

The unique

Pulp
therapeutic
&
Restorative
material



BiodentineTM

in the Bio-Bulk Fill procedure²⁰

Pulp therapeutic

**Superior
Bioactivity^{1-4 *}**

**Excellent
Biocompatibility^{5-7 **}**

**Antimicrobial
Properties¹⁰**

* Highest mean value of Calcium release and its superior concentration that encourages positive interaction with pulp cells.

** Biodentine™ showed the highest % of cell biocompatibility.

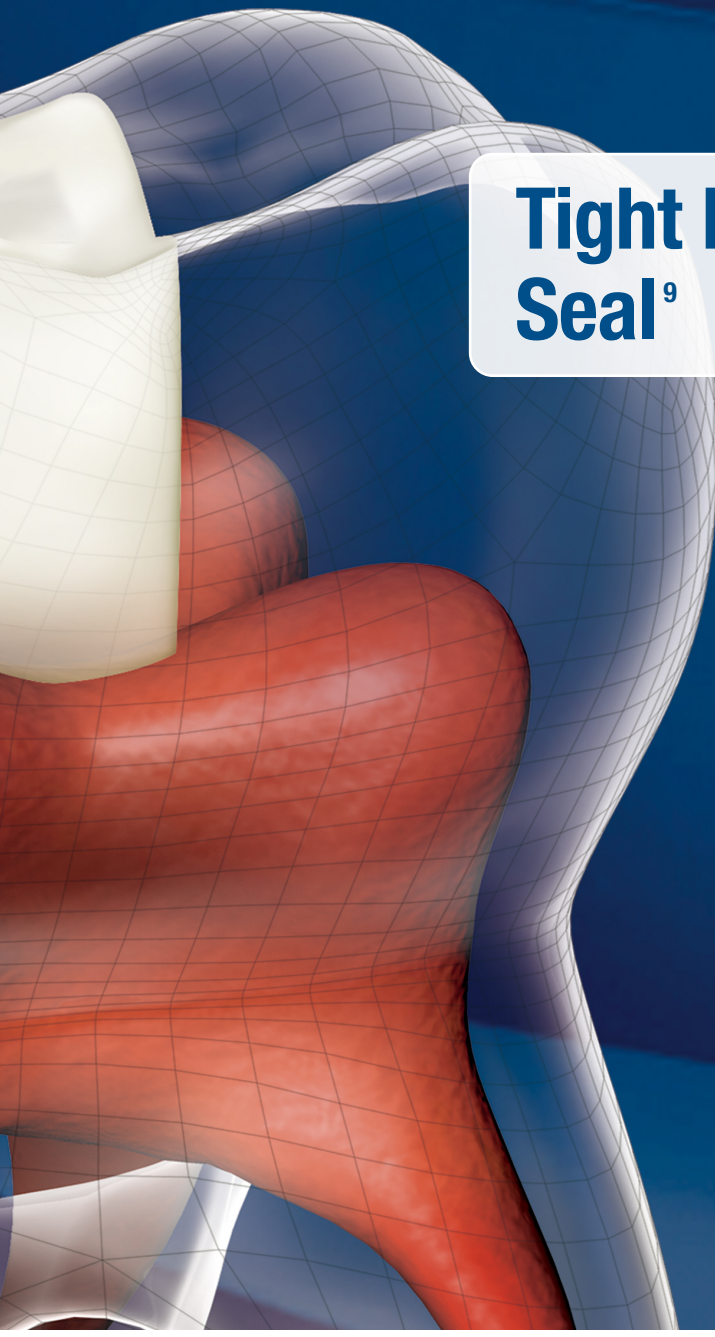
Properties verified by preclinical studies.



Restorative material

**Strong Mechanical
Properties^{5,7}**

**Tight Marginal
Seal⁹**

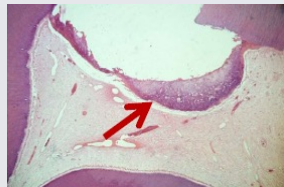


Pulp therapeutic

Superior Bioactivity¹⁻⁴

Favorable interaction with pulp cells

▼
Dense dentinal
bridge formation
to protect pulp.



▼
Remineralization
of damaged
dentin.

Excellent Biocompatibility⁵⁻⁷

✦ ✦ ✦
Extra-pure
C3S

0
resin

0
cell death

Antimicrobial Properties^{10,21}

pH **11+**

pH 10.99 at release and
pH >11 maintained for 28 days.

