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Case Report

Anterior aesthetic rehabilitation with adhesively cemented lithium disilicate ceramic veneers: a case report

César Francisco Ruíz Ravelo[1], Baltazar Barrera Mera[2]*

[1]Department of Oral Rehabilitation and Implantology, National Institute of Orthodontics and Implantology (INOI), Texcoco, Mexico
[2]Department of Physiology, Faculty of Medicine, National Autonomous University of Mexico (UNAM), Mexico City, Mexico

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***Correspondence:**
Dr. Baltazar Barrera Mera,
E-mail: baltazar.barrera.mera@gmail.com

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ABSTRACT

Contemporary restorative dentistry prioritizes biomimetic principles and preservation of sound enamel to optimize adhesion, marginal stability, and long-term performance. This clinical case report describes anterior esthetic rehabilitation using adhesively cemented lithium disilicate ceramic veneers within a minimally invasive restorative approach. A 32-year-old systemically healthy female patient presented with esthetic dissatisfaction related to dental giroversion, discoloration, and incisal wear in the maxillary anterior region. After comprehensive clinical evaluation and diagnostic planning, treatment with four lithium disilicate veneers (IPS e.max®, Ivoclar) was indicated for teeth 11, 12, 21, and 22. A diagnostic wax-up and mock-up were performed to validate esthetic and functional parameters prior to conservative preparation, primarily within enamel. Impressions were obtained using addition silicone, and provisional restorations were placed. At the definitive appointment, veneers were conditioned following glass-ceramic protocols, and enamel surfaces were treated using a strict adhesive protocol. Cementation was performed individually with light-cured resin cement under rubber dam isolation. Occlusal adjustment, finishing, and polishing ensured functional stability and esthetic integration. The final outcome demonstrated satisfactory morphological, chromatic, and functional integration. Longitudinal evidence supports high survival rates for lithium disilicate veneers when adhesion is predominantly enamel-based and protocols are rigorously executed. Within minimally invasive restorative options, lithium disilicate veneers remain a predictable and evidence-supported solution for cases with high esthetic demand and long-term color stability requirements.

Keywords: Lithium disilicate, Ceramic veneres, Adhesive cementation, Anterior esthetic rehabilitation, Minimally invasive dentistry

INTRODUCTION

Contemporary restorative dentistry is founded on the principle of minimal intervention, prioritizing the preservation of sound dental structure through biomimetic adhesive techniques.[1] Historically, dental veneers were initially described by Pincus in 1938 as temporary restorations for Hollywood actors, subsequently, the development of acid etching by Buonocore in 1955 marked the beginning of modern adhesive dentistry.[2,3] The evolution of light-cured composites in the 1970s enabled the progressive development of direct stratification techniques and subsequently matrix-guided techniques using transparent matrices, which led to contemporary resin-based restorative systems.[4] Currently, the technique assisted by digital mock-up and transparent silicone guides is considered a conservative alternative within the minimally invasive digital dentistry approach, the injected resin veneer technique (composite injection technique) is based on micromechanical adhesion to enamel and on the

formation of a resin-substrate interface capable of transferring functional loads with minimal removal of dental tissue.[2,3,6,5] Adhesively bonded ceramic veneers constitute a central therapeutic option in anterior esthetic rehabilitation due to their ability to modify shape, texture, and color with a minimally invasive approach when enamel is preserved.[7] Recent meta-analyses demonstrate that ceramic veneers bonded predominantly to enamel achieve survival rates approaching clinical perfection, whereas dentin exposure (particularly when severe) reduces survival and success rates. This substrate-dependent effect is clinically relevant in anterior region, where the objective is to maximize adhesion, minimize sensitivity, and maintain marginal and esthetic stability.[8]

From a physiological standpoint, adhesion to enamel demonstrates greater predictability than adhesion to dentin due to its higher mineral content and lower organic component, which favors the long-term stability of indirect or direct adhesive restorations.[9]

CASE REPORT

Usual indications are shown in Figure 1:[10-12] Dental shape and size alterations (microdontia, diastemas, mild proportional discrepancies). Young patients in whom preservation of dental structure and maintenance of reversibility are desired. Mild to moderate esthetic corrections without the need for extensive structural modifications.

