Wickland

ALLGENS

BIOMIMETIC
MINERALIZED COLLAGEN

BONE GRAFTS

Mineralized Collagen Artificial Bone Repair Material

Biomimetic Bone Closest to Autologous Bone

Distributed by :

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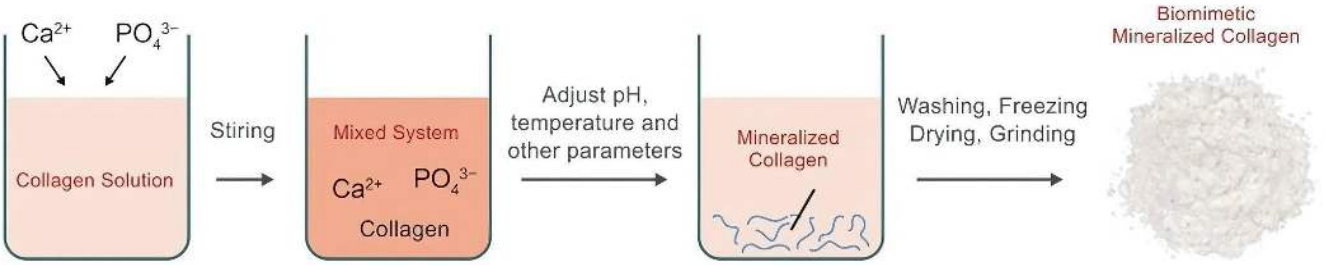
TECHNICAL OVERVIEW

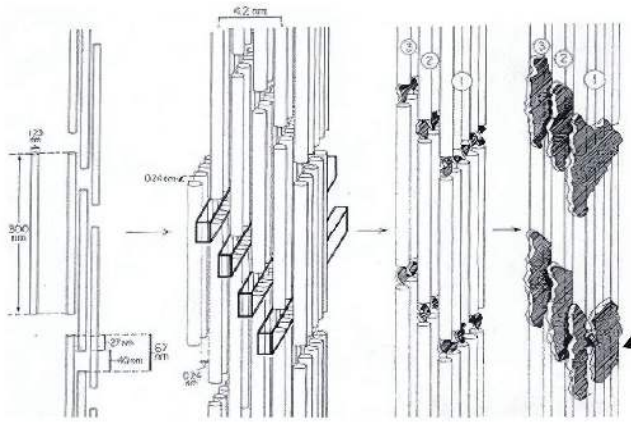
Mineralized collagen artificial bone repair material is a type I collagen/nano-hydroxyapatite (n-HA) composite bionic bone synthesized by in vitro mineralization technology. It has a bionic microstructure in which collagen and hydroxyapatite are arranged in an orderly manner. The new bone tissue is completely replaced by crawling.

This technology originates from the national 863 project research of Tsinghua University, and has obtained Chinese patent (ZL01129699.2) and US patent (US 6,887,488 B2)

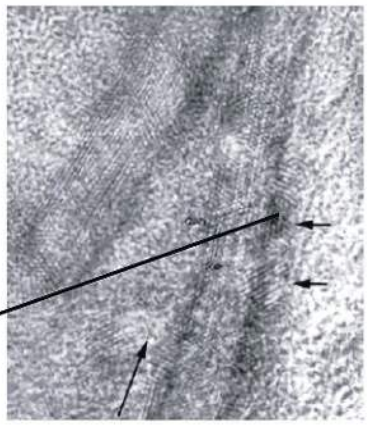
Preparation Route of Mineralized Collagen - In Vitro Biomimetic Mineralization Technology



Material Characterization of Mineralized Collagen Compared with Schematic Diagram of Natural Mineralized Collagen

