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Topic	Title	Abstract	Link to Publication	Reference
Open Apex - Clinical Outcome	Apexification with a bioceramic reparative cement: a case report	Clinical and radiographic evaluations at the 18-month follow-up visit showed that the treated tooth was asymptomatic, suggesting that the bioceramic reparative cement is effective for apexification.	https://pubmed.ncbi.nlm.nih.gov/37358584/	SOUZA, G.H.; ET AL; Apexification with a bioceramic reparative cement: a case report. GENERAL DENTISTRY July/August 2023
	Healing the Open Apex: A Case Report on Innovative Apexogenesis of a Maxillary Molar Using Bio-C Repair	Follow-up examinations at one, three, and six months demonstrated normal tooth function and a normal response to pulp sensibility tests. No signs or symptoms of pulpal pathology were observed. The radiographic evaluation confirmed complete root development. Therefore, Bio-C Repair, with its convenient ready-to-use format, can facilitate faster and more efficient management of open apices.	https://pubmed.ncbi.nlm.nih.gov/39881929/	Shetty A, Sultana HA, V KB, Reddy NS. Healing the Open Apex: A Case Report on Innovative Apexogenesis of a Maxillary Molar Using Bio-C Repair. Cureus. 2024 Dec 29;16(12):e76566. doi: 10.7759/cureus.76566. PMID: 39881929; PMCID: PMC11774637.
Internal Root Resorption - Clinical Outcome	Treatment of inflammatory internal root resorption in the right upper canine with bioceramic cement: A case report.	Bio-C Repair cement is an excellent option for the treatment of inflammatory inter-nal root resorption due to its characteristics of easy insertion, good marginal adaptation, biocompatibility, and sealing ability in moist environments.	https://faculdadecape.edu.br/wp-content/uploads/2024/01/7.-RO-Lacerda-et-al.-2023-KS.pdf	LACERDA,R.O.;ET AL - Treatment of inflammatory internal root resorption in the right upper canine with bioceramic cement: A case report.Kariri Science v.1 n.2(2023): 7. https://doi.org/10.29327/2256856.1.2-7
	Emerging Paradigms in Internal Root Resorption Management: Harnessing the Power of Bioceramics	The treatment resulted in the resolution of symptoms and the restoration of periapical tissues. Bioceramics, with their unique composition and favorable biological properties, offer the potential for effective tissue repair and provide alternatives to traditional materials in the treatment of internal resorption. The utilization of bioceramics, including Bio-C Repair, holds promise for achieving successful outcomes and preserving natural dentition.	https://pubmed.ncbi.nlm.nih.gov/37842389/	Bhopatkar J, Ikhar A, Nikhade P, Chandak M, Agrawal P. Emerging Paradigms in Internal Root Resorption Management: Harnessing the Power of Bioceramics. Cureus. 2023 Sep 13;15(9):e45149. doi: 10.7759/cureus.45149. PMID: 37842389; PMCID: PMC10571069.

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Leakage	Effect of blood and artificial saliva contamination on marginal adaptation and sealing ability of different retrograde filling materials: A comparative analysis	The Bio-C Repair group showed the least mean marginal gap and dye leakage values, followed by bioactive bone cement, Biodentine, and Cention N, respectively, in both blood and artificial saliva contamination. However, the mean marginal gaps and dye leakage between the major groups were statistically insignificant.	https://pubmed.ncbi.nlm.nih.gov/39262585/	Sunanda YL, Parvathaneni KP, Raju TBVG, Seshadri A, Dondapati GD. Effect of blood and artificial saliva contamination on marginal adaptation and sealing ability of different retrograde filling materials: A comparative analysis. J Conserv Dent Endod. 2024 Jul;27(7):743-749. doi: 10.4103/JCDE.JCDE_212_24. Epub 2024 Jul 8. PMID: 39262585; PMCID: PMC11385918.
