



BÖLÜM 13

GENİŞLETME SONRASI RETANSİYON

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GENEL BAKIŞ

Ortodontide retansiyon ve relaps olarak adlandırılan süreç Dr. Angle'dan günümüze kadar uygulanmış bir konu olup literatürde, retansiyon döneminin 'ikincil ortodontik tedavi' olarak da tanımlanabildiği görülmektedir (1, 2). Tanı ve tedavi planlaması ardından uygulanan ortodontik tedaviyi takiben retansiyonun önemi azalmış gibi görünse de, düzeltilmiş vakaların önemli bir kısmında relaps eğilimlerinin devam ettiği tespit edilmiştir. Yine bu gözleme ilaveten bazı ortodontistlerin retansiyon sürecine gereken önemi vermediği bildirilmektedir. Bununla birlikte, retansiyon uygulanmasına rağmen ortodontik tedavi sonrasında gerçekleşen relapsın, çok sayıda faktörün dahil olduğu karmaşık bir problematik süreç olduğu unutulmamalıdır (1).

Retansiyon, ortodontik tedavi sonrası dişlerin optimal estetik ve fonksiyonel pozisyonlarında tutulması olarak tanımlanmaktadır (3). Retansiyon gereksinimine genellikle tanı ve tedavi planlaması sırasında karar verilmekle birlikte, tedavi sonuçlarının kalıcı olmasında, tedavi hedeflerinin doğru tanı sonrası mantıklı bir tedavi planı ve süresiyle ideal fonksiyonların elde edilmesine yönelik olması önemli rol oynamaktadır (3). Ayrıca, retansiyon tipinin ve süresinin belirlenmesin-

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Sonu olarak, st ene geniřletmesi sonrası genel stabiliteyi deęerlendiren alıřmaların dřk kaliteli olmasından ve alıřmalar arasındaki yksek metodolojik farklılıklar nedeniyle daha kaliteli ve standart zelliklerle tasarlanmış daha fazla bilimsel alıřmaya ihtiya olduęu grlmektedir. Bununla birlikte, yapılan alıřmaların oęunda hem HG hem de YG sonrasında minimal relaps rapor edilse de, tedavi sonrası uzun dnem sonuların stabil olduęu sonucuna varılmaktadır (5).

KAYNAKLAR

1. Reitan K. Principles of retention and avoidance of posttreatment relapse. *American Journal of Orthodontics and Dentofacial Orthopedics*. 1969;55(6):776-90.
2. McCoy JD. *Applied orthodontics*. 4th ed. Philadelphia: Lea & Febiger; 1935.
3. Graber LW, Vanarsdall RL, Vig KW, Huang, G.J. Stability, Retention, and Relapse. In: *Current Principles and Techniques*. 6th ed. Missouri: Elsevier, Inc; 2017.
4. Dyer KC, Vaden JL, Harris EF. Relapse revisited—again. *American Journal of Orthodontics and Dentofacial Orthopedics*. 2012;142(2):221-7.
5. Srivastava SC, Mahida K, Agarwal C, Chavda RM, Patel HA. Longitudinal Stability of Rapid and Slow Maxillary Expansion: A Systematic Review. *The Journal of Contemporary Dental Practice*. 2020;21(9):1068-72.
6. Linder-Aronson S, Lindgren J. The skeletal and dental effects of rapid maxillary expansion. *British Journal of Orthodontics*. 1979;6(1):25-9.
7. Cameron CG, Franchi L, Baccetti T, McNamara Jr JA. Long-term effects of rapid maxillary expansion: a posteroanterior cephalometric evaluation. *American Journal of Orthodontics and Dentofacial Orthopedics*. 2002;121(2):129-35.
8. Ferris T, Alexander R, Boley J, Buschang PH. Long-term stability of combined rapid palatal expansion—lip bumper therapy followed by full fixed appliances. *American Journal of Orthodontics and Dentofacial Orthopedics*. 2005;128(3):310-25.
9. Haas A. Long-term posttreatment evaluation of rapid palatal expansion. *The Angle Orthodontist*. 1980;50(3):189-217.
10. Haas AJ. Rapid expansion of the maxillary dental arch and nasal cavity by opening the midpalatal suture. *The Angle Orthodontist*. 1961;31(2):73-90.
11. Haas AJ. The treatment of maxillary deficiency by opening the midpalatal suture. *The Angle Orthodontist*. 1965;35(3):200-17.
12. Bishara SE, Staley RN. Maxillary expansion: clinical implications. *American Journal of Orthodontics and Dentofacial Orthopedics*. 1987;91(1):3-14.
13. McNamara JA, Brudon WL. *Orthodontic and Orthopedic Treatment in the Mixed Dentition*. Ann Arbor: Needham Press; 1993.
14. Melsen B. Palatal growth studied on human autopsy material: a histologic microradiographic study. *American Journal of Orthodontics and Dentofacial Orthopedics*. 1975;68(1):42-54.
15. Melsen B, Melsen F. The postnatal development of the palatomaxillary region studied on human autopsy material. *American Journal of Orthodontics and Dentofacial Orthopedics*. 1982;82(4):329-42.
16. Persson M, Thilander B. Palatal suture closure in man from 15 to 35 years of age. *American Journal of Orthodontics and Dentofacial Orthopedics*. 1977;72(1):42-52.
17. Bell WH, Epker BN. Surgical-orthodontic expansion of the maxilla. *American Journal of Orthodontics and Dentofacial Orthopedics*. 1976;70(5):517-28.
18. Lines PA. Adult rapid maxillary expansion with corticotomy. *American Journal of Orthodontics and Dentofacial Orthopedics*. 1975;67(1):44-56.
19. Handelman CS, Wang L, BeGole EA, Haas AJ. Nonsurgical rapid maxillary expansion in adults: report on 47 cases using the Haas expander. *The Angle Orthodontist*. 2000;70(2):129-44.