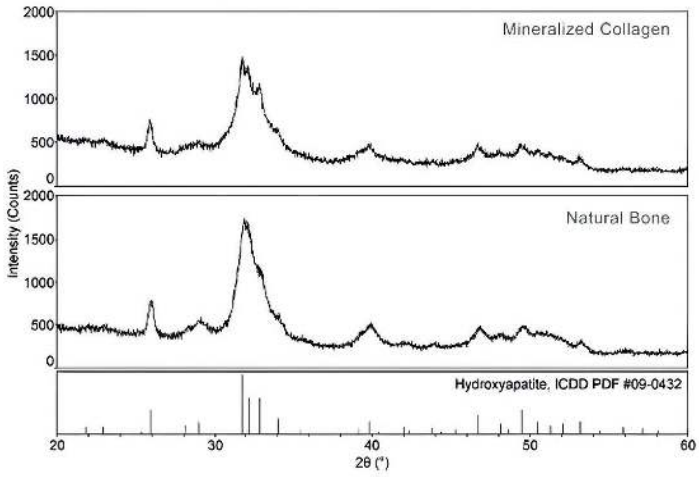


Schematic Diagram of the Microstructure of Natural Mineralized Collagen



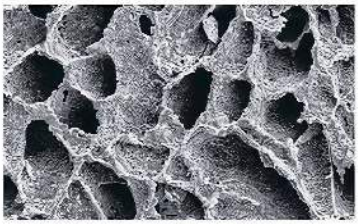
The C axis of Hydroxyapatite is Parallel to the Collagen Fibers Consistent with Natural Bone Structure

Mineralized Collagen is Highly Consistent with the Phase Composition of Natural Bone Tissue

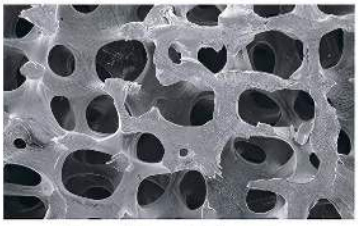


X-ray Diffraction Analysis:

The phase composition of synthetic mineralized collagen material (Top) is highly consistent with that of natural bone (Bottom)

