Juvenile Dentistry

The incidence and severity of periodontal disease and other common oral problems certainly increases with age, but young animals may also suffer from a number of dental and oral maladies. Early recognition and treatment of these problems can often prevent more serious complications in later life. This chapter will describe some common dental concerns in dogs and cats during their first year of life and focus on disease recognition and indications for treatment (Fig. 1).

Figure 1. This ten-week-old golden retriever pup had a gingival squamous cell carcinoma as seen in the clinical photograph and radiograph. Treatment involved semi-conservative surgery to remove the mass, surrounding bone and several deciduous and permanent teeth while maintaining the ventral mandibular border and so the integrity of the mandibles as a functional unit. The patient was reported to be doing very well one year post-operatively.

Juvenile Dental Problems Recognized During the First Weeks of Life

Microglossia is a lethal hereditary abnormality that results in, among other things, an abnormally small tongue [1-3]. The puppies are usually presented for evaluation of nursing difficulty, as they are unable to latch on to the nipple properly. Additionally, these puppies seem mentally dull, disinterested in nursing, and lacked the swallowing reflex. It had been suggested that some puppies that die of Fading Puppy Syndrome are in fact afflicted with microglossia and fade due to an inability to nurse resulting in malnutrition, dehydration and aspiration pneumonia [1]

Wiggs and Lobprise [1] reported on a litter of five Miniature Schnauzer puppies, in which there were three affected individuals. With intensive nursing care, the affected pups survived to seven weeks of age, at which point their condition deteriorated dramatically and they were euthanized. During their short lives, it was observed that these puppies developed slowly compared to litter mates. They were smaller in stature, slower to open their eyes, were unable to stand or walk, and had intermittent digestive upsets. Post-mortem findings indicated that the condition is a complex multi-system birth defect with abnormalities noted in the tongue, pharynx, musculoskeletal system and the brain.

The characteristic abnormality for which the condition is named was described by Wiggs et al., [1] as follows:

"...the affected animals’ tongues had grossly normal deep base muscular layers, but the lateral and rostral thin portions were missing or underdeveloped. Light fimbriation was present on the lateral surfaces. Their tongues initially moved only in a dorso-ventral direction action [sic], with the tongue commonly placed against the roof of the mouth”.

The experience with this litter suggests that the prognosis is hopeless, even with heroic efforts to support the puppies. Immediate euthanasia seems the only reasonable recommendation [1,2]. As this is a hereditary condition (simple autosomal recessive gene), the parents should be removed from the breeding pool.

Another group of neonatal oral problems that might be encountered are clefts of the palates and lips.
Clefts may be in the primary palate (rostral to the incisive foramen and including the lips) or the secondary palate (hard palate caudal to the incisive foramen and the soft palate) [3,4]. Defects of the primary palate (harelip) usually cause no problems with nursing or respiration and are largely of cosmetic concern. In most cases, surgical treatment can be delayed until the patient is mature, at which time the structures are larger and easier to work with and the anesthetic risks are lower. Primary palatal clefts may be unilateral or bilateral, and when unilateral are almost always on the left side in dogs [5].

Clefts of the secondary palate (hard palate caudal to the incisive foramen and the soft palate) are of much greater concern in the neonate. Congenital hard palate clefts are almost always midline and usually associated with midline clefts in the soft palate as well (Fig. 2).

Figure 2. An eight week old Boston Terrier pup with clefts of the hard palate and agenesis of the left side of the soft palate. - To view this image in full size go to the IVIS website at www.ivis.org.

These clefts result in a direct communication between the oral and nasal cavities. During nursing, milk will flow into the nasal passages leading to sneezing, gagging, coughing and nasal discharge. Affected animals are at great risk of developing aspiration pneumonia. Other signs include poor growth and weight gain and a general unthriftness. The prognosis is guarded without surgical correction of the cleft to re-establish a functional separation between oral and nasal cavities. With successful closure of the defects, the prognosis is excellent [4-7].

The first challenge is to keep the patient healthy until anesthesia and surgery are acceptable risks. If the patient can be supported until six to eight weeks of age, there will be more tissue to work with and the anesthetic risk will be more manageable than in a newborn. Delaying surgery longer is contraindicated as the defect often gets proportionally larger as the animal grows. Standard surgical and dental texts outline a variety of procedures for closure of midline hard and soft palate defects [4-7].

