

ORAL SURGERY:
Be Careful Removing Impacted Canine Teeth!

It is important for practitioners to have a good look in their patient's mouth during routine spays and neutering procedures. Puppies should have all 42 teeth erupted in their mouth by 6 to 7-months of age, although not all of them will be completely erupted. If you do not see all of these teeth, it is important to determine why. Is it because these teeth are congenitally missing, or because they are still embedded in soft tissue or bone? If the tooth is actually missing, there is really no negative consequence other than fewer teeth to chew. This may actually be a good thing in



Fig. 2 Photograph shows the impacted canine tooth after mucoperiosteal flap elevation and bone removal.

small, brachycephalic breeds since tooth crowding is common and can lead to periodontal disease. The only way to determine if the tooth is missing or impacted is with dental radiographs! If a tooth is impacted, it can negatively affect surrounding bone and support structures to other teeth.

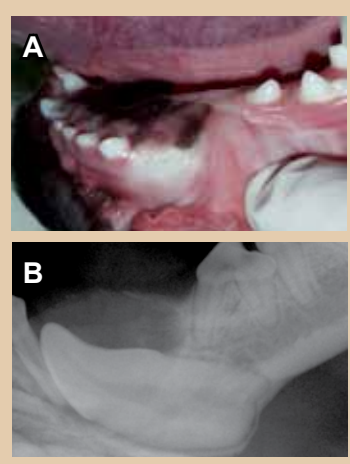


Fig. 1 Photograph (A) showing a missing or impacted left mandibular canine tooth and associated soft tissue swelling. The dental radiograph (B) shows bone loss and evidence of cyst formation dorsal to the tooth.

During development, there is an embryologic sac surrounding the crown of the tooth known as the *reduced enamel epithelium*. As the tooth erupts through the gingiva, this sac is essentially shed from the crown of the tooth except for where it remains attached at the cemento-enamel junction. *If the tooth fails to erupt, this sac remains intact and can eventually start to produce fluid leading to what's known as a dentigerous cyst.* This fluid filled sac can actually cause bone lysis and interrupt blood supply to adjacent teeth.

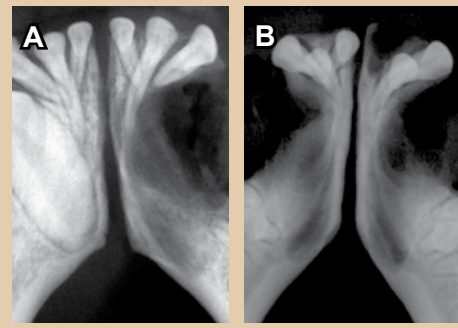


Fig. 3 In this case, both canine teeth were impacted and extracted. Radiographs (A and B) confirm complete removal including the left mandibular third incisor tooth.

When the impacted tooth is a mandibular canine, great care must be taken to extract the tooth as atraumatically as possible in order to avoid fracture (Fig. 1). This includes developing a large mucoperiosteal flap and

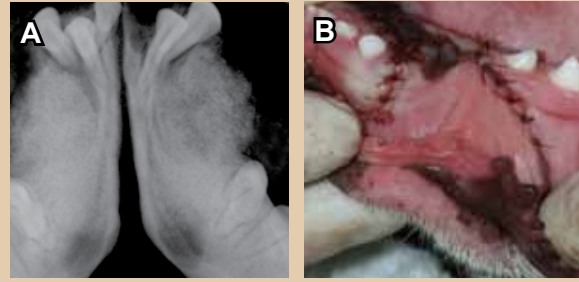


Fig. 4 The alveoli are packed with synthetic bone graft to promote rapid bony repair (A). The mucoperiosteal flap is repositioned and sutured after impacted canine tooth extraction (B).

removing sufficient surrounding bone to visualize the tooth, then delivering the tooth while maintaining jaw integrity (Fig. 2). In addition, a bone graft or graft substitute should be placed in the large alveolar defect to help promote bone regeneration (Fig. 3 and 4). *If you see a patient with missing or unerupted teeth, don't wait for it to become a bigger problem than it already is!*

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FALL NEWSLETTER

Welcome Back Dr. Smith!

Mark Returns After a 4-Month Medical Leave

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Dr. Mark M. Smith and Dr. Kendall Taney are partners in the Center for Veterinary Dentistry and Oral Surgery established in 2006. Dr. Smith is a Diplomate of the American College of Veterinary Surgeons and the American Veterinary Dental College. He was Professor of Surgery and Dentistry at the VA-MD Regional College of Veterinary Medicine at Virginia Tech for 16-years before entering private practice in 2004. Dr. Smith is Editor of the Journal of Veterinary Dentistry and co-author of Atlas of Approaches for General Surgery of the Dog and Cat.



Dr. Taney is a Diplomate of the American Veterinary Dental College and a Fellow of the Academy of Veterinary Dentistry. She has practiced dentistry and oral surgery at the Center since 2006. She is a 2002 graduate of the VA-MD Regional College of Veterinary Medicine. She completed her residency at the Center and has also performed internships in both general medicine and surgery, and specialized surgery.



Dr. Emily Edstrom is a 2010 graduate of the Colorado State University School of Veterinary Medicine. She completed a rotating internship in small animal medicine and surgery at VCA Veterinary Referral Associates in Gaithersburg, MD. She is a member of the American Veterinary Dental Society.



EXODONTICS:

Worn Teeth Are Not Always A Benign Problem!

