

## **Anterior and posterior placement – Astra Tech Implant System™ for all indications**

Numerous studies have shown excellent clinical outcome with Astra Tech implants placed in different indications in the anterior maxilla or mandible. Minimal marginal bone loss, good long-term esthetics, and survival rates close to 100% have been reported for single tooth restorations<sup>1-7</sup>, fixed partial dentures<sup>8</sup>, and full arch rehabilitation with 4 to 6 implants placed in the interforaminal area in the mandible<sup>9,10</sup>. Additionally, good clinical results have been shown in immediate loading situations<sup>2,5,10,11</sup>, and in implant sites subjected to augmentation procedures<sup>12</sup>.

Less known, but extensively proven in the scientific literature, is the excellent short- and long-term clinical results of Astra Tech implants when used in posterior locations. Generally, implant placement in the posterior area is considered more challenging. Resorption of the ridge in combination with a large maxillary sinus cavity in the maxilla, or an interfering inferior alveolar nerve in the mandible could lead to more demanding situations with a limited bone height. Moreover, the posterior maxillary bone is often of softer quality, with thin cortical layers and large cancellous structures.

Despite the more challenging conditions in posterior regions, several studies report good results for Astra Tech implants placed in different indications, such as single tooth restorations<sup>13-17</sup>, fixed partial dentures<sup>18-29</sup> using both conventional and early loading protocols<sup>23-25</sup>, in atrophied mandibles close to the nerve<sup>22</sup>, in periodontally compromised dentitions<sup>30-32</sup>, and associated with sinus lift procedures<sup>26,31-42</sup>. More unconventional treatment solutions, such as the use of two implants to restore one molar<sup>43</sup>, and posterior implants linked to natural teeth<sup>44</sup>, have also proven to be successful treatment options.

In addition, a number of studies show similar good results for Astra Tech implants whether placed in anterior or posterior locations. The results reflect different indications, such as single teeth<sup>45-48</sup>, full arch rehabilitation<sup>49-51</sup> partial cases<sup>20,47,52-58</sup>, in augmentation situations<sup>49</sup>, and in periodontally compromised dentitions<sup>55</sup>.