The following are considered contraindications:[13-15] Severe bruxism without prior occlusal management. Severe malalignments requiring prior orthodontic treatment. Patients with unrealistic expectations regarding long-term color stability.

Porcelain ceramic veneers and injected resin veneers

Compared with feldspathic porcelain or lithium disilicate ceramic veneers, injected resin veneers offer reduced dental wear, greater reversibility, and lower biological cost; however, they exhibit lower long-term color stability and wear resistance.[16,17] Ceramic veneers demonstrate survival rates exceeding 90% at 10 years when properly indicated, whereas direct resin restorations show variable survival rates ranging from 75-90% at 5 years, depending on the clinical protocol and occlusal control.[18,19] Lithium disilicate has emerged as the ceramic of choice in multiple esthetic indications due to its combination of optical properties and clinical performance in thin adhesive restorations. A contemporary meta-analysis that included different ceramic families reported high long-term survival rates for veneers and suggests that lithium disilicate may be associated with favorable long-term complication profiles compared with other categories, longitudinal clinical evidence and systematic reviews support that veneers are an effective alternative for the conservative treatment of unaesthetic anterior teeth, with a need for maintenance and long-term follow-up.[20,21] Adhesive cementation of lithium disilicate veneers requires controlled conditioning of both the ceramic and the dental substrate, and recent literature emphasizes that strict adherence to the protocol is critical for clinical success.[7]

A 32-year-old female patient, systemically healthy, presented with esthetic dissatisfaction associated with dental giroversion and discoloration in maxillary anterior region, which affected her confidence when smiling. Esthetic rehabilitation was indicated using four lithium disilicate ceramic veneers (IPS e.max®, Ivoclar) on teeth 11, 12, 21, and 22, adhesively cemented (Figure 2).

Operative phase

A comprehensive clinical evaluation was performed, and the operative field was verified. Subsequently, local infiltrative anesthesia was administered in the maxillary anterior region using 2% lidocaine with epinephrine. A 3-0 retraction cord was placed for tissue management, followed by rubber dam isolation. During this phase, defective restorations were removed, and carious areas were restored with flowable composite resin (Figure 3).

A mock-up trial based on a diagnostic wax-up was performed for esthetic and functional validation prior to definitive tooth preparation. Preparations were carried out on the buccal, proximal, and incisal third surfaces with palatal extension, with an approximate reduction of 1.5-2.0 mm according to esthetic requirements and prosthetic space. Uniformity of reduction was verified using a silicone index guide. An impression was taken using addition silicone (Express 2®, 3M) and sent to the laboratory for fabrication of lithium disilicate ceramic veneers in shade A1-120. Provisional restorations were placed using bis-acrylic resin (3M), and the patient was scheduled 4 days later for definitive cementation.

Adhesive cementation protocol

At the placement appointment, rubber dam isolation was achieved. The veneers were conditioned following the protocol for glass ceramics: silane was applied for 60 seconds, followed by rinsing and drying, then acid etching according to the material protocol and application of an adhesive agent. The teeth were decontaminated and polished, then air-abraded to optimize micromechanical retention. Acid etching was performed with phosphoric acid (Ultra Etch®) for 15 seconds, followed by thorough rinsing and controlled drying. The CLEARFIL SE BOND® adhesive system (primer and bond) was applied according to the manufacturer's instructions, using active scrubbing and solvent evaporation.

Cementation was performed individually using flowable resin as luting agent. Each restoration was carefully positioned and light-cured for 30 sec per surface. Excess material was removed with manual instrumentation, and interproximal contacts were verified with dental floss. Procedure concluded with occlusal adjustment and final esthetic evaluation, achieving satisfactory morphological, chromatic, and functional integration (Figure 4).

Figure 1 (A-D): Clinical sequence of anterior esthetic management using a minimally invasive adhesive technique.
*(A) Initial condition: chromatic alterations, incisal wear, and morphological discrepancies in the maxillary anterior region. (B) Immediate result following direct composite resin restoration, showing improvement in dental form, symmetry, and harmony. (C) Preoperative smile with irregularities in the incisal contour and discrepancies in dental proportions. (D) Postoperative smile demonstrating biomimetic integration of the restorations, improved dental esthetics, and an appropriate lip-to-tooth relationship.

