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### **Dental Care I Vetspeak - January 1998, Linda Aronson, DVM**

Dental health in dogs as well as in humans has importance beyond the mouth itself. Periodontal disease is the most common disease in dogs. It is estimated that 80% of dogs over the age of five have dental disease which requires immediate attention. As dogs get older they are more likely to suffer periodontal disease. There is no reason to suppose that this is any less painful for them than it is for us. Dental disease represents a breach in the body's immune system. The bacteria inflaming the gums and periodontal tissues can spread in the blood to affect organs throughout the body. Most susceptible are the heart (endocarditis and mitral regurgitation), liver (hepatitis), kidney (interstitial nephritis), lungs (pulmonary fibrosis and bronchitis) and nervous system (meningitis). It is probable that many of the signs we attribute to old age actually are a direct result of poor dental hygiene. A local veterinary dentist tells of a golden retriever patient whose owners brush and floss his teeth daily. At seventeen he has the teeth of a dog one year old or less, and is in remarkable health.

Dental care is a joint undertaking in dogs as it is in people, between the owner who keeps up the day to day care, and the veterinary dentist who performs annual or biannual prophylactic cleaning. With proper care, it should be possible to avoid the need for further veterinary expertise, although virtually any procedure that is done in human dentistry can and has been done on a dog. The question of whether or not a veterinarian should correct the bite of a dog is a difficult one. On the one hand, the dog will benefit from being able to eat better, and avoid teeth biting onto gum rather than opposing teeth. On the other hand, there are the ethical questions of owners who would enter the dog into shows and use it to breed future generations of dogs with bite problems.

The adult dog should have 42 teeth, although the Bearded Collie is not a breed which is penalized for absent dentition. At the front there are six incisors in each jaw. These small teeth have a single root and are used for grasping food. Next are the canines, four in all, large, curved, single rooted teeth designed for tearing and grasping. Behind each canine are the premolars, 4 on each side in the lower jaw and 3 on each side in the upper jaw. These have between one and three roots, and pointed cusps and are used for grasping and cutting. Finally, there are three molars in both upper and lower jaws. It is important that these large multicusped teeth form an



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occlusal surface, as they are used to grind food. The upper fourth premolar and lower first molar are also known as the carnassial or shearing teeth.

On the plus side, dogs don't get cavities. Rather, they get periodontal disease, inflammation and infection of the tissues supporting the teeth - the gingiva (gums), periodontal ligaments (which anchor the teeth to the bone) and alveolar bone (surrounding the tooth roots). Plaque is 80% bacteria mixed with food particles and saliva. It forms 6-8 hours after brushing the teeth. (So rather than brushing once a week we should really be brushing three or four times a day!) It sticks to both the visible surface of the teeth and in the sulci under the gum lines. Over time it becomes mineralized as calcium, phosphorus, magnesium, sodium and potassium salts accumulate, and it forms calculus. This hard yellow brown substance can cover the gingival margin, making it impossible to clean out plaque under the gum line with simple brushing. Safe and secure the bacteria multiply, and the pockets under the gums deepen. The gums become edematous and roll at the edges - gingivitis, a local and very painful inflammation of the blood vessels, which is fortunately reversible if caught at this stage.

If dental aid is not given in time, the gums are replaced with what is called granulation tissue, and the pockets become ever deeper. The periodontal ligaments weaken, and the alveolar bone starts to recede around the roots of the teeth. While dental treatment at this stage can prevent the condition worsening, it cannot reverse the damage which has already been done. The bacterial composition changes as the disease progresses. Although the dog loses its teeth, it is actually the supporting structures which are diseased, not the teeth themselves.

The healthy mouth contains 750,000 bacteria/ml of saliva. All dogs are prone to periodontal disease, but some are at greater risk. Among the predisposing factors some are genetic (compromised immune function; malocclusions, crowding, rotation of teeth, extra or missing teeth, retained baby teeth); behavioral (rock or cage chewing; open mouth breathing - dries up the saliva which normally slows down the bacteria; diet - soft sticky diets increase plaque retention); trauma (either to individual teeth - slab fractures can remove the coronal bulge which tends to deflect food from the gingival pockets, or fracture of the jaw); infectious diseases (such as distemper which thins tooth enamel); metabolic imbalances (such as the so called "rubber jaw" or secondary hyperparathyroidism - low calcium).