Clefts of the soft palate may be midline, unilateral or bilateral with a thin strip of palatal tissue down the midline. If sufficient tissue exists, some of these clefts are amenable to surgical repair. Congenital bilateral absence of the soft palate has also been reported.4 In this case, the pharyngeal sphincter is incomplete and so the animal cannot swallow. It is not possible to surgically create a soft palate with the necessary neuromuscular anatomy for a functional sphincter and so the prognosis is hopeless [4].

The reader should be aware that repair of palatal defects can be frustrating. Complete healing may not happen after the first surgery. The constant motion of the tongue, changes in air pressure during respiration and the difficulty in getting a tension-free closure with connective tissue support under the suture line all conspire to cause dehiscence. Plan at the outset on more than one surgery to effect complete closure of the defect.

On the other hand, the reader should also be aware that the first surgery has the best chance of success. If the first surgery fails, subsequent procedures are compromised by the disruption of the vasculature, loss of tissue and scarring from the first surgery. Therefore, plan the first surgery as if it will be your only chance at treating the condition and do everything possible to enhance its chances of success.

Juvenile Dental Problems Recognized During the Traditional First Visits (Eight-Week and Twelve-Week Check Ups and Immunizations)

When a puppy or kitten is presented for a check-up at eight weeks of age, it should undergo a thorough oral examination. By this age, the deciduous teeth should be well erupted and in place. The maxillary incisors of the puppy should just slightly overlap the lower incisors and the lower canine tooth should be placed between the upper lateral incisor and the upper canine tooth. In kittens, the lower canine should be positioned as in the puppy, but the incisors meet tip-to-tip in a level bite.

As the growth of the mandible and maxilla are under separate genetic control, the growth of one only influences the growth of the other in so far as they are "locked" together by the interdigitation of the teeth. If the teeth are properly positioned, as the maxilla grows, its upper canine can push on the back of the lower canine and "drag" the mandible along. As the mandible grows forward, its incisors hit the back of the maxillary incisors and "push" the maxilla ahead. In this way, the proper mandible-maxilla relationship should be maintained throughout the growth period and into adulthood [9,11].

If the young puppy or kitten has a significant jaw length discrepancy so that there is an abnormal dental-interlock (lower canines digging holes in the hard palate or upper incisors trapped behind lower incisors) then the potential for the short jaw to catch up is mechanically impeded. In the example of an
eight-week-old puppy with a short mandible (class 2 malocclusion), the lower canines will often dig into the hard palate and the incisors will be trapped behind the incisive papilla of the hard palate. If the lower jaw attempts to go through a growth spurt to catch up to the maxilla, the interlock holds it back. The result can be that the mandible remains abnormally short or it may bend in the middle and bow ventrally. A puppy or kitten with an obvious malocclusion is a candidate for interceptive orthodontics [9,11]. Interceptive orthodontics involves the selective extraction of any deciduous teeth that would impede the development of a proper bite. The general rule is to extract the teeth from the short jaw. For a class 2 malocclusion, extraction of the deciduous mandibular canines and incisors will alleviate the dental interlock. These procedures do not alter the animal’s genetic make-up nor do they make anything happen. Rather, they allow the animal to express its full genetic potential by removing any mechanical impediment to growth. Owners and breeders should be cautioned that, even if the animal undergoes successful treatment, it did require intervention and has to potential to pass the malocclusion on to offspring. A recommendation would be to neuter these animals at an appropriate age (Fig. 3).

Figure 3. a) The first photo is of an eight-week-old Rotweiller puppy with a class II malocclusion (mandible too short compared to the maxilla). The mandibular canine and incisors teeth were contacting and traumatizing the hard palate and creating an abnormal dental interlock. b) Removal of these eight deciduous teeth relieved the trauma as well as the interlock, allowing the mandible to grow without mechanical impediment. c) The third photo illustrates how long the deciduous anterior tooth roots are. d) The fourth photo shows a puppy with normal jaw length relationships but base narrow (lingually displaced) mandibular deciduous canine teeth. Again, the abnormal tooth-to-soft tissue contact is causing obvious trauma and inflammation. Extraction or crown reduction with pulp capping are indicated to alleviate this painful condition. - To view this image in full size go to the IVIS website at www.ivis.org.