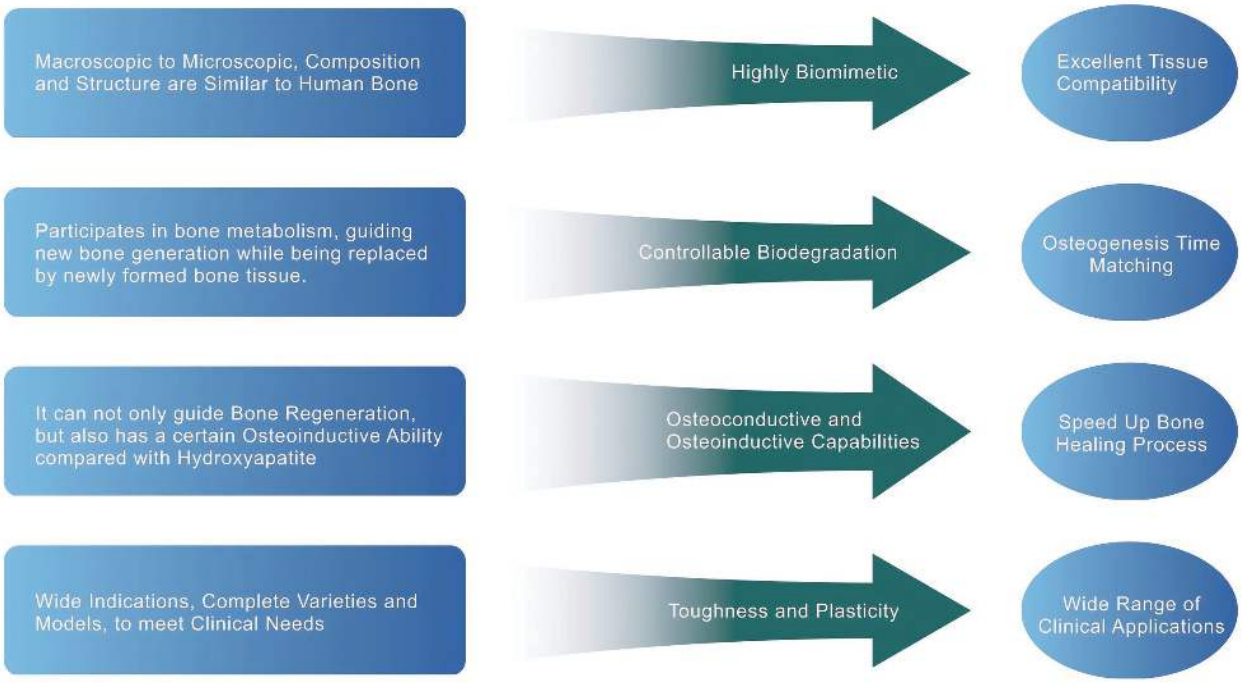


Mineralized Collagen Material



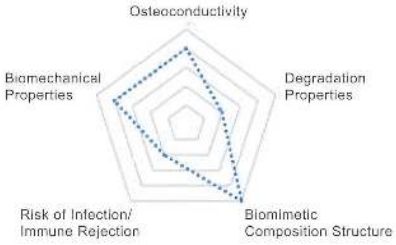
Natural Bone Trabeculae

PRODUCT ADVANTAGES

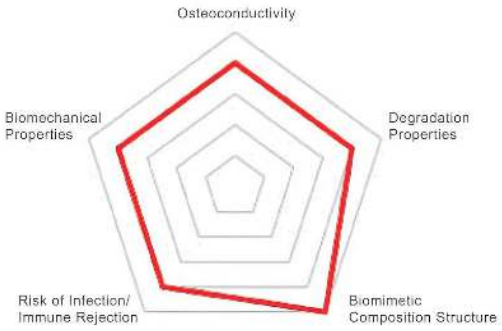


COMPARISON OF SIMILAR PRODUCTS

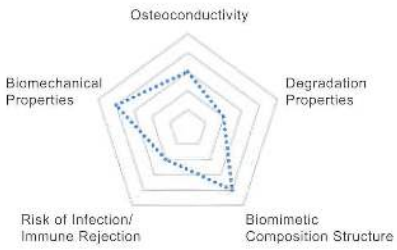
Allograft Bone



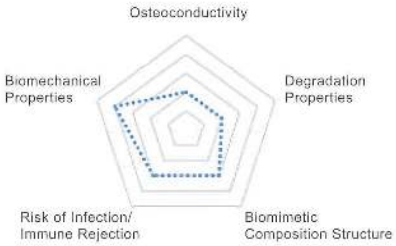
Mineralized Collagen



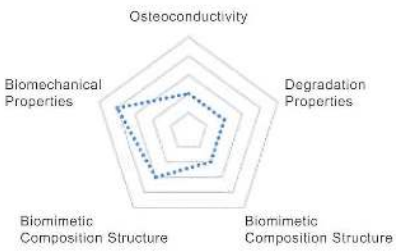
Xenograft Bone



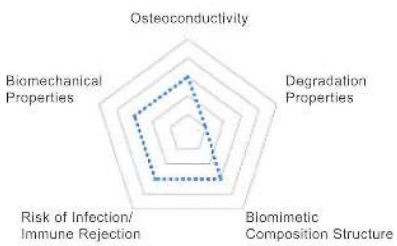
Calcium Phosphate/ Calcium Sulfate Bone Cement



Polylactic Acid



Bioceramics



PRODUCT DESCRIPTION

Filling Biomimetic Bone

Clinical Use

- Repair of Bone Defects caused by Various Fractures; Delayed Union, Non Union, or Abnormal Union of Fractures
- Repair of Bone Defects after Curettage of Various Benign Bone Tumors or Tumor Like Lesions
- Repair of Bone Defects in Primary or Revision Joint Replacement
- Bone Grafting during Spinal Fixation and Fusion
- Various types of Osteotomy and Orthopedic Bone Graft Fusion

Bone Fusion Membrane

Clinical Use

- Various Spinal Fusion Surgeries
- Various Joint Fusion Surgeries
- Repair of Fracture Line during Internal Fixation of Fractures
- Delayed or Non Union of Fractures

Artificial Periosteum (GBR Membrane)

Clinical Use

- It can be used alone as a Guide Membrane for Bone Regeneration
- Attachment of the Bone Wall at the Site of Fracture Bone Defect

Medium Strength Granule/Chunk

Clinical Use

- Filling and Repair of Bone Defects in Areas that require Certain Support Strength

Artificial Bone Putty

Clinical Use

- Filling and Regenerative Repair of Irregular Bone Defects in Non-Load-Bearing Parts
- Bone Defect Filling with Minimally Invasive Surgery
- Temporary Bonding and Filling of Broken Bone Fragments in Fracture Surgery
- Bone Grafting for Infectious Bone Defects (Drug Loading and Sustained Release)
- Used in Combination with 3D Printing Metal Bone Implant Materials

Filler Rod for Screw Path

Clinical Use

- Filling and Repair of the Screw Tunnel after Removal of Internal Fixation

PMMA Modified Bone Powder

Clinical Use

- Vertebral Compression Fractures caused by Various Reasons

Usage Method

- Mix Specific Type of Modified Bone Powder into PMMA Bone Cement according to the Operating Instructions

Observation on Cross-section of PMMA Modified Bone Powder Composite Bone Cement Cured Body

