Evaluation of Effectiveness of Hand and Ultrasonic Scalers in Oral Prophylaxis of Dog

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Abstract

Aim: Oral health is an integral part of general health and is true for both animal and human. Periodontal inflammation is most frequently occurring disease. Subgingival calculus allows close contact of plaque to gingival tissues leading to gingivitis and periodontal disease. In addition calculus has an irritant effect on gingiva. Aim of this study is to evaluate effect of Hand and ultrasonic instruments are used to remove deposits (plaque and calculus) from tooth surfaces, under general anesthesia. *Materials and Methods:* All periodontal parameters were assessed pre and post-operatively. Plaque index, gingival index, probing pocket depth, clinical attachment level was evaluated. Hand and ultrasonic oral prophylaxis instruments were used. Procedure was performed under general anaesthesia. *Result:* Statistical analysis was conducted with paired student t-test. Significant reduction in all periodontal parameters was evident pre and post operatively. *Conclusion:* Oral health care is utmost important for pets. Hand and ultrasonic scalers are most suitable for this procedure.

Keywords: Periodontal Disease; Clinical Attachment Loss; Pocket Depth; Ultrasonic Scaling Instruments.

Introduction

Animal studies have always been a primary step and integral part of medical and dental research. Dental diseases are an important component of veterinary health. Veterinary practitioners now have mechanical slow and high speed hand piece scalers for performing an oral prophylaxis and even the extraction of teeth and the bone recontouring, along with complex procedures such as endodontic therapy (root canal therapy). Periodontal diseases are most commonly reported veterinary oral disease. A number of adult dogs and cats usually have some degree of periodontal disease. Clinicians should always examine the oral cavity thoroughly as a part of any routine general health assessment.

Establishment of oral biofilm subgingivally leads to inflammation i.e. gingivitis. If left untreated gingivitis always preceded by periodontitis, but gingivitis does not always convert into periodontitis. Gingivitis, if treated well, is reversible and the health of the periodontium can be restored. The bacterial composition of the plaque undergoes ecological shift to a predominantly gram negative anaerobic motile flora. The principle bacteria involved in periodontal inflammation are Bacteroides spp.and Fusobacterium spp. The bacteria and their toxins penetrate the sulcular and junctional epithelium and initiate a acute inflammatory response. The end result of this process is periodontal soft tissue damage and alveolar bone resorption, pocket formation and eventual tooth loss [1-3].

However, it is the complex cascade of host-microbial interaction characterised by plaque bacteria and the host's immune system which lead to the loss of alveolar bone. The veterinarian's aim should be successful management of inflammation by minimising bacterial accumulation through everyday homecare and, if required, regular professional consultancy.

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Material and Methods

Basic Steps Followed During Treatment

1. Periodontal assesment
2. Treatment plan
3. Removal of supragingival plaque and calculus under general anesthesia (as per required)
4. Supra-/Subgingival debridement
5. Gingival surgery if required
6. Polishing
7. Sulcular lavage
8. Antimicrobial treatments
9. Home-care advice and instructions
10. Recall and review

Proper periodontal assessment has made and charting for probing depth and attachment loss was conducted [4-6]. The mean plaque index 2.16±0.417, gingival index 2.28±0.38, probing depth ≥4 and clinical attachment level ≥1 at baseline. The Pamalien breed dog aged 8.3yrs. Before starting the scaling, Anaesthesia was induced with propofol (4 mg/kg) intravenously (iv) and maintained by continuous iv infusion of propofol (0.35 mg/kg/minute) using a syringe pump [7-13]. Ultrasonic instrumentation was performed for scaling. Sickle shaped supragingival scaler, Subgingival curette were also used. Supra and sub gingival plaque and calculus was removed. Sub-gingival irrigation with poviodone was conducted. This procedure has been followed by polishing which allowed removing calculus, plaque and staining from the teeth and providing a smooth tooth surface that discourages further plaque and calculus decomposition.

Dog was kept under antibiotic therapy for one week. An anti-hypersensivity toothpaste sensodyne was administered for one week. Before scaling extraction and endodontic treatment was performed as per requirement.

Pre-op

Post-op

Results

Reassessment was done after 30 days. Statistical analysis was done with parametric paired student t-test. Reduction in mean plaque index 0.9±0.130, gingival index 0.10±0.19, probing pocket depth, clinical attachment level, and these values showed significant difference (p=0.001) from baseline to post-treatment.

Discussion

In conducting this scaling we have considered all measurable CAL (i.e., ≥1 mm). Concerning probing pocket depth there is no 0-point, and we therefore have arbitrarily chosen a cut-off-point of 4 mm as the threshold for a positive diagnosis of periodontitis. This threshold corroborates the threshold commonly used in the human cases, but could certainly be discussed in the context of a dog population. Further; natural cleaning mechanisms are believed to be impaired in pockets with PPD ≥4 mm leaving these animals with a need for detailed periodontal treatment planning. However, the relatively few teeth that appeared with pockets ≥4 mm in this dog support our contention that we have not applied an unduly

liberal definition of what constitutes a "pathological" pocket depth among dogs.

Conclusion

This oral prophylaxis protocol is suitable for examination of dogs for PD and our findings indicate that periodontally diseased dog is identified with a high degree of sensitivity. Use of antimicrobial agent should be evidence based in veterinary cases.

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