

LITERATUR ZMK 7-8 2024

ZMK 7-8 (40) S. 357

Prof. Dr. Claus-Peter Ernst

Streikende Zahnärzte – was bleibt im Gedächtnis?

1. <https://www.zm-online.de/artikel/2023/zm-2023-18/wie-sie-die-2-vereinbarung-der-goz-gekonnt-nutzen>
2. <https://www.iww.de/pa/recht/urteil-honorarvereinbarung-der-vereinbarte-faktor-muss-in-der-rechnung-nicht-begrundet-werden-f136083>
3. <https://www.n-tv.de/wirtschaft/Wie-viel-Zahnaerzte-verdienen-article25015203.html>
4. <https://www.swr.de/swraktuell/rheinland-pfalz/sendung-1600-uhr-vom-1862024-100.html>

ZMK 2024; 40 (7-8) S. 378-385

Prof. Dr. Dr.h.c. Adrian Kasaj, M.Sc.

Moderne Wundversorgung in der Parodontalchirurgie: Naht, Kleber oder Wundverband?

- [1] Alkaya B, Kayhan HG, Temmerman A, Haytac MC, Teughels W. Pre-operative, chair-side Zn-containing surgical stents affect morbidity and wound healing after free gingival graft harvesting: a randomized clinical trial. Clin Oral Investig. 2023; 27 (9): 5519-5527. doi: 10.1007/s00784-023-05171-3.
- [2] Aslan S, Buduneli N, Cortellini P. Entire papilla preservation technique: A novel surgical approach for regenerative treatment of deep and wide intrabony defects. Int J Periodontics Restorative Dent. 2017; 37 (2): 227-233. doi: 10.11607/prd.2584.
- [3] Baghani Z, Kadkhodazadeh M. Periodontal dressing: a review article. J Dent Res Dent Clin Dent Prospects. 2013; 7 (4): 183-91. doi: 10.5681/joddd.2013.040.
- [4] Becker P, Kasaj A, Schumann S, Kämmerer PW, Thiem DGE, Heimes D, Pabst A. Biomechanical evaluation of cyanoacrylate-based tissue adhesive for intraoral wound closure. Clin Oral Investig. 2022; 26 (6): 4499-4507. doi: 10.1007/s00784-022-04414-z.

- [5] Burkhardt R, Lang NP. Influence of suturing on wound healing. *Periodontol* 2000. 2015; 68 (1): 270-81. doi: 10.1111/prd.12078.
- [6] Chaussain Miller C, Septier D, Bonnefoix M, Lecolle S, Lebreton-Decoster C, Coulomb B, Pellat B, Godeau G. Human dermal and gingival fibroblasts in a three-dimensional culture: a comparative study on matrix remodeling. *Clin Oral Investig*. 2002; 6 (1): 39-50. doi: 10.1007/s00784-001-0143-2.
- [7] Cho YD, Kim KH, Lee YM, Ku Y, Seol YJ. Periodontal wound healing and tissue regeneration: A narrative review. *Pharmaceuticals (Basel)*. 2021; 14 (5): 456. doi: 10.3390/ph14050456.
- [8] Cortellini P, Tonetti MS. Improved wound stability with a modified minimally invasive surgical technique in the regenerative treatment of isolated interdental intrabony defects. *J Clin Periodontol*. 2009; 36 (2): 157-63. doi: 10.1111/j.1600-051X.2008.01352.x.
- [9] Debus E, Dietz UA. Nahtmaterial und Nahthilfsmaterial in der Gefäßchirurgie. In: Debus, E., Gross-Fengels, W. (eds) *Operative und interventionelle Gefäßmedizin*. Springer Reference Medizin. Springer, Berlin, Heidelberg, 2016. doi:10.1007/978-3-662-45856-3_33-1.
- [10] Deng X, Gould M, Ali MA. A review of current advancements for wound healing: Biomaterial applications and medical devices. *J Biomed Mater Res B Appl Biomater*. 2022; 110 (11): 2542-2573. doi: 10.1002/jbm.b.35086.
- [11] Dresing K, Slongo T. Chirurgisches Nahtmaterial – Grundlagen [Surgical suture material-fundamentals]. *Oper Orthop Traumatol*. 2023; 35 (5): 298-316. German. doi: 10.1007/s00064-023-00812-y.
- [12] Faris A, Khalid L, Hashim M, Yaghi S, Magde T, Bouresly W, Hamdoon Z, Uthman AT, Marei H, Al-Rawi N. Characteristics of Suture Materials Used in Oral Surgery: Systematic Review. *Int Dent J*. 2022; 72 (3): 278-287. doi: 10.1016/j.identj.2022.02.005.
- [13] Forrest JO. The use of cyanoacrylates in periodontal surgery. *J Periodontol*. 1974; 45 (4): 225-9. doi: 10.1902/jop.1974.45.4.225.
- [14] Greensmith AL, Wade AB. Dressing after reverse bevel flap procedures. *J Clin Periodontol*. 1974; 1 (2): 97-106. doi: 10.1111/j.1600-051x.1974.tb01244.x.
- [15] Griffin TJ, Hur Y, Bu J. Basic suture techniques for oral mucosa. *Clin Adv Periodontics*. 2011; 1: 221-232. doi.org/10.1902/cap.2011.110053.
- [16] Gümüş P, Buduneli E. Graft stabilization with cyanoacrylate decreases shrinkage of free gingival grafts. *Aust Dent J*. 2014; 59 (1): 57-64. doi: 10.1111/adj.12149.
- [17] Guo S, Dipietro LA. Factors affecting wound healing. *J Dent Res*. 2010; 89 (3): 219-29. doi: 10.1177/0022034509359125.
- [18] Heaney TG, Appleton J. The effect of periodontal dressings on the healthy periodontium. *J Clin Periodontol*. 1976; 3 (1): 66-76. doi: 10.1111/j.1600-051x.1976.tb01852.x.

