

BÖLÜM 4

PERİODONTAL PLASTİK CERRAHİDE PALATAL DONÖR ALANIN YARA İYİLEŞMESİ: BİYOLOJİK TEMELLER VE KLİNİK YAKLAŞIMLAR

Mustafa ÖZAY USLU¹

Pınar GÜLTEKİN²

PALATİNAL GREFT ALMA İŞLEMLERİNİN PERİODONTAL CERRAHİDEKİ YERİ

Doğal dişleri ve dental implantları etkileyen mukogingival deformiteler, özellikle çekilme (Resesyon) ve keratinize mukoza yetersizliği, oldukça yaygındır (1). Palatinal bölge, otojen greftlerin toplanması için standart donör bölgesidir ve intra-operatif ve postoperatif morbiditeyi azaltmak için tedavi protokolleri geliştirilmiş ve geliştirilmeye devam etmektedir (2). Yumuşak doku palatinal greft alma işlemi, epitelize serbest dişeti greftleri elde etmek amacıyla 1960'ların sonlarında uygulanmaya başlanmıştır; bu yöntemde donör alan sekonder iyileşmeye bırakılmıştır (3). Primer kapanmanın sağlanması amacıyla, epitel altı bağ dokusu greftleme yöntemi geliştirilmiştir. 1974 yılında Edel, donör alanda epitel flebin korunmasını sağlayan iki vertikal insizyon içeren “kapak (trap door)” tekniğini belgeleyerek bu yöntemi tanıtmıştır (4). 1985 yılında ise Langer ve Langer, geniş vertikal insizyonlara ihtiyaç duymadan, çıkartım sırasında küçük bir epitel bandı da içeren bir yöntem geliştirerek bağ dokusunun daha kolay elde edilmesini sağlamışlardır (5).

Bu yaklaşımlara çeşitli modifikasyonlar önerilmiştir. 1999'da tanıtılan tek insizyonlu (zarf) teknik, yalnızca bir yatay kesiyi içerir ve daha tutarlı kalınlığa sahip derin bağ dokusunu (periostu da içerebilir) elde eder. Bu teknikte hemostatik ajanlara duyulan ihtiyaç ve dikiş gereksinimi minimuma indirilmiştir (6). 2010

¹ Doç. Dr., Alanya Alaaddin Keykubat Üniversitesi, Diş Hekimliği Fakültesi, Periodontoloji AD., ozay.uslu@alanya.edu.tr, ORCID iD: 0000-0002-9707-1379

² Arş. Gör., Alanya Alaaddin Keykubat Üniversitesi, Diş Hekimliği Fakültesi, Periodontoloji AD., pinar.gultekin@alanya.edu.tr, ORCID iD: 0009-0008-7761-0348

