

PEER-REVIEWED

Using bioactive glass particles to repair palatal infrabony pockets

An 8-year-old male dachshund was presented for evaluation of halitosis. Preoperative oral examination revealed advanced periodontal disease. Examination with a periodontal probe revealed bilateral 7-mm pocket depths on the palatal aspect of the maxillary canine teeth (*Figure 1*). No other abnormalities were found during the oral examination.

Discussion

Advanced periodontal disease presents as suprabony (horizontal bone loss, epithelial attachment above the crestal bone) or infrabony (vertical bone loss, epithelial attachment below the crestal bone) pockets. Infrabony pockets may be classified as one-, two-, or three-walled defects, depending on how many walls of bone surround the affected tooth. For example, in an early infrabony defect, the lesion involves one tooth root surrounded by three bony surfaces. This lesion's morphology is classified as a three-walled defect (*Figure 2*). Often as the lesion progresses, more bone loss occurs, an adjacent tooth root may be involved, and the lesion becomes a two-walled and then a one-walled defect. Palatal pockets typically have three walls. If the defect does not extend into the nasal cavity, repairing it with implant material can result in a good prognosis.

Treatment

Consil® (Nutramax Laboratories, Edgewood, Md.) is a therapeutic agent formulated from bioactive glass particles that react in the presence of body fluids to enhance the body's

ability to regenerate tissue. When introduced into a defect, bioactive glass attracts fibrin, collagen fiber, and growth protein to the area of bone loss. Within days, a framework of hydroxyl-carbonate-apatite crystals forms. The surface-acting bone grafting agent induces production of osteocalcin to foster bone regeneration.¹ Osteoblasts then differentiate and produce new bone. Consil is indicated for repairing infrabony defects caused by periodontal disease and for filling sockets after tooth extraction.

In this case, I cleaned the dog's teeth and took full-mouth intraoral radiographs to make sure there were no other lesions (periodontal lesions are often present in more than one area). I then created bilateral full-thickness periodontal palatal flaps with reverse bevel incisions to expose the three-walled defect (*Figure 3*). A Langer curette was used to debride the bony pockets and plane 5 mm of the root surfaces (*Figure 4*). A periodontal ultrasonic scaler tip (Odontoson®—PERIOgiene, Laguna Beach, Calif.) was used to clean the root surfaces to the 7-mm defect extent. I then applied Consil to the defects and packed it to the height of the remaining bone (*Figure 5*). The gingival flaps were replaced and sutured interdentally.

For the week after surgery, an antibiotic (5 mg/kg of clindamycin hydrochloride b.i.d. for seven days), an analgesic (2.2 mg/kg carprofen b.i.d.