- [19] Kathariya R, Jain H, Jadhav T. To pack or not to pack: the current status of periodontal dressings. *J Appl Biomater Funct Mater*. 2015; 13 (2): e73-86. doi: 10.5301/jabfm.5000215.
- [20] Kleinheinz J. Schnittführung und Naht. *Zahnmedizin up2date*. 2009; 3 (2): 131-147 doi: 10.1055/s-0029-1185388.
- [21] Leknes KN, Røystrand IT, Selvig KA. Human gingival tissue reactions to silk and expanded polytetrafluoroethylene sutures. *J Periodontol*. 2005; 76 (1): 34-42. doi: 10.1902/jop.2005.76.1.34.
- [22] Monje A, Kramp AR, Criado E, Suárez-López Del Amo F, Garaicoa-Pazmiño C, Gargallo-Albiol J, Wang HL. Effect of periodontal dressing on non-surgical periodontal treatment outcomes: a systematic review. *Int J Dent Hyg*. 2016; 14 (3): 161-7. doi: 10.1111/idh.12130.
- [23] Newman PS, Addy M. Comparison of hypertonic saline and chlorhexidine mouthrinses after the inverse bevel flap procedure. *J Periodontol*. 1982; 53 (5): 315-8. doi: 10.1902/jop.1982.53.5.315.
- [24] Pabst A, Becker P, Kuchen R, Schumann S, Kasaj A. A comparative study of cyanoacrylate-based tissue adhesive and surgical sutures on marginal flap stability following coronally advanced flap. *Clin Oral Investig*. 2023; 28 (1): 5. doi: 10.1007/s00784-023-05390-8.
- [25] Parlak HM, Durmaz MH, Bayrak H, Yilmaz BT, Keceli HG. Cyanoacrylate and hyaluronic acid combination on palatal donor site management after de-epithelialized graft harvesting. *J Periodontol*. 2023; 94 (4): 519-528. doi: 10.1002/JPER.22-0409.
- [26] Polimeni G, Xiropaidis AV, Wikesjö UM. Biology and principles of periodontal wound healing/regeneration. *Periodontol 2000*. 2006; 41: 30-47. doi: 10.1111/j.1600-0757.2006.00157.x.
- [27] 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. doi: 10.1902/jop.2005.76.3.329.
- [28] Röllin A. Kleben statt Nähen? - Wundverschluss mit Gewebeklebern. *Pharma-kritik*. 36, PK949, Online-Artikel. doi.org/10.37667/pk.2014.949.
- [29] Ruhl S. Speichel. *Zahnmedizin up2date*. 2008; 2 (2): 115-140. doi: 10.1055/s-2008-1038381.
- [30] Sachs HA, Farnoush A, Checchi L, Joseph CE. Current status of periodontal dressings. *J Periodontol*. 1984; 55 (12): 689-96. doi: 10.1902/jop.1984.55.12.689.
- [31] Simonelli A, Severi M, Trombelli L, Farina R. Minimal invasiveness in the surgical treatment of intraosseous defects: A systematic review. *Periodontol 2000*. 2023; 91 (1): 20-44. doi: 10.1111/prd.12467.
- [32] Trainotti S, Scheithauer M. Process, disturbances and improvements of wound healing. *HNO*. 2017; 65 (9): 777-788. doi: 10.1007/s00106-017-0381-5.

- [33] Trombelli L, Farina R, Franceschetti G, Calura G. Single-flap approach with buccal access in periodontal reconstructive procedures. *J Periodontol.* 2009; 80 (2): 353-60. doi: 10.1902/jop.2009.080420.
- [34] Wikesjö UM, Selvig KA. Periodontal wound healing and regeneration. *Periodontol 2000.* 1999; 19: 21-39. doi: 10.1111/j.1600-0757.1999.tb00145.x.
- [35] 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. doi: 10.1111/j.1600-051X.2010.01550.x.
- [36] Zuhr O, Akakpo DL, Hürzeler M. Wundverschluss und Wundheilung. *Implantologie.* 2016; 03: 281-294.

ZMK 2024: (40) (7.8) S. 394-400

Prof. Dr. Andreas Hahn, Dr. Isabel Behrendt

Einfluss der Ernährung auf chronische Entzündungen

Parodontitis, Adipositas und Diabetes mellitus Typ 2

1. American Diabetes Association, Bantle JP, Wylie-Rosett J, Albright AL, Apovian CM, Clark NG, Franz MJ, Hoogwerf BJ, Lichtenstein AH, Mayer-Davis E, Mooradian AD, Wheeler ML: Nutrition recommendations and interventions for diabetes: a position statement of the American Diabetes Association. *Diabetes Care.* 2008; 31(Suppl1): S61–S78.
2. Barutta F, Bellini S, Durazzo M, Gruden G. Novel Insight into the Mechanisms of the Bidirectional Relationship between Diabetes and Periodontitis. *Biomedicines.* 2022 Jan 16;10(1):178.
3. Beaudette JR, Fritz PC, Sullivan PJ, Ward WE. Oral Health, Nutritional Choices, and Dental Fear and Anxiety. *Dent J (Basel).* 2017 Jan 21;5(1):8.
4. Casanova L, Hughes FJ, Preshaw PM. Diabetes and periodontal disease: a two-way relationship. *Br Dent J.* 2014 Oct;217(8):433-7.
5. Chen YF, Zhan Q, Wu CZ, Yuan YH, Chen W, Yu FY, Li Y, Li LJ. Baseline HbA1c Level Influences the Effect of Periodontal Therapy on Glycemic Control in People with Type 2 Diabetes and Periodontitis: A Systematic Review on Randomized Controlled Trials. *Diabetes Ther.* 2021 May;12(5):1249-1278.
6. Costa R, Ríos-Carrasco B, Monteiro L, López-Jarana P, Carneiro F, Relvas M. Association between Type 1 Diabetes Mellitus and Periodontal Diseases. *J Clin Med.* 2023 Feb 1;12(3):1147.

7. Deutsche Gesellschaft für Parodontologie (DG PARO), Deutsche Gesellschaft für Zahn-, Mund- und Kieferheilkunde (DGZMK). Die Behandlung von Parodontitis Stadium I bis III. https://www.awmf.org/uploads/tx_szleitlinien/083-043I_S3_Behandlung-von-Parodontitis-Stadium-I-III_2021-02_2.pdf (Zugriff am 12.03.2024).
8. de Mello RN, de Gois BP, Kravchychyn ACP, Dâmaso AR, Horst MA, Lima GC, Corgosinho FC. Dietary inflammatory index and its relation to the pathophysiological aspects of obesity: a narrative review. *Arch Endocrinol Metab.* 2023 Jun 19;67(6):e000631.
9. Demmer RT, Desvarieux M, Holtfreter B, et al. Periodontal status and A1C change: longitudinal results from the study of health in Pomerania (SHIP) *Diabetes Care.* 2010;33:1037–1043.
10. Flock MR, Rogers CJ, Prabhu KS, Kris-Etherton PM. Immunometabolic role of long-chain omega-3 fatty acids in obesity-induced inflammation. *Diabetes Metab Res Rev.* 2013 Sep;29(6):431-45.
11. Grossi SG, Genco RJ. Periodontal disease and diabetes mellitus: a two-way relationship. *Ann Periodontol.* 1998 Jul;3(1):51-61.
12. Hahn A, Ströhle A, Wolters M. Ernährung – Physiologische Grundlagen, Prävention, Therapie. 4. Auflage, Wissenschaftliche Verlagsgesellschaft, Stuttgart, 2023.
13. Hahn A, Jonas W, Behrendt I: Low-grade-Inflammation und chronisch-degenerative Erkrankungen. *Schw. Z. Ernährungsmed.* 2023;6:6-9.
14. Hahn A, Behrendt I: Ernährungsfaktoren und Inflammation. *Oralprophylaxe Kinderzahnmed.* 2024;46:19-22.
15. Hajishengallis G. Periodontitis: from microbial immune subversion to systemic inflammation. *Nat Rev Immunol.* 2015 Jan;15(1):30-44.
16. Hariharan R, Odjidja EN, Scott D, Shivappa N, Hébert JR, Hodge A, de Courten B. The dietary inflammatory index, obesity, type 2 diabetes, and cardiovascular risk factors and diseases. *Obes Rev.* 2022 Jan;23(1):e13349.
17. Hujoel P. Dietary carbohydrates and dental-systemic diseases. *J Dent Res.* 2009 Jun;88(6):490-502.
18. Ide R, Hoshuyama T, Wilson D, Takahashi K, Higashi T. Periodontal disease and incident diabetes: a seven-year study. *J Dent Res.* 2011;90:41–46.
19. Iwashita M, Hayashi M, Nishimura Y, Yamashita A. The Link Between Periodontal Inflammation and Obesity. *Curr Oral Health Rep.* 2021;8(4):76-83.
20. Kesavalu L, Bakthavatchalu V, Rahman MM, Su J, Raghu B, Dawson D, Fernandes G, Ebersole JL. Omega-3 fatty acid regulates inflammatory cytokine/mediator messenger RNA expression in *Porphyromonas gingivalis*-induced experimental periodontal disease. *Oral Microbiol Immunol.* 2007 Aug;22(4):232-9.