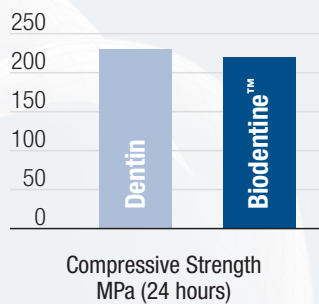
▼
Unfavorable environment for
bacteria responsible for pain
and secondary caries.

Restorative material

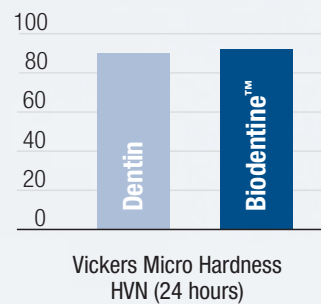
Strong Mechanical Properties^{7,8}

Similar to sound dentin

Resistance to external
impact of mastication
forces



Stress
absorption



Tight Marginal Seal^{4,9,11}

0
shrinkage

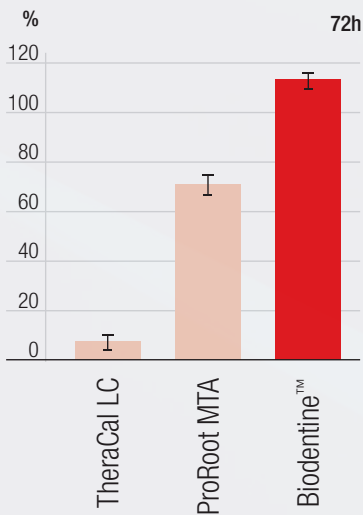
Thanks to its resin-free formulation, long-lasting dimensional stability is ensured.



Deep penetration
within dentin tubules.

Pulp therapeutic & Restorative material

Better cell viability⁵

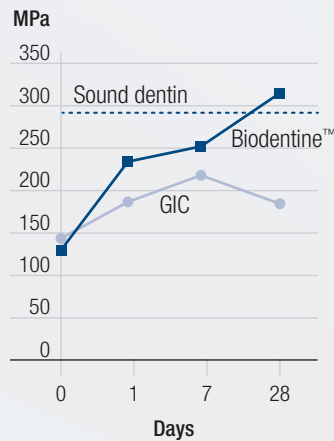


“Results reflect a percentage of cell viability compared to cells cultured without pulp capping materials, which were considered 100%.

Biodentine™ exhibited > 100%, the highest percentage of cell biocompatibility among the tested pulp capping materials.”

Poggio C et al. 2015

Better compressive strength⁸

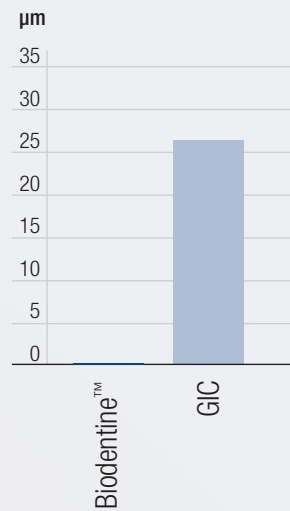


“A specific feature of Biodentine™ is its capacity to continue improving with time over several days until reaching 300 MPa after one month.

This value becomes quite stable and is in the range of the compressive strength of natural dentine (297 MPa).”

Internal data: Biodentine scientific file
O'Brian 2008

Less microleakage^{11, 12}



“Biodentine™ exhibits superior marginal sealing ability as well as marginal adaptation under composite resin as compared to GIC.”

