



Endodontics

**ACTIVE
BIOSILICATE
TECHNOLOGY**

BiodentineTM

Dentine Substitute



Biodentine™: Save the root, Save the tooth

1

Bioactivity triggers regeneration

- High biocompatibility to all dental tissues
- Biodentine™ increases the mineral density of dentine through calcium ions release
- Biodentine™ promotes cell proliferation and supports periradicular healing.

2

Outstanding seal and secure placement

- Crystallisation inside the dentine tubules allowing tight interface with dentine and ensuring strong resistance to leakage
- Biodentine™ sets in moisture in only a few minutes allowing fast repair procedures
- Biodentine™ shows high wash-out resistance and high push-out bond strength avoiding material dislodgement during the restorative procedure.



Clinical cases

Perforation

Perforations of the root canal and of the pulp chamber floor usually are the most difficult accidents to solve and with uncertain prognosis. Biodentine™ has high sealing properties and is easy to place, particularly in areas difficult to access. The fast setting time is a major advantage as work can be continued in the same operating session.



Initial X-Ray showing radiopaque substance in the pulp chamber and a peri-radicular lesion.



After removal of restorative material, perforation is noticed.

Apical surgery

For successful apicoectomy, retrograde sealing of resected root canals is essential because gutta-percha alone is known not to be capable of inducing osseous regeneration at the root tip. Biodentine™ shows a positive effect on osseous cells and allowed, in this case, complete osseous regeneration 6 months after treatment.



61-year-old patient presented with pain and swelling in the region of #16. The radiograph obtained showed apical brightening and a fractured root canal instrument at tooth #16 protruding over the apex of the mesiobuccal root canal.



Both mesiobuccal root canals were retrogradely prepared and cleaned with an angled, diamond-coated ultrasound probe.

Resorption

Cervical root resorption mostly occurs directly beneath the epithelial attachment and is caused ultimately by an injury to the periodontium.

Biodentine™ is easy to place, sets fast, gives a tight seal and causes no tooth discoloration. It therefore positions this material as the material of choice to treat effectively these resorption cases.



Swelling regio 11.



Initial X-ray findings with cervical root defect.



Removal of the coronal material, an amalgam is removed from the pulp chamber floor.



Amalgam is removed. Granulation tissue is exposed with bleeding and pain on pressure.



Biodentine™ is prepared and the cavity is filled layer by layer without pressure.

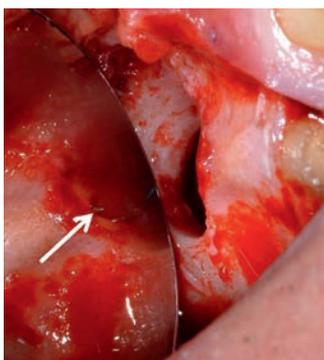


1-year follow-up.

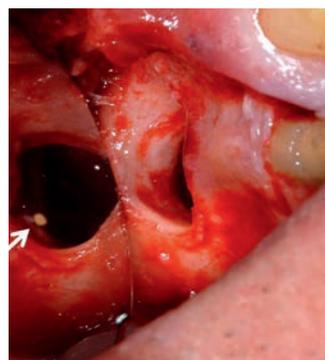
Case courtesy of Dr. Irene Lorenzo, Montevideo, Uruguay



Initial condition and fractured root canal instrument.



The arrow indicates the exposed fractured root canal instrument at the mesiobuccal root.



Apicoectomy was performed in order to remove granulation tissue and the fractured instrument.



The radiograph obtained immediately postoperatively shows an osseous defect about the mesiobuccal root tip. The fractured root canal instrument was completely removed.



Even 3 1/4 years after the procedure, apical stability was found.

Case courtesy of Prof. Till Dammaschke, Münster, Germany



Condition after excochleation of the granulation tissue.



Condition after excochleation of the granulation tissue.



Closure of the cavity with Biodentine™.



Clinical picture after 12 months.



X-ray findings 1 year postoperatively.

Case courtesy of Dr. Peter Robotta, Münster, Germany

When it comes to special endodontic treatments, success predictability can sometimes be difficult. Biodentine™ enhances your success rates thanks to innovative and bio-oriented properties.

Technical Insights

Proven biocompatibility and bioactivity for endodontic repairs

- High biocompatibility assessed and evidenced through 500 scientific publications^(1,2)
- Higher release of Calcium ions than similar products to increase the mineral density of root canal dentine⁽³⁾
- Shows both osteogenic and angiogenic properties to promote soft and hard tissues healing⁽⁴⁾
- High purity tricalcium silicate with no aluminum inclusions or trace metals^(5,6,7)

Tight seal supporting root longevity after root repair

- Mineral tags formation in the dentine tubules ensuring strong micromechanical retention and tight consistent seal
- Higher resistance to leakage supporting clinical success for endodontic repair procedures^(8,9)
- High pH (=12) inducing antimicrobial properties reducing the risk of reinfection⁽⁹⁾

Product properties adapted for a moist environment

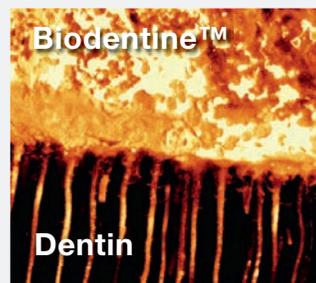
- Physical properties are not affected by contact with tissue fluids and blood thanks to Biodentine's™ hydraulic nature⁽¹⁰⁾
- Biodentine doesn't wash out and stays in place
- Higher push-out bond strength, unaffected by the use of endodontic irrigation solutions^(11,12)