21. Kotronia E, Brown H, Papacosta AO, Lennon LT, Weyant RJ, Whincup PH, Wannamethee SG, Ramsay SE. Poor oral health and the association with diet quality and intake in older people in two studies in the UK and USA. *Br J Nutr.* 2021 Jul 14;126(1):118-130.
22. Ladeira LLC, Nascimento GG, Leite FRM, Alves-Costa S, Barbosa JMA, Alves CMC, Thomaz EBAF, Batista RFL, Ribeiro CCC. Obesity, Insulin Resistance, Caries, and Periodontitis: Syndemic Framework. *Nutrients.* 2023 Aug 9;15(16):3512.
23. Landgraf R, Aberle J, Birkenfeld AL, Gallwitz B, Kellerer M, Klein H, Müller-Wieland D, Nauck MA, Reuter HM, Siegel E: Therapie des Typ-2-Diabetes. *Diabetologie&Stoffwechsel.* 2019;14(S02):S167-187.
24. Levine RS. Obesity, diabetes and periodontitis--a triangular relationship? *Br Dent J.* 2013 Jul;215(1):35-9.
25. Loe H. Periodontal disease. The sixth complication of diabetes mellitus. *Diabetes Care.* 1993 Jan;16(1):329-34.
26. Lula EC, Ribeiro CC, Hugo FN, Alves CM, Silva AA. Added sugars and periodontal disease in young adults: an analysis of NHANES III data. *Am J Clin Nutr.* 2014 Oct;100(4):1182-7.
27. Marruganti C, Suvan JE, D'Aiuto F. Periodontitis and metabolic diseases (diabetes and obesity): Tackling multimorbidity. *Periodontol 2000.* 2023 Oct 16.
28. Mealey BL, Ocampo GL. Diabetes mellitus and periodontal disease. *Periodontol 2000.* 2007;44:127-53.
29. Metin ZE, Tengilimoglu-Metin MM, Oğuz N, Kizil M. Is inflammatory potential of the diet related to oral and periodontal health? *Food Sci Nutr.* 2023 Aug 28;11(11):7155-7159
30. Mirzaei A, Shahrestanaki E, Daneshzad E, Heshmati J, Djalalinia S, Asayesh H, Mahdavi-Gorabi A, Heshmat R, Qorbani M. Association of hyperglycaemia and periodontitis: an updated systematic review and meta-analysis. *J Diabetes Metab Disord.* 2021 Aug 11;20(2):1327-1336.
31. Muniz FW, Nogueira SB, Mendes FL, Rösing CK, Moreira MM, de Andrade GM, Carvalho Rde S. The impact of antioxidant agents complimentary to periodontal therapy on oxidative stress and periodontal outcomes: A systematic review. *Arch Oral Biol.* 2015 Sep;60(9):1203-14.
32. Naqvi AZ, Buettner C, Phillips RS, Davis RB, Mukamal KJ. n-3 fatty acids and periodontitis in US adults. *J Am Diet Assoc.* 2010 Nov;110(11):1669-75.
33. Naqvi AZ, Hasturk H, Mu L, Phillips RS, Davis RB, Halem S, Campos H, Goodson JM, Van Dyke TE, Mukamal KJ. Docosahexaenoic Acid and Periodontitis in Adults: A Randomized Controlled Trial. *J Dent Res.* 2014 Aug;93(8):767-73.
34. Nielsen SJ, Trak-Fellermeier MA, Joshipura K, Dye BA. Dietary Fiber Intake Is Inversely Associated with Periodontal Disease among US Adults. *J Nutr.* 2016 Dec;146(12):2530-2536

35. Reis RA, Stolf CS, de Carvalho Sampaio HA, da Costa Silva BY, Özlü T, Kenger EB, Miguel MMV, Santamaria MP, Monteiro MF, Casati MZ, Casarin RCV. Impact of dietary inflammatory index on gingival health. *J Periodontol*. 2024 Jun;95(6):550-562. doi: 10.1002/JPER.23-0292.
36. Ryan ME, Raja V. Diet, Obesity, Diabetes, and Periodontitis: a Syndemic Approach to Management. 2016. *Curr Oral Health Rep* 3, 14–27.
37. Saito T, Shimazaki Y, Sakamoto M. Obesity and periodontitis. *N Engl J Med*. 1998 Aug 13;339(7):482-3.
38. Sedghi LM, Bacino M, Kapila YL. Periodontal Disease: The Good, The Bad, and The Unknown. *Front Cell Infect Microbiol*. 2021 Dec 7;11:766944.
39. Shi J, Liang Z, Zhang X, Ren S, Cheng Y, Liu Y, Zhang M. Association of physical activity and dietary inflammatory index with overweight/obesity in US adults: NHANES 2007-2018. *Environ Health Prev Med*. 2023;28:40.
40. Sinha S, Haque M, Lugova H, Kumar S. The Effect of Omega-3 Fatty Acids on Insulin Resistance. *Life (Basel)*. 2023 Jun 5;13(6):1322.
41. Staufenbiel I, Weinspach K, Förster G, Geurtsen W, Günay H. Periodontal conditions in vegetarians: a clinical study. *Eur J Clin Nutr*. 2013 Aug;67(8):836-40
42. Staufenbiel I, Adam K, Hahn A, Kerlikowsky F, Flohr M, Schlueter N, Vach K. Influence of Nutrition and Physical Activity on Local and Systemic Inflammatory Signs in Experimentally Induced Gingivitis. *Nutrients*. 2023 Jul 27;15(15):3344.
43. Swarnamali H, Medara N, Chopra A, Spahr A, Jayasinghe TN. Role of Dietary Fibre in Managing Periodontal Diseases. A Systematic Review and Meta-Analysis of Human Intervention Studies. *Nutrients*. 2023 Sep 18;15(18):4034.
44. Tsai C, Hayes C, Taylor GW. Glycemic control of type 2 diabetes and severe periodontal disease in the US adult population. *Community Dent Oral Epidemiol*. 2002 Jun;30(3):182-92.
45. Vivekananda L, Faizuddin M. Effect of Weight Reduction on the Serum Adiponectin and Tumor Necrosis Factor- α Levels and the Clinical Parameters of Obese Patients with and without Periodontal Disease. *J Int Soc Prev Community Dent*. 2019 Mar-Apr;9(2):166-171.
46. Vo TTT, Chu PM, Tuan VP, Te JS, Lee IT. The Promising Role of Antioxidant Phytochemicals in the Prevention and Treatment of Periodontal Disease via the Inhibition of Oxidative Stress Pathways: Updated Insights. *Antioxidants (Basel)*. 2020 Dec 1;9(12):1211.
47. Yokoyama Y, Barnard ND, Levin SM, Watanabe M. Vegetarian diets and glycemic control in diabetes: a systematic review and meta-analysis. *Cardiovasc Diagn Ther*. 2014 Oct;4(5):373-82.
48. Zhou Q, Gao Y, Guo Y, Zhu G. Relationship between Dietary Inflammatory Index and Blood Glucose Changes in Patients with Pre-diabetes Mellitus. *Altern Ther Health Med*. 2024 Apr 12:AT9354. Epub ahead of print.