20. Thilander B. Biological basis for orthodontic relapse. *Seminars in Orthodontics*. 2000;6(3):195-205.
21. Keski-Nisula K, Lehto R, Lusa V, Keski-Nisula L, Varrela J. Occurrence of malocclusion and need of orthodontic treatment in early mixed dentition. *American Journal of Orthodontics and Dentofacial Orthopedics*. 2003;124(6):631-8.
22. Tausche E, Luck O, Harzer W. Prevalence of malocclusions in the early mixed dentition and orthodontic treatment need. *The European Journal of Orthodontics*. 2004;26(3):237-44.
23. Jonsson T, Arnlaugsson S, Karlsson KO, Ragnarsson B, Arnarson EO, Magnusson TE. Orthodontic treatment experience and prevalence of malocclusion traits in an Icelandic adult population. *American Journal of Orthodontics and Dentofacial Orthopedics*. 2007;131(1):8. e11-8. e8.
24. Godoy F, Godoy-Bezerra J, Rosenblatt A. Treatment of posterior crossbite comparing 2 appliances: a community-based trial. *American Journal of Orthodontics and Dentofacial Orthopedics*. 2011;139(1):e45-e52.
25. Petrén S, Bondemark L, Söderfeldt B. A systematic review concerning early orthodontic treatment of unilateral posterior crossbite. *The Angle Orthodontist*. 2003;73(5):588-96.
26. Cozzani M, Guiducci A, Mirengi S, Mutinelli S, Siciliani G. Arch width changes with a rapid maxillary expansion appliance anchored to the primary teeth. *The Angle Orthodontist*. 2007;77(2):296-302.
27. Egermark-Eriksson I, Carlsson GE, Magnusson T, Thilander B. A longitudinal study on malocclusion in relation to signs and symptoms of cranio-mandibular disorders in children and adolescents. *The European Journal of Orthodontics*. 1990;12(4):399-407.
28. Thilander B, Wahlund S, Lennartsson B. The effect of early interceptive treatment in children with posterior cross-bite. *The European Journal of Orthodontics*. 1984;6(1):25-34.
29. Hawley CA. A Removable Retainer. *Dental Cosmos*. 1919;61(6):449-554.
30. Hellman M. Fundamental principles and expedient compromises in orthodontic procedures. *American Journal of Orthodontics and Oral Surgery*. 1944;30(8):429-36.
31. Proffit WR, Fields JR, Sarver DM. Retention. In: *Contemporary Orthodontics*. 5 th ed. Missouri: Elsevier, Inc; 2013.
32. Ormiston JP, Huang GJ, Little RM, Decker JD, Seuk GD. Retrospective analysis of long-term stable and unstable orthodontic treatment outcomes. *American Journal of Orthodontics and Dentofacial Orthopedics*. 2005;128(5):568-74.
33. Wertz RA. Skeletal and dental changes accompanying rapid maxillary suture opening. *American Journal of Orthodontics and Dentofacial Orthopedics*. 1970;58(1):41-66.
34. Storey E. Tissue response to the movement of bones. *American Journal of Orthodontics and Dentofacial Orthopedics*. 1973;64(3):229-47.
35. Lima Filho RM, de Oliveira Ruellas AC. Long-term maxillary changes in patients with skeletal Class II malocclusion treated with slow and rapid palatal expansion. *American Journal of Orthodontics and Dentofacial Orthopedics*. 2008;134(3):383-8.
36. Kau CH, Zhurov A, Scheer R, Bouwman S, Richmond S. The feasibility of measuring three-dimensional facial morphology in children. *Orthodontics & Craniofacial Research*. 2004;7(4):198-204.
37. McNamara JA, Lione R, Franchi L, Angelieri F, Cevidanes LH, Darendeliler MA, et al. The role of rapid maxillary expansion in the promotion of oral and general health. *Progress in Orthodontics*. 2015;16(1):1-7.
38. Costa JG, Galindo TM, Mattos CT, Cury-Saramago AdA. Retention period after treatment of posterior crossbite with maxillary expansion: a systematic review. *Dental Press Journal of Orthodontics*. 2017;22:35-44.
39. Bell RA, LeCompte EJ. The effects of maxillary expansion using a quad-helix appliance during the deciduous and mixed dentitions. *American Journal of Orthodontics and Dentofacial Orthopedics*. 1981;79(2):152-61.
40. Petrén S, Bjerklin K, Bondemark L. Stability of unilateral posterior crossbite correction in the mixed dentition: a randomized clinical trial with a 3-year follow-up. *American Journal of Orthodontics and Dentofacial Orthopedics*. 2011;139(1):e73-e81.