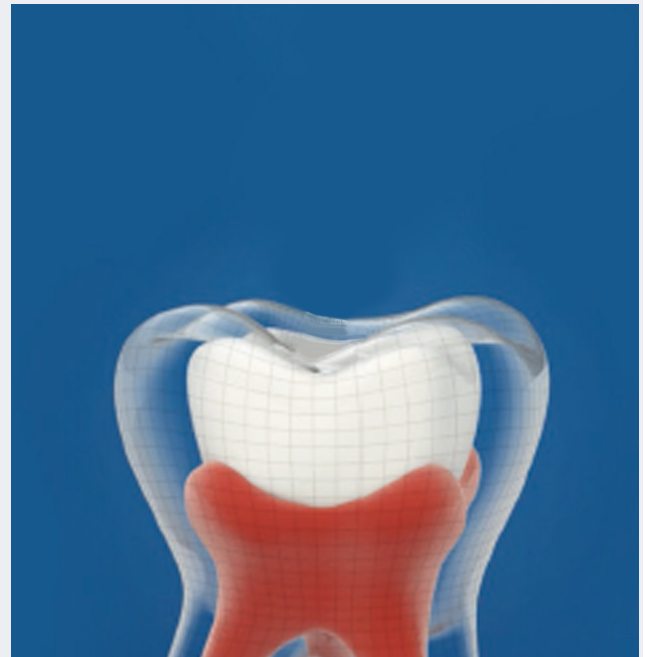
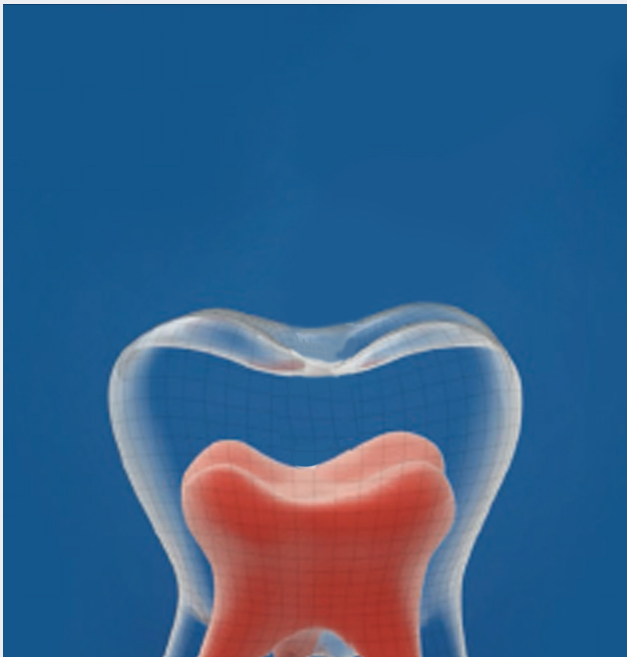
“Resistance to microleakage is important for preventing challenges such as the development of secondary caries, tooth sensitivity, aesthetic concerns, and the potential for restoration failure.”

Niranjan et al. 2016
Aljehani et al. 2023

Biodentine™ is THE unique material suited for

Bio-Bulk Fill procedure^{17,20}

Fill **the entire cavity** with only Biodentine™
from the pulp to the tooth surface.



Final enamel restoration to be performed:

- ➡ in the same session
or
- ➡ in the second session, which can be performed
between 2 weeks and 6 months later¹⁸.

**Pulp
therapeutic**



**Restorative
material**

Success in your
deep cavity restoration procedures

daily

Clinical success rate

**Direct
pulp capping**

96.4 %¹⁵

Pulpotomy

93.9 %¹⁶

**Indirect
pulp capping**

95.8 %¹³

When dentin thickness is:

- **Less than 0.5 mm**
- **Difficult to determine** in a clinical setting¹⁴

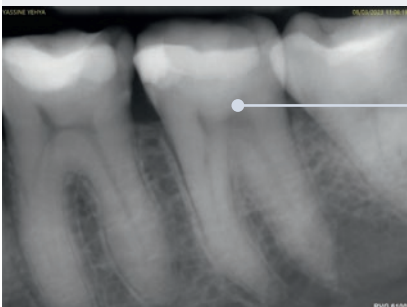
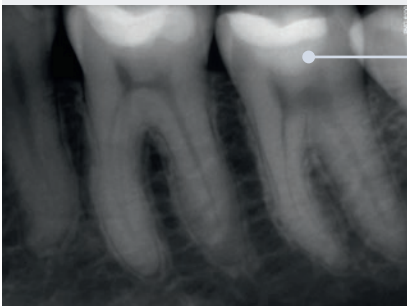
**Using just one product,
Biodentine™ lets you:**