KAYNAKLAR

1. Cortellini P, Bissada NF. Mucogingival conditions in the natural dentition: Narrative review, case definitions, and diagnostic considerations. *Journal of Clinical Periodontology*. 2018;45(S20):S190-S8.
2. Tavelli L, Barootchi S, Stefanini M, Zucchelli G, Giannobile WV, Wang H-L. Wound healing dynamics, morbidity, and complications of palatal soft-tissue harvesting. *Periodontology* 2000. 2023;92(1):90-119.
3. Nabers JM. Free gingival graft. *Periodontics*. 1966;4:243-5.
4. Edel A. Clinical evaluation of free connective tissue grafts used to increase the width of keratinised gingiva. *Journal of Clinical Periodontology*. 1974;1(4):185-96.
5. Langer B, Langer L. Subepithelial Connective Tissue Graft Technique for Root Coverage. *Journal of Periodontology*. 1985;56(12):715-20.
6. Hürzeler MB, Weng D. A single-incision technique to harvest subepithelial connective tissue grafts from the palate. *International Journal of Periodontics & Restorative Dentistry*. 1999;19(3).
7. Zucchelli G, Mele M, Stefanini M, Mazzotti C, Marzadori M, Montebugnoli L, De Sanctis M. Patient morbidity and root coverage outcome after subepithelial connective tissue and de-epithelialized grafts: a comparative randomized-controlled clinical trial. *Journal of clinical periodontology*. 2010;37(8):728-38.
8. Almaguer C, Rodriguez-Pulido J, Carvajal Montes de Oca MDLA, Galindo S, De La Garza-Ramos M, Baltazar A, et al. Anatomy of the palate: Harvesting of free, connective, and rotated gingival graft Literature Review. 2023.
9. Shahbazi A, Grimm A, Feigl G, Gerber G, Székely AD, Molnár B, Windisch P. Analysis of blood supply in the hard palate and maxillary tuberosity—clinical implications for flap design and soft tissue graft harvesting (a human cadaver study). *Clinical Oral Investigations*. 2019;23:1153-60.
10. Mu L, Chen J, Li J, Fowkes M, Benson B, Nyirenda T, et al. Innervation of human soft palate muscles. *The Anatomical Record*. 2021;304(5):1054-70.
11. Benninger B, Andrews K, Carter W. Clinical measurements of hard palate and implications for subepithelial connective tissue grafts with suggestions for palatal nomenclature. *J Oral Maxillofac Surg*. 2012;70(1):149-53.
12. Reiser GM, Bruno JF, Mahan PE, Larkin LH. The subepithelial connective tissue graft palatal donor site: anatomic considerations for surgeons. *Int J Periodontics Restorative Dent*. 1996;16(2):130-7.
13. Tavelli L, Barootchi S, Ravidà A, Oh TJ, Wang HL. What Is the Safety Zone for Palatal Soft Tissue Graft Harvesting Based on the Locations of the Greater Palatine Artery and Foramen? A Systematic Review. *J Oral Maxillofac Surg*. 2019;77(2):271.e1-.e9.
14. Monnet-Corti V, Santini A, Glise JM, Fouque-Deruelle C, Dillier FL, Liébart MF, Borghetti A. Connective tissue graft for gingival recession treatment: assessment of the maximum graft dimensions at the palatal vault as a donor site. *J Periodontol*. 2006;77(5):899-902.
15. Orban B, Sicher H. The oral mucosa. *Journal of dental education*. 1946;10:163.
16. Zuhr O, Bäumer D, Hürzeler M. The addition of soft tissue replacement grafts in plastic periodontal and implant surgery: critical elements in design and execution. *Journal of Clinical Periodontology*. 2014;41(s15):S123-S42.
17. Cho K-H, Yu S-K, Lee M-H, Lee D-S, Kim H-J. Histological assessment of the palatal mucosa and greater palatine artery with reference to subepithelial connective tissue grafting. *Anatomy & cell biology*. 2013;46(3):171-6.
18. Müller HP, Heinecke A, Schaller N, Eger T. Masticatory mucosa in subjects with different periodontal phenotypes. *J Clin Periodontol*. 2000;27(9):621-6.
19. Heil A, Schwindling FS, Jelinek C, Fischer M, Prager M, Lazo Gonzalez E, et al. Determination of the palatal masticatory mucosa thickness by dental MRI: a prospective study analysing age and gender effects. *Dentomaxillofacial Radiology*. 2018;47(2).
20. Song J-E, Um Y-J, Kim C-S, Choi S-H, Cho K-S, Kim C-K, et al. Thickness of Posterior Pala-

