

Chapter 4: Treatment Planning In Veterinary Dentistry

Treatment planning is the process of gathering all information pertinent to a case, analyzing it carefully and then devising a plan of action that has the greatest chance of long-term success. In a busy general practice, there is a temptation to latch on to the obvious diagnosis and act quickly on it, then get on with the next case. In veterinary dentistry, as in all branches of veterinary medicine, this approach can lead to undesirable results for the patient, the client and the veterinarian.

Orientation

Many dental procedures require considerable commitment from the owner and co-operation from the patient if there is to be a reasonable chance of long-term success. Therefore, the first step in treatment planning is to gather information about the owner and the patient.

Questions to be answered should include, but are not limited to:

- What is the owner's relationship with the patient? Is the animal a well-loved family member or a stray that comes by occasionally for a handout?
- What is the owner's attitude toward dental treatment in general? An owner who takes good care of their own teeth is more likely to take good care of their pet's. This question may be best answered by direct observation rather than by asking the client.
- Does the owner have anxiety about the dental treatment or the anesthetic involved? Most clients make their decision more on an emotional than intellectual level. If they are fearful of any part of the plan you are trying to formulate, this fear will have to be dealt with.
- What does the owner perceive as the problem? It may not be the most significant problem for the patient, but it is the one the owner is most aware of.
- What are the owner's financial capabilities? Can they commit to all stages of a long-term plan or do they need a more economical plan?
- What are the owner's physical capabilities regarding home-care and follow-up? Daily brushing would be difficult for an owner with

arthritic hands or one who is away from home on business much of the time.

- Is the patient likely to be co-operative with home-care? Some dogs and cats simply will not allow brushing. Developing a plan that is dependent on scrupulous oral hygiene in such an animal is doomed to disappoint all concerned.
- Does the pet have a lifestyle that will make one form of treatment preferable to others? A fence chewing dog or police services dog is likely to need a gold alloy crown to protect an endodontically treated canine tooth from further damage.
- Does the patient have any medical or anatomical considerations that make one form of treatment preferable to others? Diabetic animals are more prone to periodontal disease and heal slower and so are poor candidates for extensive periodontal surgery.

You must consider the Patient, the Client, the Problem and Your Abilities in Developing a Treatment Plan

After the veterinarian has gathered and analyzed the history and sized up the situation he or she should convey these findings and observations to the client. This gets the owner involved in the planning process. Since we rely on the owner for all of the after-care and to carry the financial burden, we must make them part of the planning team. Also, restating the history and observations allows the owner to make any corrections and fill in any gaps in the overall picture.

Now that the owner and veterinarian understand the problem and each other, they can work together to determine the goal of treatment. This goal may be as simple as ridding a dog of halitosis or as complex as restoring function to the teeth of a working dog with multiple fractures and advanced periodontal disease.

After the goal has been set, the treatment options available to achieve that goal can be discussed. You should outline *all of the options* thoroughly, taking time to explain the advantages and disadvantages of each. You must make the

owner aware of their responsibility in the treatment plan, both in the short term and the long term. A well-informed client can then select the option with which they are most comfortable. It may not be the theoretically best option, but if it is the one the owner will commit to, it is the best option for that pet. Many owners will still have difficulty making a decision, and you can guide them by saying what you would do if it were your animal. Ultimately though, it is the client who must decide what will be done.

The next step is an honest evaluation of your own ability to do what is needed to achieve the desired goal. Do you have the skill, training and equipment to do the job properly? Have you done this procedure before with success? If not, you must offer to refer the case to someone qualified to do the job properly. It is our responsibility to offer the best care possible for our patients, and for many dental conditions, this may necessitate referral.

Example

A conservative, single stage treatment is preferable to starting a multiple stage procedure only to have the client withdraw consent part way through. An example of this can be found in a case report of an avulsed right maxillary canine tooth as reported in the *Journal of Veterinary Dentistry* (Dec, 1992). The surgeon, wishing to save the tooth, reimplanted it. The surgeon reported that the tooth stabilized well by eight weeks and that there was no radiographic evidence of endodontic disease. Due to financial concerns, the owners declined endodontic treatment on the tooth.

There were some technical concerns with the case as reported and these were pointed out by an astute reader in a subsequent issue of the journal. The greatest concern arose from not obtaining consent for endodontic therapy to remove the devitalized pulp, which is an essential part of tooth reimplantation. If the owners were not able to commit to all stages of treatment, then the tooth should not have been reimplanted.

It is inappropriate to initiate dental treatment requiring follow-up and home care in a situation where there is not a reasonable chance of long-term compliance. The client must be made fully aware of the consequences of non-compliance prior to starting. Heroic treatment without co-operation post-operatively only delays the inevitable failure of the procedure. In the mean time, the animal will likely continue to suffer

from dental disease while the owner suffers the financial burden of paying for doomed treatment and the practitioner suffers from bad publicity as the owners spread the word.