To maximize the benefit of interceptive orthodontics, extractions should be performed as early as possible. The hope is that the jaw length relationship will normalize before the permanent teeth erupt and recreate dental interlock. The more time between deciduous tooth extraction and permanent tooth eruption, the better the chances of success. However, the owners should be made aware that most animals with jaw length discrepancies at eight weeks of age will not ‘go normal’, regardless of treatment, and there will very likely be orthodontic problems when the permanent teeth erupt. The removal of the abnormal interlock does not make the short jaw grow fast and catch up, rather it allows the animal to express its full genetic potential. If the programming is faulty, interceptive orthodontics will not change that. A second (and much more predictable) benefit of interceptive orthodontics is that it immediately relieves the oral trauma and pain associated with abnormal tooth-to-tooth or tooth-to-soft tissue contacts. This on its own is sufficient cause to recommend the surgery. Another common malocclusion is base-narrow, or lingually-displaced mandibular canine teeth. In these cases, the jaw length relationships are normal, but the mandibular deciduous canine tooth crowns are parallel to each other. Since the maxilla is wider than the mandible, if the mandibular canine teeth are standing up straight, they will contact and traumatize the maxillary gingiva or palatal mucosa. This causes pain and can lead to perforation into the nasal passage. It also creates an abnormal dental-interlock that can impede the growth of the mandible. Finally, the permanent mandibular canine tooth will erupt on the lingual side of its deciduous ancestor. Therefore, if the deciduous tooth is lingually displaced, there is a strong likelihood that the permanent canine tooth will also be lingually displaced (Fig. 3). The recommended treatment for lingually displaced deciduous mandibular canines is extraction of the offending deciduous mandibular canine teeth. Benefits of this surgery include immediate relief of the traumatic occlusion and removal of the abnormal dental interlock, allowing unimpeded lateral mandibular growth. It also clears a pathway by which the permanent tooth can erupt in a more labial direction, tipped away from contact with the maxilla (Fig. 4).

Figure 4. On the left is a radiograph of an eight-week-old puppy maxilla and on the right is the mandible. These images illustrate how long and thin the deciduous tooth roots are and how close the permanent tooth buds are to these roots. Always take pre-operative radiographs prior to deciduous tooth extraction to remind yourself of these facts and to document the location and number of permanent tooth buds. - To view this image in full size go to the IVIS website at www.ivis.org.

Some practitioners, concerned with the potential for causing iatrogenic trauma to the developing
permanent teeth, have advocated crown reduction, partial vital pulpectomy and direct pulp capping of the deciduous teeth. This procedure is certainly less traumatic to the deeper structures of the mandible and would achieve all the goals in treating a class 2 malocclusion. However, this is a more advanced procedure requiring more training and equipment and would be beyond the scope of most general practitioners. Also, crown reduction leaves the root in place so that it can still have an influence on the eruption path of the permanent canine tooth, making this procedure less desirable than extraction in the treatment of lingually-displaced mandibular canine teeth (Fig. 5).

Figure 5. Extraction of deciduous teeth is not without risk. a) This photo and b) radiograph are of a one-year-old West Highland White Terrier. The deciduous canines had been extracted (not by the author) at eight weeks of age. Iatrogenic trauma to the developing left mandibular canine and incisors resulted in severe deformities of these teeth. c) This photograph shows enamel hypocalcification of both maxillary permanent canines and some incisors are a result of traumatic injury during deciduous tooth extraction. - To view this image in full size go to the IVIS website at www.ivis.org . -

Deciduous canine teeth are long and thin and are found in the mouths of puppies. These three factors make them very subject to wear and fracture, which can expose the pulp of the tooth. The pulp is the soft tissue that is found inside a tooth and consists of blood vessels, nerves, lymphatics and connective tissue. Once exposed to oral bacteria, the pulp quickly becomes infected and dies. During this time, there is significant pain, but once the pulp is dead, the pain subsides. Next, infection oozes out through the root tip into the periodontal space around the root. This can cause a draining fistula, osteomyelitis and damage to the developing permanent teeth. The treatment for almost all deciduous teeth with exposed pulps is immediate and careful extraction of the entire crown and root. If the fracture is very fresh (less than 24 hours) vital partial pulpectomy and direct pulp capping is also an option (Fig. 6).

