

Remodelling des Alveolarfortsatzes im anterioren Unterkiefer nach einer Klasse III-Camouflage-Behandlung mit Extraktionen unterer Prämolaren

Prof. Dr. Dr. Dirk Wiechmann, Dr. Robert Leven, Dr. Per Rank, Dr. Yann Janssens und Dr. Jonas Q. Schmid.

Literatur

1. Ruf S, Pancherz H. Orthognathic surgery and dentofacial orthopedics in adult Class II Division 1 treatment: mandibular sagittal split osteotomy versus Herbst appliance. *Am J Orthod Dentofacial Orthop.* 2004;126(2):140–52.
2. Mujagic M, Pandis N, Fleming PS, Katsaros C. The Herbst appliance combined with a completely customized lingual appliance: A retrospective cohort study of clinical outcomes using the American Board of Orthodontics Objective Grading System. *Int Orthod.* 2020;18(4):732–8.
3. Janssens Y, Foley PF, Beyling F, Stamm T, Schwestka-Polly R, Schmid JQ. Quality of occlusal outcome in adult Class II patients treated with completely customized lingual appliances and Class II elastics compared to adult Class I patients. *Eur J Orthod.* 2024;46(5).
4. Beyling F, Klang E, Niehoff E, Schwestka-Polly R, Helms HJ, Wiechmann D. Class II correction by maxillary en masse distalization using a completely customized lingual appliance and a novel mini-screw anchorage concept - preliminary results. *Head Face Med.* 2021;17(1):23.
5. Lossdorfer S, Schwestka-Polly R, Wiechmann D. Control of lower incisor inclination with a completely customized lingual appliance for dentoalveolar compensation of class III malocclusion *J Orofac Orthop.* 2013;74(5):381–96.
6. Zimmer B, Gaida S, Dathe H. Compensation of skeletal Class III malocclusion by isolated extraction of mandibular teeth: Part 2: Skeletal, dentoalveolar and soft tissue parameters in comparison with nonextraction Class III therapies. *J Orofac Orthop.* 2016;77(2):119–28.
7. Thiem LC, Rank P, Schmid JQ, Janssens Y, Bettenhauser-Hartung L, Wiechmann D. Favourable dentoalveolar changes after lower premolar extractions for Class III camouflage with completely customized lingual appliances. *Head Face Med.* 2024;20(1):57.
8. Schmid JQ, Gerberding E, Hohoff A, Kleinheinz J, Stamm T, Middelberg C. Non-Surgical Transversal Dentoalveolar Compensation with Completely Customized Lingual Appliances versus Surgically Assisted Rapid Palatal Expansion in Adults-The Amount of Posterior Crossbite Correction. *J Pers Med.* 2022;12(11):1893.
9. Schmid JQ, Gerberding E, Hohoff A, Kleinheinz J, Stamm T, Middelberg C. Non-Surgical Transversal Dentoalveolar Compensation with Completely Customized Lingual Appliances versus Surgically Assisted Rapid Palatal Expansion in Adults-Tipping or Translation in Posterior Crossbite Correction? *J Pers Med.* 2023;13(5):807.
10. Jędrzejewski M, Smektała T, Sporniak-Tutak K, Olszewski R. Preoperative, intraoperative, and postoperative complications in orthognathic surgery: a systematic review. *Clin Oral Investig.* 2015;19(5):969–77.
11. Thiem DGE, Schneider D, Hammel M, Saka B, Frerich B, Al-Nawas B, et al. Complications or rather side effects? Quantification of patient satisfaction and complications after orthognathic surgery-a retrospective, crosssectional long-term analysis. *Clin Oral Investig.* 2021;25(5):3315–27.

