B. A. R.F. – As Good as it Sounds

More and more dog owners are feeding their dogs raw diets, sometimes referred to as "Bones and Raw Food", "Biologically Appropriate Raw Food" or just BARF. I am not a nutritionist and do not play one on TV. But I do have some thoughts that are worth sharing with your clients.

If BARF stands for bones and raw food, I get worried. It is the bones that trouble me as a dentist.

Mammalian Bones and Dental Fractures

I do not care how big or small the bones are, how they have been processed or not processed, mammalian bones are bad for dog teeth. While chewing on hard objects (natural or nylon bones, dried cow hooves…) may help remove plaque and calculus to keep the crowns of the teeth looking cleaner they are also very likely to cause crown fractures. Particularly the mesial cusp of the upper fourth premolar and the mesial or central cusps of the lower first molar are at risk of breaking off.

Some minor chip fractures are of little or no significance. Some apparently minor chip fractures are much more serious. If a fracture exposes the dentin of the crown and leaves only a thin layer of dentin remaining over the pulp, bacteria may be able to colonize the dentin tubules, pass through the dentin to enter the pulp chamber where a septic pulp necrosis will ensue. Now the tooth needs root canal treatment or extraction.

Many chewing fractures lead to frank exposures of the pulp. These fractures always require either root canal treatment or extraction – no exceptions. Failure to recognize and treat these fractures will definitely result in septic pulp necrosis followed by extension of infection into the area around the root tips; the body is powerless to prevent this sequence of events.

If the fracture is restricted to the crown of the tooth (or only goes a millimeter or so below the gum line) and periapical infection has not destroyed the root tips, the tooth can be saved with root canal treatment. On the other hand, if the fracture goes deeply into the socket or has been present for a very long time, extraction is often the only reasonable treatment plan.

A fracture like this, with the damage restricted to the crown of the tooth, is an excellent candidate for endodontic (root canal) treatment to preserve the form and function of this important tooth.

This slab fracture not only exposed the pulp but also involves a slab fracture extending below (and still attached to) the gum. How far below the gum line the damage extends can only be determined after anesthetizing the patient.

In this case, the slab did not go too far below the gum line, but further splintering of the roots extended deep into the socket making extraction necessary.

A slab fracture such as this that extends well below the gum line and involves a significant portion of the crown of the tooth, is going to require extraction.

For more details on endodontic anatomy and physiology, visit: http://www.toothvet.ca/PDF%20files/endo.pdf

Avian Bones and Periodontal Disease

Hard mammalian bones are a frequent cause of dental fracture requiring root canal treatment or extraction. Then what about poultry bones? Some people feed chicken and turkey backs and necks. These are far less likely to cause dental fractures, but I still worry about them. Fragments of small, soft bone can become lodged between teeth and below the gum line to act as sources of periodontal infection.

When I eat popcorn I almost always get a bit of hull jammed between my teeth or below the gum line. I get out the dental floss and remove the foreign body before it can cause any harm. A dog, on the other hand, has no such option. They just live with the foreign body in place until it rots out of its own accord. Usually by then, a deep periodontal pocket has developed and will persist despite the removal of the inciting cause. The result is either persistent, hidden, deep-seated periodontal infection or loss of the tooth. Some can be saved with advanced periodontal surgeries.

So if owners wish to feed bones as part of the BARF diet, I prefer that it is well ground bone that will provide the nutritional benefits (?) without the risk of dental fractures and foreign-body impactions.

Foreign-body induced periodontal disease. The inciting cause is long gone, but the damage is irreversible. Treatment = extract both of these teeth and close the wound.

Raw Diets and Bacterial Concerns

Bacteriological evaluation of commercial canine and feline raw diets, by Weese, Rousseau and Arroyo appeared in the Can Vet J, June 2005 (Volume 46, pp 513 – 516). This article paints a pretty scary picture. The diets evaluated all contained coliforms. Some diets also contained *Salmonella* and *Clostridium* including *C. difficile* and *St. aureus.*

Concerns were raised not only over the number of potentially pathogenic bacteria found in the food immediately after thawing but also the growth of these bacteria in any food residue left in the bowl at room temperature or even in the feces of the consuming animal. The authors state "There is currently inadequate information regarding the safety of raw diets in terms of both animal

and human disease. However, considering the variety of infectious and potentially zoonotic pathogens identified here and in other studies, the potential risks must be taken seriously. Given these safety concerns, the absence of any scientific data indicating beneficial health effects of raw diets, and nutritional deficiencies that have been reported with such diets, it is difficult to recommend their use at this point." They also state that veterinarians should discuss with their clients factors such as "safe handling of raw diets, disinfection of food and water bowls, proper handling of feces, personal hygiene (particularly hand hygiene) following contact with animals, raw foods, and food or water bowls, or feces." A particular caution is given against feeding raw diets in households with young children, elderly people or immunosuppressed people.

Overall, the article is a sobering warning against recommending (or even worse, selling) commercial raw diets. Those of you who feel there are real benefits to this life-style choice would do well to review this article and others cited in the reference list.

So what to do?

I will acknowledge that there are some clients (and clinicians) who have a deep skepticism of the pet food industry in general and the big brands in particular. If clients insist on feeding their pets on a home made diet, I would recommend that they cook the food properly and that they feed only ground bone meal instead of whole mammalian or avian bone.

If the animal needs something to chew to help with plaque and calculus control recommend a VOHC approved product. My favorite, as I feel it is both relatively the safest as well as being effective, are raw hide strips (Chew-eez™). Stick with the brand name for quality assurance rather than bulk, generic raw hide or other body parts that may also contain pathogenic bacteria.

By the way, I get NOTHING for this endorsement. They have never even sent me so much as a free box of product.

Rebuttal

Anecdotally, some people will tell you of how much better their dog's or cat's dental health became after going on the BARF diet. My question is, on what are they basing this assessment? The crowns of the teeth may look cleaner after chewing on bones. The breath may even smell sweeter. BUT, unless the animal has had a thorough periodontal assessment (probing below the gum line, in between the teeth, on the lingual and palatal sides of the teeth…) I would suggest that the improvements are quite superficial and purely cosmetic.

The danger here is that the owners get a false sense of security and periodontal disease goes unchallenged. If the crowns look clean, everyone (owners and veterinarians) may assume there is no need for periodontal treatment. Since periodontal disease is below the gum line, the cleanliness of the crowns has little to do with it.