	Comparative evaluation of sealing potential of mineral trioxide aggregate, biodentine, and bio-C repair in furcation perforations: A glucose penetration study	Within the study's limitations, Bio-C Repair exhibited the best sealing ability for furcation perforations, followed by MTA and then Biodentine. Therefore, Bio-C Repair could be a suitable alternative to MTA and Biodentine for repairing furcal perforations.	https://pubmed.ncbi.nlm.nih.gov/40046461/	Shetty A, Sultana HA, Srirekha A, Champa C, Pal S, Sahithi V. Comparative evaluation of sealing potential of mineral trioxide aggregate, biodentine, and bio-C repair in furcation perforations: A glucose penetration study. J Conserv Dent Endod. 2025 Feb;28(2):144-149. doi: 10.4103/JCDE.JCDE_749_24. Epub 2025 Feb 3. PMID: 40046461; PMCID: PMC11878678.
Perforation - Clinical Outcome	Bio-C Repair - A New Bioceramic Material for Root Perforation Management: Two Case Reports	The Bio-C Repair is suggested as a new cement option for the management of lateral canal perforations, with effective results as observed after a one-year follow-up.	https://pubmed.ncbi.nlm.nih.gov/33913996/	TOUBES, K.S.; ET AL. Bio-C Repair - A New Bioceramic Material for Root Perforation Management: Two Case Reports. Brazilian Dental Journal (2021) 32(1): 104-110



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Mechanical, Physical, Chemical and Biological Properties	A micro-computed tomographic study using a novel test model to assess the filling ability and volumetric changes of bioceramic root repair materials	Bio-C Repair is a new endodontic material with excellent filling capacity and low volumetric change. The gypsum model proposed for evaluating filling ability and volumetric changes by micro-CT had appropriate and reproducible results. This model may enhance the physicochemical evaluation of premixed bioceramic materials, which need moisture for setting.	https://rde.ac/journal/view.php?doi=10.5395/rde.2021.46.e2	TORRES, F.F.; ET AL - A micro-computed tomographic study using a novel test model to assess the filling ability and volumetric changes of bioceramic root repair materials. Restor Dent Endod. 2021 Feb;46(1):e2
	In vivo method to evaluate volumetric changes in bioceramic repair materials	The immersion solutions influenced the evaluation of the volumetric change of bioceramic repair materials. Bioceramic materials show greater volumetric stability when evaluated by the in vivo method. The in vivo method in the subcutaneous tissue of rats can be an alternative for analyzing the properties of bioceramic cement, showing similarity with the clinical application.	https://pubmed.ncbi.nlm.nih.gov/39320005/	Ferraz DC, Pinto JC, Guerreiro-Tanomaru JM, Tanomaru-Filho M. In vivo method to evaluate volumetric changes in bioceramic repair materials. Braz Dent J. 2024 Sep 16;35:e245960. doi: 10.1590/0103-6440202405960. PMID: 39320005; PMCID: PMC11412096.
	Physicochemical properties, cytotoxicity and bioactivity of a ready-to-use bioceramic repair material	Bio-C Repair had adequate radiopacity above 3mm Al, solubility less than 3%, dimensional expansion, and low volumetric change. In addition, Bio-C Repair promoted an alkaline pH and presented bioactivity and biocompatibility similar to MTA and Biodentine, showing potential for use as a repair material.	https://pubmed.ncbi.nlm.nih.gov/36888842/	Campi LB, Rodrigues EM, Torres FFE, Reis JMDSN, Guerreiro-Tanomaru JM, Tanomaru-Filho M. Physicochemical properties, cytotoxicity and bioactivity of a ready-to-use bioceramic repair material. Braz Dent J. 2023 Jan-Feb;34(1):29-38. doi: 10.1590/0103-6440202304974. PMID: 36888842; PMCID: PMC10027101.
