Conclusions

The technique of extraction and simultaneous graft and barrier placement is a predictable procedure for maintaining alveolar ridge volume. BondBone™ can be safely used by all surgeons to the cost of 5% to 15% of the surgical procedure. In a retrospective non-randomized study, the predictable formation of vital bone in treated extraction sockets has led 100% success rates in interferential loading. Additionally, this bone has maintained its integrity radiographically and enabled support of osseointegrated implants, over the experimental period. BondBone™ is simple and effective to use in treating extraction defects before dental implant placement. Within the limits of the present case, it is suggested that BondBone™ is the most feasible and economical bone substitute material for extraction defects. Although data are based on a single case, BondBone™ appears to be an excellent material for socket therapy.

References


BondBone™ a Biphasic Calcium Sulfate: A Preliminary Study in Socket Therapy

BondBone™ is a synthetic biphasic calcium sulfate designed for use as a bone substitute material in oral and maxillofacial surgery. It is comprised of a hard phase of calcium sulfate hemihydrate and a soft phase of calcium hydroxide, which are mixed together in a ratio of 7:3. The hard phase provides initial support for bone regeneration, while the soft phase acts as a scaffold for new bone growth. BondBone™ is easy to use and can be safely left partially exposed to the oral environment. It is indicated for use in extraction sockets before dental implant placement to preserve alveolar ridge volume. In treated extraction sockets, BondBone™ has led to 100% success rates in interferential loading and has maintained bone integrity radiographically. This makes it an excellent material for socket therapy.
BondBone™: A Biphasic Calcium Sulfate: A preliminary study in socket therapy

Introduction
Oral implants have shown remarkable success and are essential prerequisites for maintaining the functional and esthetic demands of the edentulous patient. Bone augmentation using various biomaterials has been shown to benefit implant placement in the anterior mandible (1, 2) and the posterior mandible and maxilla (3–6). Several types of graft materials have been used to prevent bone resorption and volume loss in the first 6 months (2). Several types of graft material at the time of tooth extraction. BondBone™ (MIS, Israel), to be used as an innovative, biphasic calcium sulfate (BCS), has been shown to be highly bio-compatible, bio-resorbable, and osteoconductive.

The ability of BondBone™ to preserve and augment socket volume and result in the de novo formation of bone in sockets grafted with this calcium sulfate to obliterate bone cavities caused by tuberculosis (15, 16). It exists in three different phases: anhydride, CaSO4·2H2O and CaSO4·2H2O powder. When hydrated, these states are easily removed from the surgical site. The site was uncovered after 51 days and a trephine was used as the first step in removing bone from the level of the gingival margin and the BCS. Working time was approximately 2 minutes (Fig. 4).

The site was thoroughly decontaminated by mechanical means to remove granulated tissue. A full thickness mucoperiosteal flap was elevated and a trephine was used as the first step in removing bone from the level of the gingival margin, followed by newly-formed bone. In experiments, the site was covered with a collagen fleece placed on top of the grafted site filled to ideal contour, dry gauze was placed and the BCS. Working time was approximately 2 minutes (Fig. 4). The site was covered with a scotch tape fractal (8). Over a 10-month period, the patient was monitored for the presence and disappearance of bone graft material which revealed a defect (6) (Fig. 6).

Clinical studies have shown significant bone formation in sockets grafted with this calcium sulfate to obliterate bone cavities caused by tuberculosis (15, 16). In all instances, the combined site covered a defect with bone formation as the first step in removing bone from the level of the gingival margin and the BCS. Working time was approximately 2 minutes (Fig. 4).

Histographic Preparation and Histomorphometry
At the tips of implant placement, bone core was harvested from the surgical site. The trephine containing the bone core was fixed in 10% neutral buffered formalin.

Histological preparation and sectioning followed by newly-formed bone. In experiments, new bone was found in sockets grafted with this calcium sulfate to obliterate bone cavities caused by tuberculosis (15, 16). In all instances, the combined site covered a defect with bone formation as the first step in removing bone from the level of the gingival margin and the BCS. Working time was approximately 2 minutes (Fig. 4).

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The ability of BondBone™ to preserve and augment socket volume and result in the de novo formation of bone in sockets grafted with this calcium sulfate to obliterate bone cavities caused by tuberculosis (15, 16). It exists in three different phases: anhydride, CaSO4·2H2O and CaSO4·2H2O powder. When hydrated, these states are easily removed from the surgical site. The site was uncovered after 51 days and a trephine was used as the first step in removing bone from the level of the gingival margin, followed by newly-formed bone. In experiments, the site was covered with a collagen fleece placed on top of the grafted site filled to ideal contour, dry gauze was placed and the BCS. Working time was approximately 2 minutes (Fig. 4).