49. Zuza EC, Pires JR, de Almeida AA, Toledo BEC, Guimaraes-Stabili MR, Junior CR, Barroso EM. Evaluation of recurrence of periodontal disease after treatment in obese and normal weight patients: Two-year follow-up. *J Periodontol.* 2020 Sep;91(9):1123-1131.
-

ZMK 2024: (40) (7-8) S.402-411

Univ.-Prof Dr. Dr. h. c. med. Holger Jentsch

Update: Adjuvantien zur subgingivalen Instrumentierung in der Parodontitistherapie

1. Abdul Hayei NA, Yahya NA, Safii SH, Saub R, Vaithilingam RD, Baharuddin NA. Influence of scaler tip design on root surface roughness, tooth substance loss and patients' pain perception: an in vitro and a randomised clinical trial. *BMC Oral Health.* 2021;21:169.
2. Calder PC. Omega-3 fatty acids and inflammatory processes from molecules to man. *Biochem Soc Trans* 2017;45:1105-1115.
3. Castro dos Santos NC, Andere NMRB, Araujo CF, de Marco AC, Kantarci A, Van Dyke TE, Santamaria MP. Omega-3 PUFA and aspirin as adjuncts to periodontal debridement in patients with periodontitis and type 2 diabetes mellitus. Randomized clinical trial. *J Periodontol.* 2020;91:1318–1327.
4. Castro dos Santos NC, Furukawa MV, Oliveira-Cardoso I, Cortelli JR, Feres M, Van Dyke T, Rovai ES. Does the use of omega-3 fatty acids as an adjunct to non-surgical periodontal therapy provide additional benefits in the treatment of periodontitis? A systematic review and meta-analysis. *J Periodontal Res.* 2022;57:435-447.
5. Chatterjee D, Chatterjee A, Kalra D, Kapoor A, Vijay S, Jain S. Role of adjunct use of omega-3 fatty acids in periodontal therapy of periodontitis. A systematic review and meta-analysis. *J Oral Biol Craniofac Res.* 2022;12:55-62.
6. Deore GD, Gurav AN, Patil R, Shete AR, Naiktari RS, Inamdar SP. Omega 3 fatty acids as a host modulator in chronic periodontitis patients: a randomised, double-blind, placebo-controlled, clinical trial. *J Periodontal Implant Sci.* 2014 Feb;44(1):25-32. doi: 10.5051/jpis.2014.44.1.25. Epub 2014 Feb 26. PMID: 24616831; PMCID: PMC3945394.
7. Diehl D, Friedmann A, Liedloff P, Jung RM, Sculean A, Bilhan H. Adjunctive application of hyaluronic acid in combination with a sodium hypochlorite gel for non-surgical

treatment of residual pockets reduces the need for periodontal surgery - retrospective analysis of a clinical case series. *Materials (Basel)*. 2022;15:6508.

8. Eick S, Renatus A, Heinicke M, Pfister W, Stratul SI, Jentsch H. Hyaluronic acid as an adjunct after scaling and root planing: a prospective randomized clinical trial. *J Periodontol*. 2013;84:941-949.
9. El Kholy K, Freire M, Chen T, van Dyke TE. Resolvin E1 promotes bone preservation under inflammatory conditions. *Front Immunol* 2018;9:1300.
10. El-Sharkawy H, Aboelsaad N, Eliwa M, Darweesh M, Alshahat M, Kantarci A, Hasturk H, Van Dyke TE. Adjunctive treatment of chronic periodontitis with daily dietary supplementation with omega-3 Fatty acids and low-dose aspirin. *J Periodontol*. 2010 Nov;81(11):1635-43. doi: 10.1902/jop.2010.090628. Epub 2010 Jun 23. PMID: 20572767.
11. Elwakeel NM, Hazaa HH. Effect of omega 3 fatty acids plus low-dose aspirin on both clinical and biochemical profiles of patients with chronic periodontitis and type 2 diabetes: a randomized double blind placebo-controlled study. *J Periodontal Res*. 2015 Dec;50(6):721-9. doi: 10.1111/jre.12257. Epub 2015 Jan 21. PMID: 25604769.
12. Food and Agriculture Organization/FAO der United Nations/World Health Organization/WHO
13. Frey AC, Gubler A, Schmidlin PR, Wegehaupt FJ. Dentin loss and surface alteration through chemical and chemomechanical challenge after initial root instrumentation. *Oral Health Prev Dent*. 2023;21:171-178.
14. Graziani F, Gennai S, Petrini M, Bettini L, Tonetti M. Enamel matrix derivative stabilizes blood clot and improves clinical healing in deep pockets after flapless periodontal therapy: A randomized clinical trial. *J Clin Periodontol* 2019;46:231-240.
15. Gruner D, Paris S, Schwendicke F. Probiotics for managing caries and periodontitis: Systematic review and meta-analysis. *J Dent*. 2016;48:16-25.
16. Hamm M, Neuberger K. Omega-3-aktiv – Gesundheit aus dem Meer. 3. Aufl. Hannover: Humboldt, 2018
17. Hammarström L, Heijl L, Gestrelus S. Periodontal regeneration in a buccal dehiscence model in monkeys after application of enamel matrix proteins. *J Clin Periodontol* 1997;24:669-677.