- Heal the pulp
- Preserve pulp vitality
- Save tooth structure²¹

12
years

**of success of Biodentine™
in the Bio-Bulk Fill procedure**

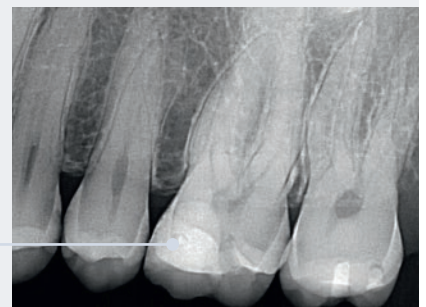
Patient 1
1- and 12-year recall



**Healthy teeth with
pulp vitality and
tooth structure
preserved.**

Cases by Prof. J. Sabbagh
DDS, MSc, PhD, FICD, HDR

Patient 2
8-year recall



6.5 million teeth saved with Biodentine™¹⁹

Biodentine™ in the Bio-Bulk Fill procedure



Time-saving

One-step
cavity filling



Easy to use

Direct placement
in the tooth



Daily convenience

Fewer steps in
the procedure



Adapted to your practice

1- or 2-session
procedure



Cost- effective

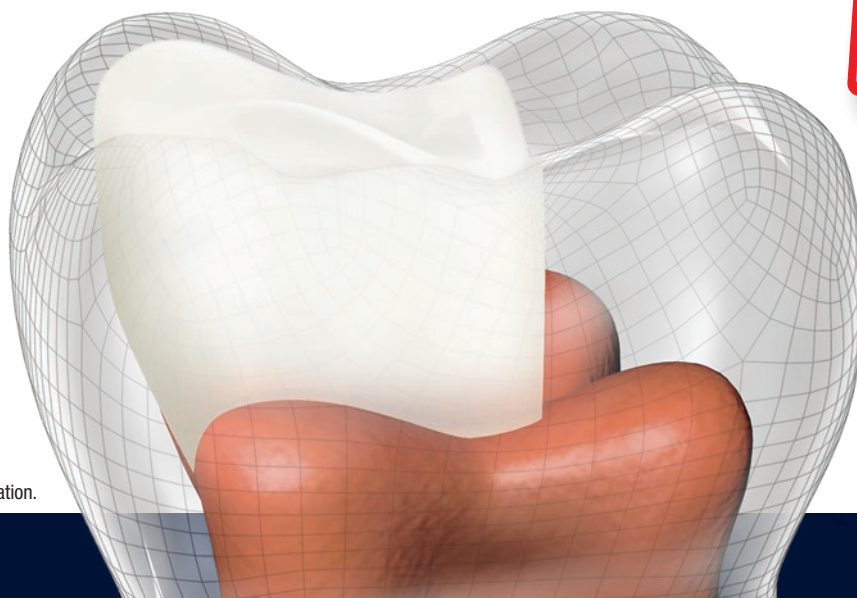
1 product
for entire cavity*



Proven clinical success

multiple
clinical trials

1300+
publications**



* under final enamel restoration.

** Publications available at
<https://pubmed.ncbi.nlm.nih.gov/>.

Examples of Bio-Bulk Fill procedure in daily deep cavity restorations

Indirect pulp capping in one session

By Prof. J. Sabbagh



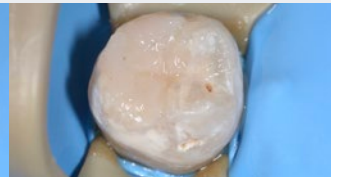
Cavity preparation.



Biodentine™ placement, Bio-Bulk Fill procedure.



Final restoration using self-etch adhesive system and composite in the same session.



Indirect pulp capping in two sessions (final enamel restoration in two weeks)

By Dr. M. Ganowicz



Tooth after preparation.



Restoration of the proximal walls with composite material.



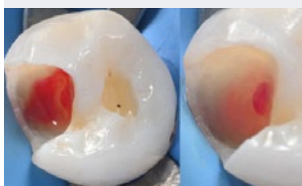
Filling of the rest of the cavity with Biodentine™.



Final enamel restoration after two weeks.

Direct pulp capping in one session

By Dr. V. Tosco



Clean cavity with pulp exposure.



Placement, hardening and shaping of Biodentine before restoration.



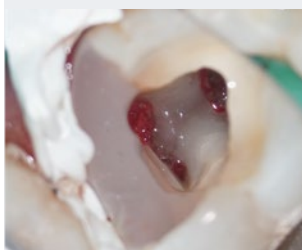
Selective enamel etching.



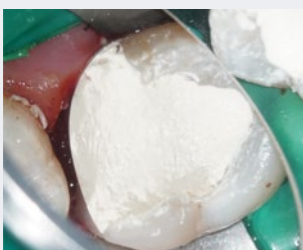
Final restoration using selective enamel etching and composite.