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So what can we do to help? First get to know the inside of your dog's mouth intimately. Notice any abnormalities which could cause potential problems and increase his chance of periodontal disease. (In my experience, dogs with hypothyroidism and some other autoimmune diseases, may have very tacky saliva, and require extra special attention when it comes to tooth cleaning.) Ideally you should clean your dog's teeth once a day from the time he is six months old, but every effort helps. It does only take a minute or so. Doing it at the same time every day, maybe before you clean your own, may make it easier to adopt this habit. Of course, many dogs are less than thrilled about having you poking around in their mouths, and initially tooth cleaning may take longer and be less thorough, but perseverance will usually win out. Optimally, you will accustom your dog to tooth cleaning before he reaches his six month birthday. Get him used to having his mouth inspected (you need to check for retained baby teeth, and if he's ever to be a show dog and/or go to the vet, letting people look in his mouth is a good trait to encourage). When he cooperates reward him, preferably with a hard treat which is less likely to cause plaque build up, or a game (yeah, I know frisbees and balls can knock teeth out, but if they're well anchored and healthy it's less likely to happen.)

There are innumerable different products on the market for tooth cleaning. Everyone likes his or her own method best. I don't feel I do as good a job with gauze pads, or those soft rubber brushes that fit over your finger, nor am I a believer in baking soda. Buy a good quality veterinary tooth paste. Excessive fluoride is dangerous, both for dogs and kids, and as both are likely to swallow their tooth paste maybe kids should be using dog toothpaste, although they may object to the liver flavored ones. I like the extra long dog tooth brushes, because they enable you to get into the back of the long mouth or the Bearded Collie, and the areas you most need to concentrate on are the cheek sides of the molars, premolars and possibly canines. If you are starting to clean the teeth of an older dog for the first time, don't expect to be able to go in, and clean him up first try. Working with a dog's mouth is seen by the dog as a sign that you are behaving in a dominating fashion, and he may object. And what do you know, you're messing with his number one weapon at the time you are trying to clean it, so take it slowly, reward every time he lets you another step closer to getting the job done, and quit when he starts to get fractious or cross - and hopefully well before he decides to bite or show other aggressive signs.



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Flavored toothpastes are generally well liked by dogs (I have to be careful to keep mine out of my dogs' way or they'll eat it, tube and all, and their toothbrushes for good measure). If your dog has dietary allergies, you may be better off just brushing with plain water, but experiment. I don't floss my dog's teeth. Because their problem is plaque rather than cavities, I think the effort isn't worth while.

Using hand scalers on dog's teeth is of questionable benefit. While they give us the comfort of watching hunks of tartar chip off, it is very difficult to clean under the gum line of the awake dog. Additionally, scaling scores microscopic lines in the surface of the tooth enamel, giving the plaque additional foot holds in which to get established. Scaled teeth should be polished ultrasonically, to erase any such lines.

For deep down periodontic prophylaxis, most dogs are given general anesthesia to enable the dentist to work without having to fight the dog, and to minimize the pain. Most dogs tolerate anesthesia well, however, to avoid problems a complete blood count and biochemistry profile, together with urinalysis is recommended, particularly for dogs over the age of seven. An electrocardiogram should also be performed, if there is any suspicion of heart disease following physical examination. With the dog safely anesthetized, the dentist can get to work. Large accumulations of tartar are removed first, then the plaque is removed from above and below (root planing) the gum line with ultrasonic scalers. The surface of the teeth and any exposed roots are then polished with a slow speed polisher using plenty of prophylactic paste and a soft cup. The gingival pockets are flushed with antiseptic (e.g ., 0.2% chlorhexidine solution), and their depth is measured with a probe. This information is recorded, and used to track the progression of any periodontal disease. Finally, after the teeth have air dried, 1.2% fluoride gel, foam or varnish is applied, care being taken to avoid getting it on the dog's tongue. This hardens the tooth enamel, desensitizes the inner layers of the tooth (dentin and pulp), decreases bone and tooth destruction and has an antibacterial effect.

Tooth disease is somewhat like icebergs. While the exposed part of the tooth may look fine, or minimally affected, who knows (your dog's dentist, hopefully) what lies hidden beneath the surface? Good health and happy smiles to you and your Beardie(s) (an added bonus to following the advice in this month's column is that Beardie kisses will be that much sweeter, liver flavored tooth paste notwithstanding).