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Step-by-Step

“BONDBONE™

MIS®
Make It Simple
MIS is proud to present BondBone™, a novel synthetic bone graft material. This manual presents the method of using BondBone™ in stages. During the development of BondBone™, the researchers were committed to using technologies that will facilitate the complexity of bone augmentation, in terms of time and handling. For further assistance, please see the step by step CD or visit: www.mis-implants.com/BB
BONDBONE™ - A Novel Synthetic Bone Graft

BondBone™ is a novel synthetic bone graft material considered to be a breakthrough in the field of dental bone grafting. It is a bi-phasic calcium sulfate, which has well established and documented biocompatible, osteoconductive and bioresorbable properties. The bi-phasic calcium sulfate takes advantage of both the dihydrate and hemihydrate phases. Hemihydrate is moldable and cementable while dihydrate is highly rigid, has a resorption rate equivalent to that of bone growth and is not affected by the oral environment. The bi-phasic calcium sulfate is fast setting and stable. Its physical properties are not affected by the presence of blood or saliva. BondBone™ is available in a granulated powder form which is packaged in 1cc and 0.5cc drivers and provided in a 3 unit package. BondBone™ can be used as a composite graft when mixed with other granular bone augmentation materials in order to prevent particle migration in an osseous defect. It can be used alone, where it is an ideal choice for obtaining complete regeneration in defects that are less than 10mm with at least three wall bony support. Finally it can be used as a resorbable barrier over other bone graft materials. In most cases, BondBone™ does not require membrane coverage.

Advantages

The material is excellent for bonding other granular augmentation materials, allowing for easy handling, and preventing particle migration thus obtaining more predictable outcomes. Its setting is not affected by the presence of blood or saliva. It is osteoconductive and its unique porous structure allows infiltration of growth factors through its micropores and angiogenesis as well as cell proliferation through its macro pores. BondBone™ does not contain any components other than calcium sulfate. It is completely resorbed, leaving behind natural bone. BondBone™ allows significant reduction in procedure time and time to implantation.

Working concept

The initial pliable paste hardens in two to three minutes, allowing excellent handling time. Once BondBone™ is mixed with saline, the granulated powder goes through an efficient setting process. This setting allows the in situ formation of a rigid structure that is highly crystalline despite the intervening harsh environment of blood, proteins, and saliva. The unique composition of BondBone™, characterized by a controlled, predetermined setting time, strength, and resorption rate, can be utilized beneficially in a variety of case types during repair of bone defects.
BONDONE™ is indicated for use in the following ways:

**OPTION 1**
COMPOSITE GRAFT

**OPTION 2**
BY ITSELF
OPTION 1
COMPOSITE GRAFT
Preparation Step

The following items are required for BondBone™ to be utilized as part of a composite graft.

- A Sterile BONDBONE™ Driver
- Granular Bone Graft Material in a Sterile Mixing Dish
- Sterile Spatula
- Sterile Dry Gauze Pads
- Sterile Medical Syringe With a Sterile Saline
Step 1.

A. Preparation.

B. The driver’s head.

Components:
- A Sterile BONDONE™ Driver
- Granular Bone Graft Material in a Sterile Mixing Dish

Hold the driver vertically.

Disconnect the driver's head while connected to the cap by turning and pulling.

Note:
Make sure you are pulling the driver's head entirely. In case you removed the cap alone, please remove the head following it.
C. The composite blend.

Add BondBone™ to the granules within the dish by pushing the piston towards the dish. Use a volume ratio of 2 parts BondBone™ to 1 part granules (for example- add 1cc BondBone™ to 0.5cc granules).

Note:
Make sure that the ratio of BondBone™ to grains you use is not lower than 2:1 in volume. In addition, make sure you are using the same units of measurements.
Step 2.

**A. Mixing.**

Use a spatula and mix the dry ingredients thoroughly.

**B. The composite blend.**

The blend should be homogenously stirred.

**Components:**

- Sterile Spatula
- Granular Bone Graft Material in a Sterile Mixing Dish
Step 3.

Add saline to completely saturate the blend.

Components:
- Sterile Medical Syringe With a Sterile Saline
- Sterile Spatula
- Granular Bone Graft Material in a Sterile Mixing Dish

A. Add saline.

B. Mix the blend.

Use a spatula to mix the blend thoroughly until a homogeneous creamy texture has been obtained.
C. **Composite blend.**

A composite blend with a glossy appearance is obtained.

The texture is ready when well mixed and has a shiny and glossy appearance.

**Note:**
Make sure the material is entirely wet. In case it’s not, add more saline until the liquid wets the material entirely. In case the material is too wet, go on to step 4. This step will make sure you reached the required viscosity.
Step 4.

A. Absorb saline.

B. Ready to use composite paste.

Components:
- Sterile Dry Gauze Pads
- Granular Bone Graft Material in a Sterile Mixing Dish

Absorb excess saline by applying a dry gauze pad on the surface of the mixture. Do not use pressure.

A matt appearance.

The composite is ready when it is well mixed and has a matt appearance.

Note: Make sure not to use too much pressure during saline absorption. The material may become too dense. In that case, add more saline and mix it again. If you did not absorb enough of the liquid, the material will not have a matt appearance; in this case, absorb additional moisture.
Step 5.

A. BondBone™ driver.

Use the empty BondBone™ driver as a carrier for the composite. Draw the piston to line 1 marked on the driver.

B. Load the driver.

Load the driver with the putty using a circular motion.

Components:

- A Sterile BONDBONE™ Driver
- Granular Bone Graft Material in a Sterile Mixing Dish

Note:

Make sure you pulled the piston to line 1, otherwise the putty will not reload into the driver.