Pulpotomy in two sessions (final enamel restoration in two weeks)

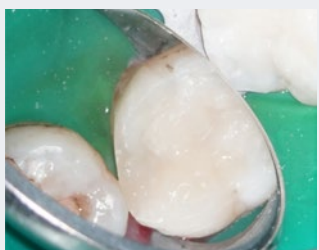
By Dr. S. Herbst



Complete pulpotomy with achieved hemostasis.



Bio-Bulk Fill procedure with Biodentine™.



Final restoration using self-etch adhesive system and composite in a second session.



Radiology check.

The unique Pulp therapeutic & Restorative material



References

- Nowicka A et al. Tomographic Evaluation of Reparative Dentin Formation after Direct Pulp Capping with Ca(OH)₂, MTA, Biodentine™, and Dentin Bonding System in Human Teeth. JOE. 2015.
- Gong V et al. Nanoscale chemical surface characterization of four different types of dental pulp-capping materials. JOD. 2017.
- Elbanna A et al. In vitro bioactivity of newly introduced dual-cured resin-modified calcium silicate cement. DRJ. 2022.
- Bakhtiar H et al. Human Pulp Responses to Partial Pulpotomy Treatment with TheraCal as Compared with Biodentine™ and ProRoot MTA: A Clinical Trial. JOE. 2017.
- Poggio C et al. In vitro cytotoxicity evaluation of different pulp capping materials: a comparative study. Archives of Industrial Hygiene and Toxicology. 2015.
- Internal R&D data.
- Internal data: Biodentine™ Scientific file. 2022 - specific pages.
- Internal data: Biodentine™ Scientific File, 2011 - specific pages.
- Atmeh et al. Dentin-cement interfacial interaction: calcium silicates and polyalkenoates. JOD. 2012.
- Kaur M., Singh H., Dhillon J.S., Batra M., Saini M. MTA versus Biodentine™: Review of Literature with a Comparative Analysis. J. Clin. Diagn. Res. 2017.
- Niranjan et al. A comparative microleakage evaluation of three different base materials in Class I cavity in deciduous molars in sandwich technique using dye penetration and dentin surface interface by scanning electron microscope Journal of Indian Society of Pedodontics and Preventive Dentistry. 2016.
- Aljehani et al. Microleakage Among Different Dental Restorative Materials: Causes, Detection, and Impact on Marginal Integrity. JOHS. 2023.
- Kaul S, Kumar A, Jasrotia A, et al. Comparative Analysis of Biodentine™, Calcium Hydroxide, and 2% Chlorhexidine with Resin-modified Glass Ionomer Cement as Indirect Pulp Capping Materials in Young Permanent Molars. J Contemp Dent Pract. 2021.
- M. Al-Ali^{1,2} and J. Camilleri. The scientific management of deep carious lesions in vital teeth using contemporary materials – A narrative review. Frontiers in Dental Medicine. 2022.
- Parinyaprom, N. et al. Outcomes of Direct Pulp Capping by Using Either ProRoot Mineral Trioxide Aggregate or Biodentine™ in Permanent Teeth with Carious Pulp Exposure in 6- to 18-Year-Old Patients: A Randomized Controlled Trial. J. Endod. 44, 341–348. 2018.
- Guang et al. Clinical observation and histopathological evaluation of pulp after pulpotomy of primary teeth with formocresol and Biodentine. Clinical observation and histopathological evaluation of pulp after pulpotomy of primary teeth with formocresol and Biodentine. CMB. 2022.
- Internal R&D document RDRADVEPA00DM_283 - Biodentine™ Bio-Bulk Fill statement. 2022.
- Koubi et al. Clinical evaluation of the performance and safety of a new dentine substitute, Biodentine™, in the restoration of posterior teeth – a prospective study. Clin Oral Investig. 2013.
- Medical device vigilance data on 12th of March 2024 incl., 6 488 275 and 108 703 patients exposed to Biodentine™ and Biodentine™.
- Internal Septodont's document provided from Biodentine Expert Board – 11th September 2023.
- About I. Biodentine. Properties and Clinical Applications. Springer 2022.

Septodont

58 rue du Pont de Créteil - 94100 Saint-Maur-des-Fossés - France

www.septodont.com

Follow us on social media channels:

