

BÖLÜM 3

PORSELEN LAMİNATE VENEERLERİN KLİNİK PERFORMANSI

Almira Ada DİKEN TÜRKSAYAR¹

Tam kron restorasyonlar, anterior dişlerdeki renklenmeler, defektler ve malformasyonlar nedeniyle anterior dişlerde sıklıkla tercih edilen bir tedavi yöntemidir.¹ Ancak bu restorasyonların ilgili dişlerde çok fazla madde kaybına neden olması, öte yandan adeziv tekniklerin gelişmesiyle minimal invaziv teknikler popüler hale gelmiştir. Minimal invaziv teknikler arasında sıklıkla kullanılan veneer restorasyonlar genel olarak 3 ayrı kategoriye ayrılırlar:

- Direkt rezin veneerler,
- İndirek rezin veneerler,
- Porselen laminate veneerler.

Klinik olarak porselen laminate veneerler ve indirek rezin veneerler, hastabaşında geçirilen zamanın daha kısa olması nedeniyle direkt rezin veneerlerden daha çok tercih edilirler.^{2,3} Seramik veneerler, deneyimli klinisyenler tarafından kullanıldığında ve uygun hasta seçimi ile öngörülebilir uzun dönem sonuçları olan oldukça estetik restorasyonlardır. Seramik laminate veneerler, mükemmel optik özellikler ve biyouyumluluğa sahip olmalarının yanı sıra kullanılan malzemeler nedeniyle de doğal dişe benzer estetiği sağlayabilen ve dayanıklı restorasyonlar olarak estetik diş hekimliğinde sıklıkla tercih edilmektedirler. İndirek restorasyonlarla ilgili olarak, laminate veneerlerde klinik başarıya ve hasta

¹ Dr. Öğr. Üyesi, Biruni Üniversitesi Diş Hekimliği Fakültesi Protetik Diş Tedavisi Anabilim Dalı, aturksayar@biruni.edu.tr

SONUÇ

Porselen laminate veneerler, günümüz estetik diş hekimliğinde sıklıkla tercih edilen minimal invaziv restorasyonlardır. Hem diş dokusunun korunması hem de kısa süre içerisinde uygulanabilmeleri sayesinde gülüş tasarımında başarıyla kullanılmaktadırlar. Ancak istenilen estetiğin sağlanması ve uzun yıllar ağız ortamında başarıyla kullanılacak restorasyonların üretilebilmesi için klinikten laboratuvara endikasyonun konulmasından hastabaşında geçirilen son seansa kadar pek çok faktörün doğru kombine edilmesi gerekmektedir. Gelişen teknoloji ile her geçen gün piyasada yerini alan yeni materyaller ve üretim teknikleriyle porselen laminate veneerlerin de başarısının artacağı kuşkusuzdur. Bu gelişmelerle olası problemleri tespit etmek ve çözüm yolları üretmek üzere restorasyonların uzun dönem klinik çalışmaları artırılmalıdır.

KAYNAKLAR

1. Peumans M, Van Meerbeek B, Lambrechts P, Vanherle G. Porcelain veneers: a review of the literature. J Dent. 2000 Mar;28(3):163-77. doi: 10.1016/s0300-5712(99)00066-4.
2. Meijering AC, Creugers NH, Roeters FJ, Mulder J. Survival of three types of veneer restorations in a clinical trial: a 2.5-year interim evaluation. J Dent. 1998; 26(7):563-8. doi: 10.1016/s0300-5712(97)00032-8.
3. Liu M, Gai K, Chen J, Jiang L. Comparison of Failure and Complication Risks of Porcelain Laminate and Indirect Resin Veneer Restorations: A Meta-Analysis. Int J Prosthodont. Jan/Feb 2019;32(1):59-65. doi: 10.11607/ijp.6099.
4. Yamockul S, Thamronganankul N, Poolthong S: Comparison of the surface roughness of feldspathic porcelain polished with a novel alumina-zirconia paste or diamond paste. Dent Mater J 2016;35:379-385
5. Lopes C de C, Rodrigues RB, Silva AL, et al: Degree of conversion and mechanical properties of resin cements cured through different all-ceramic systems. Braz Dent J 2015;26:484-489
6. Kelly JR, Nishimura I, Campbell SD: Ceramics in dentistry: Historical roots and current perspectives. J Prosthet Dent 1996;75:18-22.
7. Calamia JR, Calamia CS: Porcelain laminate veneers: reasons for 25 years of success. Dent Clin North Am 2007;51:399-417.

