

## REFERENCES

1. Att W, Bernhart J, Strub JR. Fixed rehabilitation of the edentulous maxilla: possibilities and clinical outcome. *J Oral Maxillofac Surg* 2009; 67:60–73.
2. Att W, Stappert C. Implant therapy to improve quality of life. *Quintessence Int* 2003; 34:573–581.
3. Guckes AD, Scurria MS, Shugars DA. A conceptual framework for understanding outcomes of oral implant therapy. *J Prosthet Dent* 1996; 75:633–639.
4. Bergendal T, Engquist B. Implant-supported overdentures: a longitudinal prospective study. *Int J Oral Maxillofac Implants* 1998; 13:253–262.
5. Engquist B, Bergendal T, Kallus T, Linden U. A retrospective multicenter evaluation of osseointegrated implants supporting overdentures. *Int J Oral Maxillofac Implants* 1988; 3:129–134.
6. Del Fabbro M, Testori T, Francetti L, Weinstein R. Systematic review of survival rates for implants placed in the grafted maxillary sinus. *Int J Periodontics Restorative Dent* 2004; 24:565–577.
7. Del Fabbro M, Bellini CM, Romeo D, Francetti L. Tilted implants for the rehabilitation of edentulous jaws: a systematic review. *Clin Implant Dent Relat Res* 2012; 14:612–621.
8. Maló P, Rangert B, Nobre M. “All-on-Four” immediate-function concept with Branemark System implants for completely edentulous mandibles: a retrospective clinical study. *Clin Implant Dent Relat Res* 2003; 5 (Suppl 1):2–9.
9. Branemark PI, Hansson BO, Adell R, et al. Osseointegrated implants in the treatment of the edentulous jaw. Experience from a 10-year period. *Scand J Plast Reconstr Surg Suppl* 1977; 16:1–132.
10. Bevilacqua M, Tealdo T, Menini M, et al. The influence of cantilever length and implant inclination on stress distribution in maxillary implant-supported fixed dentures. *J Prosthet Dent* 2011; 105:5–13.
11. Krekmanov L, Kahn M, Rangert B, Lindstrom H. Tilting of posterior mandibular and maxillary implants for improved prosthesis support. *Int J Oral Maxillofac Implants* 2000; 15:405–414.
12. NobelBiocare. Nobel\_All-on-4\_Brochure\_2010.1\_GB. *Manufactures Manual Goeteburg*, 2010.
13. Agliardi E, Clerico M, Ciancio P, Massironi D. Immediate loading of full-arch fixed prostheses supported by axial and tilted implants for the treatment of edentulous atrophic mandibles. *Quintessence Int* 2010; 41:285–293.
14. Agliardi E, Panigatti S, Clerico M, Villa C, Maló P. Immediate rehabilitation of the edentulous jaws with full fixed prostheses supported by four implants: interim results of a single cohort prospective study. *Clin Oral Implants Res* 2010; 21:459–465.
15. Capelli M, Zuffetti F, Del Fabbro M, Testori T. Immediate rehabilitation of the completely edentulous jaw with fixed prostheses supported by either upright or tilted implants: a multicenter clinical study. *Int J Oral Maxillofac Implants* 2007; 22:639–644.
16. Crespi R, Vinci R, Cappare P, Romanos GE, Gherlone E. A clinical study of edentulous patients rehabilitated according to the “all on four” immediate function protocol. *Int J Oral Maxillofac Implants* 2012; 27:428–434.
17. Francetti L, Agliardi E, Testori T, Romeo D, Taschieri S, Del Fabbro M. Immediate rehabilitation of the mandible with fixed full prosthesis supported by axial and tilted implants: interim results of a single cohort prospective study. *Clin Implant Dent Relat Res* 2008; 10:255–263.
18. Francetti L, Romeo D, Corbella S, Taschieri S, Del Fabbro M. Bone level changes around axial and tilted implants in full-arch fixed immediate restorations. Interim results of a prospective study. *Clin Implant Dent Relat Res* 2012; 14:646–654.