The Database

There is a dog/cat/rabbit/whatever attached to the mouth and oral disease can and will result in systemic disease. There are very few oral conditions, if any, with a high acute mortality rate, yet a general anesthetic administered carelessly to a cat with undiagnosed hypertrophic cardiomyopathy can cause death.

Virtually all dental procedures require a general anesthetic. Therefore, virtually all dental patients require pre-anesthetic work-up. In all cases, this should include recording the signalment, a history review and a thorough general physical examination. It should also include a minimum database of laboratory work. For young, systemically healthy patients, this might be limited to a CBC, total serum protein and urine chemistry. For geriatric patients or patients with long standing oral disease, full biochemical profiles, complete blood counts, urinalysis, thoracic radiography and electrocardiography should be available. The reader is directed to review anesthesia texts on the subject of preanesthetic evaluation.

Diagnosis and Prognosis

Most chapters on treatment planning in human dental texts start with extensive discussions on diagnosis and prognosis. Only by knowing exactly what is wrong and our chances of correcting the problem can we develop a logical approach to treatment. It would be a glaring error to do root canal therapy on a tooth that had no attached gingiva. We need to thoroughly assess all oral disease, formulate a differential diagnosis list, then rule-out those that do not fit with the data in order to arrive at an accurate diagnosis.

It is important to assess the relative chance of success for each treatment option and communicate this to the owner. Bear in mind that the chances of success for a procedure often depend on the operator's skill and training and so the chances may be tipped in favor of success by referring the case to someone with more experience.

If the prognosis for a particular option is guarded and the cost is high, the owner may rationally choose a more economical plan with a more favorable prognosis. An example would be

choosing crown reduction and pulp capping versus staged orthodontic movement in the treatment of base narrow canines in a dog with mandibular brachygnathism.

Much has been written on the value of and technique for oral radiology. Radiology is not only absolutely necessary pre-operatively for accurate assessment of the problem but also is often the best way to monitor the results of your efforts. Good quality dental radiographs must be a part of the diagnostic process.

Intra-Oral Dental Radiographs Must be part of the Database. They are NOT an Optional Extra.

The Effective Treatment Plan

In the human literature, it is widely suggested that treatment planning be staged and done at several appointments. The first appointment might be used to gather history, evaluate the patient's desires, attitudes and financial status and to do a survey of oral lesions. The next appointment would involve in-depth assessment of each tooth, judging its periodontal, endodontic, orthodontic and anatomic status. At this time, the bones, joints and other cranial structures are assessed. With this information, the general dentist then formulates a plan, tailored to the individual, and determines which problem should be addressed first, second and so on. Often there will be consultation with, or referral to, several specialists along the way.

Few animals present with one isolated and uncomplicated dental problem. The vast majority will have several teeth affected by a variety of diseases. A single tooth may have a fracture involving the pulp and extending below the level of the alveolar crest. Treating such a tooth requires attention to periodontal, endodontic and restorative concerns.

Many patients will present with teeth that are definitely treatable, others that are definitely not and some that are in between.

To determine if a tooth is potentially salvageable there are a number of factors to consider.

- What is the nature and extent of disease?
- What is the duration of disease? In periodontal disease, rapid onset carries a poorer prognosis, whereas in endodontics, an

acute tooth fracture carries a more favorable prognosis than a long-standing one.

- What are the causative factors? Are they purely local or are there systemic factors that may be uncontrollable such as FIV infection in a cat?
- How old is the patient? If the dog is thirteen, you only need to manage the tooth for a few more years, but if the dog is only two, then you may need to manage the problem for fifteen years.
- To what degree are the roots and furcations involved?
- Are there occlusal factors to consider? Overcrowding and rotation of teeth make management of periodontal disease more difficult.

When deciding whether to treat or extract a 'border-line' tooth there are several other factors to consider:

- Generally, treatment takes longer than extraction and so it costs more and increases anesthetic risk.
- Often, appropriate treatment is more technically challenging than extraction.
- Often treatment to save a tooth includes follow-up assessment and maintenance therapy but if the tooth is extracted, the case is closed.

You must therefore answer the following questions:

- Is the patient an appropriate anesthetic risk for prolonged or staged treatment?
- Is the tooth strategically important enough to justify the investment in time, effort and money? Visualize what the mouth would be like without the tooth, remembering that loss of a tooth leads to resorption of the supporting alveolar bone.
- Is the owner aware of and willing to accept the increased cost of treatment?
- Will the owners and patient co-operate with aftercare and rechecks?
- Do you have the equipment and training to treat the tooth appropriately?

If the answer to any of these questions is 'no', then extraction or referral may be the most prudent option.

