CLINICAL REPORT

Layered Socket Grafting™ Using an Anorganic Bovine Bone Mineral-Collagen Composite

John P. Schmitz, DDS, PhD

Introduction

Following tooth removal, the subsequent alveolar healing that ensues is never complete and a predictable volumetric resorptive response of alveolar volume follows (1-3). The volumetric loss can be between 3 mm and 6 mm horizontally, and between 1 mm and 2 mm vertically (1,3-6). Irregular and unpredictable alveolar healing can also occur. This change in alveolar bone volume can lead to a composite defect as the shrinking gingival contours follow a loss of alveolar bone (7). Bone resorption can lead to an esthetic compromise when anterior restorations are planned using removable prostheses, fixed prostheses, or implant-supported crowns or bridges. The end result may be the need for reconstructive procedures to regenerate gingival and osseous components leading to the abandonment or delay in implant placement. Because of the documented ridge resorption after extraction, bone substitutes were advocated to preserve the osseous alveolar structure prior to implant placement (3).

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Manufacturers:
PepGen P-15 FLOW, Dentsply Tulsa Dental Specialities, Tulsa, OK, 918 493 6598.
Algipore, Dentsply Tulsa Dental Specialties, Tulsa, OK, 918 493 6598.
Bio-Oss, Geistlich Pharma North America, Inc., Princeton, NJ, 855-799-5500.
Bio-Oss Collagen, Geistlich Pharma North America, Inc., Princeton, NJ, 855-799-5500.
Biosyn, US Surgical, Norwalk, CT, 508-261-8000
Nu-Oss Collagen, ACE Surgical Supply Company, Inc., Brockton, MA, 800-441-3100.

Abstract

Following tooth extraction, socket grafts are commonly used to prevent incomplete healing and to optimize the bony site for implant placement (1). Many particulate, composite, and putty-like bone grafting materials either with or without a membrane have been used as socket grafts. This article introduces the Layered Socket Grafting™ technique for socket grafting without the use of a membrane or primary closure. This technique uses a particulate anorganic bone mineral to graft the apices of sockets and then a composite material consisting of anorganic bovine bone mineral and collagen for the superior or crestal one-third of a socket or defect. When grafting sockets, the technique is fast and does not require the use of releasing flaps or primary closure and can also be used to manage large periapical defects.

KEY WORDS:
Anorganic bone mineral, Bio-Oss, socket grafting

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CASE REPORT

Surgical endodontic management of an invasive cervical resorption class 4 with mineral trioxide aggregate: A 6-year follow-up

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Root resorption is a condition associated with a loss of dentin and cementum by tooth-resorbing cells (1). Invasive cervical resorption (ICR) is a type of external resorption that occurs below the epithelial attachment of the tooth at the cervical area, owing to the injury to or deficient cementum layer covering the external surface of the root (1,2). Heithersay developed a clinical classification of ICR according to the degree of resorption (classes 1-4) (2). Class 1 denotes the least invasive resorptive lesion, near the cervical area with shallow penetration into dentine, whereas class 4 denotes the most invasive resorptive lesion, extended beyond the coronal third of the root. Although most etiologic factors for ICR include trauma, intracoronal bleaching, orthodontic treatment, dentoalveolar surgery, and periodontal procedures, some cases are idiopathic (2-4).

Bone grafts and guided tissue regeneration (GTR) are used to regenerate lost periodontal tissues as a result of periodontal diseases (5). However, root resorption may well be an adverse effect of the GTR procedure (6). When the resorption invades the root canal in advance stages, endodontic treatment and the surgical exposure of the resorptive cavity must be performed to remove the inflammatory tissue (3). Finally, an excellent restoration and seal of the resorptive cavity are important for the success of the treatment. Materials such as amalgam, composite resin, glass ionomer, and mineral trioxide aggregate (MTA) have been used for this purpose (7-9). MTA is a bioactive material

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Abstract

Invasive cervical resorption is a type of external resorption rarely seen as an adverse effect after a guided tissue regeneration procedure for a periodontal condition. This case report summarizes the surgical endodontic management of an invasive cervical resorption class 4 (Heithersay) with mineral trioxide aggregate, in a mandibular incisor of a 67-year-old man. A 6-year clinical follow-up with radiovisiography and cone-beam computerized tomography revealed complete healing. A surgical endodontic management could promote healing and survival of a tooth with advanced root resorption due to a periodontal condition.

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