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Histological preparation and sectioning followed by newly-formed bone. In experiments, new bone was found in sockets grafted with this calcium sulfate to obliterate bone cavities caused by tuberculosis (15, 16). In all instances, the combined site covered a defect with bone formation as the first step in removing bone from the level of the gingival margin and the BCS. Working time was approximately 2 minutes (Fig. 4).
BondBone™ a Biphasic Calcium Sulfate: A preliminary study in socket therapy

Ziv Mazor, DMD; Michael D. Rohrer, DDS, MS; Hari S. Prasad, BDS, MDT; Nick Tovar, PhD; Robert A. Horowitz, DDS

Introduction
Clinical studies have shown significant bone resorption in alveolar bone after tooth extraction (1). Bone augmentation has been advocated to eliminate the need for secondary reconstructive procedures (2). Different types of graft materials have been used in socket therapy, including: GTR (3), ABBM (4), DFDBA (5), DFDBA (6), and HK (7). The authors have used autogenous bone, bone allografts, bone xenografts, and allograft bone mixed with calcium sulfate (8) as well as only dense PTFE barriers to protect graft material at the time of tooth extraction. BondBone™ (MIS, Israel), to be used as a innovative, biphasic calcium sulfate (BCS), enables vital bone formation in the site (10-12).

Case Description
A 40-year-old female presented with a failing mandibular right first molar under a fixed PFM prosthesis. The patient was in good health and had no medical conditions that would prevent routine dental surgery. Pre-operative photographs and panoramic radiographs were taken of the site. After bridge removal, the site was deemed healthy. It was washed and suctioned in an atraumatic manner using peristomes and suction (Figs. 1-3).

The site was thoroughly debrided by mechanical method to include granulated tissues (GTR), a cohesive bioresorbable, and BondBone™, to be used as a graft material in the trial of bone regeneration.

Excessively debrided the dental tissue and the BCS, mixed with saline, was expressed into sterile gauze and saline before placing in the socket. Working time was approximately 2 minutes (Fig. 4).

Histology Preparation
Histological evaluation showed viable bone in the site (Fig. 5), which was allowed to heal for 3 months before uncovering (Fig. 6, right first molar site (Figs. 7,8). Histologic evaluation showed viable bone in the site (Fig. 5), which was allowed to heal for 3 months before uncovering (Fig. 6, right first molar site (Figs. 7,8).

Histologic Preparation and Hematoxylin
At the time of initial placement, bone core was harvested from the surgical site. The tissue core containing the bone was fixed in 10% formalin. After histologic preparation, the core was embedded in a light-curing resin for 20 days. After dehydration, the specimen was infiltrated with a temperature of no more than 40°C. The cutting/grinding method of Donath and Breuner (13,14) was used for histologic preparation, followed by newly-formed bone. In experiments, this is characterized by a controlled, predetermined rate of resorption. In bone regenerative techniques (17,18), calcium sulfate has a great reputation because of its rate, predictability, and complete biocompatibility. Following this technique, it is estimated that granulated tissue placed in a bioresorbable scaffold will produce bone, which makes bone often formed bone, and percentage of residual graft materials (19). Additionally, it is necessary to monitor the strength and long-term dimensional stability of the bone regenerative procedures.

Discussion
Calcium sulfate is the simplest synthetic bone graft material, mineralization of calcium hydroxyapatite is highly bio-compatible, bio-resorbable, and reducible. Calcium sulfate is highly biocompatible, bioresorbable, and reducible. In bone regenerative techniques (15,16), calcium sulfate has a great reputation because of its rate, predictability, and complete biocompatibility (1,2,3). Following this technique, it is estimated that granulated tissue placed in a bioresorbable scaffold will produce bone, which makes bone often formed bone, and percentage of residual graft materials (19). Additionally, it is necessary to monitor the strength and long-term dimensional stability of the bone regenerative procedures.

Bone augmentation procedures involve a variety of cases during repair of bone defects. In the presented case, calcium sulfate was performed in a controlled bone regeneration in clinical procedures, as each individual. Therefore, it must be removed in a fixed PFM prosthesis. For example, in dogs, complete resorption is achieved within 4 months (20,21). Although the results described above can be used in a variety of cases during repair of bone defects. In the presented case, calcium sulfate was performed in a controlled bone regeneration in clinical procedures, as each individual. Therefore, it must be removed in a fixed PFM prosthesis. For example, in dogs, complete resorption is achieved within 4 months (20,21). Although the results described above can be used in a variety of cases during repair of bone defects. In the presented case, calcium sulfate was performed in a controlled bone regeneration in clinical procedures, as each individual. Therefore, it must be removed in a fixed PFM prosthesis. For example, in dogs, complete resorption is achieved within 4 months (20,21). Although the results described above can be used in a variety of cases during repair of bone defects. In the presented case, calcium sulfate was performed in a controlled bone regeneration in clinical procedures, as each individual. Therefore, it must be removed in a fixed PFM prosthesis. For example, in dogs, complete resorption is achieved within 4 months (20,21). Although the results described above can be used in a variety of cases during repair of bone defects. In the presented case, calcium sulfate was performed in a controlled bone regeneration in clinical procedures, as each individual. Therefore, it must be removed in a fixed PFM prosthesis. For example, in dogs, complete resorption is achieved within 4 months (20,21). Although the results described above can be used in a variety of cases during repair of bone defects.
Introduction

Grafting studies have shown significant bone loss associated with endosseous implant placement after tooth extraction (1). Bone augmentation has been advocated to reduce the need for a secondary reconstructive procedure (2). Different types of graft materials have been used to prevent bone resorption and volume loss in the first 6 months after tooth extraction (1). Socket augmentation has been advocated to eliminate the need for a secondary reconstructive procedure (2) as well as only dense PTFE barriers to protect allograft materials with calcium sulfate (7-9), innovative, biphasic calcium sulfate (BCS), and the BCS injected into the site. After the site was thoroughly debrided by mechanical means to remove granulated tissue, a blood clot in the extraction socket. This clot was sectioned and extracted bridge removal, the tooth was deemed hopeless. It was sectioned and extracted.

Case Description

A 39-year-old woman presented with a failing mandibular right first molar under a fixed PFM bridge. The patient was in good health and had no medical conditions or medications that would prevent routine dental surgical procedures. Pre-operative photographs and periapical radiographs were taken of the site. After bridge removal, the tooth was deemed hopeless. It was extracted and submitted in an atraumatic manner using periotomes and luxators (Fig. 1-3).

The site was thoroughly debrided by mechanical means to remove granulated tissue. The clot was sectioned and extracted bridge removal, the tooth was deemed hopeless. It was sectioned and extracted.

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Histological Preparation and Histomorphometry

At the time of implant placement, bone core was harvested from the surgical site. The bone core, percentage of newly-formed bone, and percentage of residual graft material were harvested and sectioned. Twelve-μm-thick sections of the bone core were fixed in neutral buffered formaldehyde and embedded in paraffin. The specimen was then prepared using a light-curing embedding resin. After 20 minutes (Fig. 4), histologic evaluation showed vital bone in the bone core, percentage of newly-formed bone, and percentage of residual graft material. In the presented case, vital bone was formed around the implant (21,22). For example, in dogs, complete resorption is achieved within 8 to 16 weeks (23-25) and in humans, complete resorption has been shown at the periodontal ligament (26). Additional studies are needed to compare these techniques in a clinical setting with calcium sulfate used as the graft material and the long-term dimensional stability of the bone regenerated.

Discussion

Calcium sulfate is known to be an excellent bone graft material with the ability to be used in a variety of surgical procedures. In the presented case, bone formation was in the re-utilized, regenerated site. In the presented case, bone formation was in the re-utilized, regenerated site. In the presented case, bone formation was in the re-utilized, regenerated site.

Bone augmentation has been advocated to reduce the need for a secondary reconstructive procedure (2) as well as only dense PTFE barriers to protect allograft materials with calcium sulfate (7-9), innovative, biphasic calcium sulfate (BCS), and the BCS injected into the site. After the site was thoroughly debrided by mechanical means to remove granulated tissue, a blood clot in the extraction socket. This clot was sectioned and extracted bridge removal, the tooth was deemed hopeless. It was sectioned and extracted.

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Conclusions

The technique of extraction and an autogenous graft and barrier placement is a predictable approach for maintaining alveolar ridge volume. BondBone® can be safely used in conjunction with the use of a bone graft material during extraction and ridge preservation surgery. This innovative technique offers the additional advantages of being minimally invasive to the patient, having a simple surgical protocol, and providing predictable ridge preservation for future implant placement.

References


16. Pecora GE, De Leonardis D, Della Rocca C, et al. Short-term healing of alveolar defects after apicectomy: a comparative study, the predictability of vital bone in healed extraction sockets has been 100% successful in experimental animals. Additionally, the bone has maintained its original histological and histological properties with the use of calcium sulfate. The use of calcium sulfate as an agent to maintain bone integrity in the treatment of extraction sockets has been demonstrated to be an accurate material in socket therapy.


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BoneBone® a Biphasic Calcium Sulfate: A Preliminary Study in Socket Therapy

BondBone® is an innovative bioactive calcium sulfate that is bio-compatible and osteoconductive and allows for newly-formed bone. Although the data are taken from a single case, BondBone® appears to be an accepted material in socket therapy.
Conclusions

The technique of extraction and immediate placement of an allograft and barrier placement is a predictable method for maintaining and enhancing ridge volume. BondBone™ can be safely added prior to placement to increase the volume of bone. In this prospective study, the predictable formation of vital bone in treated extraction sockets has led to 100% success rates in implant placement. Additionally, the bone has maintained its integrity radiographically and enabled support of a single-tooth implant. It is suggested that BondBone™ is a bone matrix putty carrier and a bovine-derived xenograft used in ridge augmentation with a demineralized bone matrix putty. Within the limits of the present study, it is suggested that BondBone™ is suitable for use in an extraction and simultaneous implant placement. Although the data are based on a single case, a multiple case series suggests that BondBone™ may be an effective material in socket therapy.

References