CERAMENT® BONE VOID FILLER

CERAMENT® is an injectable, moldable, drillable and radiopaque bone substitute which provides rapid and complete bone remodeling within 6-12 months1,2,3.

Unique features:
- Injectable, Moldable, Drillable1,2,3
- Rapid and complete bone remodeling1,2,3
- Highly visible under fluoroscopy2
- 30 second, enclosed mix
- Not temperature sensitive
- Non-exothermic
- Robust clinical data

Reconstructive Orthopedics
- Revision Hip Arthroplasty
- Revision Knee Arthroplasty
- Revision Shoulder Arthroplasty - Glenoid
- Backfill Hardware Removal

Trauma
- Tibial Plateau FX
- Distal Femur FX
- Distal Radius FX
- Proximal Humerus FX

Foot & Ankle
- Calcaneal FX
- Arthrodesis
- Charcot Foot
- Calcaneal Cysts
- Backfill Hardware Removal

Ortho-Oncology
- Benign Bone Tumors and Cysts
- UBC, ABC and Enchondroma

REFERENCES
Acetabular revision surgery - intra-op image utilizing CERAMENT® BONE VOID FILLER

Pre-operative acetabular fracture

Radiograph at 12 months post-op demonstrates fracture healing with remodeling of CERAMENT® BONE VOID FILLER into trabecular bone

Intra-operative AP radiograph showing placement of CERAMENT® BONE VOID FILLER

At 12 months - bone remodeling and hip mobility observed radiographically

At 32 months - bone remodeling and hip mobility observed radiographically

Intra-operative percutaneous replacement of bone void with CERAMENT® BONE VOID FILLER

24-month post-operative lateral radiograph demonstrating complete incorporation by bone

Pre-operative radiograph of proximal humerus fracture

Pre-operative lateral radiograph of calcaneal bone cyst

REFERENCE IMAGES REPRODUCED BY KIND PERMISSION OF:
1. Dr. M. Van Der Elst, Reinier de Graaf Hospital, Delft, The Netherlands
2. Dr. J. Svacina, Bodden-Kliniken Ribnitz-Damgarten, Germany
3. Dr. L. DiDomenico, Adjunct Professor, Ohio College of Podiatric Medicine, Youngstown, Ohio, USA
Hip Revision

A 61-year old male with a history of well-positioned, well functioning bilateral uncemented THAs presented with progressive left hip pain over 6 months.

X-rays showed a large cystic osteolytic lesion in the left acetabulum involving the superior dome and the medial wall with extension into the ischium. CT scan confirmed extensive amount of osteolysis.

Intraoperatively, significant wear of the polyethylene liner allowing subluxation of the femoral head was found. The cup was solidly fixed and was not revised. The femoral head was exchanged for a new 32 mm head and the liner was exchanged to a 10-degree elevated lip liner.

A 2x2cm window was made above the acetabulum at the level of the cyst.

The cyst was curetted and filled with 32cc CERAMENT®|BONE VOID FILLER (Fig. 1). Once CERAMENT® had set, the wound was irrigated and closed.

At 6 weeks post-op, the patient had good and painless range of motion and was weight-bearing without aides. X-rays confirmed good positioning of the acetabular implant CERAMENT® is still visible (Fig. 2). At 11 weeks post-op, CERAMENT® is no longer visible (Fig. 3).

At 8 months post-op, the patient was doing well and was pain-free. X-rays demonstrated CERAMENT® to be nearly completely resorbed and replaced with new cancellous bone (Figs. 4 & 5).

Reference:

Thomas Baier, M.D.
Advocate Condell Medical Center, Libertyville, IL USA

CERAMENT®|BONE VOID FILLER can be used in the pelvis for acetabular revision only.
Right Hip Hardware Removal

Hip Head and Liner Replacement

Hip Revision Comparing CERAMENT® to a Beta BSM product

Avascular Necrosis and Osteoarthritis

1. Donald Sullivan, MD, Decatur, IL.  
2. Shahan Yacoubian, MD, Burbank, CA.  
3. Nathan Mesko, MD, Cleveland, OH.  
4. Donald Sullivan, MD, Decatur, IL.

CERAMENT BONE VOID FILLER can be used in the pelvis for acetabular revision only.
Bicondylar Osteoporotic Tibial Plateau Fracture

A female (88 years old) underwent open reduction and internal fixation of angulated, impacted, displaced and unstable left tibial plateau bicondylar fracture, with percutaneous lateral plate application.