Features

- While maintaining the support strength, the elastic modulus of the original bone cement is significantly reduced, avoiding wear on the upper and lower endplates, and reducing the incidence of refracture of adjacent vertebral bodies
- Significantly increase the biological activity of PMMA bone cement, which is conducive to the formation of osseointegration between bone cement and bone tissue
- Does not change clinical bone cement injection performance
- No need for other special equipment or changing operating habits

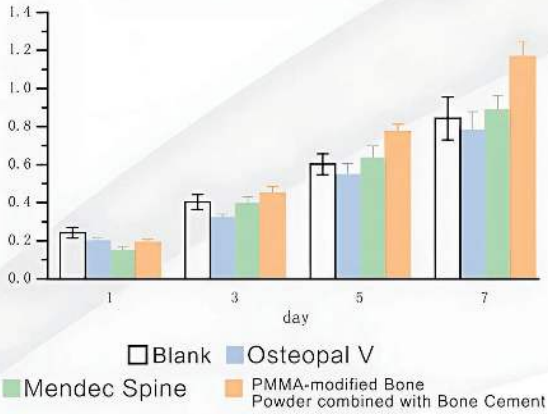
Pure PMMA Bone Cement

PMMA Modified Bone Powder, Composite Bone Cement

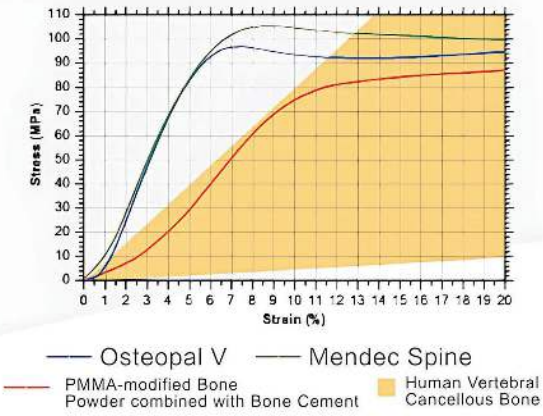
Performance

It can guarantee the support strength of PMMA bone cement and reduce the elastic modulus while endowing it with better biological characteristics. Compared with the currently commonly used simple PMMA bone cement, it has superior living activity and osseointegration ability, and achieves better results. clinical effect.

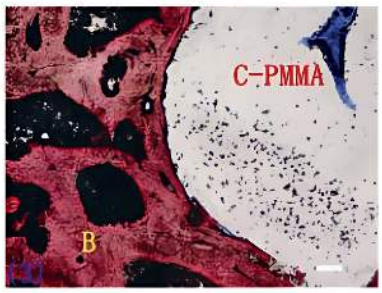
Comparison of Cytocompatibility of PMMA-modified Bone Powder combined with Bone Cement



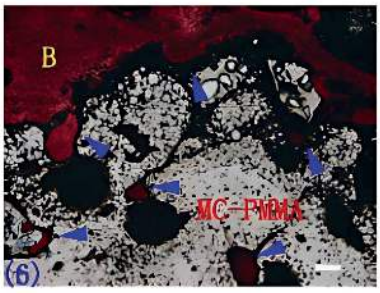
Comparison of Elastic Modulus of PMMA-modified Bone Powder Composite Bone Cement Cured Body



Evaluation of the Integration Ability of Pure PMMA Bone Cement and PMMA-modified Bone Powder Composite Bone Cement [22]



Control Group
(24 weeks)
Pure PMMA Bone Cement



Experimental Group
(24 weeks)
Mineralized Collagen Modified PMMA Bone Cement

It has been clinically used in more than 10,000 cases, and the effect is good. Clinical observations in many tertiary hospitals have shown that the incidence of secondary fractures of adjacent vertebrae has dropped from 13.3% to 2%, and there is no loosening and falling off of bone cement.

