



Restorative

**ACTIVE
BIOSILICATE
TECHNOLOGY**

BiodentineTM

The First-Ever
Biological Bulk Fill



Biodentine™ : the first-ever Biological Bulk-Fill

Vital Pulp Therapy

1

Place Biodentine™ **on the pulp**

- Biodentine's™ biocompatibility ensures high cell viability.
- Biodentine™ is bioactive and promotes the pulp's self healing capacity and the formation of dentine bridges.
- In deep cavities, carious, iatrogenic and traumatic exposures: Biodentine™ helps you save the pulp every time it's not inflamed.

2

Simply **“bulk fill”** the cavity

- Biodentine™ is placed from the pulp to the top of the cavity, regardless of depth.
- Biodentine™ can be left as a temporary filling for up to 6 months if the pulp requires monitoring.
- A direct composite or an inlay/onlay is then placed for enamel-like aesthetics and resistance.
- Risk of failure is reduced by the outstanding seal and Biodentine's™ antimicrobial properties.

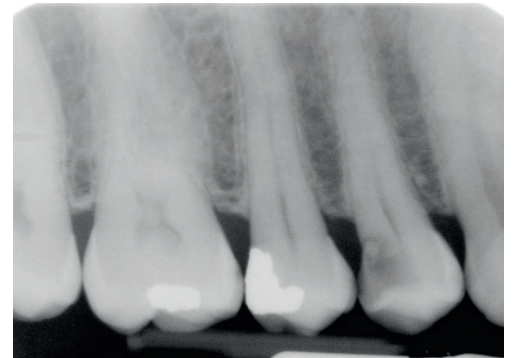


Final restoration placed within 6 months.

Clinical cases

Indirect pulp capping

Indirect pulp capping is indicated for a tooth with a carious lesion very close to the pulp. The pulp can be asymptomatic or showing signs or symptoms of reversible pulpitis. Biodentine's™ dentine-like properties offer the possibility to bulk fill the cavity and to serve as a temporary filling for up to 6 months, to monitor the pulp. The final composite will then be bonded as if bonded on natural dentine.



Deep carious lesion of tooth 14. Asymptomatic tooth and no periapical changes.

Deep caries treatment

(Single visit)

Sometimes during the curettage of caries an accidental pulp exposure may occur. Biodentine's™ properties offer the possibility to bulk fill the cavity to replace removed dentine and to bond a composite onto it in the same appointment. The full restoration is done in only one session.



Iatrogenic pulp exposure occurred after complete caries excavation during the finishing of the cavity.



Biodentine™ is applied to bulk fill the cavity and replace the dentine lost.

Direct pulp capping

(Two visits)

Direct exposure of the pulp as a result of preparation work during caries excavation or possibly due to trauma, is something that repeatedly occurs in everyday clinical practice. Bioactive potency of the capping material is the most important factor to preserve the long-term vitality of an affected – essentially healthy – pulp. Biodentine's™ properties allow bulk filling of the cavity, no matter how deep. A composite will then be placed within 6 months to functionally and aesthetically replace enamel.



Cavity after preparation and disinfection. Surface of the exposed pulp can be seen clearly.



Biodentine™ is applied to bulk fill the cavity and replace the dentine lost.



ies is accessed and excavated. Deep cavity without pulp exposure.



Biodentine™ is placed as a bulk fill material. After 2 weeks, the first millimeters were replaced by a composite.

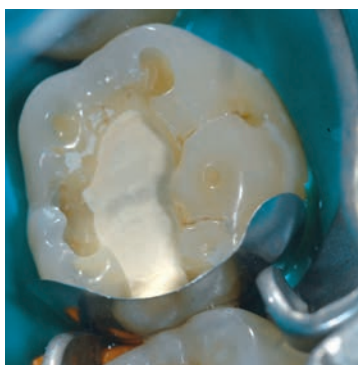


Clinical view at the 2-year recall.

Case courtesy of Dr. Subir Banerji, London, UK



d to the cavity to layer.



A matrix band and wedges are put in place to finish the restoration.



The composite restoration is bonded onto Biodentine™ after 12 mins from start of mix.



The 1-year follow-up radiograph shows no pathological changes in the apical region.

Courtesy Dr. T. Dammaschke, University of Münster, Germany. Reproduced with kind permission of Quintessenz Verlag GmbH



ine™ was placed as a bulk material for capping and to restore the large cavity, was left in place for 6 weeks.



Biodentine™ was partially removed to serve as a dentine substitute.