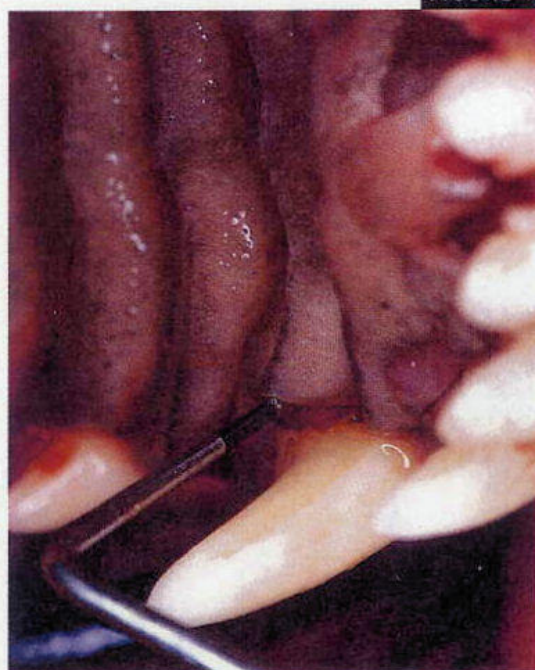


FIGURE 1

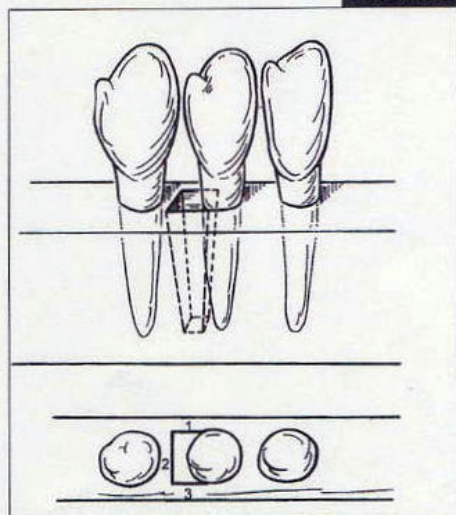


FIGURE 2

1. In this dog with advanced periodontal disease, the periodontal probe depth is 7 mm adjacent to the palatal aspect of the maxillary canine. **2.** A three-walled defect. (Reprinted with permission from Wiggs, R.B.; Lobprise, H.B.: *Periodontology. Veterinary Dentistry: Principles and Practice*, Lippincott-Raven, Philadelphia, Pa., 1997; p 204.)

FIGURE 3

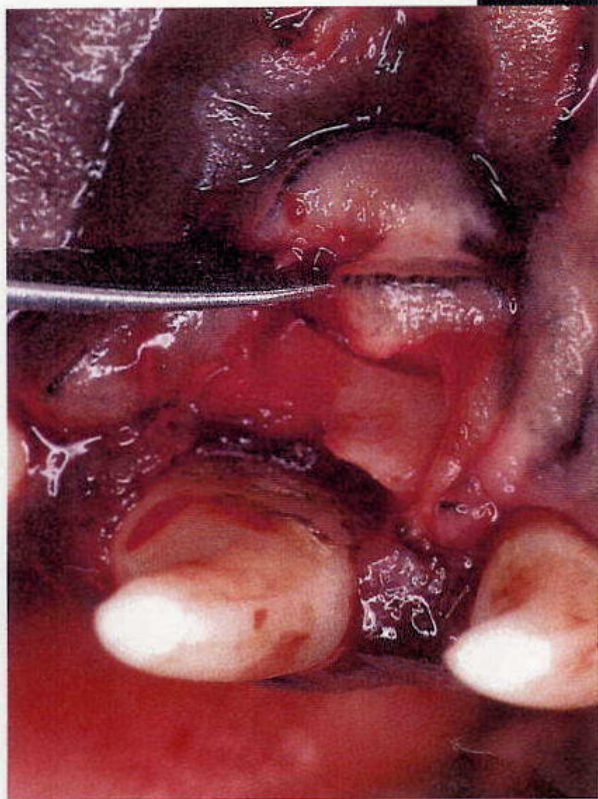
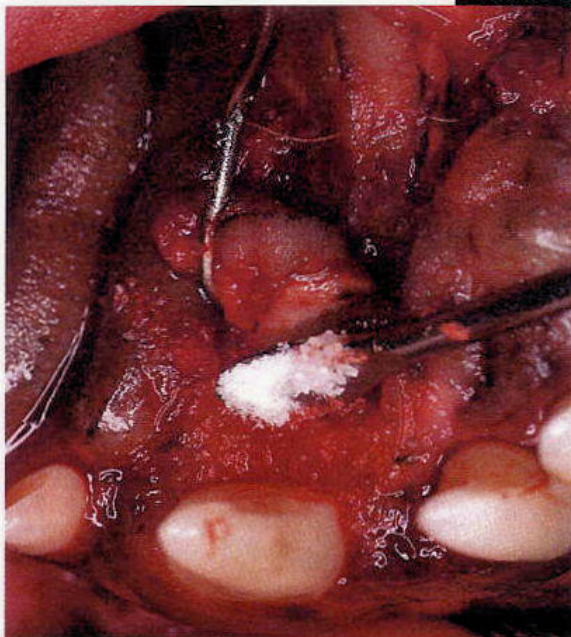


FIGURE 4



3. Interdigital palatal incisions were used to expose the three-walled defect. 4. The calculus was removed with a curette. 5. Consil was applied to fill the defect and to help regenerate tissue.

FIGURE 5



for four days), and 0.2% chlorhexidine gluconate irrigating solution (b.i.d.) were prescribed. Two weeks after surgery, I advised the owner to begin brushing the dog's teeth twice a day, paying special attention to the maxillary canine palatal area. Seven months after the bone grafting, the dog's teeth were cleaned under anesthesia, and reevaluation of the palatal pockets revealed only 3- and 4-mm probing depths. Normal sulcus depths are 1 to 3 mm.

REFERENCES

1. Hench, L.L.; West, J.K.: Biological applications of bioactive glasses. *Life Chem. Rep.* 13:187-241; 1996. ■

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