	Cytotoxicity, Biocompatibility and Biomineralization of a New Ready-for-Use Bioceramic Repair Material	The materials' cytocompatibility was similar at 48h for most dilutions (p>0.05). At 7 and 30 days, the groups had moderate and mild inflammation, respectively (p>0.05). All materials showed positive structures for von Kossa and polarized light. In conclusion, Bio-C Repair had similar cytocompatibility to MTA-based materials is biocompatible and induces biomineralization.	https://www.scielo.br/j/bdj/a/9HBMghLXV7FHjPNX6LnJqNP/?lang=en	BENETTI, F.; ET AL.; Cytotoxicity, Biocompatibility and Biomineralization of a New Readyfor-Use Bioceramic Repair Material. Brazilian Dental Journal (2019) 30(4): 325-332



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Mechanical, Physical, Chemical and Biological Properties	Bioceramic repair cements manufactured and/or available in Brazil: a literature review and bibliometric analysis of their biological properties	The data from the articles evaluated in this study showed promising results regarding the biological properties of some of the cements evaluated (MTA HP Repair® and Bio-C Repair®). However, for one of these cements (PBS HD® Cimmo), additional studies aimed at investigating its biological properties are suggested.	https://www.archhealthinvestigation.com.br/ArcHI/article/view/5025	FIGUEIREDO JUNIOR, E.C.; ET AL. Bioceramic restorative cements manufactured and/or available in Brazil: a literature review and bibliometric analysis of their biological properties. Arch Health Invest 10(2) 2021
	Calcium silicate-based cements cause environmental stiffness and show diverse potential to induce osteogenesis in human osteoblastic cells	Cements that quickly stimulate osteoblast differentiation may be ideal for reparative and regenerative purposes since they promptly lead to dentin or bone deposition.	https://www.nature.com/articles/s41598-021-96353-0	SANTIAGO, M.C.; ET AL. Calcium silicate-based cements cause environmental stiffness and show diverse potential to induce osteogenesis in human osteoblastic cells. Scientific Reports (2021) 11:16784 https://doi.org/10.1038/s41598-021-96353-0
	Comparative Surface Morphology, Chemical Composition, and Cytocompatibility of Bio-C Repair, Biodentine, and ProRoot MTA on hDPCs	Based on the evidence derived from na in vitro cellular study, it was concluded that Bio-C Repair showed excellent cytocompatibility that was similar to Biodentine and ProRoot MTA.	https://www.mdpi.com/1996-1944/13/9/2189	GHILOTTI, J.; ET AL. Comparative Surface Morphology, Chemical Composition, and Cytocompatibility of Bio-C Repair, Biodentine, and ProRoot MTA on hDPCs. Materials 2020, 13, 2189; doi:10.3390/ma13092189
	Cytotoxicity and bioactive potential of new root repair materials for use with BMP-2 transfected human osteoblast cells	Bio-C Repair presented no cytotoxic effect and did not induce apoptosis at the higher dilution (1:12). It exhibited higher ALP activity than the control group (P < 0.05) after 7 days. Exposure to Bio-C Repair extracts for 1 day increased BMP-2 gene expression. RUNX-2 mRNA was greater in Bio-C Repair-exposed cells. Bio-C Repair also increased the ALP mRNA expression compared with BMP-2 unexposed cells (p < 0.05).	https://pubmed.ncbi.nlm.nih.gov/36507750/	Rodrigues EM, Viola KS, Maldonado LG, Rossa Junior C, Guerreiro-Tanomaru JM, Tanomaru Filho M. Cytotoxicity and bioactive potential of new root repair materials for use with BMP-2 transfected human osteoblast cells. Braz Oral Res. 2022 May 2;36:e063. doi: 10.1590/1807-3107bor-2022.vol36.0063. PMID: 36507750.

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Mechanical, Physical, Chemical and Biological Properties	Response of stem cells derived from human exfoliated deciduous teeth to Bio-C Repair and Mineral Trioxide Aggregate Repair HP: Cytotoxicity and gene expression assessment	Bio-C Repair and MTA HP Repair are biocompatible and capable of odontogenic differentiation similar to Biodentine when cultured in stem cells derived from exfoliated primary teeth.	https://pubmed.ncbi.nlm.nih.gov/37304416/	Maru V, Madkaikar M, Gada A, Pakhmode V, Padawe D, Bapat S. Response of stem cells derived from human exfoliated deciduous teeth to Bio-C Repair and Mineral Trioxide Aggregate Repair HP: Cytotoxicity and gene expression assessment. Dent Res J (Isfahan). 2023 Apr 26;20:55. PMID: 37304416; PMCID: PMC10247870.
	In vitro Analysis of DSPP and BSP Expression: Comparing the Odontogenic Influence of Bio-C Repair and Biodentine in hDPSCs	The study shows that BIO-C REPAIR is as effective as Biodentine in enhancing DSPP and BSP expression and mineral deposition in hDPSCs. The 1:5 concentration of BC showed the highest levels of DSPP and BSP expression and mineral deposition.	https://pubmed.ncbi.nlm.nih.gov/39029909/	Wairooy VW, Bagio DA, Margono A, Amelia I. In vitro Analysis of DSPP and BSP Expression: Comparing the Odontogenic Influence of Bio-C Repair and Biodentine in hDPSCs. Eur J Dent. 2025 Feb;19(1):220-226. doi: 10.1055/s-0044-1786984. Epub 2024 Jul 19. PMID: 39029909; PMCID: PMC11750311.