CERAMENT®|BONE VOID FILLER was injected to fill resulting void after fracture reduction. Fig A & B.

At 18 months patient was clinically improved and ambulating well.

Radiographs showed remodeling of CERAMENT®|BONE VOID FILLER into new bone. Fig C & D.

Reference:
Thomas Baier, M.D.
Advocate Condell Medical Center, Libertyville, IL USA
Osteotomy of Distal Radius Fracture Malunion

3 month post-op | Immediate post-op showing CERAMENT®|BVF under fluoroscopy | 12 month post-op

Humeral Head Fracture

Pre-op | Treated with 10 cc of CERAMENT®|BVF | At one year bone remodeling is demonstrated

Tibial Plateau Fracture Dx (AO; C3) 32 year old

Pre-op | Pre-op | 1 month post-op | 3 month post-op | 6 month post-op | 12 month post-op

Elbow (Olecranon)

Pre-op | Hardware without CERAMENT® | Intra-op with CERAMENT® | 3 month post-op with clear visibility of early bone remodeling

Treatment of displaced intra-articular calcaneal fracture

A female (54 years old) with a displaced intra-articular calcaneal fracture had open reduction and internal fixation (ORIF) (Fig. A & B). The resulting bone void after fracture reduction was filled with CERAMENT® BONE VOID FILLER. (Fig. C & D)

After 45 days, the iohexol has washed out and early bone formation is seen (Fig. E & F).

Removal of the plate at 5 months due to pain (no signs of infection) facilitated a bone biopsy which showed early signs of new bone growth where CERAMENT® was implanted (Fig G).

The patient demonstrates a good result and is fully weight-bearing. (Fig. H & I).

Reference:
Damiano Papadia
Reparto di Ortopedia e, Traumatologia Ospedale, Santa Chiara, Trento, Italy

CERAMENT® BONE VOID FILLER in Foot and Ankle

Figure A & B. Pre-op radiographs

Figure C & D. Immediate post-op

Figures E & F. At 45 days, iohexol has washed out

Figure H & I. 5 months after surgery and with the plate removed, radiological bone healing is demonstrated

Figure G. 5 month Histology
Open Calcaneal Fracture² - 5cc

Calcaneal Non-Union and Sub-Talar Joint Arthrodesis from a Calcaneal Fracture with Arthrodesis¹

Charcot Deformity³

Calcaneal Benign Bone Cyst Removal⁴
Minimally Invasive Treatment of a Benign Proximal Humeral Cyst

Large unicameral bone cyst (UBC) of the proximal humerus with thinning of proximal cortices (Fig. 1).

The cyst was aspirated using a large-bore needle then exchanged for a cannula for pressure relief during injection of CERAMENT®|BONE VOID FILLER (Fig. 2, 3).

An additional cannula was placed into the distal part of the cyst. The CERAMENT®|BONE VOID FILLER delivery syringe was attached to the end of the distal cannula and injected one minute after mixing to ensure complete filling of the void via a bottom-to-top (distal to proximal) technique.

30cc of CERAMENT®|BONE VOID FILLER was injected. Iohexol provides visibility of product under fluoroscopy (Fig. 3) and the post-operative radiograph (Fig. 4).

6 week X-ray demonstrates a white ‘halo effect’ outlining the cyst (Fig. 5). At 3 months, early bone remodeling is seen, along with a ‘puddling effect’ at bottom of cyst (Fig. 6).

5 month X-ray shows on-going replacement of CERAMENT®|BONE VOID FILLER with new cancellous bone (Fig. 7).

Reference:
Joseph Benevenia, M.D.
Rutgers University Hospital, Newark, NJ
Femoral Neck Bone Cyst

Pre-op | Intra-op with 10cc of CERAMENT®|BVF | After one year, bone remodeling is demonstrated.

Enchondroma of the Distal Femur, 63 Year Old

Pre-op | 20 days post-op | 5 month post-op showing early bone formation | 7 month post-op showing continued bone regeneration | 10 month post-op showing continued bone regeneration

Bone Cyst of the Proximal Humerus

Pre-op | Pre-op | Post-op showing where CERAMENT® was injected | 4 month post-op increasing bone density indicating bone regeneration

Restoring health to improve the quality of life for patients with bone disorders.

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