8. Vaz EC, Vaz MM, de Torres EM, de Souza JB, Barata TJE, Lopes LG. Resin Cement: Correspondence with Try-In Paste and Influence on the Immediate Final Color of Veneers. *J Prosthodont*. 2019 Jan;28(1):e74-e81. doi: 10.1111/jopr.12728. Epub 2018 Jan 3.
9. Aristidis GA & Dimitra B (2002). Five-year clinical performance of porcelain laminate veneers *Quintessence International* 33(3) 185-189.
10. D'Arcangelo C, De Angelis F, Vadini M, & D'Amario M (2012) Clinical evaluation on porcelain laminate veneers bonded with light-cured composite: results up to 7 years. *Clinical Oral Investigations*; 16(4) 1071-1079.
11. Dumfahrt H & Schaffer H (2000) Porcelain laminate veneers. A retrospective evaluation after 1 to 10 years of service: part II—clinical results. *International Journal of Prosthodontics*; 13(1) 9-18.
12. Peumans M, De Munck J, Fieuws S, Lambrechts P, Vanherle G, & Van Meerbeek B (2004) A prospective tenyear clinical trial of porcelain veneers. *Journal of Adhesive Dentistry*; 6(1) 65-76.
13. Beier US, Kapferer I, Burtscher D, Dumfahrt H. Clinical performance of porcelain laminate veneers for up to 20 years. *International Journal of Prosthodontics*; 2012; 25(1) 79-85.
14. Arif R, Dennison JB, Garcia D, Yaman P. Gingival Health of Porcelain Laminate Veneered Teeth: A Retrospective Assessment. *Oper Dent* 2019;44(5):452-458. doi: 10.2341/18-088-C. Epub 2019 Jan 23.
15. Moretti LA, Barros RR, Costa PP, et al. The influence of restorations and prosthetic crowns finishing lines on inflammatory levels after non-surgical periodontal therapy. *J Int Acad Periodontol*. 2011;13(3):65-72.
16. Farrell CV, Johnson GH, Oswald MT, Tucker RD. Effect of cement selection and finishing technique on marginal opening of cast gold inlays. *J Prosthet Dent*. 2008 Apr;99(4):287-92.
17. Al-Makramani BMA, Razak AAA, Abu-Hassan MI. Evaluation of load at fracture of Procera AllCeram copings using different luting cements. *J Prosthodont*. 2008;17(2):120-124.
18. Dumfahrt H, Schaffer H. Porcelain laminate veneers. A retrospective evaluation after 1 to 10 years of service: part II clinical results. *Int J Prosthodont*, 13 (2000), pp. 9-18.
19. Arif R, Dennison JB, Garcia D, Yaman P. Retrospective evaluation of the clinical performance and longevity of porcelain laminate veneers 7 to 14 years after cementation. *J Prosthet Dent*. 2019;122(1):31-37. (b)
20. Magne P, Versluis A, Douglas WH. Effect of luting composite shrinkage and thermal loads on the stress distribution in porcelain laminate veneers. *J Prosthet Dent*. 1999;81(3):335-344.
21. Beschnidt SM, Strub JR: Evaluation of the marginal accuracy of different all-ceramic crown systems after simulation in the artificial mouth. *J Oral Rehabil* 1999; 26:582-593.
22. Boitelle P, Mawussi B, Tapie L, et al: A systematic review of CAD/CAM fit restoration evaluations. *J Oral Rehabil* 2014;41:853-874.