41. Fenderson FA, McNamara Jr JA, Baccetti T, Veith CJ. A long-term study on the expansion effects of the cervical-pull facebow with and without rapid maxillary expansion. *The Angle Orthodontist*. 2004;74(4):439-49.
42. Huynh T, Kennedy DB, Joondeph DR, Bollen A-M. Treatment response and stability of slow maxillary expansion using Haas, hyrax, and quad-helix appliances: a retrospective study. *American Journal of Orthodontics and Dentofacial Orthopedics*. 2009;136(3):331-9.
43. Masucci C, Franchi L, Defraia E, Mucedero M, Cozza P, Baccetti T. Stability of rapid maxillary expansion and facemask therapy: a long-term controlled study. *American Journal of Orthodontics and Dentofacial Orthopedics*. 2011;140(4):493-500.
44. Krebs A. Expansion of the midpalatal suture, studied by means of metallic implants. *Acta Odontologica Scandinavica*. 1959;17(4):491-501.
45. Krebs A. Midpalatal suture expansion studies by the implant method over a seven year period. *Report of the Congress. European Orthodontic Society*. 1964;40:131-142.
46. Gurel HG, Memili B, Erkan M, Sukurica Y. Long-term effects of rapid maxillary expansion followed by fixed appliances. *The Angle Orthodontist*. 2010;80(1):5-9.
47. Chang JY, McNamara Jr JA, Herberger TA. A longitudinal study of skeletal side effects induced by rapid maxillary expansion. *American Journal of Orthodontics and Dentofacial Orthopedics*. 1997;112(3):330-7.
48. McNamara Jr JA, Baccetti T, Franchi L, Herberger TA. Rapid maxillary expansion followed by fixed appliances: a long-term evaluation of changes in arch dimensions. *The Angle Orthodontist*. 2003;73(4):344-53.
49. Azizi M, ShROUT MK, Haas AJ, Russell CM, Hamilton Jr EH. A retrospective study of Angle Class I malocclusions treated orthodontically without extractions using two palatal expansion methods. *American Journal of Orthodontics and Dentofacial Orthopedics*. 1999;116(1):101-7.
50. Lima Filho RM, Ruellas AC. Long-term anteroposterior and vertical maxillary changes in skeletal class II patients treated with slow and rapid maxillary expansion. *The Angle Orthodontist*. 2007;77(5):870-4.
51. Lima AL, Lima Filho RM, Bolognese AM. Long-term clinical outcome of rapid maxillary expansion as the only treatment performed in Class I malocclusion. *The Angle Orthodontist*. 2005;75(3):416-20.
52. Mohan CN, Araujo EA, Oliver DR, Kim KB. Long-term stability of rapid palatal expansion in the mixed dentition vs the permanent dentition. *American Journal of Orthodontics and Dentofacial Orthopedics*. 2016;149(6):856-62.
53. Matsumoto MAN, Itikawa CE, Pereira Valera FC, Faria G, Anselmo-Lima WT. Long-term effects of rapid maxillary expansion on nasal area and nasal airway resistance. *American Journal of Rhinology & Allergy*. 2010;24(2):161-5.
54. Pinheiro FHdSL, Garib DG, Janson G, Bombonatti R, Freitas MRd. Longitudinal stability of rapid and slow maxillary expansion. *Dental Press Journal of Orthodontics*. 2014;19:70-7.
55. Bjerklín K. Follow-up control of patients with unilateral posterior cross-bite treated with expansion plates or the quad-helix appliance. *Journal of Orofacial Orthopedics/Fortschritte der Kieferorthopädie*. 2000;61(2):112-24.
56. De Boer M, Steenks M. Functional unilateral posterior crossbite. Orthodontic and functional aspects. *Journal of Oral Rehabilitation*. 1997;24(8):614-23.
57. Göz G, Bacher M, Ney T, Axmann-Krczmar D, Hartmann U. Transverse expansion with plate appliances--their intermolar stability and significance for gingival recession. *Fortschritte der Kieferorthopädie*. 1992;53(6):344-8.
58. Herold JS. Maxillary expansion: a retrospective study of three methods of expansion and their long-term sequelae. *British Journal of Orthodontics*. 1989;16(3):195-200.
59. Baccetti T, Franchi L, Cameron CG, McNamara Jr JA. Treatment timing for rapid maxillary expansion. *The Angle Orthodontist*. 2001;71(5):343-50.
60. Mutinelli S, Cozzani M. Rapid maxillary expansion in early-mixed dentition: effectiveness of increasing arch dimension with anchorage on deciduous teeth. *European Journal of Paediatric Dentistry*. 2015;16(2):115-22.