- tal Masticatory Mucosa: The Use of Computerized Tomography. *Journal of Periodontology*. 2008;79(3):406-12.
21. Bertl K, Pifl M, Hirtler L, Rendl B, Nürnberger S, Stavropoulos A, Ulm C. Relative Composition of Fibrous Connective and Fatty/Glandular Tissue in Connective Tissue Grafts Depends on the Harvesting Technique but not the Donor Site of the Hard Palate. *Journal of Periodontology*. 2015;86(12):1331-9.
22. Sculean A, Gruber R, Bosshardt DD. Soft tissue wound healing around teeth and dental implants. *Journal of Clinical Periodontology*. 2014;41(s15):S6-S22.
23. Graves DT, Nooh N, Gillen T, Davey M, Patel S, Cottrell D, Amar S. IL-1 plays a critical role in oral, but not dermal, wound healing. *The Journal of Immunology*. 2001;167(9):5316-20.
24. Iglesias-Bartolome R, Uchiyama A, Molinolo AA, Abusleme L, Brooks SR, Callejas-Valera JL, et al. Transcriptional signature primes human oral mucosa for rapid wound healing. *Sci Transl Med*. 2018;10(451).
25. Martin P. Wound Healing--Aiming for Perfect Skin Regeneration. *Science*. 1997;276(5309):75-81.
26. Mantovani A, Biswas SK, Galdiero MR, Sica A, Locati M. Macrophage plasticity and polarization in tissue repair and remodelling. *J Pathol*. 2013;229(2):176-85.
27. Serhan CN, Chiang N, Van Dyke TE. Resolving inflammation: dual anti-inflammatory and pro-resolution lipid mediators. *Nat Rev Immunol*. 2008;8(5):349-61.
28. Polimeni G, Xiropaidis AV, Wikesjö UM. Biology and principles of periodontal wound healing/regeneration. *Periodontol 2000*. 2006;41:30-47.
29. Harper D, Young A, McNaught C-E. The physiology of wound healing. *Surgery (Oxford)*. 2014;32(9):445-50.
30. Bernstein G. Healing by secondary intention. *Dermatol Clin*. 1989;7(4):645-60.
31. Del Pizzo M, Modica F, Bethaz N, Priotto P, Romagnoli R. The connective tissue graft: a comparative clinical evaluation of wound healing at the palatal donor site. *Journal of Clinical Periodontology*. 2002;29(9):848-54.
32. Tavelli L, Barootchi S, Majzoub J, Chan HL, Giannobile WV, Wang HL, Kripfgans OD. Ultrasonographic tissue perfusion analysis at implant and palatal donor sites following soft tissue augmentation: A clinical pilot study. *J Clin Periodontol*. 2021;48(4):602-14.
33. Zucchelli G, Mounssif I. Periodontal plastic surgery. *Periodontology 2000*. 2015;68(1):333-68.
34. Hürzeler MB, Weng D. A Single-Incision Technique to Harvest Subepithelial Connective Tissue Grafts from the Palate. *International Journal of Periodontics & Restorative Dentistry*. 1999;19(3):278-87.
35. Jahnke PV, Sandifer JB, Gher ME, Gray JL, Richardson AC. Thick Free Gingival and Connective Tissue Autografts for Root Coverage. *Journal of Periodontology*. 1993;64(4):315-22.
36. Harris RJ. A comparison of two techniques for obtaining a connective tissue graft from the palate. *Int J Periodontics Restorative Dent*. 1997;17(3):260-71.
37. Lorenzana ER, Allen EP. The single-incision palatal harvest technique: a strategy for esthetics and patient comfort. *Int J Periodontics Restorative Dent*. 2000;20(3):297-305.
38. Fickl S, Fischer KR, Jockel-Schneider Y, Stappert CFJ, Schlagenhauf U, Kerschull M. Early wound healing and patient morbidity after single-incision vs. trap-door graft harvesting from the palate—a clinical study. *Clinical Oral Investigations*. 2014;18(9):2213-9.
39. Guo S, Dipietro LA. Factors affecting wound healing. *J Dent Res*. 2010;89(3):219-29.
40. Tandara AA, Mustoe TA. Oxygen in Wound Healing—More than a Nutrient. *World Journal of Surgery*. 2004;28(3):294-300.
41. Campos AC, Groth AK, Branco AB. Assessment and nutritional aspects of wound healing. *Current Opinion in Clinical Nutrition & Metabolic Care*. 2008;11(3):281-8.
42. Wilson JA, Clark JJ. Obesity: impediment to postsurgical wound healing. *Adv Skin Wound Care*. 2004;17(8):426-35.
43. Marucha PT, Kiecolt-Glaser JK, Favagehi M. Mucosal wound healing is impaired by examination stress. *Psychosom Med*. 1998;60(3):362-5.

