

Periodontal Surgery

Cutting Edge is the newest addition to the *Clinician's Brief* line-up of practical and concise columns. This column will discuss the important clinical aspects of new or improved techniques, procedures, medications, or treatments. We welcome your thoughts on topics you would like to see covered in this column; contact us at cliniciansbrief.com.



Periodontal disease is the number one problem diagnosed in small animal patients today.¹ The condition has few clinical signs; therefore, treatment often begins late in the course of disease. Because many owners are interested in salvaging diseased teeth, periodontal surgery is becoming more common.

This article covers the basics of periodontal surgery and guided tissue regeneration. While they are advanced procedures, they can be learned and performed by general practitioners.

INDICATIONS

Closed Root Planing

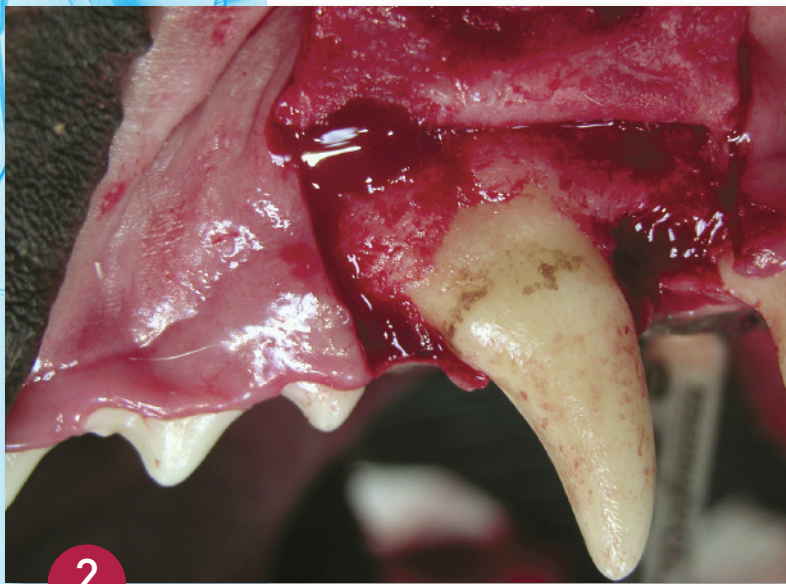
In dogs, pockets 3- to 6-mm deep that are not associated with tooth mobility or other abnormalities are best treated with closed root planing.^{2,3} This procedure is performed with a combination of meticulous mechanical and hand scaling to achieve the cleanest tooth possible in order to promote healing. However, there are many instances where closed root planing alone is insufficient for adequate cleaning (further detail to follow).

1 Mandibular left canine (#304) in a dog: This 7-mm periodontal pocket cannot be cleaned effectively without direct root visualization provided by a periodontal flap procedure. Note the relative lack of calculus or gingival inflammation. This emphasizes the importance of periodontal probing under general anesthesia, regardless of outward evidence of disease.

CONTINUES

Periodontal Flap Surgery

As pockets deepen, cleaning becomes more difficult and surface irregularities increase, complicating closed periodontal therapy.⁴⁻⁶ Consequently, pockets deeper than 5- to 6-mm (Figure 1, page 56) require direct root visualization for effective cleaning⁷ because residual calculus is often seen in such pockets (Figure 2).⁸



Maxillary right canine (#104) in a dog: This patient presented with an 8-mm periodontal pocket. A "full" periodontal flap (with 2 vertical releasing incisions) was performed after closed root scaling. Note the residual calculus that is now visible for cleaning.

Periodontal flap surgery is also indicated for teeth with moderate alveolar bone loss, furcation exposure levels II and III (Figure 3), and inaccessible areas.⁹ Areas with deep bone craters or irregular bone contours should also be treated surgically.⁹ Finally, a surgical approach is needed for any area that has not responded favorably to conservative treatment (ie, closed root planing).⁹

Periodontal flap surgeries generally result only in soft tissue attachment (termed *long junctional epithelium*). While this will resolve the infection and reduce pocket depth, the attachment is tenuous and will easily break down without strict home care. Therefore, if bone regeneration is possible, it should be attempted.

Tissue Regeneration

In guided tissue regeneration, a barrier membrane (with or without bone augmentation) is placed over or in the defect to regenerate the alveolar bone and, ideally, periodontal ligament. This procedure is best performed in 3-walled pockets but can be effective in 2-walled pockets as well.

CONTRAINDICATIONS

There are several contraindications to periodontal flap surgery. Any tooth that is compromised should not undergo periodontal flap surgery.

Some examples include:

- Teeth that are endodontically infected and have not been treated
- Teeth undergoing severe resorption
- Teeth that are severely mobile
- Teeth that are fractured and have minimal remaining crown.

In addition, patients with poor systemic health may not be good candidates for these procedures. Finally, without a motivated client who is committed to home care and routine professional visits, infection will most likely return. In such cases, extraction should be considered.

ADVANTAGES

The major advantage of periodontal flap surgery is effective removal of periodontal infection while maintaining the diseased tooth. Too often, teeth with deep periodontal pockets or furcational disease will be treated with closed root planing only, which is insufficient for treatment of these areas and will result in continued infection.