18. Heijl L. Periodontal regeneration with enamel matrix derivative in one human experimental defect. A case report. J Clin Periodontol 1997;24:693-696.
19. Herrera D. Scaling and root planing is recommended in the nonsurgical treatment of chronic periodontitis J Evid Based Dent Pract. 2016;16:56-58.
20. Hu D, Zhong D, Dai Q. Clinical efficacy of probiotics as an adjunctive therapy to scaling and root planing in the management of periodontitis. A systematic review and meta-analysis of randomized controlled trials. J Evid Based Dent Pract. 2021;21:101547.
21. Iorio-Siciliano V, Ramaglia L, Isola G, Blasi A, Salvi GE, Sculean A. Changes in clinical parameters following adjunctive local sodium hypochlorite gel in minimally invasive nonsurgical therapy (MINST) of periodontal pockets: a 6-month randomized controlled clinical trial. Clin Oral Investig. 2021;25:5331-5340.
22. Jentsch A, Eick S, Rassoul F, Purschwitz R, Jentsch H. Nutritional intervention in patients with periodontal disease: clinical, immunological and microbiological variables during 12 months. Br J Nutr 2009;101:879-885.
23. Jentsch H, Blüher M, Hamm M, Thiery J, Richter V. Parodontitis –Adipositas – Atherosklerose. Zusammenhänge und Einfluss der Ernährung. Parodontologie 2019;30:23-36.
24. Jentsch H, Jepsen S. Schmelz-Matrix-Proteine bei subgingivaler Instrumentierung - Aktueller Kenntnisstand. Parodontologie 2021;32:171-180.
25. Jentsch H, Pomowski R, Kundt G, Göcke R. Treatment of gingivitis with hyaluronan. J Clin Periodontol. 2003;30:159-64.
26. Jentsch H, Richter V, Hamm M. Stellenwert von Omega-3-Fettsäuren in der Prävention und Therapie der Parodontitis. Parodontologie 2017;28:399-408.
27. Jentsch H, Richter V, Hamm M. Wissen über Omega-3-Fettsäuren - wichtig für die Parodontologie? Quintessenz 2020;71:528-537.
28. Jentsch H, Richter V. Ernährung und Parodontalerkrankungen. Plaque N Care 2018;12:84-88.
29. Jentsch H, Rocuzzo M, Piloni A, Kasaj A, Fimmers R, Jepsen S. Flapless application of enamel matrix derivative in periodontal retreatment: A multicenter feasibility RCT. J Clin Periodontol. 2021;48:659-667.
30. Jentsch H. Soll der Zahnarzt während der Parodontistherapie die Ernährung des Patienten berücksichtigen und beeinflussen? Parodontologie 2014;25:403-408.

31. Kebschull M et al. S3-Leitlinie: Die Behandlung von Parodontitis Stadium I bis III. Die deutsche Implementierung der S3-Leitlinie „Treatment of Stage I–III Periodontitis“ der European Federation of Periodontology (EFP). AWMF-Registernummer: 083-043; Stand: Dezember 2020, Gültig bis: November 2025; Die Behandlung von Parodontitis Stadium I bis III (dgzmk.de)
32. Kebschull M et al. S3-Leitlinie: Subgingivale Instrumentierung. AWMF-Registernummer: 083-030 Stand: Oktober 2019, Gültigkeit ist abgelaufen; Subgingivale Instrumentierung (S3) (dgzmk.de)
33. Martin-Cabezas R, Davideau JL, Tenenbaum H, Huck O. Clinical efficacy of probiotics as an adjunctive therapy to non-surgical periodontal treatment of chronic periodontitis: a systematic review and meta-analysis. J Clin Periodontol. 2016;43:520-30.
34. Mishra S, Misra SR, Panda S, Mohanty N, Manfredi B, Parrini M, Giacomello MS, Mortellaro C, Lucchina AG, Annunziata M, Del Fabbro M. Role of probiotics in adjunct to non-surgical periodontal therapy in patients with chronic periodontitis: a systematic review and meta-analysis. J Biol Regul Homeost Agents. 2021;35(2 Suppl. 1):67-78.
35. Mizraji G, Heyman O, van Dyke TE, Wilensky A. Resolvin D2 restrains Th1 immunity and prevents alveolar bone loss in murine periodontitis. Front Immunol 2018;9:785.
36. Neprelyuk OA, Zhad'ko SI, Romanenko IG, Kriventsov MA. Adjunctive use of omega-3 fatty acids in combination with low-dose aspirin in periodontitis: Systematic review and meta-analysis. J Periodontal Res. 2023;58:1128-1138.
37. Ochôa C, Castro F, Bulhosa JF, Manso C, Fernandes JCH, Fernandes GVO. Influence of the probiotic L. reuteri on periodontal clinical parameters after nonsurgical treatment: A systematic review Microorganisms. 2023 30;11:1449.
38. Puzhankara L, Banerjee A, Chopra A, Venkitachalam R, Kedlaya MN. Effectiveness of probiotics compared to antibiotics to treat periodontal disease: Systematic review. Oral Dis. 2023, online ahead of print.
39. Radulescu V, Boariu MI, Rusu D, Roman A, Surlin P, Voicu A, Didilescu AC, Jentsch H, Siciliano VI, Ramaglia L, Vela O, Kardaras G, Sculean A, Stratul SI. Clinical and microbiological effects of a single application of sodium hypochlorite gel during subgingival re-instrumentation: a triple-blind randomized placebo-controlled clinical trial. Clin Oral Investig. 2022;26:6639-6652.

40. Ramanauskaite E, Machiulskiene V, Shirakata Y, Dvyliene UM, Nedzelskiene I, Sculean A. Clinical evaluation of sodium hypochlorite/amino acids and cross-linked hyaluronic acid adjunctive to non-surgical periodontal treatment: a randomized controlled clinical trial. Clin Oral Investig. 2023;27:6645-6656.
41. Richter V, Hamm M, Löhlein I et al. Langkettige Omega-3-Fettsäuren: Bedeutung und Versorgungskonzept. Ein Konsensus-Statement des Arbeitskreis Omega-3 e. V. Dtsch Apoth Ztg 2011;151:2953-2957.
42. Richtlinie zur systematischen Behandlung von Parodontitis und anderer Parodontalerkrankungen (PAR-Richtlinie), KZBV, 2021
43. Sanz M, Herrera D, Kebschull M, Chapple I, Jepsen S, Beglundh T, Sculean A, Tonetti MS. Treatment of stage I-III periodontitis-The EFP S3 level clinical practice guideline. EFP Workshop Participants and Methodological Consultants. J Clin Periodontol. 2020;47(Suppl 22):4-60.
44. Schallhorn RA, McClain PK, Benhamou V, Doobrow JH, Grandin HM, Kasaj A. Application of enamel matrix derivative in conjunction with non-surgical therapy for treatment of moderate to severe periodontitis: A 12-month, randomized prospective, multicenter study. J Periodontol. 2021 May;92(5):619-628. doi: 10.1002/JPER.19-0579. Epub 2020 Oct 21. PMID: 32996172.
45. Schmidlin PR, Beuchat M, Busslinger A, Lehmann B, Lutz F. Tooth substance loss resulting from mechanical, sonic and ultrasonic root instrumentation assessed by liquid scintillation. J Clin Periodontol. 2001;28:1058-1066.
46. Serhan CN. Treating inflammation and infection in the 21st century: new hints from decoding resolution mediators and mechanisms. FASEB J. 2017;31:1273-1288.
47. Shokryazdan P, Jahromi MF, Liang JB, Ho YW. Probiotics: From isolation to application. J Am Coll Nutr. 2017;36:666-676.

ZMK 2024: (40) (7-8) S. 412-415

Dr. Alex Solderer A, Dr. Chun Ching Liu, Prof. Dr. Patrick R. Schmidlin

Therapieentscheid in der rekonstruktiven Periimplantitis-Therapie.