1. Cooper LE, Ellner S, Moriarty J, Felton DA, Paquette D, Molina A, et al. Three-year evaluation of single-tooth implants restored 3 weeks after 1-stage surgery. *Int J Oral Maxillofac Implants* 2007;22(5):791-800. (ID No. 78988) [Abstract in PubMed](#)
2. De Kok IJ, Chang SS, Moriarty JD, Cooper LE. A retrospective analysis of peri-implant tissue responses at immediate load/provisionalized microthreaded implants. *Int J Oral Maxillofac Implants* 2006;21(3):405-12. (ID No. 78727) [Abstract in PubMed](#)
3. Gotfredsen K. A 5-year prospective study of single-tooth replacements supported by the Astra Tech implant: a pilot study. *Clin Impl Dent Rel Res* 2004;6(1):1-8. (ID No. 78273) [Abstract in PubMed](#)
4. Norton MR. Biologic and mechanical stability of single-tooth implants: 4- to 7-year follow-up. *Clin Impl Dent Rel Res* 2001;3(4):214-20. [Abstract in PubMed](#)
5. Norton MR. A short-term clinical evaluation of immediately restored maxillary TiOblast single-tooth implants. *Int J Oral Maxillofac Implants* 2004;19(2):274-81. (ID No. 78173) [Abstract in PubMed](#)
6. Palmer RM, Palmer PJ, Smith BJ. A 5-year prospective study of Astra single tooth implants. *Clin Oral Implants Res* 2000;11(2):179-82. (ID No. 75352) [Abstract in PubMed](#)
7. Gotfredsen K. A 10-year prospective study of single tooth implants placed in the anterior maxilla. *Clin Impl Dent Rel Res* 2009;E-pub Aug 6, DOI: 10.1111/j.1708-8208.2009.00231.x. [Abstract in PubMed](#)
8. Murphy WM, Absi EG, Gregory MC, Williams KR. A prospective 5-year study of two cast framework alloys for fixed implant-supported mandibular prostheses. *Int J Prosthodont* 2002;15(2):133-8. [Abstract in PubMed](#)
9. Collaert B, De Bruyn H. Early loading of four or five Astra Tech fixtures with a fixed cross-arch restoration in the mandible. *Clin Impl Dent Rel Res* 2002;4(3):133-5. (ID No. 78384) [Abstract in PubMed](#)
10. Cooper LE, Rahman A, Moriarty J, Chaffee N, Sacco D. Immediate mandibular rehabilitation with endosseous implants: simultaneous extraction, implant placement, and loading. *Int J Oral Maxillofac Implants* 2002;17(4):517-25. (ID No. 78110) [Abstract in PubMed](#)
11. Colomina LE. Immediate loading of implant-fixed mandibular prostheses: a prospective 18-month follow-up clinical study—preliminary report. *Implant Dent* 2001;10(1):23-9. [Abstract in PubMed](#)
12. Kahnberg KE, Vannas-Löfqvist L. Maxillary osteotomy with an interpositional bone graft and implants for reconstruction of the severely resorbed maxilla: a clinical report. *Int J Oral Maxillofac Implants* 2005;20(6):938-45. (ID No. 78774) [Abstract in PubMed](#)
13. Norton MR. Multiple single-tooth implant restorations in the posterior jaws: maintenance of marginal bone levels with reference to the implant-abutment microgap. *Int J Oral Maxillofac Implants* 2006;21(5):777-84. (ID No. 78773) [Abstract in PubMed](#)
14. Donati M, La Scala V, Billi M, Di Dino B, Torrisi P, Berglundh T. Immediate functional loading of implants in single tooth replacement: a prospective clinical multicenter study. *Clin Oral Implants Res* 2008;19:740-48. (ID No. 79065) [Abstract in PubMed](#)
15. Lee DW, Huh JK, Park KH, Chai JK, Kim CK, Moon IS. Comparison of interproximal soft tissue height for single implants and contra-lateral natural teeth. *Clin Oral Implants Res* 2009;20(12):1320-25. [Abstract in PubMed](#)
16. Kwon HJ, Lee DW, Park KH, Kim CK, Moon IS. Influence of the tooth- and implant-side marginal bone level on the interproximal papilla dimension in a single implant with a microthread, conical seal, and platform-switched design. *J Periodontol* 2009;80(9):1541-7. [Abstract in PubMed](#)
17. Kim TH, Lee DW, Kim CK, Park KH, Moon IS. Influence of early cover screw exposure on crestal bone loss around implants: intraindividual comparison of bone level at exposed and non-exposed implants. *J Periodontol* 2009;80(6):933-9. [Abstract in PubMed](#)
18. Cecchinato D, Bengazi F, Blasi G, Botticelli D, Cardarelli I, Gualini F. Bone level alterations at implants placed in the posterior segments of the dentition: outcome of submerged/non-submerged healing. A 5-year multicenter, randomized, controlled clinical trial. *Clin Oral Implants Res* 2008;19(4):429-31. [Abstract in PubMed](#)
19. Cecchinato D, Olsson C, Lindhe J. Submerged or non-submerged healing of endosseous implants to be used in the rehabilitation of partially dentate patients. *J Clin Periodontol* 2004;31(4):299-308. (ID No. 78302) [Abstract in PubMed](#)
20. Lee DW, Choi YS, Park KH, Kim CS, Moon IS. Effect of microthread on the maintenance of marginal bone level: a 3-year prospective study. *Clin Oral Implants Res* 2007;18(4):465-70. (ID No. 78930) [Abstract in PubMed](#)
21. Nordin T, Jonsson G, Nelvig P, Rasmusson L. The use of a conical fixture design for fixed partial prostheses. A preliminary report. *Clin Oral Implants Res* 1998;9(5):343-7. (ID No. 75052) [Abstract in PubMed](#)