Clinical view of the final restoration with N'Durance.

Case courtesy of Dr. Markus T.Frits, Germany

Vital pulp therapy often means placing layers of different materials. With Biodentine™, **the procedure is made better, easier and faster** as the same material is used for direct/indirect pulp capping and filling the cavity up to the top.

Technical Insights

Proven biocompatibility and bioactivity for vital pulp therapy

- High biocompatibility assessed and evidenced through 500 scientific publications
- Highest amount of calcium and hydroxide ions released upon setting⁽¹⁾
- Induces thick dentine bridge formation⁽²⁾ thanks to largest calcium surface concentration compared to similar dental materials⁽³⁾
- Shows both osteogenic and angiogenic properties to promote pulp and tissues healing⁽⁴⁾

Bulk fill placement thanks to dentine-like properties

- Similar mechanical properties as dentine allowing durable bulk fill procedure
- Fast growing mechanical strength allowing solid restoration as soon as Biodentine™ is set
- Shows no depth of cure limitation thanks to its biosilicate chemistry

High consistent cavity seal allowing bulk fill placement

- Mineral tags formation in the dentine tubules ensuring strong micromechanical retention
- Provides excellent marginal adaptation⁽⁵⁾
- High resistance to leakage to reduce the risk of secondary caries^(6,7)
- High pH inducing antibacterial properties⁽⁸⁾

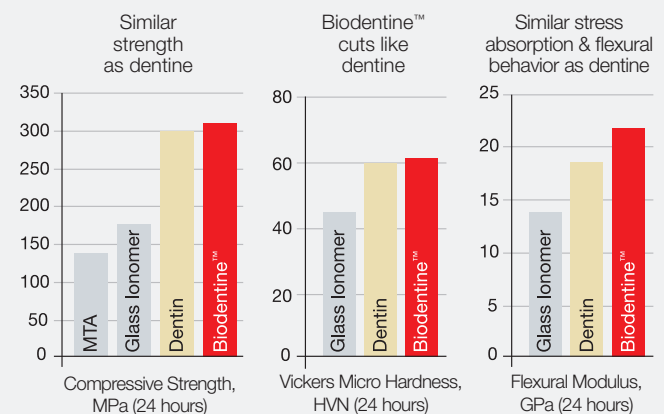


Pulp exposure before Biodentine™ placement.



8 months after Biodentine™ placement, the pulp healed.

Courtesy Prof. L. Martens & Prof. R. Cauwels, UZ Ghent, Belgium

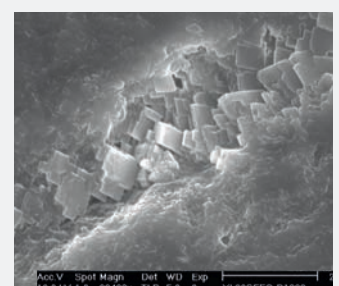


Source Biodentine™ Scientific File



Biodentine™ cement labelled with fluorescein dye which has moved from the cement into the dentine tubules. Notice the plugs of material in the tubule openings.

Courtesy Dr Amre Atmeh, King's College London



Mineral tags inside dentine tubules
Courtesy Prof. Franquin, Koubi, Dejou, University of Marseille



Authors	Title	Journal	Year	Ref.
Kurun Aksoy M, Tulga Oz F, Orhan K.	Tomographic Evaluation of Reparative Dentin Formation after Direct Pulp Capping with Ca(OH) ₂ , MTA, Biodentine™, and Evaluation of calcium (Ca ²⁺) and hydroxide (OH ⁻) ion diffusion rates of indirect pulp capping materials	International Journal of Artificial Organs	2017	1
Gong V, França R.	Nanoscale chemical surface characterization of four different types of dental pulp-capping materials	Journal of Dentistry	2017	3
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Aggarwal V, Singla M, Yadav S, Yadav H, Ragini.	Marginal Adaptation Evaluation of Biodentine™ and MTA Plus in "Open Sandwich" Class II Restorations	Journal of Esthetic Restorative Dentistry	2015	5
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Laurent P, Camps J, About I.	Biodentine™ induces TGF-β1 release from human pulp cells and early dental pulp mineralization	International Endodontic Journal	2011	
Han L, Okiji T.	Uptake of Calcium and Silicon released from calcium silicate based endodontic materials into root canal dentin	International Endodontic Journal	2011	

Presentation

Available in:

- Box of 15 capsules and 15 single-dose containers



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