Reconstruction Rod for Femoral Head Necrosis

Clinical Use

- Early Necrosis of the Femoral Head (Stage I, Stage II)

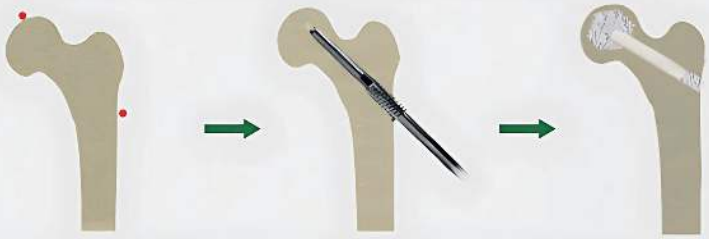
Features

- Provide Structural Support for Femoral Head Necrosis
- Improve the Process of Femoral Head Necrosis and Delay the Time of Total Hip Replacement
- Physiological Load without Destroying the Healthy Bone of Femoral Head and Femoral Neck
- The Support Strength is close to that of Cortical Bone
- Does not Affect the Second Operation, no need to Remove

Performance

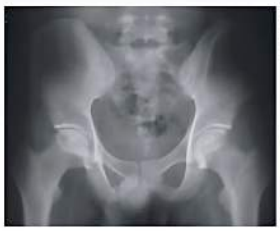
- The elastic modulus is close to that of autogenous bone, which can improve the bone structure in the femoral head necrosis area, and quickly integrate with the surrounding bone, repair bone tissue, and achieve the purpose of biological support and fixation.

Operation Diagram

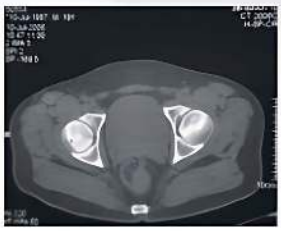


Typical Case 1

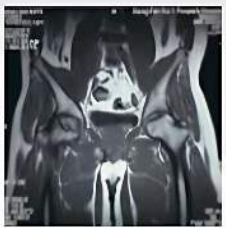
Male, 19 years old, bilateral idiopathic femoral head necrosis. Preoperative X-ray showed extensive necrosis of bilateral femoral heads. The bone necrosis femoral head reconstruction rod was used for treatment. Three months after the operation, the bilateral hip joint pain disappeared, and the joint range of motion returned to normal. After 1 year of follow-up, the X-ray showed that the position of the bone support frame was good, the shape of the femoral head and the joint space were normal, and the Harris score was 92 points.



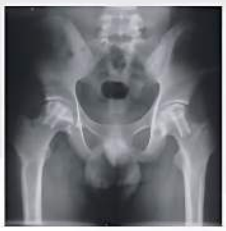
Pre-op X-ray film



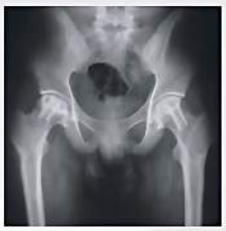
Pre-op CT



Pre-op MRI



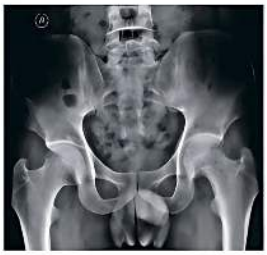
3 months Post-op X-ray film



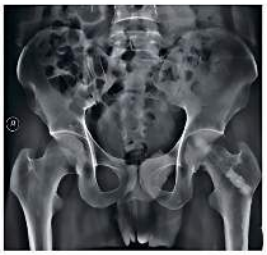
1 year Post-op X-ray film

Typical Case 2

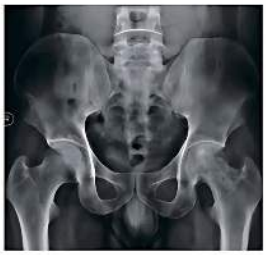
Male, 35 years old, with early necrosis of the left femoral head (Steinbery stage II). The shape of the femoral head was acceptable before operation, without collapse, and there was no osteoarthritis in both hip joints. The osteonecrosis of the femoral head was treated with the BONGOLD reconstruction rod, and callus formed around the artificial support frame 8 months after the operation. 24 months after the operation, the necrotic area of the femoral head re-ossified, and the artificial bone support frame was obviously absorbed and the shape was blurred.