Figure 2 (A-F): Intraoral clinical records before and after adhesive restorative treatment in the maxillary anterior region.
*(A) Initial right lateral view showing incisal wear, morphological alterations, and discrepancies in the buccal contour. (B) Initial frontal view demonstrating asymmetries in incisal edges, irregularities in dental proportions, and esthetic compromise of the anterior region. (C) Pre-treatment right lateral view in maximum intercuspation, with loss of structure in the incisors and alteration of anterior guidance. (D) Frontal view after direct composite resin restorative treatment, showing contour harmonization, improved proportions, and reestablishment of dental symmetry. (E) Post-treatment right lateral view demonstrating incisal reconstruction and appropriate biomimetic integration in the buccal plane. (F) Lateral detail of the final result with stratified restorations, polished surface, and proper enamel–resin transition.

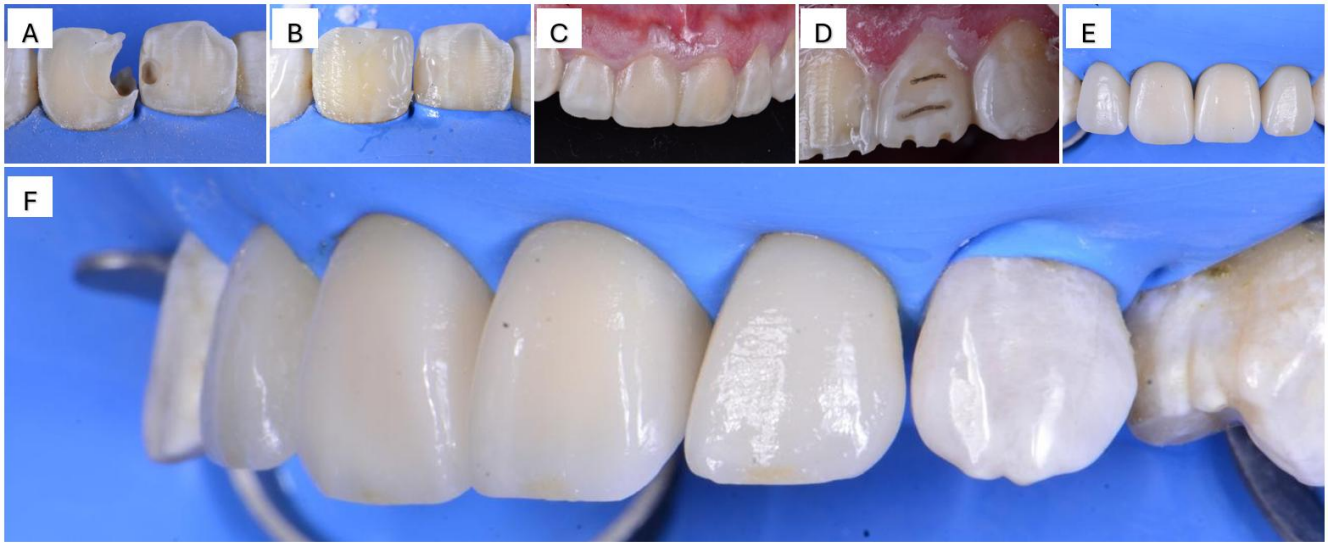

Figure 3 (A-F): Clinical sequence of the adhesive restorative protocol in the maxillary incisors.

*(A) Initial condition following removal of defective restorations and compromised tissue, revealing class IV cavities and incisal structure loss. (B) Preliminary anatomical reconstruction using a direct adhesive composite resin technique, restoring buccal volume and contour. (C) Intraoral clinical evaluation of the provisional result, demonstrating chromatic integration and harmonization of the incisal edge. (D) Detail of the dental substrate with delineation of stratification areas and internal characterization for thickness control and optical effects. (E) Restorations completed extraorally on a model or silicone guide, showing definitive anatomy and established incisal morphology. (F) Clinical outcome under rubber dam isolation, demonstrating marginal adaptation, enamel–resin continuity, and polished surface finish.