Figure 6. Photos (a, b, c) of a three-month-old Labrador pup with pulp exposure/necrosis leading to osteomyelitis and draining fistulous tracts of all four deciduous canine teeth. d) The Radiograph illustrates the proximity of the deciduous tooth root to several of the developing permanent teeth. - To view this image in full size go to the IVIS website at www.ivis.org . -

Throughout this section, I have mentioned several indications for deciduous tooth extraction. The reader is cautioned that this is by no means a risk-free procedure. Adjustments must be made to the anesthetic protocol in very young animals. Also, there is a very real risk of causing iatrogenic damage to the permanent tooth buds that are forming within the jawbones adjacent to the deciduous tooth roots. If the operator is familiar with dental anatomy and development, is equipped with an assortment of fine elevators, and uses a delicate touch with lots of patience, things can go very well. On the other-hand, using large elevators and rough technique can lead to serious mutilation of the permanent teeth. When in doubt, refer.(Fig. 4 and Fig. 5)

**Third Visit (Four Month Check-up and Final Vaccination).**

By the time a pet is presented for rabies vaccination around 4 months of age, some of the permanent incisors should be erupting. The permanent canines and some of the premolars may also be erupting by this time. It is at this stage that you should be looking for **persistent deciduous teeth.** This is a problem commonly associated with small breed dogs, but can happen in cats and large breed dogs as well. The rule is that if the permanent tooth crown is visible above the gum-line, then the deciduous tooth should be gone. If the deciduous tooth is still in place, it should be removed as soon as possible. Leaving a persistent deciduous tooth in place until six months (spay/neuter time) is inappropriate as it forces the permanent tooth to erupt into an abnormal location. The interactions are complex, but very simply, if the deciduous tooth is in place while the permanent is erupting, you have two teeth occupying the space meant for one and this will cause problems [9] (Fig. 7).
Persistent deciduous teeth can occur in any breed of dog or cat. a) The first photo illustrates how the continued presence of the deciduous maxillary canine tooth is causing the permanent tooth to erupt to far mesial (forward), closing the space (diastema) where the mandibular canine crown ought to go. Immediate removal of the deciduous tooth allowed this animal to develop and normal bite. b) The second film shows the permanent mandibular canine teeth being displaced lingually by the persistent deciduous canines as well as crowding due to persistent mandibular deciduous incisor teeth. c) The radiograph of a six-month-old cat illustrates how the mid-portion of the deciduous root was partially absorbed but the apical half of the root was still intact. The opening mid-root not only exposed the pulp to infection, but also created a weak spot such that a very delicate touch and fine instruments were required to extract this tooth in one piece. - To view this image in full size go to the IVIS website at www.ivis.org.

Typically, the animal has been presented monthly for check-up and immunization. After this visit, it is often two months before the animal is presented for spay/neuter. A lot will be happening in the mouth during those two months. It would be prudent to spend some time with the owners to explain what should happen and what problems they should be watching for. It would be worth making a five-month check-up part of your puppy/kitten protocol so developmental abnormalities can be diagnosed early and dealt with in a timely fashion.

Six Month Spay/Neuter Visit:
An animal presented for spay/neuter at about six months of age represents a golden opportunity. The animal will be under general anesthesia and so you can do an unhurried, thorough oral examination. In most breeds, all permanent teeth should be partially or fully erupted by this age. During your examination, you should note any missing or extra teeth, deformed or malpositioned teeth, or any other situations that might be predisposed to problems.

"Missing" teeth should always be documented with an intra-oral radiograph. If the radiograph shows that the tooth is missing then it can be recorded as such on the animal’s permanent dental record for future reference. Though this may be of no functional significance to the animal (depending on which tooth is missing), some breed standards require a full set of teeth, and so the breeder should be informed of this developmental abnormality.

If the radiograph shows a tooth that is unerupted for any reason there are usually two options. If the tooth is impacted under soft tissue only and is pointing in the right direction, then cutting a window in the overlying soft tissue may allow the tooth to erupt properly. This procedure, known as an operculectomy, may work if the eruption path is clear and if the tooth still has open root apices [9]. Once the apices have closed, the tooth is not likely to erupt any further. If the tooth is misdirected or impacted under other teeth or deep in the bone, then its extraction should be recommended (Fig. 8, Fig. 9 and Fig. 10).

Unerupted teeth are likely to cause dentigerous cysts. a) This 1.5-year-old Chow Chow developed a large mandibular swelling. A radiograph revealed a horizontally impacted left mandibular first premolar and absence of the second premolar. b) A very large cyst had formed around the unerupted tooth as seen in the second photograph. The cyst was so large that it had destroyed the entire distal wall of the alveolus for the canine tooth. As a result, the dog lost the canine tooth as well as the unerupted first premolar. If the impaction had been detected and dealt with much earlier, this cyst would have been prevented and the dog would still have the canine tooth. - To view this image in full size go to the IVIS website at www.ivis.org.
Failure to detect and expose or extract an unerupted tooth will often lead to the development of a dentigerous cyst. These cysts, while benign, are destructive of bone as they expand, which can lead to loss of adjacent teeth. They have also been reported to undergo malignant transformation. Theoretically, this extraction should not be done at the same time as a sterile procedure due to the increased risk of infection at the sterile site. The finding of an unerupted tooth should be recorded on the animal’s chart and the extraction scheduled for sometime prior to the animal’s first birthday. The extraction of an impacted tooth at the same anesthetic as the spay/neuter may be preferable to a separate anesthetic later (especially since the clients may neglect to return the animal for the extraction at a later date).