19. Weinstein R, Agliardi E, Fabbro MD, Romeo D, Francetti L. Immediate rehabilitation of the extremely atrophic mandible with fixed full-prosthesis supported by four implants. *Clin Implant Dent Relat Res* 2012; 14:434–441.
20. Maló P, de Araujo Nobre M, Lopes A. The use of computer-guided flapless implant surgery and four implants placed in immediate function to support a fixed denture: preliminary results after a mean follow-up period of thirteen months. *J Prosthet Dent* 2007; 97:S26–S34.
21. Maló P, de Araujo Nobre M, Lopes A, Francischone C, Rigolizzo M. “All-on-4” immediate-function concept for completely edentulous maxillae: a clinical report on the medium (3 years) and long-term (5 years) outcomes. *Clin Implant Dent Relat Res* 2012; 14 (Suppl 1):e139–e150.
22. Maló P, de Araujo Nobre M, Lopes A, Moss SM, Molina GJ. A longitudinal study of the survival of All-on-4 implants in the mandible with up to 10 years of follow-up. *J Am Dent Assoc* 2011; 142:310–320.
23. Maló P, Rangert B, Nobre M. All-on-4 immediate-function concept with Branemark System implants for completely edentulous maxillae: a 1-year retrospective clinical study. *Clin Implant Dent Relat Res* 2005; 7 (Suppl 1):S88–S94.
24. Babbush CA, Kutsko GT, Brokloff J. The all-on-four immediate function treatment concept with NobelActive implants: a retrospective study. *J Oral Implantol* 2011; 37: 431–445.
25. Butura CC, Galindo DF, Jensen OT. Mandibular all-on-four therapy using angled implants: a three-year clinical study of 857 implants in 219 jaws. *Oral Maxillofac Surg Clin North Am* 2011; 23:289–300.
26. Galindo DF, Butura CC. Immediately loaded mandibular fixed implant prostheses using the all-on-four protocol: a report of 183 consecutively treated patients with 1 year of function in definitive prostheses. *Int J Oral Maxillofac Implants* 2012; 27:628–633.
27. Landazuri-Del Barrio RA, Cosyn J, De Paula WN, De Bruyn H, Marcantonio E Jr. A prospective study on implants installed with flapless-guided surgery using the all-on-four concept in the mandible. *Clin Oral Implants Res* 2013; 24:428–433.
28. Hinze M, Thalmair T, Bolz W, Wachtel H. Immediate loading of fixed provisional prostheses using four implants for the rehabilitation of the edentulous arch: a prospective clinical study. *Int J Oral Maxillofac Implants* 2010; 25:1011–1018.
29. Albrektsson T, Buser D, Sennerby L. On crestal/marginal bone loss around dental implants. *Int J Oral Maxillofac Implants* 2012; 27:736–738.
30. Esposito M, Grusovin MG, Achille H, Coulthard P, Worthington HV. Interventions for replacing missing teeth: different times for loading dental implants. *Cochrane Database Syst Rev* 2009; (1)CD003878.
31. Cannizzaro G, Felice P, Giorgi A, et al. Immediate loading of 2 (all-on-2) flapless-placed mandibular implants supporting cross-arch fixed prostheses: interim data from a 1-year follow-up prospective single cohort study. *Eur J Oral Implantol* 2012; 5:49–58.
32. Heydecke G, Zwahlen M, Nicol A, et al. What is the optimal number of implants for fixed reconstructions: a systematic review. *Clin Oral Implants Res* 2012; 23 (Suppl 6):217–228.
33. Menini M, Signori A, Tealdo T, et al. Tilted implants in the immediate loading rehabilitation of the maxilla: a systematic review. *J Dent Res* 2012; 91:821–827.
34. Hammerle CH, Bragger U, Burgin W, Lang NP. The effect of subcrestal placement of the polished surface of ITI implants on marginal soft and hard tissues. *Clin Oral Implants Res* 1996; 7:111–119.