Eine Übersicht

1. Buser D, Janner SF, Wittneben JG, Brägger U, Ramseier CA, Salvi GE. 10-year survival and success rates of 511 titanium implants with a sandblasted and acid-etched surface: a retrospective study in 303 partially edentulous patients. *Clin Implant Dent Relat Res*. 2012;14:839-851.
2. Chappuis V, Buser R, Brägger U, Bornstein MM, Salvi GE, Buser D. Long-term outcomes of dental implants with a titanium plasma-sprayed surface: a 20-year prospective case series study in partially edentulous patients. *Clin Implant Dent Relat Res*. 2013;15:780-790.
3. Solderer A, Al-Jazrawi A, Sahrman P, Jung R, Attin T, Schmidlin PR. Removal of failed dental implants revisited: Questions and answers. *Clin Exp Dent Res*. 2019;1-13.
4. Salvi GE, Ramseier CA. Efficacy of patient-administered mechanical and/or chemical plaque control protocols in the management of peri-implant mucositis. A systematic review. *J Clin Periodontol*. 2015;42 Suppl 16:S187-201.
5. Herrera D, Berglundh T, Schwarz F et al. Prevention and treatment of peri-implant diseases - The EFP S3 level clinical practice guideline. *J Clin Periodontol*. 2023;50 Suppl 26:4-76.
6. Berglundh T, Armitage G, Araujo MG et al. Peri-implant diseases and conditions: Consensus report of workgroup 4 of the 2017 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions. *J Periodontol*. 2018;89 Suppl 1:S313-S318.
7. Derks J, Tomasi C. Peri-implant health and disease. A systematic review of current epidemiology. *J Clin Periodontol*. 2015;42 Suppl 16:S158-71.
8. Monje A, Kan JY, Borgnakke W. Impact of local predisposing/precipitating factors and systemic drivers on peri-implant diseases. *Clin Implant Dent Relat Res*. 2023;25:640-660.
9. Schwarz F, Jepsen S, Obreja K, Galarraga-Vinueza ME, Ramanauskaite A. Surgical therapy of peri-implantitis. *Periodontol 2000*. 2022;88:145-181.
10. Suárez-López Del Amo F, Yu SH, Wang HL. Non-Surgical Therapy for Peri-Implant Diseases: a Systematic Review. *J Oral Maxillofac Res*. 2016;7:e13.
11. Khoury F, Kerve PL, Ramanauskaite A et al. Surgical treatment of peri-implantitis - Consensus report of working group 4. *Int Dent J*. 2019;69 Suppl 2:18-22.

12. Solderer A, Schmidlin PR. Regenerative surgical therapy of peri-implantitis: an umbrella review of answered/unanswered questions and future perspectives. *Frontiers in Dental Medicine*. 2020;1:614240.
13. Monje A, Pons R, Insua A, Nart J, Wang HL, Schwarz F. Morphology and severity of peri-implantitis bone defects. *Clin Implant Dent Relat Res*. 2019;21:635-643.
14. Schwarz F, Sahm N, Schwarz K, Becker J. Impact of defect configuration on the clinical outcome following surgical regenerative therapy of peri-implantitis. *J Clin Periodontol*. 2010;37:449-455.
15. Chan HL, Rodriguez Betancourt A, Liu CC, Chiang YC, Schmidlin PR. A conceptual review on reconstructive peri-implantitis therapy: Challenges and opportunities. *Clin Exp Dent Res*. 2023;9:735-745.
16. Monje A, Schwarz F. Principles of Combined Surgical Therapy for the Management of Peri-Implantitis. *Clin Adv Periodontics*. 2022;12:57-63.
17. Herrera D, Berglundh T, Schwarz F et al. Prevention and treatment of peri-implant diseases - The EFP S3 level clinical practice guideline. *J Clin Periodontol*. 2023
18. Solderer A, Paterno Holtzman L, Milinkovic L et al. Implant failure and clinical and radiographic outcomes after surgical treatment of peri-implantitis: A meta-analysis. *Int J Oral Implantol (Berl)*. 2024;17:13-42.
19. Hatz CR, Janson TM, Solderer A, Bastendorf KD. An Umbrella Review on Low-Abrasive Air Powder Water Jet Technology in Periodontitis and Peri-Implantitis Patients. *Applied Sciences*. 2022 12(14), 7203
20. Khoshkam V, Suarez-Lopez Del Amo F, Monje A, Lin GH, Chan HL, Wang HL. Long-term Radiographic and Clinical Outcomes of Regenerative Approach for Treating Peri-implantitis: A Systematic Review and Meta-analysis. *International Journal of Oral & Maxillofacial Implants*. 2016;31:1303-1310.
21. Steiger-Ronay V, Merlini A, Wiedemeier DB, Schmidlin PR, Attin T, Sahrman P. Location of unaccessible implant surface areas during debridement in simulated peri-implantitis therapy. *BMC Oral Health*. 2017;17:137.
22. Monje A, Pons R, Vilarrasa J, Nart J, Wang HL. Significance of barrier membrane on the reconstructive therapy of peri-implantitis: A randomized controlled trial. *J Periodontol*. 2023;94:323-335.

23. Sahrman P, Attin T, Schmidlin PR. Regenerative treatment of peri-implantitis using bone substitutes and membrane: a systematic review. *Clinical Implant Dentistry & Related Research*. 2011;13:46-57.
24. Tomasi C, Regidor E, Ortiz-Vigón A, Derks J. Efficacy of reconstructive surgical therapy at peri-implantitis-related bone defects. A systematic review and meta-analysis. *J Clin Periodontol*. 2019;46 Suppl 21:340-356.
25. Donos N, Calciolari E, Ghuman M, Baccini M, Sousa V, Nibali L. The efficacy of bone reconstructive therapies in the management of peri-implantitis. A systematic review and meta-analysis. *J Clin Periodontol*. 2023;50 Suppl 26:285-316.
26. Ichioka Y, Trullenque-Eriksson A, Ortiz-Vigón A et al. Factors influencing outcomes of surgical therapy of peri-implantitis: A secondary analysis of 1-year results from a randomized clinical study. *J Clin Periodontol*. 2023;50:1282-1304.
27. Ravidà A, Siqueira R, Di Gianfilippo R et al. Prognostic factors associated with implant loss, disease progression or favorable outcomes after peri-implantitis surgical therapy. *Clin Implant Dent Relat Res*. 2022;24:222-232.
28. Wentorp F, Jablonowski L, Pink C, Holtfreter B, Kocher T. At which bone level are implants explanted. *Clin Oral Implants Res*. 2021;32:786-798.
29. Schwarz F, Hegewald A, John G, Sahm N, Becker J. Four-year follow-up of combined surgical therapy of advanced peri-implantitis evaluating two methods of surface decontamination. *J Clin Periodontol*. 2013;40:962-967.
30. Hwang S, Lee HM, Yun PY, Kim YK. Survival analysis of implants after surgical treatment of peri-implantitis based on bone loss severity and surgical technique: a retrospective study. *BMC Oral Health*. 2023;23:308.