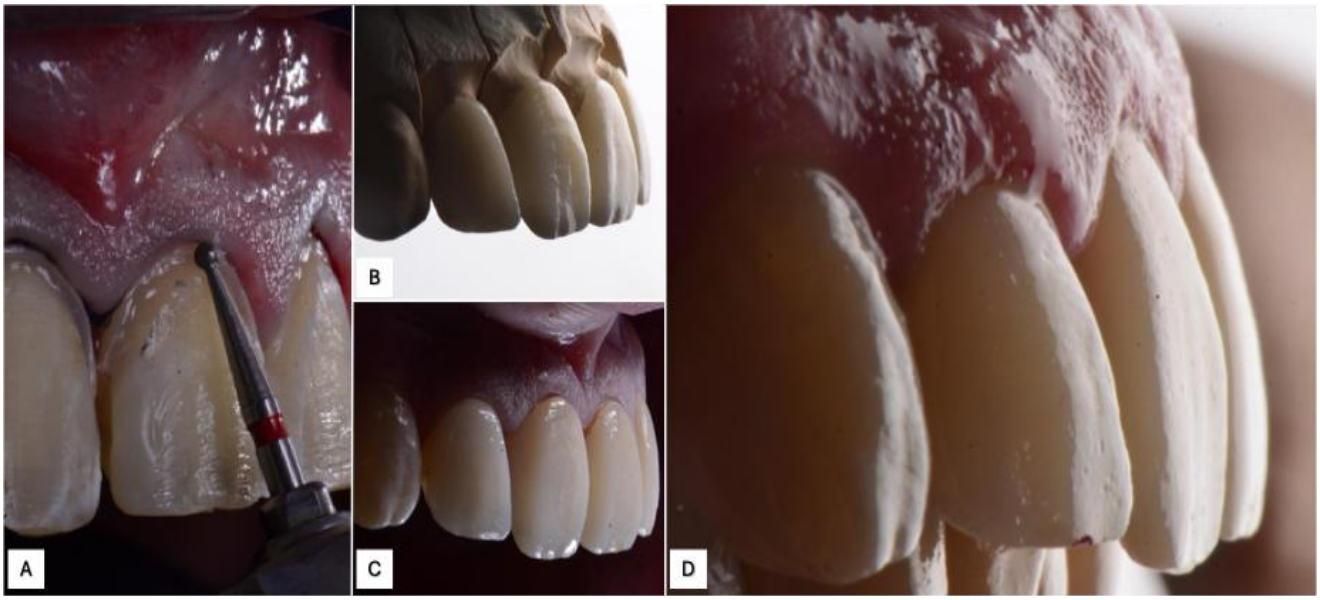

Figure 4 (A-D): Clinical sequence of gingival conditioning and optimization of the emergence profile in the maxillary anterior region.

*(A) Cervical contouring performed with a rotary instrument to regularize the gingival margin and define the restorative margin. (B) Indirect restorations/diagnostic wax-up demonstrating morphological planning of the cervical contour and dental proportions. (C) Intraoral clinical evaluation following adjustment of the emergence profile, showing harmonization of the gingival margin and a smooth tooth–gingiva transition. (D) Macro view of the final result, highlighting tissue integration, marginal contour stability, and biomimetic characteristics in the cervical third.

Occlusal adjustment, finishing, and polishing protocol. Following definitive cementation, occlusal adjustment was performed using 200 µm articulating paper to evaluate contacts in maximum intercuspation, as well as during lateral and protrusive movements. Premature contacts were identified and eliminated with fine-grit rotary instruments, preserving incisal anatomy and functional guidance. The finishing phase included

refinement of margins and surfaces using sequential abrasive rubber systems (3M®), ensuring marginal continuity and anatomical adaptation. Polishing was carried out with discs and felt wheels using ceramic polishing paste, complemented by aluminum oxide and silicon carbide polishers, with the aim of achieving a smooth surface, clinical gloss, and reduced biofilm retention. Occlusion was reassessed after polishing, confirming functional stability and appropriate anterior guidance (Figure 5).