35. Adell R, Lekholm U, Rockler B, Branemark PI. A 15-year study of osseointegrated implants in the treatment of the edentulous jaw. *Int J Oral Surg* 1981; 10:387–416.
36. Mombelli A, Muller N, Cionca N. The epidemiology of peri-implantitis. *Clin Oral Implants Res* 2012; 23 (Suppl 6): 67–76.
37. Chaytor DV. Clinical criteria for determining implant success: bone. *Int J Prosthodont* 1993; 6:145–152.
38. Albrektsson T, Zarb GA. Current interpretations of the osseointegrated response: clinical significance. *Int J Prosthodont* 1993; 6:95–105.
39. Zarb GA, Albrektsson T. Consensus report: towards optimized treatment outcomes for dental implants. *J Prosthet Dent* 1998; 80:641.
40. Harrison JW, Svec TA. The hopeless tooth: when is treatment futile? *Quintessence Int* 1999; 30:846–850.
41. Iqbal MK, Kim S. A review of factors influencing treatment planning decisions of single-tooth implants versus preserving natural teeth with nonsurgical endodontic therapy. *J Endod* 2008; 34:519–529.
42. Mordohai N, Reshad M, Jivraj S, Chee W. Factors that affect individual tooth prognosis and choices in contemporary treatment planning. *Br Dent J* 2007; 202:63–72.
43. Mordohai N, Reshad M, Jivraj SA. To extract or not to extract? Factors that affect individual tooth prognosis. *J Calif Dent Assoc* 2005; 33:319–328.
44. Samet N, Jotkowitz A. Classification and prognosis evaluation of individual teeth – a comprehensive approach. *Quintessence Int* 2009; 40:377–387.
45. Agliardi EL, Francetti L, Romeo D, Del Fabbro M. Immediate rehabilitation of the edentulous maxilla: preliminary results of a single-cohort prospective study. *Int J Oral Maxillofac Implants* 2009; 24:887–895.
46. Jensen OT, Adams MW. All-on-4 treatment of highly atrophic mandible with mandibular V-4: report of 2 cases. *J Oral Maxillofac Surg* 2009; 67:1503–1509.
47. Aparicio C, Perales P, Rangert B. Tilted implants as an alternative to maxillary sinus grafting: a clinical, radiologic,

- and periosteal study. *Clin Implant Dent Relat Res* 2001; 3: 39–49.
48. Jensen OT, Adams MW, Cottam JR, Parel SM, Phillips WR 3rd. The All-on-4 shelf: maxilla. *J Oral Maxillofac Surg* 2010; 68:2520–2527.
  49. Ata-Ali J, Penarrocha-Oltra D, Candel-Marti ME, Penarrocha-Diago MA. Oral rehabilitation with tilted dental implants: a metaanalysis. *Med Oral Patol Oral Cir Bucal* 2012; 17:e582–e587.
  50. Jensen OT, Adams MW, Cottam JR, Parel SM, Phillips WR 3rd. The all on 4 shelf: mandible. *J Oral Maxillofac Surg* 2011; 69:175–181.
  51. Balmer S, Mericske-Stern R. [Implant-supported bridges in the edentulous jaw. Clinical aspects of a simple treatment concept]. *Schweiz Monatsschr Zahnmed* 2006; 116:728–739.
  52. Jensen OT, Cottam J, Ringeman J, Adams M. Trans-sinus dental implants, bone morphogenetic protein 2, and immediate function for all-on-4 treatment of severe maxillary atrophy. *J Oral Maxillofac Surg* 2012; 70:141–148.
  53. Bedrossian E. Rescue implant concept: the expanded use of the zygoma implant in the graftless solutions. *Oral Maxillofac Surg Clin North Am* 2011; 23:257–276, vi.
  54. Khatami AH, Smith CR. “All-on-Four” immediate function concept and clinical report of treatment of an edentulous mandible with a fixed complete denture and milled titanium framework. *J Prosthodont* 2008; 17:47–51.