ZMK 2024; 40 (7-8) S. 416–422

S2k-Leitlinie: Hinweise auf besten Implantationszeitpunkt

Isabel Becker, Prof. Dr. Christian Walter, Dr. Stefan Wentaschek, PD Dr. Dr. Keyvan Sagheb

1. Chen, S. T., Wilson, T. G., Jr., & Hammerle, C. H. (2004): Immediate or early placement of implants following tooth extraction: review of biologic basis, clinical procedures, and

- outcomes. *Int J Oral Maxillofac Implants*, 19 Suppl, 12-25.
<https://www.ncbi.nlm.nih.gov/pubmed/15635942>
2. Hämmerle, C. H., Araujo, M. G., Simion, M., & Osteology Consensus, G. (2012): Evidence-based knowledge on the biology and treatment of extraction sockets. *Clin Oral Implants Res*, 23 Suppl 5, 80-82. <https://doi.org/10.1111/j.1600-0501.2011.02370.x>
 3. Mello, C. C., Lemos, C. A. A., Verri, F. R., Dos Santos, D. M., Goiato, M. C., & Pellizzer, E. P. (2017): Immediate implant placement into fresh extraction sockets versus delayed implants into healed sockets: A systematic review and meta-analysis. *Int J Oral Maxillofac Surg*, 46(9), 1162-1177. <https://doi.org/10.1016/j.ijom.2017.03.016>
 4. Tonetti, M. S., Jung, R. E., Avila-Ortiz, G., Blanco, J., Cosyn, J., Fickl, S., Figuero, E., Goldstein, M., Graziani, F., Madianos, P., Molina, A., Nart, J., Salvi, G. E., Sanz-Martin, I., Thoma, D., Van Assche, N., & Vignoletti, F. (2019): Management of the extraction socket and timing of implant placement: Consensus report and clinical recommendations of group 3 of the XV European Workshop in Periodontology. *J Clin Periodontol*, 46 Suppl 21, 183-194.
<https://doi.org/10.1111/jcpe.13131>
 5. Heydecke G, Seedorf H, Kern M et al.: S1-Leitlinie „Festsitzender Zahnersatz für zahnbegrenzte Lücken“. AWMF-Reg-Nr. 083-003, 2012.
 6. Kan JYK, Rungcharassaeng K, Deflorian M et al.: Immediate implant placement and provisionalization of maxillary anterior single implants. *Periodontol 2000* 2018;77(1): 197–212.
 7. Van der Weijden, F., Dell'Acqua, F., & Slot, D. E. (2009): Alveolar bone dimensional changes of post-extraction sockets in humans: a systematic review. *J Clin Periodontol*, 36(12), 1048-1058.
<https://doi.org/10.1111/j.1600-051X.2009.01482.x>
 8. Tan, W. L., Wong, T. L., Wong, M. C., & Lang, N. P. (2012): A systematic review of post-extraction alveolar hard and soft tissue dimensional changes in humans. *Clin Oral Implants Res*, 23 Suppl 5, 1-21. <https://doi.org/10.1111/j.1600-0501.2011.02375.x>
 9. Tröltzsch M, K. P., Pabst A, Tröltzsch M, Kauffmann P, Schiegnitz E, Brockmeyer P, Al-Nawas B (07/2020): S2k-Leitlinie: Implantologische Indikationen für die Anwendung von Knochenersatzmaterialien. AWMF Registernummer: 083 009
<https://www.awmf.org/leitlinien/detail/II/083-009.html>
 10. Avila-Ortiz, G., Chambrone, L., & Vignoletti, F. (2019): Effect of alveolar ridge preservation interventions following tooth extraction: A systematic review and meta-analysis. *J Clin Periodontol*, 46 Suppl 21, 195-223. <https://doi.org/10.1111/jcpe.13057>
 11. Cosyn J, De Lat L, Seyssens L et al.: The effectiveness of immediate implant placement for single tooth replacement compared to delayed implant placement: A systematic review and meta-analysis. *J Clin Periodontol* 2019;46(Suppl 21): 224–241.

12. Mareque, S., Castelo-Baz, P., Lopez-Malla, J., Blanco, J., Nart, J., & Valles, C. (2021): Clinical and esthetic outcomes of immediate implant placement compared to alveolar ridge preservation: a systematic review and meta-analysis. *Clin Oral Investig*, 25(8), 4735-4748.
<https://doi.org/10.1007/s00784-021-03986-6>
13. Moraschini, V., L. A. Poubel, V. F. Ferreira and S. Barboza Edos (2015): "Evaluation of survival and success rates of dental implants reported in longitudinal studies with a follow-up period of at least 10 years: a systematic review." *Int J Oral Maxillofac Surg* 44(3): 377-388.
14. Wiegner, J. W. H. N. K.-H. B. W. J. J.-U. (2021) "AWMF-Leitlinie-S3 Zahnimplantate bei Diabetes mellitus."
15. E. Schiegnitz, B. A.-N., K.A. Grötz, (2015): „AWMF-Leitlinie-S3 Implantat-Versorgung zur oralen Rehabilitation im Zusammenhang mit Kopf-HalsBestrahlung".
16. Beckmann, K. A. G. t. F. D. M. A. F. M. B. Y. (2019). AWMF-Leitlinie-S3 Dentale Implantate bei Patienten mit Immundefizienz. AWMF. <https://www.awmf.org/leitlinien/detail/II/083-034.html>
17. Sanz I, Garcia-Gargallo M, Herrera D et al.: Surgical protocols for early implant placement in post-extraction sockets: A systematic review. *Clin Oral Implants Res* 2012;23(Suppl 5):67–79.
18. Buser D, Chappuis V, Bornstein MM et al. Long-term stability of contour augmentation with early implant placement following single tooth extraction in the esthetic zone: A prospective, cross-sectional study in 41 patients with a 5- to 9-year followup. *J Periodontol* 2013;84(11): 1517–1527.
19. Bassir SH, El Kholy K, Chen CY et al.: Outcome of early dental implant placement versus other dental implant placement protocols: A systematic review and meta-analysis. *J Periodontol* 2019;90(5): 493–506.
20. Graziani F, Chappuis V, Molina A et al. Effectiveness and clinical performance of early implant placement for the replacement of single teeth in anterior areas: A systematic review. *J Clin Periodontol* 2019;46(Suppl 21): 242–256.
21. Chrcanovic, B. R., Albrektsson, T., & Wennerberg, A. (2015). Dental implants inserted in fresh extraction sockets versus healed sites: a systematic review and meta-analysis. *J Dent*, 43(1), 16-41. <https://doi.org/10.1016/j.jdent.2014.11.007>
22. Chen, S. T. and D. Buser (2009): "Clinical and esthetic outcomes of implants placed in postextraction sites." *Int J Oral Maxillofac Implants* 24 Suppl: 186-217.
23. Gamborena, I., Y. Sasaki and M. B. Blatz (2021): "Predictable immediate implant placement and restoration in the esthetic zone". *J Esthet Restor Dent* 33(1): 158-172.
24. Chrcanovic BR, Albrektsson T, Wennerberg A. Bone quality and quantity and dental implant failure: A systematic review and meta-analysis. *Int J Prosthodont* 2017;30(3): 219–237.