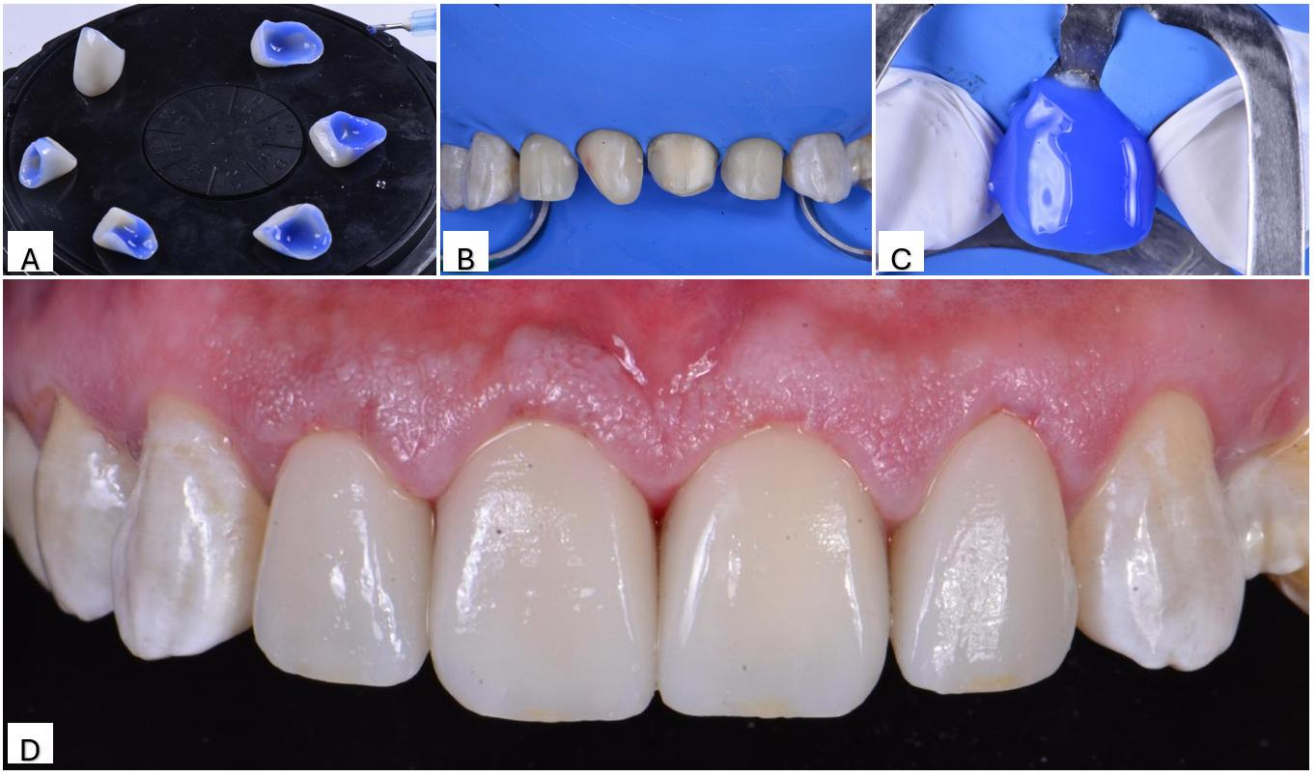

Figure 5 (A-D): Clinical sequence of the adhesive protocol for cementation of anterior restorations.

*(A) Selective application of phosphoric acid and silane on the internal surface of the ceramic restorations, demonstrating conditioning prior to cementation. (B) Clinical try-in under rubber dam isolation, verifying marginal adaptation, proximal contacts, and shade matching. (C) Application of phosphoric acid to the dental surface to condition the substrate. (D) Final result following adhesive cementation, showing chromatic integration, harmonious anatomical contours, and stability of the gingival margin.