44. Kiecolt-Glaser JK, Marucha PT, Malarkey WB, Mercado AM, Glaser R. Slowing of wound healing by psychological stress. *Lancet*. 1995;346(8984):1194-6.
45. Godbout JP, Glaser R. Stress-induced immune dysregulation: implications for wound healing, infectious disease and cancer. *J Neuroimmune Pharmacol*. 2006;1(4):421-7.
46. Boyapati L, Wang H-L. The role of stress in periodontal disease and wound healing. *Periodontology* 2000. 2007;44(1):195-210.
47. Sørensen LT. Wound Healing and Infection in Surgery: The Pathophysiological Impact of Smoking, Smoking Cessation, and Nicotine Replacement Therapy: A Systematic Review. *Annals of Surgery*. 2012;255(6):1069-79.
48. Anderson K, Hamm RL. Factors That Impair Wound Healing. *Journal of the American College of Clinical Wound Specialists*. 2012;4(4):84-91.
49. Szabo G, Mandrekar P. A recent perspective on alcohol, immunity, and host defense. *Alcohol Clin Exp Res*. 2009;33(2):220-32.
50. Radek KA, Matthias AM, Burns AL, Heinrich SA, Kovacs EJ, Dipietro LA. Acute ethanol exposure impairs angiogenesis and the proliferative phase of wound healing. *Am J Physiol Heart Circ Physiol*. 2005;289(3):H1084-90.
51. Tavelli L, Ravidà A, Saleh MHA, Maska B, Del Amo FS, Rasperini G, Wang HL. Pain perception following epithelialized gingival graft harvesting: a randomized clinical trial. *Clin Oral Investig*. 2019;23(1):459-68.
52. Tavelli L, Barootchi S, Di Gianfilippo R, Kneifati A, Majzoub J, Stefanini M, et al. Patient experience of autogenous soft tissue grafting has an implication for future treatment: A 10- to 15-year cross-sectional study. *J Periodontol*. 2021;92(5):637-47.
53. Zucchelli G, Mele M, Stefanini M, Mazzotti C, Marzadori M, Montebugnoli L, De Sanctis M. Patient morbidity and root coverage outcome after subepithelial connective tissue and de-epithelialized grafts: a comparative randomized-controlled clinical trial. *Journal of Clinical Periodontology*. 2010;37(8):728-38.
54. Zucchelli G, Mele M, Stefanini M, Mazzotti C, Marzadori M, Montebugnoli L, de Sanctis M. Patient morbidity and root coverage outcome after subepithelial connective tissue and de-epithelialized grafts: a comparative randomized-controlled clinical trial. *J Clin Periodontol*. 2010;37(8):728-38.
55. Rossmann JA, Rees TD. A comparative evaluation of hemostatic agents in the management of soft tissue graft donor site bleeding. *J Periodontol*. 1999;70(11):1369-75.
56. Powell CA, Mealey BL, Deas DE, McDonnell HT, Moritz AJ. Post-surgical infections: prevalence associated with various periodontal surgical procedures. *J Periodontol*. 2005;76(3):329-33.
57. Kızıltoprak M, özay Uslu M. Diş Hekimliğinde Trombosit Konsantrasyonlarının Tarihsel Gelişimi ve Özellikleri. *Cumhuriyet Dental Journal*. 2018;21(2):152-66.
58. Kulkarni MR, Thomas BS, Varghese JM, Bhat GS. Platelet-rich fibrin as an adjunct to palatal wound healing after harvesting a free gingival graft: A case series. *Journal of Indian Society of Periodontology*. 2014;18(3):399-402.
59. Choukroun J, Diss A, Simonpieri A, Girard M-O, Schoeffler C, Dohan SL, et al. Platelet-rich fibrin (PRF): A second-generation platelet concentrate. Part IV: Clinical effects on tissue healing. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology*. 2006;101(3):e56-e60.
60. Kızıltoprak M, Uslu MÖ. Comparison of the effects of injectable platelet-rich fibrin and autologous fibrin glue applications on palatal wound healing: a randomized controlled clinical trial. *Clinical Oral Investigations*. 2020;24(12):4549-61.
61. Lekturmur Alpan A, Torumtay Cin G. PRF improves wound healing and postoperative discomfort after harvesting subepithelial connective tissue graft from palate: a randomized controlled trial. *Clinical Oral Investigations*. 2020;24(1):425-36.
62. Gusman DJ, Matheus HR, Alves BE, de Oliveira AM, Britto AS, Novaes VC, et al. Platelet-rich fibrin for wound healing of palatal donor sites of free gingival grafts: Systematic review and meta-analysis. *J Clin Exp Dent*. 2021;13(2):e190-e200.