Intra-op



8 months Post-op



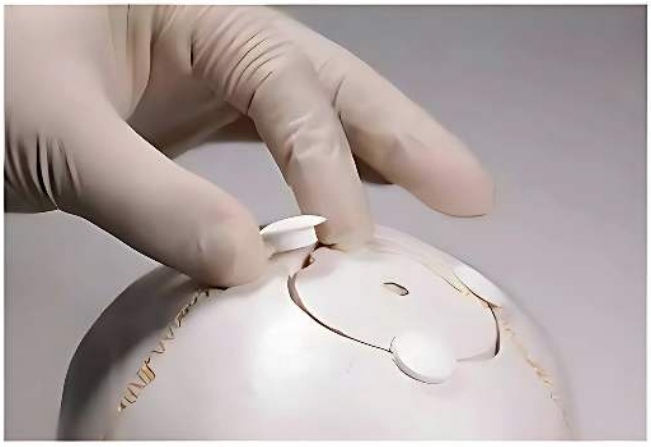
24 months Post-op

PRODUCT INTRODUCTION

Skull Repair Plug

Clinical Use

- Repair of Bone Defect caused by Drilling in Craniotomy
- Microvascular Decompression (MVD) for the Repair of Small Bone Window Defects such as Trigeminal Neuralgia, Hemifacial Spasm, and Glossopharyngeal Neuralgia
- Repair of Small Skull Defects



*The Repair Plug can be Smeared or Infiltrated with Autologous Blood, and can be used after Trimming and Shaping with a Surgical Blade according to Clinical Needs

Features

- Integrated Molding Design solves the Interference of Granular Implants in Osteogenic Soft Tissue Growth (Soft Tissue Growth Rate is 3-4 times faster than Osteogenic Rate)
- The Porous Microstructure allows for Better Collection and Enrichment of Blood Supply, facilitating Rapid Osteogenesis
- Different Diameters are available, suitable for 6-20mm diameter Drilling Repair, to achieve Anatomical Repair and Functional Reconstruction
- It can reduce the Bleeding of the Plate Barrier, and fill the Small Bone Window in the part not covered by the hair, which can increase the Appearance and reduce Postoperative Discomfort
- Material can be Degraded and Absorbed, more suitable for Children

Performance

Bone substitute material based on the principle of bionics. Using purified and deantigenated type I collagen as a template, the composite material is obtained by modulating mineralization in a calcium-phosphorus salt solution. The mineral phase is hydroxyapatite with low crystallinity, and the crystal size is on the nanometer scale and is evenly distributed. On the collagen matrix, self-assemble with collagen into a hierarchical structure imitating natural bone. These characteristics endow the material with the ability to bond with bone itself. The surface of this composite scaffold material can provide a suitable environment to promote the adhesion and active expression of bone cells.

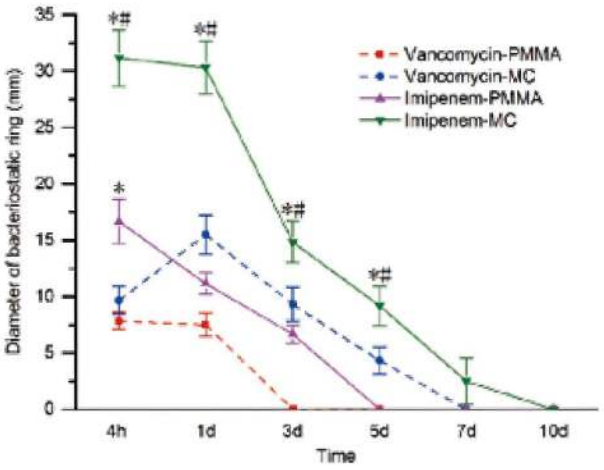
Mineralized Collagen Synthetic Bone Putty

Clinical Use

- Bone Seam Filling caused by Craniotomy Milling Cutter Blade and Skull Fracture
- Repair of Small Skull Defects caused by Drilling in Craniotomy
- Filling and Bone Repair of Skull Base after Transsphenoidal Resection of Pituitary Tumour

Features

- Excellent Plasticity, can be Shaped Arbitrarily according to the Shape of Bone Defect
- Good Injectability, meet the requirements of Minimally Invasive Surgery
- Can Quantitatively Load Antibiotics, Anti-tuberculosis Drugs, etc., and achieve Sustained Release effect



Filling Biomimetic Bone

Clinical Use

- Repair of Bone Defects caused by Various Fractures; Delayed Union, Non Union, or Abnormal Union of Fractures
- Repair of Bone Defects after Secondary Surgery
- Filling and Repairing Various Small Bone Defects in the Skull
- Bone Grafting or Bone Defect Repair during Spinal Fixation and Fusion
- Various types of Osteotomy and Orthopedic Bone Graft Fusion
- Repair of other types of Bone Defects without Contraindications for Bone Grafting

Synthetic Periosteum

Clinical Use

- Attachment of Bone Wall at Irregular Defect Site of Skull
- Repair of Fracture Line in Fresh Skull Fracture Internal Fixation Surgery
- Combined with Titanium Mesh for Skull Repair, Guiding Bone Regeneration
- Other Operations requiring Conventional Bone Grafting

