

ORODENTAL EMERGENCIES

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In a general practice the majority of work involving the oral cavity tends to be treatment of slowly creeping periodontal disease with emergency presentations being less common. Situations which need immediate attention tend to involve, or lead to, dysfunction and pain. Identification of the pathology may be challenging in an awake/distressed animal therefore analgesics and radiographs can be invaluable.

Orodoental Trauma of the Hard Tissues

The most common emergency associated with the oral cavity is an insult that results in fractures with pain, hemorrhage, loss of function, and risk of infection. High-energy impacts are the obvious villains, but pathologic conditions, injury from another animal, and self-generated trauma can all result in fractures of the facial bones and/or the teeth. Facial asymmetry, deviation of the jaws, epistaxis, visible soft tissue tearing, malocclusion and visible dental fractures are all possible presentations.

Initial stabilization of the patient should include analgesics and antibiotics as almost all bony fractures involving the oral cavity are compound and therefore at risk of infection from pathogens in the oral cavity. Immobilization of the fractured area to prevent further trauma, such as with a tape muzzle, should be incorporated as indicated. Unsedated skull xrays can give an initial overview of the possible damage but intraoral radiographs are necessary to accurately assess orodental fractures. Sedation and/or anesthesia may be contraindicated until the initial head/brain/shock trauma is controlled. Nutritional support may be needed.

The goal of any treatment is to return function without pain, not necessarily achieve a "normal" or "perfect" bite. Ideally dental structures should not be harmed, but teeth can always be extracted later once trauma has healed (assuming the presence of the teeth won't interfere with healing). A canine tooth that is acting as a fulcrum on a fracture site, periodontally diseased teeth that cause pathologic fracture or that are contributing high bacterial load to the oral cavity, or any tooth that is making traumatic tissue contact should be dealt with at the time of initial treatment.

Fracture stabilization can be achieved in multiple ways. The most likely to be successful is that with which you are most familiar. Non-invasive techniques involve muzzles, intraoral acrylic splints and interdental wiring. More invasive stabilization can involve interfragmentary wiring, screws, wires, plates or a Kirschner apparatus. These latter techniques are most useful away from the dentate areas of the dental arcades and in larger patients. The only wrong way to treat a mandibular fracture is to not stabilize it as (micro) movement will prevent bony healing.

Orodoental Trauma of the Soft Tissues

Trauma that damages the orodental soft tissues may involve the tongue, pharynx, soft palate, or oral and/or buccal mucosa. Lacerations, degloving injuries, foreign bodies, topical irritants, electrical burns and impalement are possible sources of harm. Hemostasis should be achieved, and respiratory function should be verified. Distant sites which may also have been affected should be monitored such as the lungs and liver. Treatment is aimed at decontamination, debridement and tissue adaptation to facilitate first intention healing. Nutritional support, possibly through the placement of a feeding tube may be needed. Analgesia and antibiotics are indicated.

Tooth Fracture, Avulsion or Intrusion

All fractured teeth with pulp exposure will be painful and will allow bacterial ingress leading to infection, and without treatment, loss of the tooth. Any tooth with pulp exposure requires endodontic treatment or extraction. Allowing a tooth to go untreated is inappropriate. In a young animal a pulp capping procedure will reseal the tooth and allow it to stay vital and continue to develop. In an older animal a root canal will reseal the tooth from bacterial infection. An untreated tooth will manifest chronic inflammation and eventually infection. The animal may present acutely febrile and painful with facial swelling. The facial swelling/tooth root abscess must be distinguished from an "insect bite". A draining tract at the mucogingival line is almost always secondary to a

non-vital tooth. A radiodense object inserted into the parulis will track to the tooth of origin for a radiographic diagnosis.