25. Nitsche T, Wiltfang JMM. S2k-Leitlinie „Indikationen zur implantologischen 3D Röntgendiagnostik und navigationsgestützten Implantologie“. AWMF-Reg.-Nr. 083-011, 2011.
26. Schulze R, Terheyden HHS et al.: S2k-Leitlinie „Dentale digitale Volumentomographie“. AWMF-Reg.-Nr. 083-005, 2013.
27. Raes F, Cosyn J, Crommelinck E et al.: Immediate and conventional single implant treatment in the anterior maxilla: 1-year results of a case series on hard and soft tissue response and aesthetics. J Clin Periodontol 2011;38(4): 385–394.
28. Iyer SS, Haribabu PK.: Minimizing alveolar bone loss during and after extractions (Part I) – Review of techniques: Atraumatic extraction, root retention. Alpha Omegan 2013;106(3–4): 67–72.
29. Zhuang J, Zhao D, Wu Y, Xu C.: Evaluation of outcomes of dental implants inserted by flapless or flapped procedure: A meta-analysis. Implant Dent 2018;27(5): 588–598.
30. Clementini M, Tiravia L, De Risi V et al.: Dimensional changes after immediate implant placement with or without simultaneous regenerative procedures: A systematic review and meta-analysis. J Clin Periodontol 2015;42(7): 666–677.

ZMK 2024; 40 (7-8) S. 434–436

Dr. Klaus-Dieter Bastendorf , Dr. Nadine Strafela-Bastendorf

Moderne systematische Prophylaxe-Protokolle

1. Ziebolz D: Zusammenhang zwischen Mund- und Allgemeinerkrankungen. Welche Zusammenhänge gibt es? Prophylaxe Journal 2018; 6: 6-15
2. Wolf H, Rateitschak-Erben E, Rateitschak K, Hrsg. Farbatlanten der Zahnmedizin - Parodontologie. 3. Auflage. Stuttgart: Thieme; 2012
3. Konsensuspapier Perio&Caries
European Federation of Peridontology (EFP) and European Organisation Caries Research (ORCA)
4. Eickholz,P:
Glossar der Grundbegriffe für die Praxis-Unterstützende Parodontistherapie, Teil 1: Ziele und Inhalte
Parodontologie 2020; 31:205-211
5. Schwendicke F:

Evidenz der professionellen Zahnreinigung

Der Freie Zahnarzt 2021;3: 62-64

6. Strafela-Bastendorf N, Bastendorf KD: PZR-neu gedacht. zm 2016; 106, Nr. 117A; 1: 26-32
7. Haas M, Koller M, Arefnia B: Rauheit und Substanzverlust von Zahnoberflächen nach Biofilmentfernung mit unterschiedlichen Bearbeitungsverfahren. DIEassistentin: 03-2018;22-27
8. Frankenhauser A: Semiquantitative plaque assessment after the application of two different tooth-polishing methods. A split mouth randomized controlled clinical trial. Dissertation Universität Krems 2020
9. Wennström JL, Tomasi C, Bertelle A, Dellasega E: Full mouth ultrasonic debridement versus quadrant scaling and root planing as an initial approach in the treatment of chronic periodontitis. J Clin Periodontol 2005; 32: 851-859.doi:10.1111/j.1600-051X.2005.00776.x.
10. Petersilka GJ, Steinmann D, Häberlein I, Heinecke A, Flemmig TF (2003b): Subgingival plaque removal in buccal and lingual sites using a novel low abrasive air-polishing powder. Journal of Clinical Periodontology 2003; 30: 328-333.
11. Petersilka GJ, Tunkel J, Barakos K, Heinecke A, Häberlein I, Flemmig TF (2003a): Subgingival plaque removal at interdental sites using a low abrasive air polishing powder. Journal of Periodontology 2003; 74: 307-311.
12. Müller N, Moene R, Jose AC, Mombelli A: Subgingival air-polishing with erythritol during periodontal maintenance. Randomized clinical trial of twelve months. J Clin Periodontol 2014; doi: 10.1111/jcpe.12289. J Clin Periodontol 2014 ; 41(9) : 883-9
13. Hägi T, Klemensberger S, Bereiter R, Nietzsche S, Cosgarea R, Flury S, Lussi A, Sculean A and Eick S: A Biofilm Pocket Model to evaluate different non-surgical periodontal treatment modalities in terms of Biofilm Removal and Reformation, Surface Alterations and Attachment of Periodontal Ligaments Fibroblasts, PLOS,ONE/DOI:10.1371/journal.pone.0131056,June29,2015
14. Hägi T, Klemensberger S, Bereiter R, Nietzsche S, Cosgarea R, Flury S, Lussi A, Sculean A and Eick S: A Biofilm Pocket Model to evaluate different non-surgical periodontal treatment modalities in terms of Biofilm Removal and Reformation, Surface Alterations and Attachment of Periodontal Ligaments Fibroblasts. PLOS, ONE/DOI: 10.1371/journal.pone. 0131056, June29,2015

15. Flemmig TF, Petersilka GJ, Mehl A, Rudiger S, Hickel R, Klaiber B: Working parameters of a sonic scaler influencing root substance removal in vitro. Clin Oral Investig 1997; 1: 55-60
16. Ritz L, Hefti AF, Rateitschak KH: An in vitro investigation on the loss of root substance in scaling with various instruments. J Clin Periodontol 1991; 18: 643-647
17. Rupf S, Brader I, Vonderlind D: In vitro, clinical and microbiological evaluation of a linear oscillating device for scaling and root planing. Journal of Periodontology 2005; 76:1942-1949
18. Bozbay E, Dominici F, Gokbuget AY, Cintan S, Guida L, Aydi MS, Mariotti A, Pilloni A: Preservation of root cementum: a comparative evaluation of power-driven versus hand instruments. Int J Dent Hygiene September 2016 DOI: 10.1111/idh.12249
19. Petersilka G, Heckel R, Koch R, Ehmke B, Arweiler N: Evaluation of an ex vivo porcine model to investigate the effect of low abrasive airpolishing. Clinical Oral Investigations: doi.org/10.1007/s00784-018-2536-5 June 2018
20. Barnes C, Covey D, Watanabe H, Simetich B, Schulte J, Chen H: An in Vitro Comparison of the Effects of Various Air Polishing Powders on Enamel and Selected Esthetic Restorative Material. J Clin Dent 2014; 25:76-87
21. Wennström JL, Dahlen G, Ramberg P: Subgingival debridement of periodontal pockets by air polishing in comparison with ultrasonic instrumentation during maintenance therapy. J Clin Periodontol 2011; 38: 820-827. doi:10.1111/j.1600-051X
22. Bühler J., Amato M., Weiger R., Walter C.: A systematic review on the patient perception of periodontal treatment using air polishing devices. Int J Dent Hygiene, November 2014. DOI:10.1111/idh.12119
23. Lalumandier J. Scott D, McPhee: Prevalence and Risk Factors of Hand Problems and Carpal Tunnel Syndrome among Dental Hygienists. The Journal of Dental Hygiene Volume 75, Issue II Spring 2001
24. Graetz C, Plaumann A, Rauschenbach S, Bielfeldt J, Dörfer CE, Schwendicke F: Removal of simulated biofilm: a preclinical ergonomic comparison of instruments and operators. Clin Oral Invest. DOI 10.1007/s00784-015-1605-2
25. Cianter M: Time to shift: From Scaling and Root Planing to Root Surface Debridement. Prim Dent J. 2014; 3: 38-42