Bone Fusion Membrane

Clinical Use

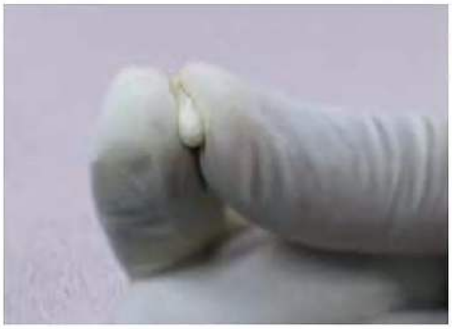
- Can be used alone as a Bone Regeneration Guidance Membrane
- Spinal Fusion: including Paravertebral Fusion, Intervertebral Fusion, etc
- Delayed or Non Union of Fractures, combined with Bone Marrow Grafting
- Other Operations requiring Conventional Bone Grafting

The First Filling Plug that can guide Bone Generation (Osteogenesis) in China

MINERALIZED COLLAGEN SYNTHETIC DENTAL SOCKET PLUG

Features

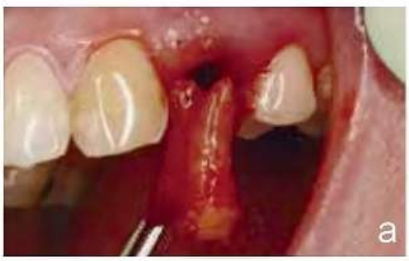
- Biomimicry of Composition and Microstructure: Biomimetic Self-assembly of Type I Collagen/Nano-hydroxyapatite In Vitro
- Unique 3D Structure: the Porosity is greater than 70%, and the Pore Size is 50-550 μm, which provides sufficient space for Angiogenesis and New Bone Regeneration
- Integrated Molding Design, Shortening Operation Time
- It can be shaped arbitrarily in the dry state, adapting to the shape of various bone defects.

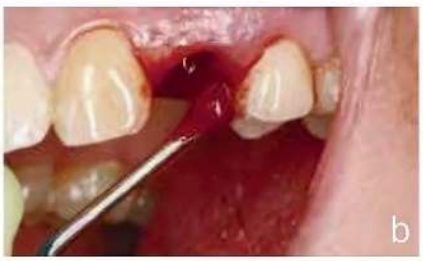


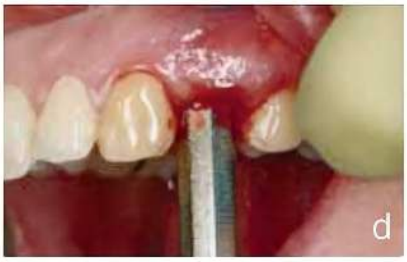
Indications

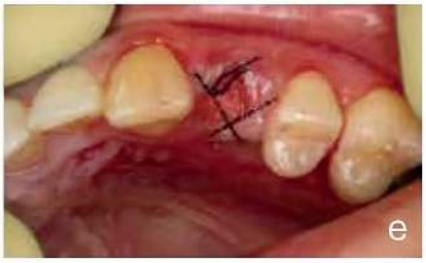
- Site Preservation before Restoration after Tooth Extraction
- Effectively prevent Poor Hemostasis and Dry Socket after Tooth Extraction
- Bone Defect Filling after Apicectomy
- Bone Defect Filling after Cyst Curettage
- Prevent Bone Resorption after Tooth Extraction

SURGICAL EXAMPLES









a. Extraction of Affected Teeth

b. Scrape Off Granulation Tissue

c. Insert a Dry Extraction Plug of Matching Size

d. Confirm Filling In Place

e. Postoperative Suturing
(Film Covering is Recommended)

Leading the 2.5-Generation Biomimetic Bone

MINERALIZED COLLAGEN SYNTHETIC BONE POWDER

Features

- Biomimetic Composition and Microstructure: Biomimetic Self-assembly of Type I Collagen/Nano-hydroxyapatite In Vitro
- Unique 3D Structure: the Porosity is greater than 70%, and the Pore Size is 50-550 μm, which provides sufficient space for Angiogenesis and New Bone Regeneration
- Unique Passive Degradation Method, the Bone Material is always in contact with the Trabecular Bone, Gradually Autogenizing
- Excellent Hydrophilicity, Easy and Convenient Bone Grafting Operation