In veterinary dentistry, we are faced with the need for chemical restraint for accurate assessment and treatment of the oral cavity. This means we feel compelled, either by financial or anesthetic concerns, to complete our assessment, develop a treatment plan and provide definitive treatment, all at one sitting. In some cases, it is quite possible to do all that is needed in one visit, but other procedures may require staged treatment. Though this may mean multiple anesthetics, the long-term benefits of accurate diagnosis and unhurried treatment planning may justify this approach. It is a self-fulfilling prophecy to say the owners will not consent to staged treatment. Certainly, they will not request it if it is not offered, but if the rationale is explained and the benefits outlined, many clients will consent. Many would rather pay a bit more for proper treatment than to cut corners and risk treatment failure.

- Expect the Unexpected.
- Look for Hidden Problems.
- Be Prepared to Change the Plan in Light of New Findings

No matter how carefully one assesses a dental patient during the planning stages, it is common to find unexpected problems once the patient is under general anesthesia.

In my practice, I often do not see an animal until it is presented to me for treatment of a specific dental condition. Usually, the problem presented is an obvious one, easily detected in the animal while it is awake. I always try to do a thorough oral examination to find other problems before admitting the animal. This allows me to discuss these incidental findings with the owner before they leave the hospital.

Once the animal is anaesthetized and I am able to crawl into the mouth with my headlight on and my explorer in hand, I almost always find at least one problem that is a complete surprise. Sometimes it is an early caries (cavity) on the occlusal fossa of a maxillary first molar, sometimes it is a chip fracture on the lingual or palatal aspect of a tooth that has exposed the pulp tissue, sometimes it is a deep periodontal pocket lingual to a maxillary canine...

I have found these surprises in all ages and types of animals.

When I find these extra problems, I try to contact the owner to explain the findings and treatment options and to obtain authorization to proceed. Sometimes, it is not possible to contact the client at the time. In anticipation of this, I like to have a pre-operative interview with the client. This allows me to get a sense of how they would want me to react in a given situation. I also ensure that we have a contact number and let the owner know when the call might come, so that they can make sure they are available to talk if I call with new findings. Today, most clients have a cellular phone, so if they are not able to be at home or at their desks waiting for your call, they should still be reachable.

I am passing this on for a couple of reasons. One is that I want you to be thorough any time you get a chance to get into the mouth. Look for the unexpected and check everywhere. If you go to the dentist with two sore teeth but he/she fixes one and leaves the other untreated, are you 50% satisfied with the service? I think not. You still have one sore tooth and are completely miserable. If a pet comes in with an obvious dental problem and you treat it without looking further, you may send the animal home with a mouth full of less obvious problems. If you do, do not expect the owners to report much improvement at the two week recheck.

Finding extra problems at surgery does not mean you have to deal with them then. If you do not have the time, energy, equipment, training, inclination or authorization to treat the surprises, chart them thoroughly and recover the animal. Then at discharge, explain your findings to the owner, discuss the options and decide on a treatment plan.

Summary

Treatment planning may be as simple as deciding to extract a retained deciduous tooth. It might involve a complex series of events including periodontics, endodontics, orthodontics, restorative and prosthodontic work and oral surgery. Whatever the conditions call for in the way of a treatment plan, we are encouraged to keep the plan as simple as possible. We are reminded that providing proper dental care is complicated enough without introducing unnecessary problems with excessively complicated plans.

An effective treatment plan will deal with all the known problems and their etiologic factors while considering the variables relating to the client and the patient. Take the time to formulate your plan, review it with the owner, making adjustments as needed and then review it once more to ensure that it is the right plan for the case.

Remember the carpenter's law
Measure Twice, Cut Once.

Chapter 5: The Role Of The Veterinary Technician In The Delivery Of Veterinary Dental Care.

In this section, I am addressing the veterinary technician directly, but I would encourage veterinarians to read this section as well.

As with all areas of veterinary medicine, there are limitations, imposed by law, on what procedures a technician is allowed to perform, though there may be some differences between jurisdictions. In most places, invasive dental procedures such as extractions and periodontal surgery are to be performed by a licensed veterinarian. Similarly, making a diagnosis and prescribing medications and treatment are the responsibility of the attending clinician.

With these limitations in mind, let us examine some of the areas where your skills and training can be of great value to your patients and to your practice. We will look at a hypothetical oral hygiene procedure from start to finish and outline those tasks for which you can be responsible.

Assume a pet has been examined at vaccine time and the veterinarian has recommended that a dental cleaning be scheduled. Do not assume that the doctor had the time to do a complete oral examination and discuss the procedure thoroughly with the owner. There may have been many other issues to discuss during that fifteen-minute appointment.