Biodentine shows higher incorporation depths of Ca and Si (µm) in dentine

Phosphate-buffered saline immersion	Ca		Si	
	Biodentine™	MTA	Biodentine™	MTA
24h	66.8 (5.1) a	14.4 (3.8) b	17.6 (2.5) a	13.8 (2.2) a
7 days	116.8 (10.1) a	77.8 (13.5) b	71.2 (10.0) a	61.0 (8.9) a
30 days	212.2 (26.4) a	166.8 (10.1) b	160.2 (16.1) a	115.4 (24.0) b
90 days	296.0 (26.0) a	206.6 (15.1) b	275.8 (28.9) a	171.2 (33.4) b

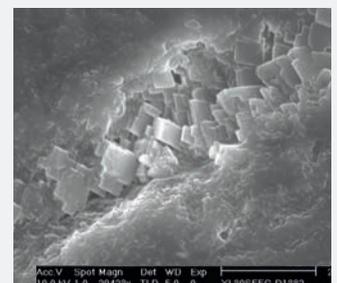
Mean (SD), n=5
Mean values followed by different letters in the same line of the same element are significantly different (P<0.05)
MTA, mineral trioxide aggregate

Source : Han, Okiji, IEJ, 2011



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.

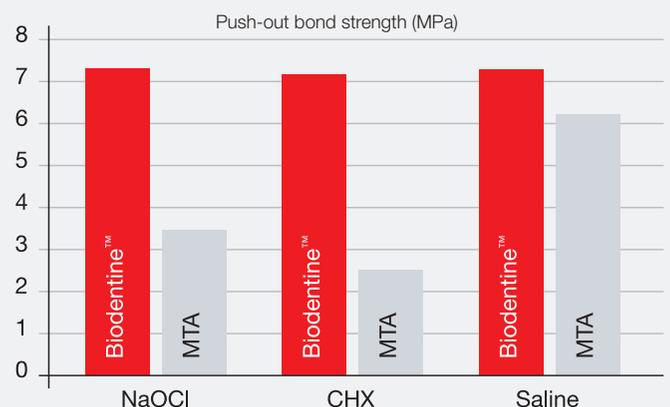
Courtesy Dr Amre Atmeh, King's College London



Mineral tags inside dentine tubules.

Courtesy Prof. Franquin, Koubi, Dejou, University of Marseille

Biodentine™ shows higher resistance to dislodgement, regardless of the irrigation solution(a)



Source : Guner et al., JOE, 2013



Authors	Title	Journal	Year	Ref.
Subramanyam D, Vasantharajan M.	Effect of Oral Tissue Fluids on Compressive Strength of MTA and Biodentine™: An In vitro study	Journal of Clinical Diagnosis and Research	2017	10
Tsesis I, Elbahary S, Venezia NB, Rosen E.	Bacterial colonization in the apical part of extracted human teeth following root-end resection and filling: a confocal laser scanning microscopy study	Clinical Oral Investigation	2017	
Gomes-Cornélio AL, Rodrigues EM, Salles LP, Mestieri LB, Faria G, Guerreiro-Tanomaru JM, Tanomaru-Filho M.	Bioactivity of MTA Plus, Biodentine™ and an experimental calcium silicate-based cement on human osteoblast-like cells	International Endodontic Journal	2017	2
Escobar-García DM, Aguirre-López E, Méndez-González V, Pozos-Guillén A.	Cytotoxicity and Initial Biocompatibility of Endodontic Biomaterials (MTA and Biodentine™) Used as Root-End Filling Materials	Biomedical Research International	2016	1
Costa F, Sousa Gomes P, Fernandes MH.	Osteogenic and Angiogenic Response to Calcium Silicate-based Endodontic Sealers	Journal of Endodontics	2016	4
Katge FA, Shivasharan PR, Patil D.	Sealing ability of mineral trioxide aggregate Plus™ and Biodentine™ for repair of furcal perforation in primary molars: An in vitro study	Contemporary Clinical Dentistry	2016	8
Sinkar RC, Patil SS, Jogad NP, Gade VJ.	Comparison of sealing ability of ProRoot MTA, RetroMTA, and Biodentine™ as furcation repair materials: An ultraviolet spectrophotometric analysis	Journal of Conservative Dentistry	2015	9
Camilleri J, Sorrentino F, Damidot D.	Investigation of the hydration and bioactivity of radiopacified tricalcium silicate cement, Biodentine™ and MTA Angelus	Dental Materials	2013	6
Aggarwal V, Singla M, Miglani S, Kohli S.	Comparative evaluation of push-out bond strength of ProRoot MTA, Biodentine™, and MTA Plus in furcation perforation repair	Journal of Conservative Dentistry	2013	11
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Camilleri J, Kralj P, Veber M, Sinagra E.	Characterization and analyses of acid- extractable and leached trace elements in dental cements	International Endodontic Journal	2012	7
Han L, Okiji T.	Uptake of Calcium and Silicon released from calcium silicate based endodontic materials into root canal dentin	International Endodontic Journal	2011	3
Camilleri J.	Characterization and hydration kinetics of tricalcium silicate cement for use as a dental biomaterial	Dental Materials	2011	5

Presentation

Available in:

- Box of 15 capsules and 15 single-dose containers



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