61. Lagravère MO, Carey J, Heo G, Toogood RW, Major PW. Transverse, vertical, and antero-posterior changes from bone-anchored maxillary expansion vs traditional rapid maxillary expansion: a randomized clinical trial. *American Journal of Orthodontics and Dentofacial Orthopedics*. 2010;137(3):304. e1-. e12.
62. Primožič J, Richmond S, Kau CH, Zhurov A, Ovsenik M. Three-dimensional evaluation of early crossbite correction: a longitudinal study. *The European Journal of Orthodontics*. 2013;35(1):7-13.
63. Lagravère MO, Major PW, Flores-Mir C. Long-term skeletal changes with rapid maxillary expansion: a systematic review. *The Angle Orthodontist*. 2005;75(6):1046-52.
64. Akkaya S, Lorenzon S, Üçem TT. A comparison of sagittal and vertical effects between bonded rapid and slow maxillary expansion procedures. *The European Journal of Orthodontics*. 1999;21(2):175-80.
65. Darendeliler MA, Strahm C, Joho J-P. Light maxillary expansion forces with the magnetic expansion device. A preliminary investigation. *The European Journal of Orthodontics*. 1994;16(6):479-90.
66. Akkaya S, Lorenzon S, Üçem T. Comparison of dental arch and arch perimeter changes between bonded rapid and slow maxillary expansion procedures. *The European Journal of Orthodontics*. 1998;20(3):255-61.
67. Bell RA. A review of maxillary expansion in relation to rate of expansion and patient's age. *American Journal of Orthodontics and Dentofacial Orthopedics*. 1982;81(1):32-7.
68. Hicks EP. Slow maxillary expansion: a clinical study of the skeletal versus dental response to low-magnitude force. *American Journal of Orthodontics and Dentofacial Orthopedics*. 1978;73(2):121-41.
69. Sandikçiolu M, Hazar S. Skeletal and dental changes after maxillary expansion in the mixed dentition. *American Journal of Orthodontics and Dentofacial Orthopedics*. 1997;111(3):321-7.
70. Haas AJ. Palatal expansion: just the beginning of dentofacial orthopedics. *American Journal of Orthodontics and Dentofacial Orthopedics*. 1970;57(3):219-55.
71. Pavlin D, Vukicevic D. Mechanical reactions of facial skeleton to maxillary expansion determined by laser holography. *American Journal of Orthodontics and Dentofacial Orthopedics*. 1984;85(6):498-507.