Note:

Use the same maneuvers such as loading amalgam to collect the putty. In case the putty still remains in the dish, use a spatula to deliver the material into the required site instead of using the driver. If the material is stiff, add more saline. If the material is too wet, absorb liquid.
Step 6.

A. **Apply BondBone™.**

Apply the BondBone™ composite graft into the required site by pushing the piston and ejecting the composite graft.

B. **Augmentation with BondBone™.**

The bone defect has to be entirely filled with composite graft in order to obtain good contact with natural bone.

Components:

A. Sterile BONDBONE™ Driver
Step 7.

A. Condensing the composite graft.

B. Shape the graft.

Components:
- Sterile Dry Gauze Pads

Apply a dry gauze pad for 3-5 seconds and condense the composite graft, using moderate pressure.

Shape as necessary to achieve the desired form.

Note:
Make sure the time elapsed since the material encountered the saline did not exceed 2-3 minutes. Once the setting time has passed, additional setting is not possible however the material would still behave as a graft. In that case, the practitioner may decide whether to add a membrane (BondBone® or any other type of membrane).
Step 8.

A. Wet the gauze pad.

Hold the wet gauze pad against the graft. Remove the gauze pad after about 30 seconds. Proceed with soft tissue coverage and wound closure.

B. Wetting the graft.

Wet a gauze pad with sterile saline.

Components:
- Sterile Dry Gauze Pads
- Granular Bone Graft Material in a Sterile Mixing Dish
C. The final result.

The bone defect should neither be over or under filled. If more material is required, add another layer by repeating the procedure from step 1. Additional newly prepared composite graft can be added on top of the composite graft already in place.
OPTION 2
BY ITSELF
Preparation Step

The following items are required when using BondBone™ by itself.

- Sterile dish
- Sterile Dry Gauze Pads
- A Sterile BONDONE™ Driver
- Sterile Medical Syringe with a sterile saline and sterile medical needle 21-27G (1.25”-1.5”)

BY ITSELF
Step 1.

A. The BondBond™ driver.

B. Twist and pull the cap.

Components:

A Sterile BONDBONE™ Driver

The BondBond™ driver.

Twist and pull to remove the driver's cap.

Push the piston to line 1 marked on the driver.

Twist and pull the cap.

Note:

Make sure that you disconnect the driver's cap rather than the driver's head.
Step 2.

A. Activating BondBone™.

Hold the driver and the syringe horizontally. Push the piston towards the line marked “1” until you meet resistance. Insert the syringe’s needle through the driver’s head, and eject the saline from the syringe into the BondBone™ driver.
- Eject until saline drips out.
- Do not block the driver’s aperture.

Components:
- A Sterile BONDBONE™ Driver
- Sterile Medical Syringe with a sterile saline and sterile medical needle 21-27G (1.25"-1.5")

Note:
Make sure the material is entirely wet, if it is not, add more saline until liquid surplus drips out of the driver’s head. The needle should be long enough to reach the piston.
Step 3.

A. Expelling the liquid from the driver.

Hold the driver’s head handles firmly and gently push the piston in the direction of line 2 to expel excess liquid.

B. Compress the putty.

Make sure you pushed the piston gently in the direction of line 2. The pressure should be applied until a resistance is felt, caused by the putty.

Note:
1. In case of over compression the piston could not be advanced to line 2 freely. In that case, stop pushing the piston and go on to step 4.
2. Make sure that the material is entirely wet, if not, inject more saline into the driver.

Components:
- A Sterile BONDONE™ Driver
- Sterile dish
Step 4.

A. Remove the driver’s head.

Components:

A Sterile BONDBONE™ Driver

Remove the driver’s head.

Hold the driver horizontally and remove the driver's head by twisting and pulling.

Note: Make sure you disconnect the driver’s head rather than the driver's cap.
Step 5.

A. **Absorb the liquid.**

Cover the aperture using a dry gauze pad and slightly push the piston against it. This will absorb any excess liquid to obtain the desired viscosity.

Components:

- A Sterile BONDBONE™ Driver
- Sterile Dry Gauze Pads
Step 6.

A. Apply BondBone™.

Apply BondBone™ paste into the required site by pushing the piston and ejecting the paste.

B. Augmentation with BondBone™.

The bone defect has to be entirely filled with paste in order to obtain good contact with natural bone.

Components:

A Sterile BONDBONE™ Driver

A. Apply BondBone™.
Step 7.

A. Condensing the composite graft.

Apply a dry gauze pad for 3-5 seconds and condense the paste, using moderate pressure.

B. Shape the graft.

Shape as necessary to achieve the desired form.

Components:

- Sterile Dry Gauze Pads

Note:

Make sure the time elapsed since the material was mixed with the saline did not exceed 2-3 minutes. Once the setting time has passed, additional setting is not possible however the material would still behave as a graft. In that case, the practitioner may decide whether to add a membrane (BondBone® or any other type of membrane).
Step 8.

A. Wet the gauze pad.

Wet the gauze pad.

B. Wetting the graft.

Wetting the graft.

Wet a sterile gauze pad with sterile saline.

Place the gauze pad on the graft. Remove the gauze pad after about 30 seconds. Proceed with soft tissue coverage and wound closure.

Components:

- Sterile Dry Gauze Pads
- Sterile dish
C. The final result.

The bone defect should neither be over or under filled. If more material is required, add another layer by preparing and placing additional BondBone™.

For further assistance, please see the step by step CD or visit: www.mis-implants.com/BB