

# Oral Emergencies: Deciding What Can't Wait

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How often are there phone calls regarding “dentistry” emergencies? How often does a particular scenario sound like an emergency/urgent situation to you, where the owner on the other end of the phone call doesn't share your sense of urgency? Certain aspects of veterinary medicine are clear-cut. When considering oral emergencies they are not so clear-cut. Hopefully after this lecture you'll better be able to manage those phone calls and understand what is truly an emergency and what isn't.

## True emergencies

In veterinary dentistry there are very few true emergencies. True dentistry oriented emergencies would include: fractured teeth in young animals, jaw fractures, avulsed teeth and TMJ luxation. Even within that list, some of these are more urgent than others. It is the goal of the veterinarian to triage those emergent complaints and address them in a timely fashion. When triaging human injuries, they are distributed into the truly severe- these injuries constitute 5% of what enters the emergency room, but 50% of those cases end in death. Urgent injuries make up 10-15% of cases in human emergency rooms where normal vital parameters exist but intervention needs to happen quickly while nonurgent injuries constitute 80% of cases. Nonurgent injuries require intervention after a significant period of observation and evaluation.

### Jaw fracture

Jaw fractures are ultimately manifestations of broken bones. When broken bones are considered “open,” they are exposed to the outside world or into the mouth. Sufficient evidence is available in humans to suggest that the longer a jaw fracture is exposed to the oral environment, the more at-risk the fracture is to infection. Whenever a client calls about a jaw fracture it should ultimately be treated as an emergency because of the pain associated with the condition. At that point, whoever may be treating that jaw fracture may consider it more urgent depending on whether the fractured bones are open into the oral cavity. Typically, if the patient is stable for anesthesia, a practitioner will not want to wait more than 24-48 hours to fix a jaw fracture that is exposed to the mouth. When waiting for optimal time for stabilization, a loose fitting muzzle or tape muzzle can be applied to help reduce fracture fragments and resultant inflammation. The patient should be maintained on appropriate antibiotics and pain medications. Broad spectrum antibiotics capable of handling oral microflora (clindamycin, Clavamox) will be sufficient to reduce the likelihood of post surgical infections. It is the practitioner's preference whether to continue the course of antibiotics once the fracture fixation has been applied. Once starting those medications, a full course is usually recommended.

When evaluating oral trauma patients, fractures of the maxilla (midface) or mandible may result. Fractures involving the maxilla are likely to be associated with swelling of the muzzle, periorbital soft tissues, nasal bleeding and possibly malocclusion. The maxilla's structure in cross section is like a box- more than one fracture will be necessary for displacement and malocclusion of fracture fragments. Not all maxillary and midface injuries require fixation or treatment. In some cases these fracture fragments may be well reduced and 6-8 weeks of softened food may result in acceptable bony healing.

Fractures in the mandible tend to occur in the mandibular body- the area of the mandible that constitutes this includes the canine tooth to the third molar. In both dogs and humans this area may be somewhat an area of vulnerability. Remember that teeth are held in place by periodontal ligament which is made up of collagen. The size of the mandibular first molar tooth and the enormity of its roots contribute to this vulnerability. The root length-to-bone-height ratio in small dogs nears 1 because of the close approximation of the roots to the ventral cortex in these patients. Larger dogs have more structural bone in their mandible to anchor their teeth. Small dogs being predisposed to dental crowding and periodontal disease only increase their risks of pathologic fracture in this area of the mandible.

### Tooth fracture

Teeth develop and mature similar to how tree trunks grow. Trees grow by laying down rings of cambium, which results in the outside circumference getting larger. Teeth are similar but deposit mineralized material in completely the opposite direction. The newly erupted tooth is comprised of mostly soft tissue (pulp) internally. The large pulp chamber is lined with odontoblasts that lay down additional dentin as the tooth ages. This results in the internal pulp diameter (soft tissue) narrowing as additional dentin is laid down (hard tissue). No matter what a veterinarian (or veterinary dentist) does, a tooth will never be as strong as what Mother Nature intends. Performing a procedure designed to replace the pulpal contents with something foreign will still result in a tooth that is structurally weaker than a natural tooth.

Any time deciduous (primary) teeth are damaged, the correct treatment is always extraction. Permanent teeth on the other hand are worth keeping. If a permanent tooth, in a patient less than 18 months old is fractured, a treatment known as vital pulp therapy should be performed to create a new barrier against the outside world. The goal is to use specific materials that will resist infection/pain while maintain the health of the odontoblasts required for additional dentin to be deposited. Performing a root canal on a tooth in a patient younger than 18 months of age is challenging because files aren't wide enough to clean all of the canal walls simultaneously. Even if files were large enough, the remaining dentin may not be strong or durable enough to survive the entire life for the patient.

The take home message: fractured deciduous teeth should be extracted (sooner the better because of the approximation of the deciduous tooth root and the developing tooth bud). Fractured permanent teeth in dogs and cats younger than 18 months of age should be addressed quickly- this gives the patient the best chance of receiving a treatment that will enable them to maintain a comfortable, living tooth. The sooner the vital pulp therapy is performed, the higher the likelihood success. Vital pulp therapy performed during the first 48 hours stand the best chance for success. Success has been reported to be approximately 25% for fractured teeth exposed to the mouth for up to 2 weeks.