23. Al-Dwairi ZN, Alkhatatbeh RM, Baba NZ, Goodacre CJ. A comparison of the marginal and internal fit of porcelain laminate veneers fabricated by pressing and CAD-CAM milling and cemented with 2 different resin cements. *J Prosthet Dent.* 2019;121(3):470-476.
24. Stappert CF, Ozden U, Gerds T, Strub JR. Longevity and failure load of ceramic veneers with different preparation designs after exposure to masticatory simulation. *J Prosthet Dent.* 2005;94(2):132-139.
25. Raptis, NV, Michalakis, KX, Hirayama, H. Optical behavior of current ceramic systems. *Int J Per Rest Dent* 2006;26:31-41.
26. Silami FD, Tonani R, Alandia-Román CC, Pires-de-Souza F de C. Influence of different types of resin luting agents on color stability of ceramic laminate veneers subjected to accelerated artificial aging. *Braz Dent J* 2016;27:95-100.
27. Niu E, Agustin M, Douglas RD. Color match of machinable lithium disilicate ceramics: Effects of cement color and thickness. *J Prosthet Dent* 2014;111:42-50.
28. Bagis B, Turgut S. Optical properties of current ceramics systems for laminate veneers. *Journal of Dentistry* 2013;41 Suppl 3:24-30.
29. Rodrigues RB, Lima E, Roscoe MG, Soares CJ, Cesar PF, Novais VR. Influence of Resin Cements on Color Stability of Different Ceramic Systems. *Braz Dent J.* 2017;28(2):191-195.
30. Kelly JR, Benetti P. Ceramic materials in dentistry: historical evolution and current practice. *Aust Dent J* 2011;56Suppl 1:84-96.
31. McLean JW: Evolution of dental ceramics in the twentieth century. *J Prosthet Dent* 2001;85:61-66.
32. Perroni AP, Kaizer MR, Della Bona A, Moraes RR, Boscato N. Influence of light-cured luting agents and associated factors on the color of ceramic laminate veneers: A systematic review of in vitro studies. *Dent Mater.* 2018;34(11):1610-1624.
33. Della Bona A, Nogueira AD, Pecho OE. Optical properties of CAD-CAM ceramic systems. *J Dent.* 2014;42(9):1202-1209.
34. Burke FJ, Qualtrough AJ, Hale RW. Dentin-bonded all-ceramic crowns: current status. *J Am Dent Assoc.* 1998 Apr;129(4):455-60.
35. Guess PC, Schultheis S, Bonfante EA, Coelho PG, Ferencz JL, Silva NR. All-ceramic systems: laboratory and clinical performance. *Dent Clin North Am.* 2011 Apr;55(2):333-52.
36. Barbon FJ, Moraes RR, Calza JV, Perroni AP, Spazzin AO, Boscato N. Inorganic filler content of resin-based luting agents and the color of ceramic veneers [published correction appears in *Braz Oral Res.* 2018 Jul 23;32:e49err]. *Braz Oral Res.* 2018;32:e49. Published 2018 Jun 7.
37. Heffernan MJ, Aquilino SA, Diaz-Arnold AM, Haselton DR, Stanford CM, Vargas MA. Relative translucency of six all-ceramic systems. Part II: Core and veneer materials. *J Prosthet Dent* 2002;88:10-15.
38. Turgut, S, Bagis, B. Color stability of laminate veneers: An in vitro study.