12. Robertson L, Kaur H, Fagundes NCF, Romanyk D, Major P, Flores MC. Effectiveness of clear aligner therapy for orthodontic treatment: A systematic review. *Orthod Craniofac Res.* 2020;23(2):133–42.
13. Haouili N, Kravitz ND, Vaid NR, Ferguson DJ, Makki L. Has Invisalign improved? A prospective follow-up study on the efficacy of tooth movement with Invisalign. *Am J Orthod Dentofacial Orthop.* 2020;158(3):420–5.
14. Huggare J, Derringer KA, Eliades T, Filleul MP, Kiliaridis S, Kuijpers-Jagtman A, Martina R, Pirttiniemi P, Ruf S, et al. The Erasmus programme for postgraduate education in orthodontics in Europe: an update of the guidelines. *Eur J Orthod.* 2014;36(3):340–9.
15. Proffit WR, White RP Jr. Who needs surgical-orthodontic treatment? *Int J Adult Orthodon Orthognath Surg.* 1990;5(2):81–9.
16. Stanley TH. Fentanyl. *J Pain Symptom Manage.* 2005;29(5 Suppl):67–71.
17. Kuczyńska K, Grzonkowski P, Kacprzak Ł, Zawilska JB. Abuse of fentanyl: An emerging problem to face. *Forensic Sci Int.* 2018;289:207–14.
18. Wiechmann D. Novel concept for posterior crossbite correction : Preliminary results. *J Orofac Orthop.* 2023.
19. Graf I, Bock NC, Bartzela T, Roper V, Schumann U, Reck K, Christ H, Hofer K, Fritz U, Wiechmann D, Jost-Brinkmann PG, Wolf M, Ruf S, et al. Quality of orthodontic care-A multicenter cohort study in Germany : Part 1: Evaluation of effectiveness of orthodontic treatments and predictive factors. *J Orofac Orthop.* 2022;83(5):291–306.
20. AlQatami FM, Alouini O, Knosel M, Helms HJ, Schwestka-Polly R. Objective treatment outcome assessment of a completely customized lingual appliance: A retrospective study. *Int Orthod.* 2021;19(3):445–52.
21. Alouini O, Wiechmann D. Completely-customized lingual orthodontics to correct class II malocclusion in adolescents. *Orthod Fr.* 2018;89(1):3–19.
22. Bock NC, Ruf S, Wiechmann D, Jilek T. Dentoskeletal effects during Herbst- Multibracket appliance treatment: a comparison of lingual and labial approaches. *Eur J Orthod.* 2016;38(5):470–7.
23. Vu J, Panherz H, Schwestka-Polly R, Wiechmann D. Correction of Class II, Division 2 malocclusions using a completely customized lingual appliance and the Herbst device. *J Orofac Orthop.* 2012;73(3):225–35.
24. Rank CP. Guide to superimposition of profile radiographs by "The Structural Method". 2010 (Available from: [http:// angle- socie ty. com/ wp- content/ uploa ds/ 2020/ 01/ guide. pdf](http://angle-society.com/wp-content/uploads/2020/01/guide.pdf))
25. Bjork A. Prediction of mandibular growth rotation. *Am J Orthod.* 1969;55:585–99.
26. Bjork A, Skieller V. Normal and abnormal growth of the mandible. A synthesis of longitudinal cephalometric implant studies over a period of 25 years. *Eur J Orthod.* 1983;5: 1–46
27. Springate SD. Natural reference structures in the human mandible: a systematic search in children with tantalum implants. *Eur J Orthod.* 2010;32:354–62.
28. Renkema AM, Fudalej PS, Renkema A, Kiekens R, Katsaros C. Development of labial gingival recessions in orthodontically treated patients. *Am J Orthod Dentofacial Orthop.* 2013;143:206–12.
29. Koo TK, Li MY. A Guideline of Selecting and Reporting Intraclass Correlation Coefficients for Reliability Research. *J Chiropr Med.* 2016;15(2):155–63.
30. Dahlberg G. Statistical methods for medical and biological students. London: G. Allen & Unwin Ltd.; 1940. p. 122–32.

31. Guo R, Zhang L, Hu M, Huang Y, Li W. Alveolar bone changes in maxillary and mandibular anterior teeth during orthodontic treatment: A systematic review and meta-analysis. *Orthod Craniofac Res.* 2021;24(2):165–79.
32. Kalina E, Grzebyta A, Zadurska M. Bone Remodeling during Orthodontic Movement of Lower Incisors-Narrative Review. *Int J Environ Res Public Health.* 2022;19(22):15002.
33. Kuc AE, Kotuła J, Nawrocki J, Kulgawczyk M, Kawala B, Lis J, et al. Bone Remodeling of Maxilla after Retraction of Incisors during Orthodontic Treatment with Extraction of Premolars Based on CBCT Study: A Systematic Review. *J Clin Med.* 2024;13(5):1503.
34. Kobylansky O, Schwarz L, Rausch MA, Kobylanska A, Andrukhov O, Rausch-Fan X. Changes in the alveolar bone morphology among different patterns of incisor inclination during the alignment phase in orthodontic treatment without premolar extraction. *Orthod Craniofac Res.* 2024;27(4):645–55.
35. Li L, Chen Y, Wang J, Luo N, Wu Y, Dai H, et al. Long-term morphometric changes in the anterior alveolar bone in adolescents and adults after space closure: A retrospective study. *Orthod Craniofac Res.* 2023;26(4):618–31.
36. Wang J, Zhou W, Wu Y, Dai H, Zhou J. Long-term changes in the anterior alveolar bone after orthodontic treatment with premolar extraction: A retrospective study. *Orthod Craniofac Res.* 2022;25(2):174–82.
37. Wang S, Li L, Liu X, Wang X, Li W, Liu D. Mandibular cortical bone remodeling characteristics in patients with extraction: A cone-beam computed tomography study. *Am J Orthod Dentofacial Orthop.* 2024;166(3):215–26.
38. Qin Q, Guo R, Li L, Zhu K, Su X, Zhang L, et al. Alveolar bone remodelling and stability of mandibular incisors in adult patients after orthodontic treatment with premolar extractions: A prospective follow-up study. *Orthod Craniofac Res.* 2024;27(3):413–20.
39. Kim HJ, Noh HK, Park HS. Recovery bone formation on radiographic palatal bone dehiscences after incisor retraction with microimplants. *Angle Orthod.* 2024;94(2):168–79.
40. Bae SM, Kim HJ, Kyung HM. Long-term changes of the anterior palatal alveolar bone after treatment with bialveolar protrusion, evaluated with computed tomography. *Am J Orthod Dentofacial Orthop.* 2018;153(1):108–17.
41. Leung CC, Palomo L, Griffith R, Hans MG. Accuracy and reliability of conebeam computed tomography for measuring alveolar bone height and detecting bony dehiscences and fenestrations. *Am J Orthod Dentofacial Orthop.* 2010;137(4 Suppl):109–19.
42. Schulze R, Couso-Queiruga E, Katsaros C. Accuracy of cone-beam computed tomography in imaging the components of the periodontal phenotype. *Periodontol 2000.* 2024.
43. De Grauwe A, Ayaz I, Shujaat S, Dimitrov S, Gbadegbegnon L, Vande Vannet B, et al. CBCT in orthodontics: a systematic review on justification of CBCT in a paediatric population prior to orthodontic treatment. *Eur J Orthod.* 2019;41(4):381–9.