SMALL MOUTHS, BIG HOLES:
Multifocal Oral Tumors.

Multifocal oral tumors are rare. In order to make this observation, it is important to examine the entire oral cavity even when there is a predominant large tumor lesion. Multifocal malignant oral tumors have a poor prognosis and are usually not amenable to surgery (Fig. 1). However, multifocal benign oral tumors are candidates for surgical therapy and have an excellent prognosis if tumor-free margins can be obtained. The multifocal nature of a benign lesion simply means that multiple resective procedures will be required in the patient, at the same time, to provide a potential cure (Fig. 2).

As in all oral oncology surgery cases, preoperative planning is critical in order to increase the incidence of complete tumor removal. Guidelines include removing at least 1-cm of grossly normal tissue around each lesion in order to maximize tumor-free margins. Margins are also dictated by changes on high-detail intraoral dental radiographs or MR/CT imaging. Again, the goal is 1-cm of radiographically normal tissue architecture around the entire lesion.

It is important to convey to owners that relatively aggressive local surgery does require the removal of teeth and a section of the maxilla and/or mandible to ensure complete resection of the lesion (Fig. 3). The amount of tissue that must be removed is compounded by multifocal lesions. The good news is that dogs and cats do very well even when there are multiple bone and tooth deficits in the mouth (Figs. 4 and 5).

Thanks to client education by you, our referring veterinarians, owners understand that early surgical therapy is important. Everyone can understand that tumors, even when benign, do not get smaller with time. Waiting and watching only increases the number of teeth and amount of jaw bone that requires removal. Owners want to limit the amount of tissue removed in order to obtain as much postoperative function as possible. They also want their pet to have only one surgical procedure. This is why owners almost always agree to an aggressive local surgery with adequate margins for their pet….the earlier in the disease process, the better!

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**Fig. 1** Inoperable oral multifocal (arrows) malignant melanoma in a dog.

**Fig. 2** Bilateral salivary gland before (A) and after (B) surgery.

**Fig. 3** Multifocal plasmacytoma affecting the mandible (A) and maxilla (B) in a dog.

**Fig. 4** Laser flap incisions (A) for resection (B) of the maxillary plasmacytoma with at least 1-cm margins. The flap is closed with a buccal mucoperiosteal flap (C).

**Fig. 5** Ventral laser flap incisions (A) for resection (B) of the mandibular plasmacytoma with at least 1-cm margins. The flap is closed with a buccal mucoperiosteal flap (C) and cheiloplasty.
ENDONTIC SECTIONS:
When Root Canal Treatment Is Not Possible.

Standard root canal procedures are about 90-95% successful under the right circumstances and are usually recommended to save the strategic teeth, which include the canine teeth as well as the maxillary fourth premolar and mandibular first molar teeth. The most common reason for performing a root canal procedure is fractured teeth, but it would also be recommended for discolored or excessively worn teeth. These problems can lead to periodontal alveolus and root resorption (Fig. 3), and unusual endodontic problems may inhibit our ability to perform a root canal procedure (Fig. 4).

However, in some cases, the root canal procedure may not be recommended because the nature of the problem or disease does not favor a good outcome. Endodontic evaluations are commonly performed and patients will exhibit little or no clinical signs as a result of the missing teeth. Problems that may be a reason to recommend extraction over root canal treatment include teeth that are fractured where very little crown is present. Interpreting radiographs in a young dog can be very difficult with these overlapping structures. Further investigation of the problem (Fig. 1). Dental radiographs can provide much information in these cases but can be hard to interpret in young animals. If the permanent teeth have not yet erupted and deciduous teeth are still present, there will be many overlapping structures (Fig. 2).

With careful evaluation and our experience in these cases, we can almost always determine whether there is an eruption problem. Sometimes, the teeth are simply missing. In other cases, the tooth has encountered some obstruction to the normal eruption path and has become impacted (Figs. 3 and 4). Impaction is generally classified as a soft tissue impaction or a hard tissue impaction. If the impacted tooth is covered with firm gingival tissue, it is a soft tissue impaction. If the tooth is covered in bone, it is a hard tissue impaction. Generally, soft tissue impactions are more likely to be successfully treated by simply removing the obstruction (termed operculectomy) and allowing the tooth to erupt normally (Fig. 5). In any of these cases, diagnosis and treatment should be initiated as soon as a problem is noted, because the longer the tooth remains impacted the less likely it will erupt normally with treatment.

DEVELOPMENTAL PROBLEMS: What Is Normal?

Eruption of teeth in the dog and cat generally follows set rules. The deciduous teeth erupt between 12-16 weeks in the dog and 2-6 weeks in the cat. The permanent teeth erupt from 3-7 months in the dog and from 3-6 months in the cat. Certain small breed dogs can take a little longer to erupt their permanent teeth, and are more prone to having retained deciduous teeth. The general rule is that the same deciduous and permanent teeth should not be in the mouth at the same time. So what do you do if you have a puppy or kitten that seems to have missing teeth? First you should reference normal eruption times and confirm the pet’s actual age. (Call us if you need help with this!) If it seems that there should be teeth present and they are not, it is time to further investigate the problem (Fig. 1). Dental radiographs can provide much information in these cases but can be hard to interpret in young animals. If the permanent teeth have not yet erupted and deciduous teeth are still present, there will be many overlapping structures (Fig. 2).

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CANAINE ORAL INFLAMMATION: Putting The Fire Out!

Dogs can develop a very frustrating type of stomatitis called chronic ulcerative parodontal stomatitis, or the acronym CUPS. The hallmark symptoms of this disease include painful ulcers on the inside of the mouth, thick white plaque, severe halitosis, and signs of periodontal disease (Fig. 1). Radiographically, there can be signs of bone loss consistent with severe periodontal disease, especially as the disease progresses (Fig. 2). Patients tend to appear on the inside of the mouth where the lips touch the teeth. Common areas of ulceration are over the canine teeth and over the caudal dentition (Fig.3). While the cause of this disease is still unknown, it may be an immune system dysfunction similar to stomatitis.

We explain to owners that their pet seems to have an “allergy” to normal plaque and bacteria in their mouth, and their pet’s immune system is overreacting to what it sees as foreign invaders. To make matters worse, the inflammation and tissue destruction encourage the growth of pathogenic opportunistic bacteria that will cause the disease to progress and worsen. Often these pets are very painful and very reluctant to have any manipulation of their head or mouth. Antibiotic treatment may initially allow for improvement, but once they are discontinued the disease returns with a vengeance. Immune modulating therapies such as steroids can also provide temporary relief of symptoms, but the pet would need to be on these drugs long-term, which of course can cause other unwanted side effects and shortening of the life span. Over time the drugs tend to lose their effectiveness as well. Similar to stomatitis in cats, the ulceration of the teeth can potentially be a cure for this disease (Fig. 4). While it seems dramatic, the basic principle is plaque removal. Without teeth, there will be no plaque. Plaque control is otherwise next to impossible since, even after brushing or a professional teeth cleaning procedure, plaque returns within hours. Home care is also next to impossible in these pets since they are so painful. The great news is that they are much happier with no teeth than with a mouthful of painful ulcers and diseased teeth and most patients do not require any additional medical treatment. In some cases if the inflammation is localized to one area, extraction of those affected teeth may provide relief. We caution owners that sometimes the inflammation will shift to other normal areas of the mouth, requiring extraction of the remaining teeth.

When we see these pets back for recheck examination, the owners are very thankful that their pet has a new lease on life, and that they can finally stand to be in the same room with their breath!