Indications

- Bone Defect Repair after Tooth Extraction can be used for Site Preservation
- Filling and Repairing of Bone Defects around Implants
- Repair of Alveolar Bone Defect caused by Periodontal Disease
- Maxillary Sinus Lift
- Repair of Bone Defect after good Tumor Resection and Curettage of Cyst in Oral and Maxillofacial Region
- Repair of Bone Defects caused by other Oral Diseases





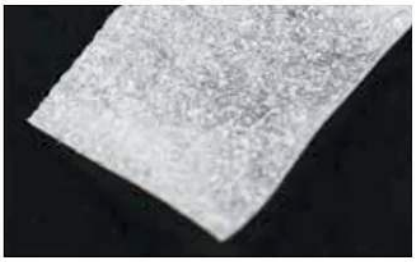

Operating Requirements

Note: Mineralized collagen synthetic bone powder needs to be hydrated with physiological saline or blood before use.
The recommended hydration ratio is 1.2cm3 powder+0.9ml water/blood; 0.6cm3 powder+0.4ml water/blood; 0.3cm3 powder+0.3ml water/blood (can be changed according to operating habits)

MINERALIZED COLLAGEN GUIDED BONE (TISSUE) REGENERATION MEMBRANE

The core of GBR (Guided Bone Regeneration) is the barrier of soft tissue fibroblasts by the biological barrier membrane, and the existence of the biological barrier membrane determines the quality of bone formation.

Features



- Unique Double-layer Structure, Barrier Protection Function Up to 3-6 months
- Collagen Material is Pure and Originates from Bovine Tendons
- Excellent Hydrophilic Adhesion, still maintains sufficient Tensile Strength in a Wet State
- Provide sufficient space for Hard Tissue Growth, promote Bone Regeneration and Osteoblast Proliferation

SMOOTH SURFACE

Barrier Function, prevent Fibrous Connective Tissue Cells from entering the Bone Defect Area, and protect New Bone Formation

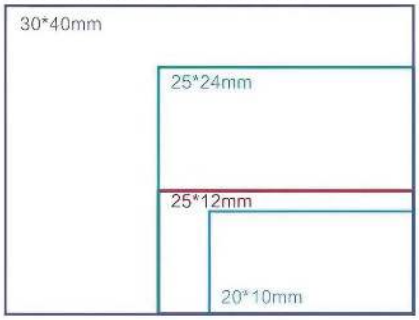
ROUGH SURFACE

Rich in Bionic Bone, which stabilizes Bone Graft Materials and Blood Clots, and enables Bone Cells to tightly combine with Membranes to promote Bone Formation

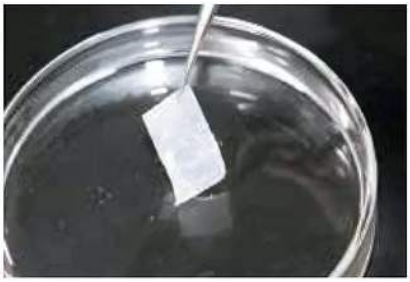
Indications

- Periodontal Defect/Bone Defect
- Alveolar Ridge Augmentation
- Guide the Regeneration of Bone Defects during Immediate Implantation and Delayed Implantation
- Treatment of Bone Resorption caused by Peri Implant Inflammation
- Application of Maxillary Sinus Elevation
- Application in Maxillofacial Surgery
- Application in Plastic Surgery

Specifications and Dimensions



Operating Requirements



Note: It needs to be soaked in normal saline or blood for 1-3 minutes before use, and can be cut arbitrarily according to the needs of the operation.

FILLING BIOMIMETIC BONE

Indications

- Due to various reasons, there is no Contraindication for Implantation of Bone Defect Filling and Regeneration Repair
- Rich Specifications and Models can meet Various Clinical Bone Defect Requirements

MINERALIZED COLLAGEN SYNTHETIC PUTTY

Product Features

- Moldable, Injectable, Drug Loaded, and Compatible with Bone Powder
- Solved the Problem of Inconvenient Maxillary Filling Operation

Allgens Mineralized Collagen Synthetic Bone Repair Material is the first in the world. After decades of research and development, millions of clinical cases, it is widely used in stomatology, plastic surgery, orthopedics, neurosurgery and other fields. The synthetic bionic bone repair products certified by the US FDA bring health and happiness to patients and families.