CERAMENT® BONE VOID FILLER
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CERAMENT® | BONE VOID FILLER

CERAMENT® is an injectable, moldable, drillable and radiopaque bone substitute which provides rapid and complete bone remodeling within 6-12 months\textsuperscript{1,2,3}.

Unique features:
\textbullet \textit{Injectable, Moldable, Drillable}\textsuperscript{1,2,3}
\textbullet \textit{Rapid and complete bone remodeling}\textsuperscript{1,2,3}
\textbullet \textit{Highly visible under fluoroscopy}\textsuperscript{2}
\textbullet 30 second, enclosed mix
\textbullet Not temperature sensitive
\textbullet Non-exothermic
\textbullet Robust clinical data

References:
THE PROBLEM

TRAEUMA

Pre-op radiograph of proximal humerus fracture

RECONSTRUCTIVE ORTHOPEDICS

Pre-operative acetabular fracture

BONE CYST

Pre-operative lateral radiograph of calcaneal bone cyst

THE SOLUTION

TRAUMA

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

RECONSTRUCTIVE ORTHOPEDICS

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

At 12 months - bone remodeling and hip mobility observed radiographically

Bone cyst replacement with CERAMENT® BONE VOID FILLER

At 32 months - bone remodeling and hip mobility observed radiographically

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

REFERENCE IMAGES REPRODUCED BY KIND PERMISSION OF:
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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
Right Hip Hardware Removal

1. Donald Sullivan, MD, Decatur, IL.

Hip Head and Liner Replacement

2. Shahan Yacoubian, MD, Burbank, CA.

Hip Revision Comparing CERAMENT® to a Beta BSM product

3. Nathan Mesko, MD, Cleveland, OH.

Avascular Necrosis and Osteoarthritis

4. Donald Sullivan, MD, Decatur, IL.

1.5 year post-op. CERAMENT has completely incorporated and bone stock has reconstituted.

Post-op after injecting 20cc CERAMENT®/BVF

Comparing CERAMENT®/BVF and ETEX

6 month showing clear bone remodeling with CERAMENT®/BVF; No evidence of remodeling with Beta BSM

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

CERAMENT®|BONE VOID FILLER in Foot and Ankle

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

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

Open Calcaneal Fracture—5cc

Charcot Deformity

Calcaneal Benign Bone Cyst Removal

1. Dr. Jeffrey Karr, Lakeland, FL. 2. A. Hofmann, et al, Mainz, Germany. 3. Dr. Lawrence DiDomenico, Ohio, CA. 4. Dr. Lawrence DiDomenico, Ohio, CA.
CERAMENT® | BONE VOID FILLER
in Ortho-Oncology

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

Large Humeral Unicameral Bone Cyst in a Pediatric Case

Pre-op | Immediate post-op after injecting 28cc into void | 3 month post-op showing early signs of bone remodeling