DISCUSSION

The current trend in restorative dentistry favors biomimetic and minimally invasive treatments, [22] recent studies suggest that the injected resin technique demonstrates favorable medium-term clinical success rates when adequate occlusal control and strict adherence to the adhesive protocol are maintained, classical meta-analyses on ceramic veneers report high survival rates at 5-10 years for certain ceramic systems, with relevant clinical and methodological heterogeneity.[11,23] By contrast, direct resin veneers offer advantages in terms of tissue preservation, relative reversibility, intraoral repairability, and lower cost, at expense of greater technique sensitivity and increased need for esthetic maintenance.[24,25] Anterior esthetic rehabilitation using adhesively cemented lithium disilicate ceramic veneers represents a predictable, conservative therapeutic alternative supported by longitudinal clinical evidence when enamel is preserved and a rigorous adhesive protocol is executed; therefore, ceramic veneers continue to be the standard of care in cases with higher esthetic demands and long-term color stability requirements.[18] Due to its partial reversibility and reduced dental wear, the injected resin technique may represent a therapeutic alternative, particularly in young patients.[26] The available literature, including meta-analyses and long-term prospective studies, confirms high clinical survival rates for properly indicated ceramic veneers, particularly when adhesion is performed predominantly on enamel. Current alternatives include ultrathin lithium disilicate veneers, CAD/CAM restorations, and next-generation nanohybrid composites.[27] Recent observational clinical studies continue to evaluate performance and variables related to light-cured resin cements in anterior veneers, reinforcing the clinical interest in optimizing color, stability, and interface control.[28] Lithium disilicate combines favorable optical properties, adequate mechanical strength, and stable clinical behavior, positioning it as the material of choice in esthetic rehabilitation of the anterior region with high esthetic demands. Nevertheless, treatment success depends on proper case selection, etiologic control of wear or dental malposition, occlusal stability, and periodic maintenance. Although direct techniques

such as injected resin offer advantages in terms of reversibility and reduced tissue wear, ceramic veneers continue to represent the therapeutic standard in scenarios requiring maximum color stability and long-term longevity.

In the future, the development of resins with a higher degree of conversion, bioactive adhesive systems, and ion-releasing materials may improve marginal stability and reduce hydrolytic degradation.[29] Likewise, the integration of artificial intelligence into digital smile design could optimize personalized esthetic planning.[30]

CONCLUSION

Ceramic restorations provide greater longevity; the integration of updated adhesive protocols, precise diagnostic planning, and structured clinical follow-up allows optimization of functional and esthetic outcomes, consolidating lithium disilicate veneers as a central tool within contemporary minimally invasive restorative dentistry.

