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**Thema:** Piezoelektrische Bone-Splitting-Technik mit simultaner Implantation im Unterkiefer

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### **Literatur:**

1. Adell R, Lekholm U, Grondahl K, Branemark PI, Lindstrom J, Jacobsson M (1990) Reconstruction of severely resorbed edentulous maxillae using osseointegrated fixtures in immediate autogenous bone grafts. *Int J Oral Maxillofac Implants* 5: 233-246.
2. Ainamo J, Bay I (1975) Problems and proposals for recording gingivitis and plaque. *Int Dent J* 25: 229-235.
3. Albrektsson T, Isidor F. Consensus report of session I. In: Lang NP, Karring T (eds). *Preceeds of the 1st European Workshop on Periodontology*. London: Quintessence Publinsing Co., Ltd, 1994: 365-369.
4. Araujo MG, Lindhe J (2005) Dimensional ridge alterations following tooth extraction. An experimental study in the dog. *J Clin Periodontol* 32: 212-218.
5. Araujo MG, Lindhe J (2009) Ridge alterations following tooth extraction with and without flap elevation: an experimental study in the dog. *Clin Oral Implants Res* 20: 545-549.
6. Atwood DA (1973) Reduction of residual ridges in the partially edentulous patient. *Dent Clin North Am* 17: 747-754.
7. Blus C, Szmukler-Moncler S (2006) Split-crest and immediate implant placement with ultra-sonic bone surgery: a 3-year life-table analysis with 230 treated sites. *Clin Oral Implants Res* 17: 700-707.
8. Blus C, Szmukler-Moncler S, Vozza I, Rispoli L, Polastri C (2010) Split-crest and immediate implant placement with ultrasonic bone surgery (piezosurgery): 3-year follow-up of 180 treated implant sites. *Quintessence Int* 41: 463-469.
9. Buser D, Dula K, Hess D, Hirt HP, Belser UC (1999) Localized ridge augmentation with autografts and barrier membranes. *Periodontol* 2000 19: 151-163.
10. Camargo PM, Lekovic V, Weinlaender M, Klokkevold PR, Kenney EB, Dimitrijevic B, Nedic M, Jancovic S, Orsini M (2000) Influence of bioactive glass on changes in alveolar process dimensions after exodontia. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 90: 581-586.
11. Cawood JI, Howell RA (1988) A classification of the edentulous jaws. *Int J Oral Maxillofac Surg* 17: 232-236.
12. Chiapasco M, Romeo E, Vogel G (2001) Vertical distraction osteogenesis of edentulous ridges for improvement of oral implant positioning: a clinical report of preliminary results. *Int J Oral Maxillofac Implants* 16: 43-51.
13. Dahlin C, Lekholm U, Becker W, Becker B, Higuchi K, Callens A, van Steenberghe D (1995) Treatment of fenestration and dehiscence bone defects around oral implants using the guided tissue regeneration technique: a prospective multicenter study. *Int J Oral Maxillofac Implants* 10: 312-318.
14. Danza M, Guidi R, Carinci F (2009) Comparison between implants inserted into piezo split and unsplit alveolar crests. *J Oral Maxillofac Surg* 67: 2460-2465.
15. de Wijs FL, Cune MS (1997) Immediate labial contour restoration for improved esthetics: a radiographic study on bone splitting in anterior single-tooth replacement. *Int J Oral Maxillofac Implants* 12: 686-696.

16. Di Alberti L, Donnini F, Di Alberti C, Camerino M (2010) A comparative study of bone densitometry during osseointegration: piezoelectric surgery versus rotary protocols. *Quintessence Int* 41: 639-644.
17. Engelke WG, Diederichs CG, Jacobs HG, Deckwer I (1997) Alveolar reconstruction with splitting osteotomy and microfixation of implants. *Int J Oral Maxillofac Implants* 12: 310-318
- 11.
18. Felice P, Pistilli R, Lizio G, Pellegrino G, Nisii A, Marchetti C (2009) Inlay versus onlay iliac bone grafting in atrophic posterior mandible: a prospective controlled clinical trial for the comparison of two techniques. *Clin Implant Dent Relat Res* 11 Suppl 1: e69-82.
19. Hammerle CH, Chiantella GC, Karring T, Lang NP (1998) The effect of a deproteinized bovine bone mineral on bone regeneration around titanium dental implants. *Clin Oral Implants Res* 9: 151-162.
20. Han JY, Shin SI, Herr Y, Kwon YH, Chung JH (2011) The effects of bone grafting material and a collagen membrane in the ridge splitting technique: an experimental study in dogs. *Clin Oral Implants Res* 22: 1391-1398.
21. Hermann JS, Buser D (1996) Guided bone regeneration for dental implants. *Curr Opin Periodontol* 3: 168-177.
22. Horton JE, Tarpley TM, Jr., Wood LD (1975) The healing of surgical defects in alveolar bone produced with ultrasonic instrumentation, chisel, and rotary bur. *Oral Surg Oral Med Oral Pathol* 39: 536-546.
23. Iasella JM, Greenwell H, Miller RL, Hill M, Drisko C, Bohra AA, Scheetz JP (2003) Ridge preservation with freeze-dried bone allograft and a collagen membrane compared to extraction alone for implant site development: a clinical and histologic study in humans. *J Periodontol* 74: 990-999.
24. Laurie SW, Kaban LB, Mulliken JB, Murray JE (1984) Donor-site morbidity after harvesting rib and iliac bone. *Plast Reconstr Surg* 73: 933-938.
25. Lekovic V, Camargo PM, Klokkevold PR, Weinlaender M, Kenney EB, Dimitrijevic B, Nedic M (1998) Preservation of alveolar bone in extraction sockets using bioabsorbable membranes. *J Periodontol* 69: 1044-1049.
26. Lekovic V, Kenney EB, Weinlaender M, Han T, Klokkevold P, Nedic M, Orsini M (1997) A bone regenerative approach to alveolar ridge maintenance following tooth extraction. Report of 10 cases. *J Periodontol* 68: 563-570.
27. Mellonig JT, Nevins M (1995) Guided bone regeneration of bone defects associated with implants: an evidence-based outcome assessment. *Int J Periodontics Restorative Dent* 15: 168-185.
28. Misch CM (1997) Comparison of intraoral donor sites for onlay grafting prior to implant placement. *Int J Oral Maxillofac Implants* 12: 767-776.
29. Nevins M, Langer B (1993) The successful application of osseointegrated implants to the posterior jaw: a long-term retrospective study. *Int J Oral Maxillofac Implants* 8: 428-432.
30. Nkenke E, Schultze-Mosgau S, Radespiel-Troger M, Kloss F, Neukam FW (2001) Morbidity of harvesting of chin grafts: a prospective study. *Clin Oral Implants Res* 12: 495-502.
31. O'Leary TJ, Drake RB, Naylor JE (1972) The plaque control record. *J Periodontol* 43:38
32. Pikos MA (1999) Block autografts for localized ridge augmentation: Part I. The posterior maxilla. *Implant Dent* 8: 279-285.
33. Pikos MA (2000) Block autografts for localized ridge augmentation: Part II. The posterior mandible. *Implant Dent* 9: 67-75.
34. Preti G, Martinasso G, Peirone B, Navone R, Manzella C, Muzio G, Russo C, Canuto RA, Schierano G (2007) Cytokines and growth factors involved in the osseointegration of oral titanium implants positioned using piezoelectric bone surgery versus a drill technique: a pilot study in minipigs. *J Periodontol* 78: 716-722.

