Crowded and rotated teeth

Crowded teeth are common in small breed dogs, while crowded and rotated premolars are typically seen in brachycephalic breeds. To some this might suggest that the propensity for crowded, rotated teeth have a hereditary link. Studies show that the smaller the dog, the larger the teeth are in proportion to the mouth when compared to the teeth and mouths of larger dogs. Rotated and/or crowded conditions can occur in a single tooth, in multiple teeth, or in any combination. It is not uncommon to find crowded mandibular incisors in brachycephalic breeds (Figure 1). Another common finding in many breeds, but especially in brachycephalics, is maxillary third premolars crowded with maxillary fourth premolars or the mandibular fourth premolars crowded with first molars. The maxillary third premolars and mandibular fourth premolars are usually also rotated in this condition. (Figure 2) Another common condition is incisors crowded together but also against the canine teeth.

Figure 1: Crowding of the mandibular incisors. Treatment included extracting the right and left mandibular second incisors.

Figure 2: Crowded and rotated maxillary third premolars in a brachycephalic dog.
Rotation and crowding can cause pain from chronic tooth on tooth contact. This might be compared to the pain that humans experience from a caries that has been overfilled. It is a condition that generally does not result in clinical signs; however, it can be quite painful. The chronic trauma resulting from tooth on tooth contact can lead to tooth non vitality.

Rotation and crowding can also result in tooth on soft tissue contact, which can be not only painful but can result in soft tissue defects. This condition can progress and produce a defect that can collect food and stay inflamed, and if severe, can progress further to produce a fistula. Rotation and crowding may also result in partial tooth impaction. (Figure 3) This results in part of tooth crown being submerged below the gingival margin. Because gingiva cannot attach to enamel, the portion of the crown that is submerged creates a pseudopocket. This is a convenient location for food entrapment, plaque and calculus accumulation, and eventual periodontal disease development. If the impaction is slight, this can be corrected with gingivectomy and/or good home care. If this is insufficient, an apical repositioning flap can be performed. The goal is to eliminate pockets deeper that 3-mm in order to prevent the formation or periodontal disease.

Figure 3
Infraeruption of the right maxillary canine tooth due to crowding.

Teeth affected by rotation/crowding have lowered defenses to periodontal disease due to their propensity to trap food, plaque, and calculus leading to infection and inflammation (Figure 4). Our canine and feline patients are anisognathic, meaning they have maxillary and mandibular dental arches or jaws that are of different sizes, which promotes a self-cleaning mechanism. In the rotated and crowded situation, this normal cleaning mechanism is impaired, further promoting plaque and calculus accumulation and adding fuel to the fire of periodontal disease.

Figure 4: Crowding of the left maxillary fourth premolar and first molar, which has resulted in accumulation of plaque and calculus and the formation of periodontal disease.
Veterinary dentists have the ability to correct almost any occlusal abnormality with orthodontic devices. However, in the case of crowded and rotated teeth, the use of orthodontic devices is rarely recommended. Not all rotated and crowded teeth are problematic. Some remain functional and non-painful throughout the life of the patient (Figure 5). If the tooth or teeth are deemed problematic, the usual treatment of choice is extraction. Extracting the least strategic tooth can eliminate the problem without the expense and pain caused by orthodontic movement.

Figure 5 Rotated right maxillary third premolar. This rotated tooth was not creating crowding and therefore no periodontal disease. Note the thin but present interdental papilla between the second and third premolar.

Commonly recommended treatments for some of the most frequently found crowding situations include extraction of the lateral incisors to save the canines, extraction of the maxillary third premolars to save the maxillary fourth premolars, or extraction of one or more of the more crowded mandibular incisors. If intervention in the form of extraction occurs early in the course of the disease, the more functionally important tooth can be saved. Delayed treatment will often result in the extraction of both teeth due to periodontal disease. Selected extractions are the treatment of choice for this condition. Because many orthodontic conditions are inherited, correction of malocclusions in animals has legal and ethical implications. Certain orthodontic conditions suggest that animals not be bred. Rotated and crowded conditions are a common abnormality in small and brachycephalic breeds, and animals with this condition are not normally eliminated from the breeding pool.