- Journal of Dentistry 2011;39:57-64.
39. Sari T, Ural C, Yüzbaşıoğlu E, Duran I, Cengiz S, Kavut I. Color match of a feldspathic ceramic CAD-CAM material for ultrathin laminate veneers as a function of substrate shade, restoration color, and thickness. *J Prosthet Dent.* 2018;119(3):455-460.
 40. Li Q, Yu H, Wang YN. Spectrophotometric evaluation of the optical influence of core build-up composites on all-ceramic materials. *Dental Materials* 2009;25:158-165.
 41. Pires LA, Novais PM, Araújo VD, Pegoraro LF. Effects of the type and thickness of ceramic, substrate, and cement on the optical color of a lithium disilicate ceramic. *J Prosthet Dent* 2017;117:144-149.
 42. Lee YK, Cha HS, Ahn JS. Layered color of all-ceramic core and veneer ceramics. *J Prosthet Dent* 2007;97:279-86.
 43. Joiner A. Tooth colour: a review of the literature. *J Dent* 2004;32:3-12.
 44. Kim SJ, Woo JM, Jo CW, Park JH, Kim SK, Kahm SH. Color changes of ceramic veneers following glazing with respect to their composition. *J Adv Prosthodont.* 2019;11(1):16-22.
 45. Volpato CAM, Monteiro S, de Andrada MC, Fredel MC, Petter CO. Optical influence of the type of illuminant, substrates and thickness of ceramic materials. *Dent Mater* 2009;25:87-93.
 46. Paul SJ, Peter A, Rodoni L, Pietrobon N. Conventional visual vs spectrophotometric shade taking for porcelain-fused-to-metal crowns: a clinical comparison. *Int J Periodontics Restorative Dent* 2004;24:222-31.
 47. Jankar AS, Kale Y, Pustake S, Bijjaragi S, Pustake B. Spectrophotometric study of the effect of luting agents on the resultant shade of ceramic veneers: an in vitro study. *J Clin Diagn Res* 2015;9:56-60.
 48. Magalhães AP, Cardoso Pde C, de Souza JB, Fonseca RB, Pires-de-Souza Fde C, Lopez LG. Influence of activation mode of resin cement on the shade of porcelain veneers. *J Prosthodont.* 2014;23(4):291-295.
 49. Kilinc E, Antonson SA, Hardigan PC, Kesercioglu A. Resin cement color stability and its influence on the final shade of all-ceramics. *J Dent.* 2011;39 Suppl 1:e30-e36.
 50. Marchionatti AME, Wandscher VF, May MM, Bottino MA, May LG. Color stability of ceramic laminate veneers cemented with light-polymerizing and dual-polymerizing luting agent: A split-mouth randomized clinical trial. *J Prosthet Dent.* 2017;118(5):604-610.
 51. Shono NN, Al Nahedh HN. Contrast ratio and masking ability of three ceramic veneering materials. *Oper Dent.* 2012;37:406-416.
 52. Chang J, Da Silva JD, Sakai M, Kristiansen J, Ishikawa-Nagai S. The optical effect of composite luting cement on all ceramic crowns. *J Dent* 2009;37:937-43.
 53. Koishi Y, Tanoue N, Atsuta M, Matsumura H. Influence of visible-light exposure on colour stability of current dual-curable luting composites. *J Oral Rehabil.* 2002;29(4):387-393.

54. Almeida JR, Schmitt GU, Kaizer MR, Boscato N, Moraes RR. Resin-based luting agents and color stability of bonded ceramic veneers. *J Prosthet Dent.* 2015;114(2):272-277.
55. Lu H, Powers JM. Color stability of resin cements after accelerated aging. *Am J Dent.* 2004;17(5):354-358.
56. Rosenstiel SF, Land MF, Crispin BJ. Dental luting agents: a review of the current literature. *J Prosthet Dent;* 1998; 80(3): 280-301.
57. Rueggeberg FA. From vulcanite to vinyl, a history of resins in restorative dentistry. *J Prosthet Dent.* 2002; 87: 364-79.
58. Zaimoğlu A, Can G. Sabit protezler. 2004; 281-96.
59. Karaagaçlıoğlu L, Yılmaz B. Influence of cement shade and water storage on the final color of leucite-reinforced ceramics. *Oper Dent* 2008;33:386-91.
60. Azer SS, Rosenstiel SF, Seghi RR, Johnston WM. Effect of substrate shades on the color of ceramic laminate veneers. *J Prosthet Dent.* 2011;106(3):179-183.
61. da Cunha LF, Pedroche LO, Gonzaga CC, et al: Esthetic, occlusal, and periodontal rehabilitation of anterior teeth with minimum thickness porcelain laminate veneers. *J Prosthet Dent* 2014;112:1315-1318.
62. Anadioti E, Aquilino SA, Gratton DG, et al: Internal fit of pressed and computer-aided design/computer-aided manufacturing ceramic crowns made from digital and conventional impressions. *J Prosthet Dent* 2015;113:304-309.
63. Yuce M, Ulusoy M, Turk AG. Comparison of Marginal and Internal Adaptation of Heat-Pressed and CAD/CAM Porcelain Laminate Veneers and a 2-Year Follow-Up. *J Prosthodont.* 2019;28(5):504-510.
64. Torbjörner A, Fransson B. Biomechanical aspects of prosthetic treatment of structurally compromised teeth. *Int J Prosthodont.* 2004;17(2):135-141.
65. 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):111-124. doi:10.11607/ijp.3202
66. Nejatidanesh F, Savabi G, Amjadi M, Abbasi M, Savabi O. Five year clinical outcomes and survival of chairside CAD/CAM ceramic laminate veneers - a retrospective study. *J Prosthodont Res.* 2018;62(4):462-467.
67. Alavi AA, Behrooz Z, Nik EF. The shear bond strength of porcelain laminate to prepared and unprepared anterior teeth. *J Dent.* 2017;18:50-55.
68. Shetty A, Kaiwar A, Shubhashini N, et al. Survival rates of porcelain laminate restoration based on different incisal preparation designs: an analysis. *J Conserv Dent.* 2011;14:10-15.
69. Tuncdemir MT, Gulbahce N, Aykent F. Comparison of color stability of two laminate veneers cemented to tooth surfaces with and without preparation. *J Esthet Restor Dent.* 2020;1-6.
70. Chai, SY., Bennani, V., Aarts, J. M., & Lyons, K. (2018). Incisal preparation design for ceramic veneers. *The Journal of the American Dental Associati-*