35. Schropp L, Wenzel A, Kostopoulos L, Karring T (2003) Bone healing and soft tissue contour changes following single-tooth extraction: a clinical and radiographic 12-month prospective study. *Int J Periodontics Restorative Dent* 23:313-323
36. Scipioni A, Bruschi GB, Calesini G (1994) The edentulous ridge expansion technique: a five-year study. *Int J Periodontics Restorative Dent* 14: 451-459.
37. Scipioni A, Bruschi GB, Calesini G, Bruschi E, De Martino C (1999) Bone regeneration in the edentulous ridge expansion technique: histologic and ultrastructural study of 20 clinical cases. *Int J Periodontics Restorative Dent* 19: 269-277.
38. Sethi A, Kaus T (2000) Maxillary ridge expansion with simultaneous implant placement: 5-year results of an ongoing clinical study. *Int J Oral Maxillofac Implants* 15: 491-499.
39. Simion M, Misitano U, Gionso L, Salvato A (1997) Treatment of dehiscences and fenestrations around dental implants using resorbable and nonresorbable membranes associated with bone autografts: a comparative clinical study. *Int J Oral Maxillofac Implants* 12: 159-167.
40. Skouteris CA, Sotereanos GC (1989) Donor site morbidity following harvesting of autogenous rib grafts. *J Oral Maxillofac Surg* 47: 808-812.
41. Suh JJ, Shelemay A, Choi SH, Chai JK (2005) Alveolar ridge splitting: a new microsaw technique. *Int J Periodontics Restorative Dent* 25: 165-171.
42. Summers RB (1994) The osteotome technique: Part 2--The ridge expansion osteotomy (REO) procedure. *Compendium* 15:422, 424, 426, passim; quiz 436.
43. Takahashi T, Funaki K, Shintani H, Haruoka T (2004) Use of horizontal alveolar distraction osteogenesis for implant placement in a narrow alveolar ridge: a case report. *Int J Oral Maxillofac Implants* 19: 291-294.
44. Tatum H, Jr. (1986) Maxillary and sinus implant reconstructions. *Dent Clin North Am* 30: 207-229.
45. Urban IA, Nagursky H, Lozada JL (2011) Horizontal ridge augmentation with a resorbable membrane and particulated autogenous bone with or without anorganic bovine bone-derived mineral: a prospective case series in 22 patients. *Int J Oral Maxillofac Implants* 26: 404-414.
46. Vercellotti T (2000) Piezoelectric surgery in implantology: a case report--a new piezoelectric ridge expansion technique. *Int J Periodontics Restorative Dent* 20: 358-365.
47. Vercellotti T (ed). *Piezochirurgie in der Zahnmedizin*. Berlin: Quintessenz Verlags-GmbH, 2011.
48. Vercellotti T, Nevins ML, Kim DM, Nevins M, Wada K, Schenk RK, Fiorellini JP (2005) Osseous response following resective therapy with piezosurgery. *Int J Periodontics Restorative Dent* 25: 543-549.
49. von Arx T, Hardt N, Wallkamm B (1996) The TIME technique: a new method for localized alveolar ridge augmentation prior to placement of dental implants. *Int J Oral Maxillofac Implants* 11: 387-394.
50. von Arx T, Kurt B (1999) Implant placement and simultaneous ridge augmentation using autogenous bone and a micro titanium mesh: a prospective clinical study with 20 implants. *Clin Oral Implants Res* 10: 24-33.
51. Young VL, Schuster RH, Harris LW (1990) Intracerebral hematoma complicating split calvarial bone-graft harvesting. *Plast Reconstr Surg* 86: 763-765.