Other advantages include:

- Maintaining teeth is ideal, but particularly important for strategic teeth (canine and carnassial).
- For some clients, keeping the incisor teeth may be aesthetically important.
- Periodontal surgery is typically less invasive and painful than extraction, especially with large teeth.
- Clients will appreciate the additional option, improving your clinic's reputation.

DISADVANTAGES

Periodontal surgery has few disadvantages. The main drawback is that without a commitment to home care, rechecks, and routine professional treatment, these surgeries typically fail. Therefore, before surgery clients must commit to the maintenance.

The only other disadvantage is the required learning curve and requirement for careful surgery to avoid damaging the delicate periodontal tissues. These procedures must be learned in hands-on laboratories, such as those at the San Diego Veterinary Dental Training Center (sdvdtc.com) or the Annual Dental Forum (veterinarydentalforum.com).

ECONOMIC IMPACT

For clinics that have the basic capital equipment (dental radiology equipment, scaler, polisher, and high-speed unit), the cost of adding surgical equipment is not significant. The main necessities are a supply of sharp curettes along with a good

periosteal elevator and fine surgical instruments. In addition, a barrier membrane, root conditioning medication, and bone augmentation are needed. The total cost of this equipment should be less than \$1000.

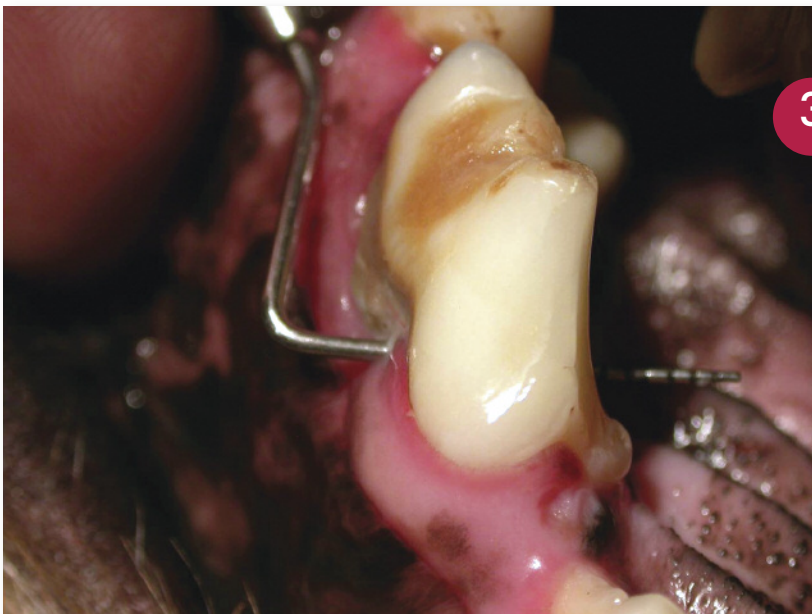
A moderately busy practice could offer these procedures at least a few times a week. With proper client education, this should result in thousands of dollars of profit annually and many salvaged teeth. This does not include the continued maintenance that is required for the patient, which is an additional financial benefit.

CONCLUSION

Many teeth in small animals have deep periodontal pockets that are often undertreated. Clients are becoming more interested in salvaging these teeth, and periodontal surgery can provide this benefit. By learning these procedures, general practitioners can provide this service as part of routine dental care.

CONTINUES

Too often, teeth with deep periodontal pockets or furcational disease will be treated with closed root planing only, which is insufficient for treatment of these areas and will result in continued infection.



3

Maxillary left fourth premolar (#208) in a dog: This patient had slight to moderate gingival recession, minimal periodontal pocketing, and approximately 20% alveolar bone loss. Regardless, there is complete furcation exposure (level II), which requires periodontal flap surgery (or extraction) to remove the infection.

New Techniques & Products

.....
The addition of antibiotics to membranes has been shown to improve attachment gains.

Periodontal flap surgeries have been used in humans for years but are rarely performed in veterinary dentistry. The flap techniques are well described, but they are new to most veterinarians. The new products and techniques are too numerous to list, but a few are regularly used today.

Membranes: For years, my colleagues and I have been using expensive barrier membranes, which require exact shaping to adapt to the tooth. However, a new liquid membrane (Atrisorb Freeflow, citagenix.com) allows creation of the membrane in the defect.^{10,11}

Antibiotics: The addition of antibiotics to membranes has been shown to improve attachment gains.¹² Although not approved for this use, it has led to the application of a periosteal for this procedure (Doxirobe, pfizerah.com) (**Figure 4**).

Bone Regeneration: Bioglass has been used for many years for bone regeneration. It has been effective but may no longer be the best choice. Recently, demineralized allografts have been shown to be effective at regenerating periodontal defects.^{13,14} A veterinary-specific product (Osteoallograft Periomix, vtsonline.com) is now available.



4

Application of a viscous biodegradable barrier membrane directly over the graft in a defect on the palatal aspect of the maxillary right canine in a dog

See Aids & Resources, back page, for references & suggested reading.