  55. Bedrossian E. Rescue implant concept: the expanded use of the zygoma implant in the graftless solutions. *Dent Clin North Am* 2011; 55:745–777.
  56. Butura CC, Galindo DF, Cottam J, Adams M, Jensen O. Hourglass mandibular anatomic variant incidence and treatment considerations for all-on-four implant therapy: report of 10 cases. *J Oral Maxillofac Surg* 2011; 69:2135–2143.
  57. Cannizzaro G, Felice P, Soardi E, Ferri V, Leone M, Esposito M. Immediate loading of 2 (all-on-2) versus 4 (all-on-4) implants placed with a flapless technique supporting mandibular cross-arch fixed prostheses: preliminary results from a pilot randomised controlled trial. *Eur J Oral Implantol* 2011; 4:205–217.
  58. Orentlicher G, Abboud M. Computed tomography-guided surgery and all on four. *J Oral Maxillofac Surg* 2011; 69:2947.
  59. Degidi M, Nardi D, Piattelli A. Immediate loading of the edentulous maxilla with a definitive restoration supported by an intraorally welded titanium bar and tilted implants. *Int J Oral Maxillofac Implants* 2010; 25:1175–1182.
  60. Oyama K, Kan JY, Kleinman AS, Runcharassaeng K, Lozada JL, Goodacre CJ. Misfit of implant fixed complete denture following computer-guided surgery. *Int J Oral Maxillofac Implants* 2009; 24:124–130.
  61. Penarrocha M, Carrillo C, Boronat A. Maximum use of the anterior maxillary buttress in severe maxillary atrophy with tilted, palatally positioned implants: a preliminary study. *Int J Oral Maxillofac Implants* 2010; 25:813–820.
  62. Di P, Lin Y, Li JH, Qiu LX, Chen B, Cui HY. [Clinical study of “All-on-4” implant immediate function in edentulous patients]. *Zhonghua Kou Qiang Yi Xue Za Zhi* 2010; 45: 357–362.
  63. Penarrocha M, Vina JA, Carrillo C, Penarrocha D. Rehabilitation of reabsorbed maxillae with implants in buttresses in patients with combination syndrome. *J Oral Maxillofac Surg* 2012; 70:e322–e330.
  64. Ferreira EJ, Kuabara MR, Gulinelli JL. “All-on-four” concept and immediate loading for simultaneous rehabilitation of the atrophic maxilla and mandible with conventional and zygomatic implants. *Br J Oral Maxillofac Surg* 2010; 48:218–220.
  65. Penarrocha-Oltra D, Candel-Marti E, Ata-Ali J, Penarrocha M. Rehabilitation of the atrophic maxilla with tilted implants: review of the literature. *J Oral Implantol*. In press.
  66. Graves S, Mahler BA, Javid B, Armellini D, Jensen OT. Maxillary all-on-four therapy using angled implants: a 16-month clinical study of 1110 implants in 276 jaws. *Dent Clin North Am* 2011; 55:779–794.
  67. Pomares C. A retrospective study of edentulous patients rehabilitated according to the “all-on-four” or the “all-on-six” immediate function concept using flapless computer-guided implant surgery. *Eur J Oral Implantol* 2010; 3:155–163.
  68. Graves S, Mahler BA, Javid B, Armellini D, Jensen OT. Maxillary all-on-four therapy using angled implants: a 16-month clinical study of 1110 implants in 276 jaws. *Oral Maxillofac Surg Clin North Am* 2011; 23:277–287, vi.
  69. Rosen A, Gynther G. Implant treatment without bone grafting in edentulous severely resorbed maxillas: a long-term follow-up study. *J Oral Maxillofac Surg* 2007; 65:1010–1016.
  70. Jensen O, Cottam J, Adams M, Adams S. Buccal to lingual transalveolar implant placement for all on four immediate function in posterior mandible: report of 10 cases. *J Oral Maxillofac Surg* 2011; 69:1919–1922.