63. Tunalı M, Özdemir H, Küçükodacı Z, Akman S, Fıratlı E. In vivo evaluation of titanium-prepared platelet-rich fibrin (T-PRF): a new platelet concentrate. *British Journal of Oral and Maxillofacial Surgery*. 2013;51(5):438-43.
64. Ustaoglu G, Ercan E, Tunalı M. The role of titanium-prepared platelet-rich fibrin in palatal mucosal wound healing and histoconduction. *Acta Odontologica Scandinavica*. 2016;74(7):558-64.
65. Mourão CFdAB, Valiense H, Melo ER, Mourão NBMF, Maia MD-C. Obtention of injectable platelets rich-fibrin (i-PRF) and its polymerization with bone graft. *Revista do Colégio Brasileiro de Cirurgiões*. 2015;42:421-3.
66. Miron RJ, Fujioka-Kobayashi M, Hernandez M, Kandalam U, Zhang Y, Ghanaati S, Choukroun J. Injectable platelet rich fibrin (i-PRF): opportunities in regenerative dentistry? *Clinical oral investigations*. 2017;21:2619-27.
67. Choukroun J. Advanced PRF &i-PRF: platelet concentrates or blood concentrates? *J Periodont Med Clin Pract*. 2014;1.
68. Doillon CJ, Silver FH. Collagen-based wound dressing: effects of hyaluronic acid and fibrinectin on wound healing. *Biomaterials*. 1986;7(1):3-8.
69. Cho YD, Kim KH, Lee YM, Ku Y, Seol YJ. Periodontal Wound Healing and Tissue Regeneration: A Narrative Review. *Pharmaceuticals (Basel)*. 2021;14(5).
70. Khurana JV, Mali AM, Mali RS, Chaudhari AU. Comparative evaluation of healing after periodontal flap surgery using isoamyl 2-cyanoacrylate (bioadhesive material) and silk sutures: A split-mouth clinical study. *Journal of Indian Society of Periodontology*. 2016;20(4):417-22.
71. Turkaslan T, Ozcan H, Dayicioglu D, Ozsoy Z. Use of Adhesives in Cleft Palate Surgery: A New Flap Fixation Technique. *Journal of Craniofacial Surgery*. 2005;16(4):719-22.
72. Stavropoulou C, Atout RN, Brownlee M, Schroth RJ, Kelekis-Cholakias A. A randomized clinical trial of cyanoacrylate tissue adhesives in donor site of connective tissue grafts. *Journal of Periodontology*. 2019;90(6):608-15.
73. Gümüş P, Buduneli E. Graft stabilization with cyanoacrylate decreases shrinkage of free gingival grafts. *Australian Dental Journal*. 2014;59(1):57-64.
74. Al-Belasy FA, Amer MZ. Hemostatic effect of *n*-butyl-2-cyanoacrylate (histoacryl) glue in warfarin-treated patients undergoing oral surgery. *Journal of Oral and Maxillofacial Surgery*. 2003;61(12):1405-9.
75. Karimi MR, Sadatmansouri S, Anoush G, Montazeri M, Taheri N. Effect of Cyanoacrylate Adhesive on Palatal Wound Healing Following Free Gingival Grafting: A Clinical Trial. *Journal of Research in Dental and Maxillofacial Sciences*. 2024;9(2):71-9.
76. Boateng JS, Matthews KH, Stevens HN, Eccleston GM. Wound healing dressings and drug delivery systems: a review. *Journal of pharmaceutical sciences*. 2008;97(8):2892-923.
77. Yadav VS, Makker K, Haidrus R, Dawar A, Gumber B. Chitosan-based dressing for management of palatal donor site: A randomized clinical trial. *Journal of Periodontal Research*. 2024;59(6):1153-61.
78. Madi M, Kassem A. Topical simvastatin gel as a novel therapeutic modality for palatal donor site wound healing following free gingival graft procedure. *Acta Odontologica Scandinavica*. 2018;76(3):212-9.
79. Huang S, Zhang C-P, Wang K, Li GQ, Hu F-L. Recent Advances in the Chemical Composition of Propolis. *Molecules*. 2014;19(12):19610-32.
80. Alizadeh Tabari Z, Seyfi F, Dashkhaneh F, Gheibi N, Anbari F. Effect of an Oral Ointment Containing Propolis on Palatal Donor Site Pain and Wound Healing After Harvesting a Free Gingival Graft: A Split-Mouth, Double-Blind Clinical Trial. *Journal of Herbal Medicine*. 2023;42:100741.
81. Alasqah M, Alrashidi A, Alshammari N, Alshehri A, Gufran K. Effect of honey dressing material on palatal wound healing after harvesting a free gingival graft: a prospective randomized case control study. *European Review for Medical & Pharmacological Sciences*. 2022;26(8).
82. Zhao H, Hu J, Zhao L. The effect of low-level laser therapy as an adjunct to periodontal surgery

