Periodontal disease: Treatment

RACHEL PERRY BSc (VetSc), BVM&S, MANZCVS (Small Animal Dentistry and Oral Surgery), MRCVS

e: info@perrydentalvet.co.uk
twitter:@Perrydentalvet

The goal is to suppress inflammation to restore healthy tissues, ie by the suppression of dental plaque and calculus. The aim of gingivitis treatment is to restore the inflamed gingival to clinical health and maintain this state. The goal of periodontitis treatment is to stop progression of tissue destruction and prevent lesions at other sites.

Aims of treatment:

☐ Disrupt dental biofilm (plaque)
☐ Removal of dental biofilm (plaque)
☐ Removal of calculus
☐ Removal of periodontal bacteria/debris
☐ Smooth root surfaces to enhance re-attachment

Client Preparation

Telling the client that their pet is coming in for a dental tells them nothing. You must explain what will happen under the anaesthetic including full oral examination, probing, radiography, recording findings on a chart, and what scaling, polishing and extractions will involve. If extractions are anticipated, ensure the client understands this and gives consent. The client must understand this, ie: informed consent. Also ensure the client gives a phone number where they may be reached. If the vet decides more extractions are needed than first anticipated, then call the client during the procedure. A client would prefer this than collect their pet only to be informed that 20 teeth have been extracted. Extractions are terminal for the tooth.
It is also important to gauge the client’s attitude towards homecare. Are they already brushing their pet’s teeth, and keen to save teeth? Are they unwilling/unable to brush and would prefer more extractions of diseased teeth?

**Patient preparation**

Upon admission, every patient should have their temperature, pulse and respiration (TPR) recorded. The vet may decide to perform pre-anaesthetic blood tests.

Many patients will require IV fluid support as many are geriatric, and many dental procedures are long. Placing a IV catheter is sensible, because even if a procedure is anticipated to be short, it can quickly turn into a longer one as pathology is detected under the anaesthetic.

**Prevention of hypothermia**

Hypothermia is a real risk in dentistry. Patients lose heat naturally from their mouths, and we are soaking the mouth with lots of cold water. Often they are positioned on metal tub tables. Procedures can be long. Small dogs and cats are especially at risk due to large surface area: volume ratio.

Hypothermia will cause:

- Hypoxia
- Reduced renal perfusion
- Delayed recovery
- Prolonged healing
- Increased risk of post-op infections
- Dissatisifed client

Take as many steps to prevent hypothermia as possible:

- Monitor the temperature and record it every 10 minutes.
- Bair huggers/Cocoon hot air blankets
✓ Warm water heating pads (HotDog)
✓ Electric heat pads - care!
✓ Blankets to cover
✓ Bubble wrap
✓ Cover extremities with bubble wrap
✓ Warm fluids
✓ Hot hands (latex gloves filled with warm water)

Care must be taken not to BURN the patient.

**Anaesthetic monitoring**

Monitor as much as possible, and record it on a chart so you can spot trends. Parameters involving the head may be difficult to check (blink reflex, mm colour, CRT, jaw tone, eye position). Consider other positions for pulse oximeter probe rather than tongue. If you have a Doppler BP machine, you can attach the probe to the leg with tape and this will give an audible sound of the heart rate. Blood pressure can also be intermittently measured.

**Intubation**

Ensure that the tube is not too long. It should be measured from the incisors to the thoracic inlet with the neck flexed. Lubricating the tube with a water-based product like KY will improve the seal and patient comfort (do not occlude bevel or Murphey’s eye). Ensure that inflation is only to the point where the patient is not breathing around it, and no more! Preferable to use high volume/low pressure tubes rather than high pressure/low volume red rubber tubes. Disconnect the patient from anaesthetic circuit before turning it over.

Place an easily retrievable absorbable throat pack, and be sure to remove at the end. Drain it periodically.
Avoid spring-loaded mouth gags. These may be associated with post-operative blindess in cats, due to the restriction of blood flow in the maxillary artery. Having your mouth wedged fully open for long periods is also uncomfortable for days!

**Personal Protective Equipment (PPE)**

Ensure that you have access to suitable PPE, including gloves, face masks, goggles, plastic aprons/change of scrubs. Having negative pressure areas to work in will ensure harmful aerosols are rapidly removed from the working area.

**Reduce the bacterial load in the mouth**

This achieves two things: 1) Reduces patient bacteraemia. 2) Increased operator safety by reducing bacteria in aerosols produced during scaling, drilling etc.

This can be achieved by rinsing the mouth with 0.12% chlorhexidine (Hexarinse) before starting the procedure.

**Treatment plan**

1) **General health assessment**

It is important to assess systemic health status to assess any contributory factors to the development or severity of periodontal disease. A complete clinical examination should be performed, and CBC/biochem + Felv/FIV if necessary. Remember many animals with dental disease are geriatric, and many of these may have concurrent systemic disease. Record TPR on admission.

2) **Full mouth periodontal probing and charting**

Probing depths as measured with a periodontal probe are entered into the patient’s dental chart, along with other findings once the animal is anaesthetised. The dental chart is important and should be kept as a record of the patient’s oral health at a specific point in time. By reviewing earlier charts the clinician can assess the success or failure of previous
treatments. It is also a medico-legal document, can be forwarded if a patient is referred, and can be used to explain treatments to owners. See Webcast 1: Back to Dentistry Basics!

3) **Formulate a treatment plan**

The ability and willingness of the client to perform oral hygiene at home should be assessed prior to embarking on any periodontal treatment plan, as it will greatly influence the decision making process. Also consider the functionality and importance of teeth: the 8 important teeth in the mouth are the 4 canines and 4 carnassials. The vet will make final decisions about the treatment of individual teeth. If the plan is different to that discussed previously with the owner, call the client to inform them. This will prevent a potentially angry and dissatisfied client later in the day.