Extra teeth also call for an intra-oral radiograph to determine if there are two completely separate teeth or two crowns sharing a common root and pulp system. If you find that they are two completely separate teeth and the extra tooth is causing a crowding situation, it should be extracted in the near future (Fig. 11 and Fig. 12).

Failure to detect and expose or extract an unerupted tooth will often lead to the development of a dentigerous cyst. These cysts, while benign, are destructive of bone as they expand, which can lead to loss of adjacent teeth. They have also been reported to undergo malignant transformation. Theoretically, this extraction should not be done at the same time as a sterile procedure due to the increased risk of infection at the sterile site. The finding of an unerupted tooth should be recorded on the animal’s chart and the extraction scheduled for sometime prior to the animal’s first birthday. The extraction of an impacted tooth at the same anesthetic as the spay/neuter may be preferable to a separate anesthetic later (especially since the clients may neglect to return the animal for the extraction at a later date).

Extra teeth also call for an intra-oral radiograph to determine if there are two completely separate teeth or two crowns sharing a common root and pulp system. If you find that they are two completely separate teeth and the extra tooth is causing a crowding situation, it should be extracted in the near future (Fig. 11 and Fig. 12).

Many brachycephalic and small breed dogs will have severe crowding and rotation of teeth. This can lead to food impaction and early onset of periodontal disease. The suggested treatment is selective extraction of less significant teeth to relieve the crowding and improve the periodontal prognosis for the remaining teeth. If there are three teeth crowded together, then removal of the middle one may improve the outlook for the other two. Failure to do this can lead to loss of all three within a few years (Fig. 13).

Some orthodontic problems lead to abnormal tooth-to-tooth or tooth-to-soft tissue contacts. The resulting trauma can cause a variety of problems including periodontal disease, root resorption, oral-nasal fistulas and endodontic (pulp) disease. The treatment varies depending on the specifics of the condition but may
involve selective extraction, crown reduction (with partial vital pulpotomy and direct pulp capping), or orthodontic movement of teeth to alleviate the abnormal contact [9,11] (Fig. 14 and Fig. 15).

![Figure 14](image1.png) a) This six-month-old Irish Wolf Hound had a distally and lingually displaced left mandibular canine tooth. b) Treatment involved selective extraction of the left mandibular lateral (third) incisor tooth and bilateral acrylic incline planes to tip the canine tooth medially and labially (forward and out). c) This photograph shows the results one month following appliance removal. - To view this image in full size go to the IVIS website at www.ivis.org.

![Figure 15](image2.png) A common problem in Shelties is rostrally displaced or lance canines. a) The first photo shows the problem in a miniature Schnauzer and b) the second is of a Sheltie. The abnormal placement of the maxillary canine tooth leads to a variety of problems due to abnormal tooth-to-tooth and tooth-to-soft tissue contacts. Extraction or orthodontic repositioning are among the treatment options. As this condition shows every indication of being hereditary, affected dogs should be neutered, especially if orthodontic correction is to be attempted. - To view this image in full size go to the IVIS website at www.ivis.org.

Enamel hypocalcification is a condition that may affect one tooth or many teeth. It is recognized as an area of thin or absent enamel on the crown of a tooth, usually with staining of the exposed underlying dentin and the rough enamel margins. The cause is disruption of the enamel producing tissues during development. The enamel may form but be poorly mineralized. Therefore, shortly after eruption, the defective enamel flakes away, resulting in a rough, stained lesion on the crown [12]. When many teeth are affected, the cause is usually some systemic disorder such as infection with an epitheliotrophic virus, a high fever, malnutrition, or heavy parasite load. In these cases, all the enamel that was forming during the time of stress is defective and so there is a ring around the crown of the teeth, often with normal enamel above and below the lesion. When only one or a few teeth are affected, the cause is thought to be some local irritation. It might be trauma to the area causing deep bruising or local bacterial infection due to a fractured deciduous tooth. Treatment for enamel hypocalcification may range from daily brushing to bonded composite restorations to cast metal crowns to restore the defective teeth. Many factors need to be considered and the scope of this chapter does not allow for a detailed discussion (Fig. 16 and Fig. 17).