Many dogs have worn teeth, also known as dental attrition or abrasion. Dogs do not acquire worn teeth from eating food. *Causes for worn teeth are related to chewing objects that can damage teeth over a prolonged period of time.* Chewing hard objects may damage teeth acutely leading to crown fracture. Chewing hard or soft, abrasive objects over a prolonged time leads to tooth wear and crown reduction. Typical objects that cause worn teeth when chewed include tennis balls, rags/towels, cage bars when dogs are crated, sand, and any object that is habitually chewed. In these cases, the teeth lose their pointed cusps, and the tooth crown is flattened and block-shaped (Fig. 1). If the tooth wear is indeed gradual, the enamel is worn away exposing the dentin. Dentin is the most dominant structure of teeth, supporting the enamel, and protecting the tooth pulp that is responsible for tooth viability. With prolonged tooth wear, the odontoblasts that reside in the tooth pulp become sensitive to changes in temperature or pressure from eating and chewing. The normal response to this sensitivity is for the odontoblasts to form reparative dentin within the pulp to protect the pulp by extending the amount of dentin between the pulp and the oral environment (Fig. 2).



Fig. 2 Histomicrograph showing reparative dentin. Note the porous, globular nature of the dentin.

Most times, reparative dentin protects the tooth and pulp infection and abscess formation do not occur. However, if the chewing behavior is not modified or eliminated, the pulp may become exposed or open allowing bacteria to enter the pulp causing root abscess (Fig. 3). *Another route for bacteria to gain access to the pulp is through the more porous dentin or reparative dentin since these tissues are not nearly as protective as enamel (Fig. 4).*

When behavior cannot be modified, treatment for worn carnassial and canine teeth includes crown application to prevent pulp exposure. *If tooth root abscess has occurred, then root canal therapy is an option pending the owner's decision whether behavior modification can be accomplished leaving crown application and root canal therapy as another treatment option.* Finally, worn teeth with abscessation may be extracted. Generally, worn teeth affect larger breed dogs and larger (carnassial and canine) teeth. Therefore, surgical tooth extraction is mandatory with the veterinarian avoiding techniques that might lead to jaw or root fracture.

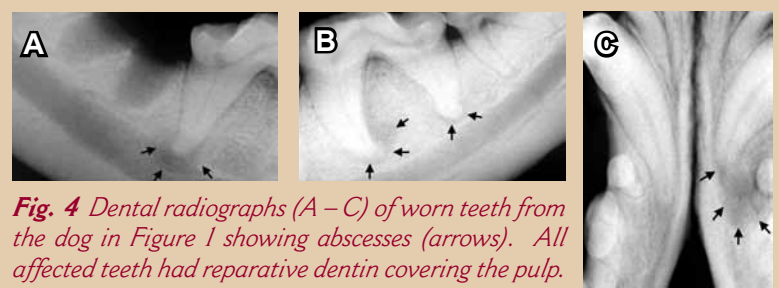


Fig. 4 Dental radiographs (A – C) of worn teeth from the dog in Figure 1 showing abscesses (arrows). All affected teeth had reparative dentin covering the pulp.



Fig. 1 Right (A), left (B), and rostral (C) views showing worn teeth in a dog.



Fig. 3 Photograph of a worn canine tooth with pulp exposure allowing bacterial entrance into the tooth..

THANK YOU FOR SUPPORTING OUR PRACTICE

As many of you know, I received a heart transplant on May 25 after progressive symptoms of heart failure secondary to dilated cardiomyopathy. I want to thank you for your thoughts and prayers during my hospitalization and recovery. I also want to thank you for supporting the Center during my absence that ended with my return to work on October 1st. If you would like to know more of my story, you may visit caringbridge.org and enter the password: mmckimsmith.

My partner, Dr. Kendall Taney, Dr. Emily Edstrom, and our staff have done a great job caring for your patients. We appreciate your continued confidence in us as we strive to provide specialized care that exceeds your expectations!

Best professional regards,
Mark

DENTISTRY:

Why Follow-Up Resorptive Lesion Cases?

Feline tooth resorptive (TR) lesions occur secondary to activation of odontoclasts that attack the tooth and cause resorption most commonly at the cemento-enamel junction. TR and destruction can also occur primarily at the crown (coronal) or root (radicular). *Dental radiographs are instrumental in determining the diagnosis and severity of TR.*

One theory concerning TR is that it is a generalized disease affecting all or many teeth in the same patient but at varying degrees of pathology. Some affected teeth are seemingly normal based upon gross examination, but have severe signs of destruction based on dental radiographs. Other affected teeth have gross lesions that typify TR, whereas other teeth appear normal both grossly and radiographically yet may have TR at a microscopic level.

Tooth extraction is the only viable treatment option for teeth affected by resorption. However, it is difficult to extract seemingly normal teeth in a cat that has other teeth with more blatant clinical and/or radiographic signs of TR. Therefore, we do not extract “normal” teeth in cats with multifocal TR unless there are only a few teeth left that are not functional based on lack of a complimentary occlusal tooth. Further, incisor teeth are uncommonly affected with TR in our experience and we make every effort to save these teeth to assist in grooming and prehension of food and play toys.

The reason to diligently follow-up these cases with annual dental clinical and radiographic examinations is exemplified by the case presented here. Some teeth were missing likely from TR and spontaneous fracture from root resorption. All 4 canine teeth were extracted based primarily on radiographic findings (A-F). By recommending a teeth cleaning procedure and dental radiographs 1-year later, other teeth affected by TR (arrows) were extracted including 2 “normal” mandibular premolar teeth that were non-occlusal (G-L). *We always recommend annual teeth cleaning and dental radiographs in TR cases so that newly affected teeth can be extracted to alleviate pain as quickly as possible.*

