

## REFERENCES

- [1] Sreedhar C, Baratam S. Deep overbite—A review (Deep bite, Deep overbite, Excessive overbite). *Annals and Essences of Dentistry.* 2009;1(1):8-25.
- [2] Sonnesen L, Svensson P. Temporomandibular disorders and psychological status in adult patients with a deep bite. *Eur J Orthod.* 2008;30(6):621-9.
- [3] Burstone CR. Deep overbite correction by intrusion. *Am J Orthod.* 1977;72(1):1-22.
- [4] Burstone CJ. Biomechanics of deep overbite correction. *Semin Orthod.* 2001;7(1):26-33.
- [5] Jain RK, Kumar SP, Manjula WS. Comparison of intrusion effects on maxillary incisors among mini implant anchorage, j-hook headgear and utility arch. *J Clin Diag Res.* 2014;8(7):ZC21-ZC4.
- [6] Polat-Ozsoy O, Arman-Ozcirpici A, Veziroglu F. Miniscrews for upper incisor intrusion. *Eur J Orthod.* 2009;31(4):412-6.
- [7] Ohnishi H, Yagi T, Yasuda Y, Takada K. A Mini-Implant for Orthodontic Anchorage in a Deep Overbite Case. *Angle Orthod.* 2005;75(3):444-52.
- [8] Kim TW, Kim H, Lee SJ. Correction of deep overbite and gummy smile by using a mini-implant with a segmented wire in a growing Class II Division 2 patient. *Am J Orthod Dentofacial Orthop.* 2006;130(5):676-85.
- [9] Upadhyay M, Nagaraj K, Yadav S, Saxena R. Mini-implants for en masse intrusion of maxillary anterior teeth in a severe Class II division 2 malocclusion. *J Orthod.* 2008;35(2):79-89.
- [10] Deguchi T, Nasu M, Murakami K, Yabuuchi T, Kamioka H, Takano-Yamamoto T. Quantitative evaluation of cortical bone thickness with

computed tomographic scanning for orthodontic implants. Am J Orthod Dentofacial Orthop. 2006;129(6):721.e7-12.

- [11] Ozdemir F, Tozlu M, Germec-Cakan D. Cortical bone thickness of the alveolar process measured with cone-beam computed tomography in patients with different facial types. Am J Orthod Dentofacial Orthop. 2013;143(2):190-6.
- [12] Cheng SJ, Tseng IY, Lee JJ, Kok SH. A prospective study of the risk factors associated with failure of mini-implants used for orthodontic anchorage. Int J Oral Maxillofac Implants. 2004;19(1):100-6.
- [13] Choi JH, Yu HS, Lee KJ, Park YC. Three-dimensional evaluation of maxillary anterior alveolar bone for optimal placement of miniscrew implants. Korean J Orthod. 2014;44(2):54-61.
- [14] Nanda RS, Tosun Y. Biomechanics in Orthodontics: Principles and Practice. Hanover Park, IL, USA: Quintessence Publishing Co; 2010. p. 105-7.
- [15] Park HK, Sung EH, Cho YS, Mo SS, Chun YS, Lee KJ. 3-D FEA on the intrusion of mandibular anterior segment using orthodontic miniscrews. Korean J Orthod. 2011;41(6):384-98.
- [16] Konda P, Tarannum S. Basic principles of finite element method and its applications in orthodontics. J Pharm Biomed Sci. 2012;16(16):1-8.
- [17] Ansari T, Mascarenhas R, Paulose V. Trends in Orthodontics...Finite element analysis and its applications in orthodontics. APOS. 2011;2:5-9.
- [18] Kelly JE, Harvey CR. An assessment of the occlusion of the teeth of youths 12-17 years. Vital Health Stat 11. 1977(162):1-65.
- [19] Soh J, Sandham A, Chan YH. Occlusal status in Asian male adults: prevalence and ethnic variation. Angle Orthod. 2005;75(5):814-20.
- [20] Mathurasai W, Viteporn S. Orthodontic Problem and Need in Rural Area. 1986.

- [21] Proffit WR, Fields HW, Sarver DM. The Biologic Basis of Orthodontic Therapy. *Contemporary Orthodontics*. 5th ed. St. Louis, MO, USA: Elsevier/Mosby; 2013. p. 286-7.
- [22] Schwarz AM. Tissue changes incidental to orthodontic tooth movement. *Int J Orthod, Oral Surg Radio*. 1932;18(4):331-52.
- [23] Sifakakis I, Pandis N, Makou M, Eliades T, Bourauel C. A comparative assessment of the forces and moments generated with various maxillary incisor intrusion biomechanics. *Eur J Orthod*. 2010;32(2):159-64.
- [24] Sifakakis I, Pandis N, Makou M, Eliades T, Bourauel C. Forces and moments on posterior teeth generated by incisor intrusion biomechanics. *Orthod Craniofac Res*. 2009;12(4):305-11.
- [25] Jasoria G, Shamim W, Rathore S, Kalra A, Manchanda M, Jaggi N. Miniscrew implants as temporary anchorage devices in orthodontics: a comprehensive review. *J Contem Dent Prac*. 2013;14(5):993-9.
- [26] Kuroda S, Tanaka E. Risks and complications of miniscrew anchorage in clinical orthodontics. *Jpn Dent Sci Rev*. 2014;50(4):79-85.
- [27] Chen YJ, Chang HH, Huang CY, Hung HC, Lai EH, Yao CC. A retrospective analysis of the failure rate of three different orthodontic skeletal anchorage systems. *Clin Oral Implants Res*. 2007;18(6):768-75.
- [28] Park HS, Jeong SH, Kwon OW. Factors affecting the clinical success of screw implants used as orthodontic anchorage. *Am J Orthod Dentofacial Orthop*. 2006;130(1):18-25.
- [29] Melsen B. Mini-implants: Where are we? *J Clin Orthod*. 2005;39(9):539-47; quiz 1-2.
- [30] Misch CE. *Contemporary Implant Dentistry*: Mosby Elsevier; 2008.
- [31] Deguchi T, Murakami T, Kuroda S, Yabuuchi T, Kamioka H, Takano-Yamamoto T. Comparison of the intrusion effects on the maxillary incisors between implant anchorage and J-hook headgear. *Am J Orthod Dentofacial Orthop*. 2008;133(5):654-60.

- [32] Polat-Ozsoy O, Arman-Ozcirpici A, Veziroglu F, Cetinsahin A. Comparison of the intrusive effects of miniscrews and utility arches. *Am J Orthod Dentofacial Orthop.* 2011;139(4):526-32.
- [33] Senisik NE, Turkkahraman H. Treatment effects of intrusion arches and mini-implant systems in deepbite patients. *Am J Orthod Dentofacial Orthop.* 2012;141(6):723-33.
- [34] Aras I, Tuncer AV. Comparison of anterior and posterior mini-implant-assisted maxillary incisor intrusion: Root resorption and treatment efficiency. *Angle Orthod.* 2016.
- [35] Reitan K. Effects Of Force Magnitude And Direction Of Tooth Movement On Different Alveolar Bone Types. *Angle Orthod.* 1964;34(4):244-55.
- [36] Rudolph DJ, Willes PMG, Sameshima GT. A finite element model of apical force distribution from orthodontic tooth movement. *Angle Orthod.* 2001;71(2):127-31.
- [37] Tanne K, Sakuda M, Burstone CJ. Three-dimensional finite element analysis for stress in the periodontal tissue by orthodontic forces. *Am J Orthod Dentofacial Orthop.* 1987;92(6):499-505.
- [38] Geng JP, Tan KB, Liu GR. Application of finite element analysis in implant dentistry: a review of the literature. *J Prosthet Dent.* 2001;85(6):585-98.
- [39] Yoshida N, Koga Y, Peng CL, Tanaka E, Kobayashi K. In vivo measurement of the elastic modulus of the human periodontal ligament. *Med Eng Physics.* 2001;23(8):567-72.
- [40] Gallagher RH. Finite element analysis: fundamentals 4ed.: Englewood cliffs: Prentice-Hall; 1975.
- [41] Dorow C, Sander FG. Development of a model for the simulation of orthodontic load on lower first premolars using the finite element method. *J Orofac Orthop.* 2005;66(3):208-18.

- [42] McGuinness NJ, Wilson AN, Jones ML, Middleton J. A stress analysis of the periodontal ligament under various orthodontic loadings. *Eur J Orthod.* 1991;13(3):231-42.
- [43] Cattaneo PM, Dalstra M, Melsen B. The finite element method: a tool to study orthodontic tooth movement. *J Dent Res.* 2005;84(5):428-33.
- [44] McGuinness N, Wilson AN, Jones M, Middleton J, Robertson NR. Stresses induced by edgewise appliances in the periodontal ligament--a finite element study. *Angle Orthod.* 1992;62(1):15-22.
- [45] Williams KR, Edmundson JT. Orthodontic tooth movement analysed by the Finite Element Method. *Biomater.* 1984;5(6):347-51.
- [46] Middleton J, Jones M, Wilson A. The role of the periodontal ligament in bone modeling: the initial development of a time-dependent finite element model. *Am J Orthod Dentofacial Orthop.* 1996;109(2):155-62.
- [47] Ammar HH, Ngan P, Crout RJ, Mucino VH, Mukdadi OM. Three-dimensional modeling and finite element analysis in treatment planning for orthodontic tooth movement. *Am J Orthod Dentofacial Orthop.* 2011;139(1):e59-71.
- [48] Wakabayashi N, Ona M, Suzuki T, Igarashi Y. Nonlinear finite element analyses: advances and challenges in dental applications. *J Dent.* 2008;36(7):463-71.
- [49] Natali AN, Carniel EL, Pavan PG, Sander FG, Dorow C, Geiger M. A visco-hyperelastic-damage constitutive model for the analysis of the biomechanical response of the periodontal ligament. *J Biomech Eng.* 2008;130(3):031004.
- [50] Natali AN, Pavan PG, Scarpa C. Numerical analysis of tooth mobility: formulation of a non-linear constitutive law for the periodontal ligament. *Dent Mater.* 2004;20(7):623-9.
- [51] Qian L, Todo M, Morita Y, Matsushita Y, Koyano K. Deformation analysis of the periodontium considering the viscoelasticity of the periodontal ligament. *Dental Mater.* 2009;25(10):1285-92.

- [52] Hemanth M, Deoli S, Raghuveer HP, Rani MS, Hegde C, Vedavathi B. Stress Induced in Periodontal Ligament under Orthodontic Loading (Part II): A Comparison of Linear Versus Non-Linear Fem Study. *J Int Oral Health.* 2015;7(9):114-8.
- [53] Toms SR, Eberhardt AW. A nonlinear finite element analysis of the periodontal ligament under orthodontic tooth loading. *Am J Orthod Dentofacial Orthop.* 2003;123(6):657-65.
- [54] Lin DC, Shreiber DI, Dimitriadis EK, Horkay F. Spherical indentation of soft matter beyond the Hertzian regime: numerical and experimental validation of hyperelastic models. *Biomech Model Mechanobiol.* 2009;8(5):345-58.
- [55] Zhang K, Siegmund T, Chan RW. A constitutive model of the human vocal fold cover for fundamental frequency regulation. *J Acoust Soc Am.* 2006;119(2):1050-62.
- [56] Prange MT, Margulies SS. Regional, directional, and age-dependent properties of the brain undergoing large deformation. *J Biomech Eng.* 2002;124(2):244-52.
- [57] Maikos JT, Elias RA, Shreiber DI. Mechanical properties of dura mater from the rat brain and spinal cord. *J Neurotrauma.* 2008;25(1):38-51.
- [58] Huang H, Tang W, Yan B, Wu B. Mechanical Responses of Periodontal Ligament under A Realistic Orthodontic Loading. *Procedia Engineering.* 2012;31(Supplement C):828-33.
- [59] Cifter M, Sarac M. Maxillary posterior intrusion mechanics with mini-implant anchorage evaluated with the finite element method. *Am J Orthod Dentofacial Orthop.* 2011;140(5):e233-e41.
- [60] Baumgaertel S, Hans MG. Buccal cortical bone thickness for mini-implant placement. *Am J Orthod Dentofacial Orthop.* 2009;136(2):230-5.
- [61] Kojima Y, Kawamura J, Fukui H. Finite element analysis of the effect of force directions on tooth movement in extraction space closure with

miniscrew sliding mechanics. Am J Orthod Dentofacial Orthop. 2012;142(4):501-8.

- [62] Caballero GM, Carvalho Filho OA, Hargreaves BO, Brito HH, Magalhaes Jr PA, Oliveira DD. Mandibular canine intrusion with the segmented arch technique: A finite element method study. Am J Orthod Dentofacial Orthop. 2015;147(6):691-7.
- [63] Toms SR, Lemons JE, Bartolucci AA, Eberhardt AW. Nonlinear stress-strain behavior of periodontal ligament under orthodontic loading. Am J Orthod Dentofacial Orthop. 2002;122(2):174-9.
- [64] Shibata T, Botsis J, Bergomi M, Mellal A, Komatsu K. Mechanical behavior of bovine periodontal ligament under tension-compression cyclic displacements. Eur J Oral Sci. 2006;114(1):74-82.
- [65] Melsen B, Agerbaek N, Markenstam G. Intrusion of incisors in adult patients with marginal bone loss. Am J Orthod Dentofacial Orthop. 1989;96(3):232-41.
- [66] Salehi P, Gerami A, Najafi A, Torkan S. Evaluating Stress Distribution Pattern in Periodontal Ligament of Maxillary Incisors during Intrusion Assessed by the Finite Element Method. J Dent (Shiraz). 2015;16(4):314-22.
- [67] Saga AY, Maruo H, Argenta MA, Maruo IT, Tanaka OM. Orthodontic intrusion of maxillary incisors: a 3D finite element method study. Dental Press J Orthod. 2016;21(1):75-82.
- [68] Artun J, Smale I, Behbehani F, Doppel D, Van't Hof M, Kuijpers-Jagtman AM. Apical root resorption six and 12 months after initiation of fixed orthodontic appliance therapy. Angle Orthod. 2005;75(6):919-26.
- [69] Mohandesan H, Ravanmehr H, Valaei N. A radiographic analysis of external apical root resorption of maxillary incisors during active orthodontic treatment. Eur J Orthod. 2007;29(2):134-9.

- [70] Yu JH, Shu KW, Tsai MT, Hsu JT, Chang HW, Tung KL. A cone-beam computed tomography study of orthodontic apical root resorption. *J Dent Sci.* 2013;8(1):74-9.
- [71] Proffit WR, Fields HW, Sarver DM. Mechanical Principles in Orthodontic Force Control. *Contemporary Orthodontics.* 5th ed. St. Louis, MO, USA: Elsevier/Mosby; 2013. p. 324-7.
- [72] Jang HJ, Roh WJ, Joo BH, Park KH, Kim SJ, Park YG. Locating the center of resistance of maxillary anterior teeth retracted by Double J Retractor with palatal miniscrews. *Angle Orthod.* 2010;80(6):1023-8.
- [73] Choy K, Kim KH, Burstone CJ. Initial changes of centres of rotation of the anterior segment in response to horizontal forces. *Eur J Orthod.* 2006;28(5):471-4.
- [74] Jeong GM, Sung SJ, Lee KJ, Chun YS, Mo SS. Finite-element investigation of the center of resistance of the maxillary dentition. *Korean J Orthod.* 2009;39(2):83-94.
- [75] Vanden Bulcke MM, Dermaut LR, Sachdeva RCL, Burstone CJ. The center of resistance of anterior teeth during intrusion using the laser reflection technique and holographic interferometry. *Am J Orthod Dentofacial Orthop.* 1986;90(3):211-20.
- [76] Pedersen E, Isidor F, Gjessing P, Andersen K. Location of centres of resistance for maxillary anterior teeth measured on human autopsy material. *Eur J Orthod.* 1991;13(6):452-8.