- in the management of postoperative pain and wound healing: a systematic review and meta-analysis. *Lasers in Medical Science*. 2021;36(1):175-87.
83. Isler SC, Uraz A, Guler B, Ozdemir Y, Cula S, Cetiner D. Effects of Laser Photobiomodulation and Ozone Therapy on Palatal Epithelial Wound Healing and Patient Morbidity. *Photomedicine and Laser Surgery*. 2018;36(11):571-80.
84. Bitencourt FV, Cardoso De David S, Schutz JDS, Otto Kirst Neto A, Visioli F, Fiorini T. Minimizing patient morbidity after free gingival graft harvesting: A triple-blind randomized-controlled clinical trial. *Clin Oral Implants Res*. 2022;33(6):622-33.
85. Lafzi A, Kakhodazadeh M, Mojahedi SM, Amid R, Shidfar S, Baghani MT. The Clinical Evaluation of the Effects of Low-Level Laser Therapy on the Donor and Recipient Sites of the Free Gingival Graft: A Case Series. *J Lasers Med Sci*. 2019;10(4):355-60.
86. Ustaoglu G, Ercan E, Tunali M. Low-Level Laser Therapy in Enhancing Wound Healing and Preserving Tissue Thickness at Free Gingival Graft Donor Sites: A Randomized, Controlled Clinical Study. *Photomedicine and Laser Surgery*. 2017;35(4):223-30.
87. Soileau KM, Brannon RB. A histologic evaluation of various stages of palatal healing following subepithelial connective tissue grafting procedures: a comparison of eight cases. *J Periodontol*. 2006;77(7):1267-73.
88. Tavelli L, Barootchi S, Siqueira R, Kauffmann F, Majzoub J, Stefanini M, et al. Three-Dimensional Volumetric Analysis of the Palatal Donor Site Following Soft Tissue Harvesting. *Int J Periodontics Restorative Dent*. 2022;42(3):393-9.