

RIDGE PRESERVATION: WHY NOT?

Most general dentists perform routine tooth extractions, some impacted third molar extractions and, to a lesser degree, apical and periodontal surgeries.¹ However, a much-needed surgical procedure should be incorporated into more practices—alveolar ridge preservation. This procedure is simple, easy, fast and relatively inexpensive. It does not require a significant learning time.

The esthetic and functional advantages of ridge preservation are impressive. After practitioners see the result of ridge preservation, they become committed to the concept. This article discusses indications for ridge preservation, describes the technique and explains what outcomes to expect over a period of time.

INDICATIONS FOR RIDGE PRESERVATION

Dentists often encounter clinical situations in which teeth have been extracted in areas of esthetic concern. As a result, the alveolar bone has resorbed, the soft tissues have shrunk and the final non-anatomical prosthesis appears to be false. Such negative results usually can be avoided by using ridge preservation techniques.

The primary indication for alveolar ridge preservation is a

collapse of alveolar bone and soft tissue that would cause unacceptable prosthesis esthetics. Such situations usually involve maxillary and mandibular anterior teeth, as well as maxillary and mandibular premolars.

Another excellent indication for ridge preservation is a collapse of the alveolar ridge that would cause irregularities in alveolar form, making denture construction difficult.

A third, less common but highly important indication is tooth extraction, after which ridge preservation should be performed to provide adequate bone for subsequent implant placement. There has been discussion about the desirability of ridge preservation after all tooth extractions. However, taking such an aggressive approach is a decision for each practitioner.

SELECTING THE APPROPRIATE METHOD AND MATERIAL

Deciding to perform ridge preservation. Carefully observe the site where a tooth is to be extracted. Would shrinkage of alveolar bone beyond its current level make prosthodontic placement difficult? If bone shrinkage appears to be a potential problem, ridge preservation should be performed.

Selecting material for ridge preservation. There are several excellent, easily used materials available for ridge preservation. The concept is simple! A biologically compatible material is placed in the debrided alveolar socket to prevent collapse of bone to the extent usually expected. Some of the available materials stimulate bone growth. The materials resorb, and after a few months the extraction site appears normal in radiographs. Other non-resorbable materials remain in place indefinitely, stimulating bone growth in and around the implanted material. Such materials are usually observable in radiographs indefinitely.

Most bone-fill materials work best when used with a membrane over them, which keeps soft tissue from growing into the extraction socket (a process called guided tissue regeneration, or GTR). Such materials usually require primary soft-tissue closure, although some research has shown that they will work satisfactorily without primary closure.

Other materials do not require a protective membrane or primary soft-tissue closure. Such materials, obviously, are easier and less expensive to use.

One of the easiest methods of

preserving ridges without using GTR employs a material with a long history of acceptability.² This material (Hard Tissue Replacement, or HTR, Septodont Inc.) consists of porous poly-methyl methacrylate spheres, coated with polyhydroxyethyl methacrylate and calcium hydroxide. Two sizes of spheres are available—24 (0.75 millimeters) and 40 (0.55 mm). The larger size (24) is used for ridge preservation.

The major reasons for using this material are its ease of placement, the lack of need for membrane (GTR) placement, and the lack of need for primary soft-tissue closure. The cost is moderate. Other materials certainly may be used, but the simplicity of using HTR makes it an excellent choice.

THE TECHNIQUE

■ **Tooth removal.** Accomplish tooth removal atraumatically. Preserve bone, and do not break pieces of bone away from the ridge.

■ **Socket debridement.** Remove any soft-tissue debris from the tooth socket. If the socket had a cystic lesion, roughen the bone surrounding the soft-tissue lesion. Stimulate bone bleeding.

■ **Incorporation of blood and HTR.** Place the filter on the tip of the HTR syringe in the socket and aspirate blood from the socket into the syringe. Avoid blood from soft tissue; use blood from the bleeding bone. Let the blood-HTR combination sit for a short time. It will soon thicken, making it easier to use.

■ **Place the blood-HTR mixture in the socket.** Inject the

jellylike mass of HTR into the socket, filling it to the crest of the bone. Use a blunt instrument to compact the HTR into the socket, making sure it is dense. Remove any excess spheres that are coronal to the bone crest.

■ **Close soft tissue.** If there is enough soft tissue present, suture the soft tissue together and perform primary closure. If there is not enough soft tissue present to close the wound, cut a piece of cellulose (Gelfoam, Upjohn) to fill the coronal portion of the soft-tissue void, extending the cellulose about 2 mm lateral to the void. Place the soft tissue on top of the cellulose with sutures over it to hold it in place. Have the patient bite on the wound for a few minutes until an initial blood clot forms. The patient should avoid chewing on the extraction site for several days to allow healing to begin.

THE OUTCOME

HTR appears radiopaque in the extraction socket. The material is not resorbed. Radiopacity of HTR remains apparent in the future, but it will blend with bone and become somewhat less obvious. The socket will retain much of its original size, because HTR does not allow bone collapse to the normal degree. Research shows



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that ridge preservation techniques can lead to a significant reduction in the normal 40 to 60 percent loss of bone that occurs within two to three years of a tooth extraction.^{3,4}

If you have planned to place a fixed prosthesis with a pontic in the extraction site, be aware that the longer you wait after the ridge preservation procedure before making the final tooth preparations, the more mature will be the bone in the extraction site, and the more predictable will be your esthetic result. I prefer that the site heal for at least two months before I make final tooth preparations.

If you plan to place an implant in the extraction site, wait about one year before doing so to allow bone maturation.

OTHER USES

HTR can be used in apicoectomy sites, periodontal defects and around bone voids at the time of implant placement or in other areas.

SUMMARY

Ridge preservation should be a commonly used dental procedure. However, it is not. Simple ridge preservation techniques, using materials such as HTR, provide undeniable esthetic and functional benefits to patients and dentists. ■

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3. Boyne PJ. Use of HTR in tooth extraction sockets to maintain alveolar ridge height and increase concentration of alveolar bone matrix. *Gen Dent* 1995;43(5):470-3.

4. Ashman A. The use of synthetic bone materials in dentistry. *Compend Contin Educ Dent* 1992;13(11):1020-30.