4) **Supragingival scaling**

*Scaling removes calculus, polishing removes plaque.* Large pieces of calculus can be gently removed with extraction forceps/calculus removers ensuring no damage is caused to soft tissues. Remaining calculus is generally removed by ultrasonic scaling. Hand scaling with hand instruments is as effective, but more time-consuming. There are two types of ultrasonic scalers:

- **Magnetostrictive scalers**

  **Cavitron type**

  Flat metal strips in a stack are attached to a scaling tip. An electrical current applied to the coil in the handpiece creates a magnetic field and which alternates with the...
alternating current, causing the tip to vibrate. The movement of the tip is elliptical. However, 60% of the energy is converted into heat. Water must be used to cool the tip, otherwise thermal damage of the teeth could occur. Similarly, the tip should not be used under the gum line, as the water does not reach the tip, cooling will not occur and the tooth will be damaged.

Special slim-line tips are available which are safe to use under the gum-line, and in deeper pockets.

- Vibrate at 25-30 kHz
- Terminal 4mm of tip active
- Lateral and back surface of tip is used
- Do not use tip at right angles to tooth
- Light touch
- Water cooling essential

**Ferrite rod**

Iron rod in handpiece. Tip vibrates at higher frequency (42kH) so more efficient. Water cooling still essential. Slim perio tips available for use under the gum-line and in pockets.

- **Piezoelectric scalers**
  Crystals in the handpiece have dimensional changes upon application of an electric current. The resulting vibration produces a near-linear tip movement. The tip therefore must be used parallel to the tooth surface and most movement occurs at the end of the tip, so the end of the tip should be used. Light pressure is essential, otherwise the vibration is dampened by applying pressure, therefore reducing the efficacy of scaling. This also reduces heat build-up due to friction. A modified pen grip with finger rest should be employed. Piezo scalers are more effective in that 90% of the energy is converted to movement rather than heat.
Power setting

The amplitude of vibration can be altered on the scaler machine, so chose a setting appropriate for the degree of calculus to be removed.

- Moderate-high for thick supra-gingival calculus
- Low for subgingival work.

A fine aerosol develops during ultrasonic scaling, which is full of bacteria, so that adequate facemasks and eye protection should be used.

5) **Subgingival debridement**

The goal of periodontal treatment is the removal of plaque and calculus located in the pocket where it causes periodontitis. **THIS IS THE SINGLE MOST IMPORTANT STEP IN TREATMENT.** In the past it has been referred to as *root planing*. The preferred term is now subgingival debridement. This involves subgingival scaling using hand curettes. New ultrasonic scalers have special tips that can be used safely subgingivally. Normal scaling tips are not safe as the water supply to the tip is restricted, therefore cooling is not achieved and thermal necrosis/thermal damage to the tooth can occur. Curettes come in different types, such as Gracey and Universal, and have a sharp cutting edge to effectively remove plaque and calculus subgingivally, plus removing bacterial endotoxins on the cementum surface. Note: Any pockets greater than 6mm cannot be cleaned in a closed manner, and a periodontal flap will need to be created to provide adequate access.
6) **Polishing**
Polishing removes plaque and stains. The surfaces of the crown and neck of the tooth are polished using the low-speed handpiece with contra-angle, rubber cup (prophy cup) and prophy paste. Inappropriate polishing can build up excessive heat and cause thermal damage/necrosis of teeth, pulpitis (i.e. pulp inflammation and pain). Use polishers at a low-speed (if you are not sure try polishing your finger-nail and if it’s painful, it’s going to damage your patient’s teeth!) and use fine or medium grade paste spending a short amount of time per tooth. The cup should be allowed to flare out and polish just into the gingival sulcus.

7) **Sulcular Lavage**
Gingival fluid flow and bleeding from the sulcus is usually enough to dislodge debris from the sulcus, meaning heavy sulcular lavage is not necessary. If necessary, the air-water syringe can be gently used to remove excess prophy paste, or saline in syringe with an irrigating cannula.

8) **Extractions**
Extraction of teeth should be performed *after* the teeth have been scaled and polished. Otherwise extraction attempts may drive plaque and calculus into sockets and delay healing and encourage infection.

9) **Periodontal Surgery**
This involves using surgical flaps to expose root surfaces that are inaccessible (such as in deep pockets of furcations) to improve scaling and subgingival debridement and to surgically eliminate the periodontal pocket. *Surgical treatment must only be attempted if proper dental care at home can be guaranteed.* These techniques are usually carried out by a veterinary dentist. It is important to know that techniques are available so clients can be informed of all treatment options.

**Discharging the patient**
- Take time to explain the procedure to the client
- Show the client the dental chart
- Show dental radiographs
- Take before and after photographs
- Discuss periodontal disease and the need for prevention via homecare

Post-operative instructions should include suitable foods. If extractions have been performed, advise soft (not sticky) foods for 7 days. Avoid access to chew toys during this time. Chlorhexidine rinse (Hexarinse) can be used until tissues have healed and the client can start toothbrushing. 2.5ml per side for cats/small dogs or 5ml for larger dogs once daily. Tell the client to perform this somewhere easy to clean afterwards!

Provide supportive information to go home with. Many companies offer such material (Royal Canin, Virbac, Hills).

**Follow up**

Check at 3 days, 3 weeks and 3 months. Assess mouth healing, improvement in gingivitis. Brushing efficacy can be checked with plaque disclosing solution, and the client may see this. Start an oral homecare programme suitable for both the patient and client.

*See Webcast 5: Periodontal disease prevention*

**References and further reading**