Some time prior to the animal's arrival (a few days before perhaps), review the medical record for any notations that might impact on the treatment plan and discuss them with the doctor. There may be a note about PU/PD that suggests the need for some pre-operative blood work and urinalysis. There may be a note about an antibiotic reaction in the past that should be flagged prior to starting pre-operative antibiotics. There may be a request that the next time the animal is under anesthetic, a cyst be removed or hip radiographs taken. There may be a note about mitral valve insufficiency, which would suggest the need for antibiotic treatment starting 48 hours pre-operatively. Whatever it may be, reviewing the records helps to avoid problems and to ensure maximum benefit at minimum risk.

Review the previous dental records, if any, to see what areas were of concern in the past. There may have been a tooth with a 4-millimeter deep periodontal pocket that will need careful

reassessment to see if prior treatments and home-care have been effective in controlling the situation. There may have been a chipped tooth that requires radiographic follow-up to assess the status of the pulp.

The Pre-Admission Interview is Crucial to Understanding your Clients Needs

By the time the animal is presented for admission, all pre-operative diagnostics have been done, the results interpreted and the doctor has given approval to proceed. Before letting the client leave the building, you should spend a few minutes with them outlining the planned treatment. You should explain the need for general anesthesia in order to do the procedure properly. You should outline what is involved in doing a thorough oral hygiene procedure. Explain that during your more detailed examination, with the pet under anesthesia, you may well find unexpected problems. Try to get a sense of how the owner would like you to proceed in the event of a surprise (extraction, try to treat it or referral to a specialist). Try to get some idea of the level of commitment that the owner is willing to make. This commitment may be financial (how much treatment are they willing to pay for) or in respect to home-care (will they brush the teeth daily to control plaque). Finally, get a signature of consent to carry out the proposed treatment and a phone number where the client can be contacted intra-operatively, should you find it necessary to alter the treatment plan for any reason.

In some instances, owners may be in a hurry and may wish to just drop the pet off and leave. These are not shirts being dropped off for a wash and light starch. Every effort should be made to ensure adequate communications between client and clinic pre-operatively.

Prior to anesthetizing a patient, you should do another, careful examination of the pet. Assess skull type, as it will relate to the teeth. Brachycephalics (boxer, Lhasa Apsos...) often have severe crowding of maxillary teeth leading to periodontal disease as well as malocclusions, which can cause both soft tissue and dental trauma. Look for any facial swellings or

asymmetry and any nasal or ocular discharges as these may be due to a tooth root abscess or a tumor. Any such findings should be brought to the attention of the doctor involved in the case for further evaluation before proceeding with the anesthetic.

**Careful Review of the Patient History
and the Treatment Plan will help
Avoid Nasty Surprises**

Do as thorough an oral examination as possible to review what sort of case it is going to be (simple scale & polish or whole-mouth extraction). This helps you ensure that you have all necessary equipment and materials ready BEFORE you start and that you have enough time scheduled for the case. Once you are confident that everything is ready for the patient, you can proceed with the induction of general anesthesia.

With the animal at an appropriate plane of anesthesia, monitors in place and everything stable, you can start treatment. The specifics of treatment are covered in more detail later on. The basic steps to be followed are:

- antibacterial oral rinse,
- gross coronal scaling,
- careful evaluation of each tooth including exploration and periodontal probing,
- charting of findings, making note of any abnormalities which require further investigation (radiographs usually) or treatment,
- fine coronal and sulcar scaling.

•At this stage, the veterinarian should be called in to review the case. All areas of concern should be pointed out for evaluation. It is the veterinarian who is responsible for making the diagnosis and deciding on the treatment. If there are any surgical procedures, such as root planing or extractions, the veterinarian should do them at this point. If the veterinarian agrees that radiographs are indicated, the technician can expose and develop the films and screen them to ensure that they are of diagnostic quality for the veterinarian.

- Once all surgical procedures have been completed, the technician can step in to finish the procedure with a polishing and sulcar lavage.

After the procedure is complete and the animal is in recovery, the veterinary dental technician must clean the instruments and treatment area in preparation for the next case. There is more discussion on infection control and equipment maintenance elsewhere in this book. Also, the technician should help to devise and implement policies regarding patient and operator safety before, during and after the dental procedure.

At discharge time, the veterinarian may wish to speak with the owners regarding the treatment, particularly if it has been extensive. In some cases, however, the veterinary dental technician can discharge the patient. At this time, the dental chart and radiographs should be reviewed with the owner to outline the findings and what treatments were done. Immediate and long-term home-care instructions should be discussed and a written copy sent home. The technician can be a valuable source of information to the client and should work at establishing a rapport that will encourage the client to ask questions and seek the proper advice when problems arise. Try to reinforce the idea that veterinarian, technician and owner are all members of the same team working together to ensure the well being of the pet.