  71. Wu YQ, Huang W, Zhang ZY, Wang XD, Wang F, Wang S. [Tilted implants treatment without maxillary sinus grafting in severely resorbed posterior maxilla]. *Shanghai Kou Qiang Yi Xue* 2011; 20:506–511.
  72. Arvidson K, Bystedt H, Frykholm A, von Konow L, Lothigius E. A 3-year clinical study of Astra dental implants in the treatment of edentulous mandibles. *Int J Oral Maxillofac Implants* 1992; 7:321–329.
  73. Parel SM, Phillips WR. A risk assessment treatment planning protocol for the four implant immediately loaded maxilla: preliminary findings. *J Prosthet Dent* 2011; 106: 359–366.
  74. Arvidson K, Esselin O, Felle-Persson E, Jonsson G, Smedberg JI, Soderstrom U. Early loading of mandibular

- full-arch bridges screw retained after 1 week to four to five Monotype implants: 3-year results from a prospective multicentre study. *Clin Oral Implants Res* 2008; 19:693–703.
75. Penarrocha-Oltra D, Penarrocha-Diago M, Balaguer-Martinez J, Ata-Ali J. Full-arch fixed prosthesis supported by four implants in patients with recessive dystrophic epidermolysis bullosa. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2011; 112:e4–10.
  76. Astrand P, Almfeldt I, Brunell G, Hamp SE, Hellem S, Karlsson U. Non-submerged implants in the treatment of the edentulous lower jaw. A 2-year longitudinal study. *Clin Oral Implants Res* 1996; 7:337–344.
  77. Pieri F, Aldini NN, Fini M, Corinaldesi G. Immediate occlusal loading of immediately placed implants supporting fixed restorations in completely edentulous arches: a 1-year prospective pilot study. *J Periodontol* 2009; 80:411–421.
  78. Eccellente T, Piombino M, Piattelli A, D'Alimonte E, Perrotti V, Iezzi G. Immediate loading of dental implants in the edentulous maxilla. *Quintessence Int* 2011; 42:281–289.
  79. Pomares C. A retrospective clinical study of edentulous patients rehabilitated according to the “all on four” or the “all on six” immediate function concept. *Eur J Oral Implantol* 2009; 2:55–60.
  80. Ekelund JA, Lindquist LW, Carlsson GE, Jemt T. Implant treatment in the edentulous mandible: a prospective study on Branemark system implants over more than 20 years. *Int J Prosthodont* 2003; 16:602–608.
  81. Friberg B, Jemt T. Rehabilitation of edentulous mandibles by means of four TiUnite implants after one-stage surgery: a 1-year retrospective study of 75 patients. *Clin Implant Dent Relat Res* 2010; 12 (Suppl 1):e56–e62.
  82. Romanos GE, May S, May D. Treatment concept of the edentulous mandible with prefabricated telescopic abutments and immediate functional loading. *Int J Oral Maxillofac Implants* 2011; 26:593–597.
  83. Heschl A, Payer M, Platzer S, Wegscheider W, Pertl C, Lorenzoni M. Immediate rehabilitation of the edentulous mandible with screw type implants: results after up to 10 years of clinical function. *Clin Oral Implants Res* 2012; 23:1217–1223.
  84. Wolfinger GJ, Balshi TJ, Rangert B. Immediate functional loading of Branemark system implants in edentulous mandibles: clinical report of the results of developmental and simplified protocols. *Int J Oral Maxillofac Implants* 2003; 18:250–257.
  85. Li W, Chow J, Hui E, Lee PK, Chow R. Retrospective study on immediate functional loading of edentulous maxillas and mandibles with 690 implants, up to 71 months of follow-up. *J Oral Maxillofac Surg* 2009; 67:2653–2662.
  86. Butura CC, Galindo DF, Jensen OT. Mandibular all-on-four therapy using angled implants: a three-year clinical study of 857 implants in 219 jaws. *Dent Clin North Am* 2011; 55: 795–811.