- on, 149(1), 25-37.
71. Walls AWG, Steele JG, Wassell RW. Crowns and other extra-coronal restorations: Porcelain laminate veneers. *Br Dent J* 2002; 193: 73-82.
 72. Seymour KG, Cherukara GP, Samarawickrama DY. Stresses within porcelain veneers and the composite lute using different preparation designs. *J Prosthodont.* 2001; 10(1):16-21.
 73. Gürbulak AG, Demircan A. Geçmişten günümüze porselen laminate veneerlerde preparasyon teknikleri: Bir literatür değerlendirmesi. *Sağlık Bilimleri Dergisi (Journal of Health Sciences).*2012; 21(2) 136-142.
 74. Calamia JR. Clinical evaluation of etched porcelain veneers. *Am J Dent.* 1989;2(1):9-15.
 75. Garber D. Porcelain laminate veneers: ten years later, part I: Tooth preparation. *J Esthet Dent.* 1993;5(2): 56-62.
 76. Jankar AS, Kale Y, Kangane S, Ambekar A, Sinha M, Chaware S. Comparative evaluation of fracture resistance of ceramic veneer with three different incisal design preparations: an in-vitro study. *J Int Oral Health.* 2014;6(1):48-54.
 77. Li Z, Yang Z, Zuo L, & Meng Y. A three-dimensional finite element study on anterior laminate veneers with different incisal preparations *Journal of Prosthetic Dentistry.* 2014; 112(2) 325-333.
 78. Magne P, & Douglas WH. Design optimization and evolution of bonded ceramics for the anterior dentition: A finite-element analysis *Quintessence International.*1999;30(10) 661-672.
 79. Zarone F, Apicella D, Sorrentino R, Ferro V, Aversa R, & Apicella A. Influence of tooth preparation design on the stress distribution in maxillary central incisors restored by means of alumina porcelain veneers: A 3D finite element analysis *Dental Materials,* 2005; 21(12) 1178-1188.
 80. Bergoli CD, Meira JB, Valandro LF, & Bottino MA. Survival rate, load to fracture, and finite element analysis of incisors and canines restored with ceramic veneers having varied preparation design *Operative Dentistry,* 2014; 39(5) 530-540.
 81. Hong N, Yang H, Li J, Wu S, Li Y. Effect of Preparation Designs on the Prognosis of Porcelain Laminate Veneers: A Systematic Review and Meta-Analysis. *Operative Dentistry,* 2017; 42(6), E197-E213. doi:10.2341/16-390-l.
 82. Da CD, Coutinho M, de Sousa AS, Ennes JP. A meta-analysis of the most indicated preparation design for porcelain laminate veneers. *Journal of Adhesive Dentistry,* 2013; 15(3) 215-220.