A force that overwhelms the attachment apparatus of the tooth will cause displacement of the tooth from its normal position in the socket. Displacement can involve movement within the socket but with some persisting attachment of supporting tissues, (luxation) or a complete loss of the tooth from the socket (avulsion). Intrusion involves displacement of the tooth through the apex of the socket. Intrusion occurs most commonly to the maxillary canine teeth with the tooth coming to rest in the nasal passages. Maintaining/restoring the tooth to function can be achieved if the tooth is kept moist, (tooth transport media, saliva, milk) quickly returned to its correct position within the socket and stabilized until the supporting apparatus can heal. Displacement causes tearing away of the tooth's blood supply which means endodontic therapy is also necessary.

Dysfunction

An inability to close the mouth is usually noticed sooner than an inability to open the mouth. An inability to close the mouth may occur from trigeminal nerve paralysis, in which case the mouth is passively hanging open but can be easily shut manually. The affected animal may have a recent history of carrying a heavy object or of having caught its teeth in an unyielding object. The animal has normal sensation to the mandible and does not appear uncomfortable. Current recommended therapy is "tincture of time" to allow the facial nerve to recover. Some advocate antiinflammatories to speed this process. Assisted feeding is necessary but patients seem to cope with larger pieces of food or meatballs better than soft foods.

Interference between the dorsal coronoid process and the zygomatic arch will also hinder closure of the mouth. TMJ instability that allows lateral movement of the joint is needed which allows the dorsal coronoid process to interfere with the zygomatic arch. An onset is often preceded by a large yawn. Once the bones are "locked" muscle spasm and high muscle tone secondary to patient anxiety tend to keep the interlock in place. The animals seem to be painful and are often very anxious. At presentation a hard, unilateral bulging adjacent to one of the zygomas can be seen. Displacement can usually be verified with a DV radiograph. Some animals can self-correct but deep sedation or anesthesia may be necessary to allow the mouth to be opened to its fullest extent, then the coronoid process can be pushed medially and "unhooked" from the zygomatic with medially directed pressure maintained as the mouth is slowly closed. Anti-inflammatories and physiotherapy will help resolve post treatment discomfort. In recurring cases removal of the dorsal coronoid process and the mid-zygomatic arch will prevent recurrence.

Trauma that results in fractures, dislocation of the TMJ, or displacement of a tooth can also inhibit mouth closure by tooth-on-tooth interference or tooth-on-soft tissue contact. Treatment is correction of the underlying cause (see above).

An acute inability to open the mouth can be secondary to masticatory muscle myositis, retrobulbar cellulitis/abscess, or tetanus, while a more gradual progression can be from progressive scarring of the muscles, usually secondary to chronic inflammation and/or trauma.

Masticatory muscle myositis may present acutely with swollen temporal, and occasionally masseter, muscles, pain, and fever. Initial treatment is with immunosuppressive doses of steroids. Confirmation is via muscle biopsy. Chronic cases with muscle wasting and scarring can achieve improved range of motion by stacking tongue depressors across the teeth and stretching the scar tissue while the animal is under anesthesia. Cold laser is reported to reduce post-procedure pain and rescarring.

Retrobulbar cellulitis/abscess may produce proptosis of the affected eye. The pet can open its mouth but resists due to the acute pain such a movement will cause. Establishing drainage, and the use of antiinflammatories and antibiotics is often sufficient to resolve the problem. Occasionally a foreign body will need to be removed in order to achieve permanent resolution.

Tetanus, from infection with *Clostridium tetani* bacteria, is very rare in cats, rare in dogs, and more common in guinea pigs and horses. Progression of symptoms, including drooling/inability to swallow, risus sardonicus,

prolapse of the third eyelid, muscle spasms and respiratory paralysis, can be very rapid and treatment may involve antibiotics, antiserum, nursing and ventilatory support, and muscle relaxants.

An inability and/or unwillingness to swallow may occur secondary to retropharyngeal abscess, myasthenia gravis, severe esophageal pain/esophagitis, lingual dysfunction or viral infection (rabies).