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REFERENCES

1. Andersson-Wenckert IE, van Dijken JW, Kieri C. Durability of extensive Class II open-sandwich restorations with a resin-modified glass ionomer cement after 6 years. Am J Dent. 2004;17(1):43-50.
2. Pincus CR. Building mouth personality. J Calif Dent Assoc. 1938;14(4):125-9.
3. Buonocore MG. A simple method of increasing the adhesion of acrylic filling materials to enamel surfaces. J Dent Res. 1955;34(6):849-53.
4. Bowen RL. Properties of a silica-reinforced polymer for dental restorations. J Am Dent Assoc. 1963;66(1):57-64.
5. Coachman C, Calamita MA. Digital smile design: A tool for treatment planning and communication in esthetic dentistry. Int J Esthet Dent. 2012;7(3):310-22.
6. Perdigão J, Araujo E, Ramos RQ, Gomes G, Pizzolotto L. Adhesive dentistry: Current concepts and clinical considerations. J Esthet Restor Dent. 2021;33(1):51-68.
7. Rojas-Rueda S, Villalobos-Tinoco J, Conner C, Colvert S, Nurrohman H, Jurado CA. Bonding Protocols for Lithium Disilicate Veneers: A Narrative Review and Case Study. Biomimetics. 2025;10(3):188.
8. Alqutaibi AY, Saker S, Alghauli MA, Algabri RS, AbdElaziz MH. Clinical survival and complication rate of ceramic veneers bonded to different substrates: A systematic review and meta-analysis. J Prosthet Dent. 2025;134(4):1030-9.
9. Cuevas-Suárez CE, da Rosa WLO, Lund RG, da Silva AF, Piva E. Bonding performance of universal adhesives: an updated systematic review and meta-analysis. J Adhes Dent. 2019;21(1):7-26.
10. Dietschi D, Spreafico R. Current clinical concepts for adhesive composite restorations in anterior teeth. Int J Esthet Dent. 2018;13(2):196-214.
11. David Geštakovski. The injectable composite resin technique: minimally invasive reconstruction of esthetics and function. Clinical case report with 2-year follow-up. Quintessence Int. 2019;50(9):712-9.
12. Gresnigt MMM, Cune MS, Jansen K, van der Made SAM, Özcan M. Randomized clinical trial on indirect resin composite and ceramic laminate veneers: Up to 10-year findings. J Dent. 2019;86:102-9.
13. Manfredini D, Ahlberg J, Winocur E, Lobbezoo F. Management of sleep bruxism in adults: a qualitative systematic literature review. J Oral Rehabil. 2015;42(11):862-74.
14. Papageorgiou SN, Konstantinidis I, Papadopoulou K, Jäger A, Bourauel C. Clinical effects of pre-adjusted edgewise orthodontic brackets: a systematic review and meta-analysis. Eur J Orthod. 2014;36(3):350-63.
15. Freitas BN, Silva PO, Pintado-Palomino K, Almeida CVVB, Souza-Gabriel AE, Corona SAM, et al. Patients´ satisfaction concerning direct anterior dental restoration. Braz Dental J. 2023;34(3):82-93.
16. Susana Morimoto, Rafael Borges Albanesi, Newton Sesma, Carlos Martins Agra, Mariana Minatel Braga. Main Clinical Outcomes of Feldspathic Porcelain and Glass-Ceramic Laminate Veneers: A Systematic Review and Meta-Analysis of Survival and Complication Rates. Int J Prosthodont. 2016;29(1):38-49.
17. Layton DM, Clarke M. A systematic review and meta-analysis of the survival of non-feldspathic porcelain veneers over 5 and 10 years. Int J Prosthodont. 2013;26(2):111-24.
18. Peumans M, De Munck J, Fieuws S, Lambrechts P, Vanherle G, Van Meerbeek B. A prospective ten-year clinical trial of porcelain veneers. J Adhes Dent. 2004;6(1):65-76.
19. Demarco FF, Collares K, Coelho-de-Souza FH, Correa MB, Cenci MS, Moraes RR, et al. Anterior composite restorations: A systematic review on long-term survival and reasons for failure. Dent Mater. 2015;31(10):1214-24.
20. Sulaiman TA. Materials in digital dentistry-A review. J Esthet Restor Dent. 2020;32(2):171-81.
21. Beier US, Kapferer I, Burtscher D, Dumfahrt H. Clinical performance of porcelain laminate veneers for up to 20 years. Int J Prosthodont. 2012;25(1):79-85.
22. Magne P, Carvalho AO, Bruzi G, Giannini M. Fatigue resistance of ultrathin CAD/CAM complete crowns with a simplified cementation process. J Prosthet Dent. 2015;114(4):574-9.
23. Alenezi A, Alkhubaizi Q, Al-Saleh R, Al-Anazi M, Al-Mutairi H. Long-term survival and complication

rates of porcelain laminate veneers: a systematic review and meta-analysis. J Clin Med. 2021;10(5):1074.
24. Kouri V, Moldovani D, Papazoglou E. Accuracy of Direct Composite Veneers via Injectable Resin Composite and Silicone Matrices in Comparison to Diagnostic Wax-Up. J Funct Biomater. 2023;14(1):32.
25. Muslimah DF, Hasegawa Y, Antonin T, Foxton R, Hosaka K. Composite Injection Technique With a Digital Workflow: A Pragmatic Approach for a Protruding Central Incisor Restoration. Cureus. 2024;16(4):e58712.
26. Opdam NJM, van de Sande FH, Bronkhorst E, Cenci MS, Bottenberg P, Pallesen U, et al. Longevity of posterior composite restorations: a systematic review and meta-analysis. J Dent Res. 2014;93(10):943-9.
27. Zarone F, Di Mauro MI, Ausiello P, Ruggiero G, Sorrentino R. Current status on lithium disilicate and zirconia: A narrative review. BMC Oral Health. 2019;19(1):134
28. Hien NTM, Lam TH, Thao DT, Viet H. Clinical Performance of Lithium Disilicate Ceramic Veneers Cemented With Light-Cured Resin Cements: An Observational Study. 2025;17(5):e83862.
29. Chen L, Shen H, Suh BI. Bioactive dental restorative materials: a review. Am J Dent. 2013;26(4):219-27.
30. Schwendicke F, Samek W, Krois J. Artificial intelligence in dentistry: Chances and challenges. J Dent Res. 2020;99(7):769-74.

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