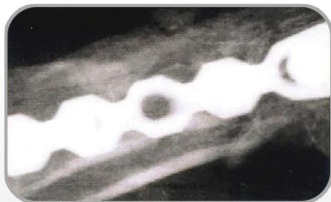


Clinical Case Study

Use of Grand Blend and internal fixation in the treatment of a comminuted metatarsal fracture



A 41 year old male presented with a secondary crush injury of the right foot. Length of the first metatarsal was re-established with a 6-hole condylar plate by securing it to the most distal and most proximal bone fragments with bone screws. Three cc of Grand Blend was injected about the area of extreme comminution to provide both osteoinductive and osteoconductive influence to augment bone healing. Union was achieved with robust bone formation observed around the third screw hole.



1-Month Post-Op

X-ray revealed the graft in place and showed areas of soft callus formation

Ordering Information

Product #	Fill Volume	Container Type
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Grand Blend Paste

977-0490	1.0 cc	Syringe
977-0491	3.0 cc	Syringe
977-0492	8.0 cc	Syringe

Grand Blend Putty

977-0496	5.0 cc	Vial
977-0497	10.0 cc	Vial



3-Months Post-Op

X-ray showed extensive bone remodeling in the area of comminution

The 2-in-1 bone graft solution

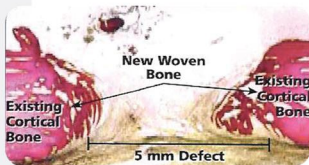
DBM and cancellous bone in a reverse phase medium

Combining osteoinductive and osteoconductive elements in a proprietary, reverse phase medium, Grand Blend is a powerful choice for bone grafting. Available in both putty and paste, they contain demineralized bone matrix (DBM) to stimulate new bone growth, and cancellous bone to support bone formation - plus a unique, temperature-responsive medium that facilitates both handling and graft containment.

Proven Bone Formation in a Large, Load-Bearing Animal Model

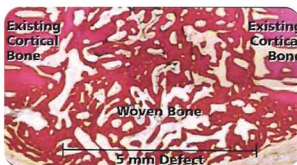
Grand Blend was evaluated in a skeletally mature sheep model. Cylindrical 5 mm transcortical defects were created in the tibial diaphysis and grafted with Grand Blend. The animals healed for 8 or 16 weeks prior to histological analysis of the regenerated tissue. Sections were stained with a modified Van Giesonstain for assessment of bone regeneration and graft incorporation.

Complete osseous bridging of the 5 mm defect with prolific woven bone was evident by 8 weeks. Active remodeling of the regenerated woven bone to new cortical bone was evident by 16 weeks. Excellent biocompatibility was observed with no evidence of inflammatory response.



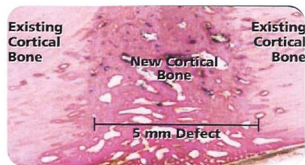
Empty Control at 8 weeks (20x)

A 5mm empty tibial defect with no added graft material served as the negative control. Minimal bone regeneration was observed within the defect at 8 weeks with healing limited to the area adjacent to the existing cortical bone.



8-week Tibial Defect (20x)

Prolific woven bone was seen bridging the defect by 8 weeks. Active remodeling was evident with no adverse inflammatory response to Grand Blend.



16-week Tibial Defect (20x)

Healing of the defect was near completion was demonstrated by the transformation of woven bone to a new cortical bone .5mm.

Osteoinductive and Osteoconductive

DBM contains the full complex of bone morphogenetic proteins (BMPs) that provide the osteoinductive signal to form new bone. Each lot of DBM is tested for osteoinductivity in a quantitative in vitro assay for its ability to stimulate new bone formation. Cancellous bone supplies an osteoconductive scaffold facilitating the attachment of osteogenic precursor cells.

Superior Handling Characteristics

Grand Blend is highly malleable at room temperature and can easily be packed and molded into any defect. Grand Blend resists irrigation and thickens at body temperature for superior containment at surgical site.

Delivered sterile in vial or syringe, Grand Blend or Paste is ready to use with no refrigeration, thawing or premixing required.