An inability to swallow may be secondary to physical inhibition and pain from a retropharyngeal abscess. History may play a role in this diagnosis. Pharyngeal radiographs may reveal a cause for infection and focus (surgical) treatment to a specific area. Once drainage is established the wound should be cultured and appropriate antibiotics used.

Myasthenia gravis affects deglutition. MG is diagnosed using blood tests to reveal the presence of acetylcholine-receptor or muscle-specific tyrosine kinase-seropositive (MuSK) antibodies. The Tensilon response test, and occasionally EEGs may also be used. Immunosuppressive treatment is aimed at reducing MuSK antibody production, and the use of cholinesterase inhibitors such as pyridostigmine will improve neural function.

Esophagitis is painful and cause an unwillingness to swallow. Esophagitis can occur secondary to regurgitation, improperly administered medication, and foreign body ingestion/trauma. Incidence of subclinical regurgitation during anesthesia has been estimated at 30% of all patients, and this percentage is even higher in brachycephalics. Flushing of the esophagus to remove gastric fluids, administration of protectants, and feeding as soon as appropriate will help mitigate irritation and prevent stricture formation. Endoscopy and/or biopsy will reveal esophageal injuries.

Lingual dysfunction will affect the patient's ability to form a food ball and deliver it to the back of the mouth for swallowing. Sublingual or intralingual tumours, trauma, and string foreign bodies should all be ruled out.

Neural dysfunction secondary to infection with the rhabdovirus responsible for rabies affects the pharyngeal function. The drooling associated with rabies is secondary to an inability to swallow saliva, not an overproduction.

Swellings

Swellings may involve any part of the face but the animal is usually presented as an emergency if there is pain, dysfunction, or respiratory compromise.

Chronically infected teeth may suddenly progress to acute onset of bony distortion, fluid and/or purulent accumulation, pain and fever. The teeth most likely to suddenly manifest this way are the maxillary canine and fourth premolar teeth. These swellings are often erroneously attributed to "insect bites/stings". Mandibular teeth tend to produce less swelling due to the density of the bone, but careful investigation may reveal draining tracts in the lip folds or at the mucogingival line, and rarely from the ventral chin. Dental radiographs are necessary to confirm the involved tooth. Extraction or endodontic treatment is necessary. If there will be a delay in treatment the animal should be treated with antibiotics and analgesics but the owner must be made to realize that the temporary improvement these medications will provide is only temporary!

Sialoceles tend to be slow to develop, but occasionally acute respiratory compromise can develop if the pharyngeal swelling becomes severe. Aspirates of the swelling will provide samples to determine if the fluid is infected or not. Xrays may help reveal the extent of the fluid accumulation, and if a sialogram can be achieved the source gland will be confirmed. If the duct is not responsive to treatment with return of patency then drainage may provide temporary relief but marsupialization and/or gland removal is needed to achieve permanent resolution.

Sialadenitis, unlike sialadenosis, can be painful with sudden development of glandular swelling. Aspirates may be sufficient to distinguish "osis" from "itis" but biopsy will be needed to diagnose the problem. Antiinflammatory treatment may be useful but phenobarbital may be needed.

Lymphatic enlargement alone is rarely an emergency but one exception might be puppies affected with juvenile cellulitis. Diagnosis is based on negative skin scrapings, negative aspirates of the enlarged lymph nodes, poor response to antibiotics, and, at least initially, index of suspicion. Despite the lymphadenopathy and (often) accompanying fever the treatment is immunosuppressive doses of steroids.

Bee or wasp stings present with either focal facial swelling with dependent edema, or a more systemic reaction that can rapidly become life threatening. Envenomization lasts up to 48 hours and treatment requires antihistamines, corticosteroids, oxygen therapy and shock support if severe.

True emergency situations may occur less frequently than in other disciplines, but orodental emergencies must be properly assessed so that correct treatment can be instituted. Return to function needs to be timely for optimal patient recovery.