaction between oral pathogens and the host immune response. Bacteria in dental plaque incite inflammation (gingivitis) but whether or not this progresses to periodontitis (affecting the cementum, alveolar bone and periodontal ligament +/- gingival recession) depends on many factors. Though the amount of calculus on the crowns of the teeth is often used as an indicator of the degree of dental disease, it is the bacteria living in the calculus that is the problem and it is the bacteria below the gum line, not what you can see on the crowns, that is causing disease. Therefore,

removing calculus from the crowns of the teeth, though important, has little effect on periodontal disease once it is established. In fact, animals may have advanced periodontal disease with very little calculus visible on the crowns while others may have crowns totally encased in calculus but no appreciable periodontal disease going on below the gum line.

Evaluation of periodontal disease requires probing and charting of gingival recession (or hyperplasia), periodontal pocket depth and clinical attachment loss as well as intra-oral dental radiography to document alveolar bone loss. In most mouths, there are teeth that can definitely be saved and others that definitely have to be extracted. Then there will be several others in the gray-zone; teeth for which extraction or treatment might be appropriate depending on a number of factors.

What is the nature and extent of disease?

What is the duration of disease? In periodontal disease, rapid onset carries a poorer prognosis.

What are the causative factors? Are they purely local or are there systemic factors that may be uncontrollable such as FIV infection in a cat?

How old is the patient? If the dog is thirteen, you only need to manage the tooth for a few more years, but if the dog is only two, then you may need to manage the problem for fifteen years.

To what degree are the roots and furcations involved?

Are there occlusal factors to consider? Overcrowding and rotation of teeth make management of periodontal disease more difficult.

When deciding whether to treat or extract a 'border-line' tooth there are several other factors to consider:

Generally, treatment takes longer than extraction and so it costs more and increases anesthetic risk.

Often, appropriate treatment is more technically challenging than extraction.

Often treatment to save a tooth includes follow-up assessment and maintenance therapy but if the tooth is extracted, the case is closed.

You must therefore answer the following questions:

Is the patient an appropriate anesthetic risk for prolonged or staged treatment?

Is the tooth strategically important enough to justify the investment in time, effort and money? Visualize what the mouth would be like without the tooth, remembering that loss of a tooth leads to resorption of the supporting alveolar bone.

Is the owner aware of and willing to accept the increased cost of treatment?

Will the owners and patient co-operate with aftercare and rechecks?

Do you have the equipment and training to treat the tooth appropriately?

If the answer to any of these questions is 'no', then extraction or referral may be the most prudent option.

If the decision is made to treat a tooth with established periodontal disease, the goal is to remove all calculus, plaque and endotoxins from the root surface and inflamed soft tissue from the pocket lining. By creating a smooth, clean root surface on one side of the pocket and fresh, bleeding connective tissue surface (or a clean bony wall) on the other side of the pocket, it is possible to get the gingiva to reattach to the root, thus reducing or eliminating the periodontal pocket. The process of root planing and subgingival curettage remains the cornerstone of periodontal treatment.

In many cases root planing and subgingival curettage is followed by systemic antibiotic treatment to combat any residual infection in the pocket that might inhibit healing. Doxirobe™ allows us to place doxycycline locally to get 10 to 14 days of antibacterial effect and weeks/months of anticollagenase effect where it counts, without systemic effects. This can have a significant impact on the outcome of treatment.

Doxirobe™ is Not:

- A substitute for proper mechanical/surgical management of periodontal pockets.
- A substitute for home care and maintenance therapy.
- A cure for periodontal disease.

Used properly, Doxirobe™ is:

- A useful tool in the treatment and management of periodontal disease.

Doxirobe™ gel should be placed in periodontal pockets 4 or more millimeters deep following appropriate evaluation/documentation and mechanical/surgical debridement of the pocket. The owners should not brush treated teeth for one week (so as to not dislodge the gel prematurely) and then should brush daily. The next periodontal assessment and maintenance therapy is scheduled for three to six months post-operatively.