	Effects of different calcium-silicate based materials on fracture resistance of immature permanent teeth with replacement root resorption and osteoclastogenesis	The treatment options for non-vital immature teeth with RRR did not strengthen the teeth and promoted a similar resistance to fractures in all cases. BD, MTA, and BCR showed inhibitory effects on osteoclast differentiation, with BCR yielding improved results compared to the other materials.	https://pubmed.ncbi.nlm.nih.gov/37284344/	de Souza GL, Freitas GAN, Ribeiro MTH, Lemus NXA, Soares CJ, Moura CCG. Effects of different calcium-silicate based materials on fracture resistance of immature permanent teeth with replacement root resorption and osteoclastogenesis. Restor Dent Endod. 2023 May 5;48(2):e21. doi: 10.5395/rde.2023.48.e21. PMID: 37284344; PMCID: PMC10240096.



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	Comparison of microbial adhesion to different materials used in root perforation sealing	The results revealed that there was no statistical difference in microbial adhesion between MTA and Bio-C Repair, accepting the null hypothesis, however, both filling materials presented a regular but not uniform surface which may explain microbial adhesion. In view of these results, Bio-C Repair presented the same microbial behavior as MTA.	https://seer.unifunc.edu.br/index.php/rfc/article/view/5622	EVES, J.O.; ET AL - COMPARISON OF MICROBIAL ADHESION IN DIFFERENT MATERIALS USED IN THE SEALING OF ROOT PERFORATIONS. Unifunc Cient. Mult., v.11, n.13, Jan./Dec. 2022
	In Vitro Effect of Putty Calcium Silicate Materials on Human Periodontal Ligament Stem Cells	The results suggest that Bio-C Repair and TotalFill BC RRM putty are biologically appropriate materials to be used as retrograde obturation material.	https://www.mdpi.com/2076-3417/10/1/325	LOZANO, F.J.R. ET AL.; In Vitro Effect of Putty Calcium Silicate Materials on Human Periodontal Ligament Stem Cells. Appl. Sci. 2020, 10, 32;
Retrograde Obturation	Comparative in vitro study of the marginal adaptation of two bioceramic materials in retrograde fillings	Comparative in vitro study of the marginal adaptation of two bioceramic materials in retrograde fillings	https://revistas.usfq.edu.ec/index.php/odontoinvestigacion/article/view/2045	SANCHON, J.M.; ET AL. Comparative study of the marginal adaptation of two endodontic bioceramic materials in retrograde fillings. DOI: https://dx.doi.org/10.18272/oi.v7i1.2045
	Evaluation the Marginal Adaptation for the Bio C Repair and Other Root end Filling Material by Using Scanning Electron Microscope (A Comparative In Vitro Study)	Marginal adaptation is better for Bio-C Repair in comparison to MTA Angelus and Amalgam.	http://cdj.cumhuriyet.edu.tr/en/pub/issue/80130/1260641	HAMMADI, F.R.; ET AL - Evaluation the Marginal Adaptation for the Bio C Repair and Other Root end Filling Material by Using Scanning Electron Microscope (A Comparative In Vitro Study) Cumhuriyet Dental Journal, 26(3): 261-267, 2023
Root Fracture - Clinical Outcome	The importance of bioceramics and computed tomography in the late clinical management of a horizontal root fracture: A case report	Pulp necrosis was diagnosed and CBTC was requested for treatment planning. Subsequently, endodontic treatment was performed using a bioceramic apical plug. A 2-year follow-up indicated the absence of root resorption and normal periodontal and periapical tissues. It was concluded that endodontic treatment associated with the use of bioceramics and the aid of CBTC is an effective therapeutic option in cases of permanent horizontal root fractures.	https://pubmed.ncbi.nlm.nih.gov/32509236/	GIRELLI, C.F.M.; ET AL. The importance of bioceramics and computed tomography in the late clinical management of a horizontal root fracture: A case report. Clin Exp Dent. 2020;12(5):e514-8.