![Figure 16](image3.png) Photos of a right maxillary canine tooth showing enamel hypocalcification affecting a single tooth and b) its restoration with a bonded composite resin material. - To view this image in full size go to the IVIS website at www.ivis.org.

![Figure 17](image4.png) Photo of the right mandible of a dog with generalized enamel hypocalcification. - To view this image in full size go to the IVIS website at www.ivis.org.

With the recent advent of early spay/neuter protocols, more and more animals are being spayed/neutered before six months of age. For these animals and for those that are not being neutered, plan on doing a thorough oral examination at six months of age with the patient awake. If there are any abnormalities or concerns, anesthetize the patient for a more detailed visual inspection and appropriate radiographs.

**Six Months to One Year**
If the patient has developed a normal occlusal relationship with the proper number of teeth all in their proper places, then the rest of the first year should go smoothly, from a dental standpoint (Fig. 18).

![Figure 18](image5.png) This photo shows a normal occlusion in a young dog. The incisors are in a tight scissors relationship. The mandibular canine tooth is perfectly centered between the maxillary lateral (third) incisor and canine teeth and touches neither. The premolar teeth are staggered in a "pinking shear" alignment. This is what nature had in mind. - To view this image in full size go to the IVIS website at www.ivis.org.

Once all the permanent teeth have erupted and the pain of ‘teething’ is over, it is time to start training the
owner and animal in the art of dental home-care. Daily brushing of the teeth is the most effective means of controlling dental plaque and maintaining gingival health.

It is often suggested that owners should start introducing home care at a very young age, when puppies and kittens are most easily trained. There is merit to this approach, but owners should suspend these efforts during the time of deciduous tooth exfoliation and permanent tooth eruption. Brushing during this mixed dentition period is very likely to cause pain, thereby teaching the animal that home-care is unpleasant. By waiting until the deciduous teeth are all gone and the permanents have all erupted, the owner can avoid this confounding factor. Home care programs should be introduced gradually and with plenty of positive reinforcement, as with any behavior modification program. Trying to proceed too quickly can result in a non-compliant pet and eventual failure of the program. Once clients have decided that they do not want to bother brushing their pet’s teeth (because they tried and it did not go well), it will be very difficult to convince them otherwise.

Young animals may suffer fractures of permanent teeth as a result of inappropriate chewing habits or accidental trauma. As with mature patients, crown fractures that cause pulp exposure, or near exposure (thin layer of dentin remaining over the pulp), require treatment. Treatment options are limited to extraction of the fractured tooth or endodontic treatment to save it. In a mature patient, endodontic treatment usually means full root canal treatment (removal of all of the pulp and filling of the pulp chamber with dental materials). In a young dog or cat, full root canal treatment is often not an option. When a permanent tooth erupts, the outside dimensions of the crown are established, but the dentin wall lining the crown and the root is very thin and the pulp chamber is very large. Until the tooth has fully erupted, the apex of the root is wide open. Once the tooth has erupted to its full length, the pulp produces dentin inside the tooth to create an apical delta and thicker root and crown walls (this post-eruptive dentin production continues as long as the pulp remains alive and healthy).

If an immature tooth is fractured, it is very desirable to keep the pulp alive so that the tooth can continue in its normal internal development. This is accomplished by partial vital pulpectomy and direct pulp capping [13,14]. The procedure removes only a small amount of pulp from the crown of the tooth and then seals the tooth to protect the remaining pulp and keep it vital. The prognosis for this procedure is greatly affected by the amount of time between injury and treatment. It is best if the tooth can be treated immediately, before the pulp becomes contaminated and inflamed. The younger the animal, the larger the pulp and the more forgiving it is, so in animals under a year of age a delay of 48, or even 72 hours, is often acceptable. Beyond that, the prognosis decays exponentially with the passage of time. There are reports of vital pulpectomies being successful in immature teeth that were treated as much as two weeks after the fracture, but these are likely the exception to the rule. Therefore, crown fractures in dogs and cats under a year of age (even up to eighteen months) should be considered emergencies and treatment sought without delay.

References


All rights reserved. This document is available on-line at www.ivis.org. Document No. A0708.0800 .