Periodontal disease: Prevention

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ALL TREATMENT OF PERIODONTAL DISEASE MUST BE FOLLOWED BY PREVENTION OF DENTAL PLAQUE REGROWTH TO AVOID DISEASE RELAPSE.

Prevention of periodontal disease involves training and motivating clients to perform home care, checking the efficacy of homecare, performing professional periodontal treatment as required and regularly checking up on the patient. Periodontal disease is not ‘cured’ by one round of periodontal scaling and polishing by the vet. If the client assumes this then it can be very difficult to explain why their pet needs more scaling and polishing and possibly extractions 6 months’ later. It is important to motivate and educate owners from the time their pet is a puppy or kitten.

Homecare revolves around DAILY PLAQUE CONTROL. This can be MECHANICAL or CHEMICAL or a combination. An individually tailored plan must be devised for each patient based on the animal’s level of cooperation and the owners’ commitment and ability.

MECHANICAL MEANS OF PLAQUE CONTROL

TOOTHBRUSHING is the single most effective method of plaque control. To be effective it must be done ONCE DAILY. If the mouth and gums are clinically healthy, then three times per week will keep them like this. Brushing once a week is as effective as doing nothing. This requires animal cooperation, and owner training and motivation. Veterinary nurses can effectively educate and motivate clients, and can successfully run ‘dental clinics’. Flavoured tooth pastes are designed to make the brushing experience for the animal more pleasurable. Any additives do little for plaque control, it is the brushing action which is most important. A soft/medium bristle brush is used. The brush should be angled at 45° dorsally (for maxillary teeth) or ventrally (for mandibular teeth) and used in a circular motion, concentrating on the gingival margin. Start at the back and work forwards, brushing the incisor teeth last. Pet tooth brushes must be replaced regularly like human ones.

Adjunctive mechanical plaque control includes:
Dental Diets. Eg Royal Canin Dental, Hill’s T/D
Dental Hygiene Chews. Eg Virbac have recently re-introduced their dental chews, Pedigree DentaSix, DentaRask, Royal Canin Oral Bar

These diets have been shown to reduce accumulation of plaque and calculus, but the studies tend to measure plaque/calculus accumulation over the whole tooth surface rather than at the gingival margin, where most pathology occurs. Therefore the foods may not be sufficient to maintain a clinically healthy gingiva. This may be due to the fact that carnivore teeth are shaped to deflect food away from the gingival margin as protection. These foods may have some effect in reducing the frequency of professional care. The kibbles are designed not to break, to give a mechanical action on the tooth surface by increasing chewing activity.

Similar results have been found with eg DentaRasks which look at the whole tooth plaque score. Whether these diets can control disease in cases of established periodontitis, is unknown. It is better to use these diets to aid prevention of periodontal disease, starting when the patient is young, rather than waiting until many teeth are extracted and expecting these to make a difference.

Zinc salts have been used in some homecare products for their antibacterial effect, and they may also help to control halitosis by controlling the production of volatile sulphur compounds.

Polyphosphates have been incorporated in dental diets and other home care products to bind salivary calcium which should reduce calculus formation (but will not effect plaque accumulation).

Kongs are good for chewing action, but beware Nylabones, which are harder than teeth and may fracture them. Rawhide chews may be a suitable adjunct. To date, there are no randomised, double-blinded clinical trials studying the effects of the ‘raw meaty bones’ diet. Bones can fracture teeth, cause GI obstruction, and harbour E.coli, Campylobacter and Salmonella so should be avoided. A recent observation study of a domestic vs feral cat population found decreased levels of calculus in the feral population but similar levels of periodontal disease. This shows that a raw diet is not protective for periodontal disease (although the teeth may look ‘cleaner’ due to reduced calculus).

Water additives. Some products contain Xylitol. There is one short term study in cats showed the product would reduce plaque and calculus. No studies in dogs have been performed, and no long term studies (including safety) have been performed.

There is no high quality evidence to support the use of seaweed based products.

Raw diets are NOT protective for periodontal disease. A study comparing feral cats eating rodents and birds, vs domestic cats eating dry and wet food found decreased levels of calculus in the feral
group. There was however, *no significant difference* in the levels of periodontal disease between the two groups.

The Veterinary Oral Health Council (VOHC) awards a seal of approval to any dental hygiene product shown to delay plaque accumulation and calculus formation in controlled studies. Look for this logo on various products.

**CHEMICAL MEANS OF PLAQUE CONTROL**

**CHLORHEXIDINE** is the gold standard for chemical plaque control (usually as the gluconate). It is a broad-spectrum antimicrobial, works well in the mouth and is unlikely to develop bacterial resistance. It also has good *substantivity* i.e. persistence of action. This can be used immediately post-operatively (eg in cases of multiple extractions where brushing is not immediately possible), squirted into the animal's mouth. Eg 2.5ml per side in cats/small dogs, 5ml per side medium dogs, and 10ml per side in large dogs. Warn the owner to do this somewhere they can clean up afterwards! Virbac make Hexarins®. Chlorhexidine also comes in a GEL form (PetDent Oral Gel, Parodongyl). This may be more tolerated than brushing, especially in cats. It can be applied with a cotton bud to the gingival margin.

**ANTIMICROBIAL USE IN THE TREATMENT OF PERIODONTAL DISEASE**

Antibiotics are generally over-used and abused in dentistry by many vets, on the belief that as bacteria are part of the aetiology, antibiotics are appropriate for treatment. However, the control of periodontal disease is very different from management of other bacterial infections. The bacterial flora in the mouth is always heterogeneous and may contain up to 300 different species, and may vary from patient to patient. The host immune response also plays a part in the pathogenesis, and antimicrobial penetration into the biofilm is minimal. Locally delivered antiseptics such as chlorhexidine are as effective in terms of bacterial control.

*Antibiotics alone should not be used to treat gingivitis or periodontitis.*

Antibiotics may be used *prophylactically* before a dental procedure is carried out. The theory is that a bacteraemia will be caused by tissue manipulation/extractions etc., where there is vascular damage. In the immunocompetent patient, this presents no problem for the immune system to mop up, and the bacteraemia is probably no greater than that caused by natural chewing movements. However, in the immune-compromised patient (FeLV, FIV positive cats, splenectomised dogs) the systemically ill patient (eg diabetics, renal/hepatic/cardiovascular disease), or geriatric/debilitated animal then prophylactic antibiotics are warranted. They should be given at high doses 2hrs (IM) or 30min (IV) before the procedure starts.
References and further reading

10) Clarke D, Cameron A. Relationship between diet, dental calculus and periodontal disease in domestic and feral cats in Australia. Australian Veterinary Journal 1998; 76 (10); 690–693

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