### **Tooth avulsion**

Avulsed teeth are described as teeth that are displaced within their socket, or teeth that have been displaced out of the mouth altogether. These are emergencies. If the client's intent is to keep those teeth, they ideally should alert you to the injury before it even happens! What we know from human literature is that teeth avulsed from the socket for more than 30 minutes begin to lose their capacity to be accepted once they are replaced into the alveolus. Obviously, the expense and work associated with replacing these teeth is sizable, so unless a patient is a show animal or working animal (police dog), resituating the teeth into the socket is probably not necessary. The option to salvage the tooth should always be given. For clients who do want to preserve the tooth, the recommendation should be to place the tooth in a "tooth-friendly" medium. Milk, Hank's Balanced Salt solution or saliva are all fluids with appropriate osmolarity to maintain the periodontal ligament cells on the surface of the tooth root in order to improve the chance for successful replacement. These cases invariably require specialty attention since the materials necessary to replace the tooth and situate it into the alveolus are expensive and technique sensitive. Furthermore, because the blood supply is severed from the socket, these teeth require root canal therapy within weeks of replacement into the socket

### **Not quite emergencies**

"Not quite emergencies" can encompass a wide variety of complaints and conditions. Ultimately, if the client feels their patient has an emergency, it should be triaged as such. No one wants to turn a client away from a perceived emergency that results in the pet suffering a critical condition.

Feline patients who are not eating are rarely primarily affected by oral disease. Although tooth resorption and stomatitis (LPGS) can present as quite painful, neither condition typically results in acute anorexia. Seeing these patients quickly can be important to properly assess them and to make sure there is no underlying severe condition. Seeing these patients also serve to keep the client's emotions in check.

Anyone who has ever fractured a tooth or known someone who has can attest to the intense pain associated with the injury. The nerves present in the pulp chamber and root canal system are directly exposed to the oral cavity and easily triggered to propagate nerve impulses to the spinal cord and brain. The most stoic of veterinary patients may mask the intense pain of pulp exposure. Owners of dogs or cats who have a pulp exposed fractured tooth, typically can be interviewed in a manner which elucidates that the fracture likely occurred due to a specific occurrence. The incident typically results in a change in food prehension, reluctance to play with toys, or increased time required for eating. These animals should be assessed so that the veterinarian can properly inventory the extent of the injuries and properly schedule the patient for further treatment. It is important to remember that traumatic injury resulting in pulp chamber exposure will always result in a dead pulp and subsequent tooth root abscessation. Pulp lacks the regenerative capacity to seal over with dentin. The pulp exposure is also where the acute pain and stimulation come from. The only exception to this phenomenon of progressive pulp disease and death is pulp exposure associated with tooth resorption. For an unknown reason, pulp exposure is a normal component of resorptive lesions and rarely continue to develop into periapical lesions.

As stated above, dogs and cats over 18 months of age typically have root canal diameters capable of being appropriately cleaned and shaped if root canal therapy is the client's intention. At this age, the pulp chamber has typically narrowed sufficiently for files to appropriately clean all the walls simultaneously; thus the greatest chance for appropriate cleaning and pulp chamber debridement can occur. Just because root canal therapy does not occur during off hours or the weekend, doesn't mean the patient's symptoms shouldn't be addressed. These patients should be minimally treated with pain medications +/- antibiotics until either root canal or extraction is performed.

Other non-emergencies include noticing discolored teeth or newly bleeding gums. Discolored teeth usually represent teeth that have suffered from pulpitis. Red blood cell lysis results in hemoglobin being released into dentinal tubules and, as it moves towards the intersection of enamel and dentin, the tooth begins to appear pink/purple. Our best understanding of this condition suggests that over 90% of these discolored teeth are nonvital and either root canal therapy or extraction is indicated. This condition, although believed to be painful, is not an emergency.

Bleeding gums is usually indicative of extremely inflamed gums (severe gingivitis). When severe enough, the gingivitis may result in bleeding with routine brushing, chewing food or playing with toys. More severe conditions exhibiting gingivitis that should be ruled out include coagulopathies (immune mediated or related to toxin ingestion-rodenticide) or the presence of an oral tumor that is being traumatized. If the bleeding is episodic or self-limiting, the patient does not need to be seen urgently, but the condition probably shouldn't be allowed to continue much longer without being seen by a veterinarian.

**Dealing with clients who think the non-emergency is an emergency**

Often clients may seem to either drastically overestimate or underestimate the pain they feel their pet is in. On one hand, the client is the one living with the pet on a daily basis and should be best at identifying concerning behaviors. On the other, we have been trained as medical professors to recognize life-threatening and painful conditions. The client is ultimately responsible for paying the bill and maintaining a good word of mouth reputation for the veterinary clinic. Therefore acknowledging and affirming the client's concerns are important. Minimally, a pet's change in eating habits, playing with toys or nonspecific display of oral pain would benefit from oral pain medications. It is always safe to triage a client's perception of an emergency and, at a minimum, manage the patient conservatively with appropriate medication. Encourage your practice to see these clients as a technician appointment so that a veterinarian can perform a physical exam away from the client if necessary. This may help to reduce the impact that dental emergencies may have on the routine of the practice.

Managing dentistry emergencies is a fine balance of listening to the client and properly understanding the nature of the situation. It will never be wrong to encourage that the animal be seen, but certain conditions like tooth avulsion or tooth fracture in young patients are conditions that may be time sensitive when considering successful treatment. Take clients' concerns seriously and encourage oral emergencies be seen by your practice to expedite treatment for the truly urgent, and keep comfortable the ones that aren't quite so urgent.

**Recommended reading**

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