22. Pinholt EM. Surface engineered dental implant insertion in conjunction with bilateral inferior mandibular nerve transposition - a case report. *Appl Osseointegration Res* 2006;5:59-61. (ID No. 78448-USX)
23. Schliephake H, Hüls A, Müller M. Early loading of surface modified titanium implants in the posterior mandible - preliminary results. *Appl Osseointegration Res* 2006;5:56-58. (ID No. 78448-USX)
24. Stanford C, Johnson G, Fakhry A, Gartton D, Mellonig J, Wagner W. Outcomes of a fluoride modified implant one year after loading in the posterior-maxilla when placed with the osteotome surgical technique. *Appl Osseointegration Res* 2006;5:50-55. (ID No. 78448-USX)
25. Stanford C, Johnson G, Fakhry A, Aquilino S, Gratten D, Reinke M, et al. Three year post-loading outcomes with MicroThread OsseoSpeed dental implants placed in the posterior-maxilla. *Appl Osseointegration Res* 2008;7:49-57. (ID No. 79173)
26. Ueda M, Yamada Y, Ozawa R, Okazaki Y. Clinical case reports of injectable tissue-engineered bone for alveolar augmentation with simultaneous implant placement. *Int J Periodontics Rest Dent* 2005;25(2):129-37. [Abstract in PubMed](#)
27. Warren P, Chaffee N, Felton DA, Cooper LE. A retrospective radiographic analysis of bone loss following placement of TiO<sub>2</sub> grit-blasted implants in the posterior maxilla and mandible. *Int J Oral Maxillofac Implants* 2002;17(3):399-404. [Abstract in PubMed](#)
28. Wennström J, Zurdo J, Karlsson S, Ekestubbe A, Gröndahl K, Lindhe J. Bone level change at implant-supported fixed partial dentures with and without cantilever extension after 5 years in function. *J Clin Periodontol* 2004;31(12):1077-83. (ID No. 78276) [Abstract in PubMed](#)
29. Van Assche N, Collaert B, Coucke W, Quirynen M. Correlation between early perforation of cover screws and marginal bone loss: a retrospective study. *J Clin Periodontol* 2008;35(1):76-9. [Abstract in PubMed](#)
30. Ellegaard B, Baelum V, Karring T. Implant therapy in periodontally compromised patients. *Clin Oral Implants Res* 1997;8(3):180-8. (ID No. 75060) [Abstract in PubMed](#)
31. Ellegaard B, Baelum V, Kolsen-Petersen J. Non-grafted sinus implants in periodontally compromised patients: a time-to-event analysis. *Clin Oral Implants Res* 2006;17(2):156-64. [Abstract in PubMed](#)
32. Ellegaard B, Kolsen-Petersen J, Baelum V. Implant therapy involving maxillary sinus lift in periodontally compromised patients. *Clin Oral Implants Res* 1997;8(4):305-15. [Abstract in PubMed](#)
33. Becktor JP, Hallström H, Isaksson S, Sennerby L. The use of particulate bone grafts from the mandible for maxillary sinus floor augmentation before placement of surface-modified implants: results from bone grafting to delivery of the final fixed prosthesis. *J Oral Maxillofac Surg* 2008;66(4):780-6. [Abstract in PubMed](#)
34. Diss A, Dohan DM, Mouhyi J, Mahler P. Osteotome sinus floor elevation using Choukroun's platelet-rich fibrin as grafting material: a 1-year prospective pilot study with microthreaded implants. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2008;105(5):572-9. [Abstract in PubMed](#)
35. Fermergård R, Åstrand P. Osteotome sinus floor elevation and simultaneous placement of implants—a 1-year retrospective study with Astra Tech implants. *Clin Impl Dent Rel Res* 2008;10(1):62-9. [Abstract in PubMed](#)
36. Galindo-Moreno P, Avila G, Fernandez-Barbero JE, Aguilar M, Sanchez-Fernandez E, Cutando A, et al. Evaluation of sinus floor elevation using a composite bone graft mixture. *Clin Oral Implants Res* 2007;18(3):376-82. [Abstract in PubMed](#)
37. Thor A, Sennerby L, Hirsch JM, Rasmusson L. Bone formation at the maxillary sinus floor following simultaneous elevation of the mucosal lining and implant installation without graft material: an evaluation of 20 patients treated with 44 Astra Tech implants. *J Oral Maxillofac Surg* 2007;65(7 Suppl 1):64-72. (ID No. 78929) [Abstract in PubMed](#)
38. Galindo-Moreno P, Avila G, Fernandez-Barbero JE, Mesa F, O'Valle-Ravassa F, Wang HL. Clinical and histologic comparison of two different composite grafts for sinus augmentation: a pilot clinical trial. *Clin Oral Implants Res* 2008;19(8):755-59. [Abstract in PubMed](#)
39. Kahnberg KE, Vannas-Löfqvist L. Sinus lift procedure using a 2-stage surgical technique: I. Clinical and radiographic report up to 5 years. *Int J Oral Maxillofac Implants* 2008;23(5):876-84. [Abstract in PubMed](#)
40. Trombelli L, Minenna P, Franceschetti G, Minenna L, Farina R. Transcrestal sinus floor elevation with a minimally invasive technique. *J Periodontol* 2010;81(1):158-66. [Abstract in PubMed](#)
41. Kahnberg KE, Wallstrom M, Rasmusson L. Local sinus lift for single-tooth implant. I. Clinical and radiographic follow-up. *Clin Impl Dent Rel Res* 2009;E-pub Sep 9, DOI: 10.1111/j.1708-8208.2009.00201.x. [Abstract in PubMed](#)
42. Fermergård R, Åstrand P. Osteotome sinus floor elevation without bone grafts - a 3-year retrospective study with Astra Tech implants. *Clin Impl Dent Rel Res* 2009;E-pub Nov 10, DOI:10.1111/j.1708-8208.2009.00254.x. [Abstract in PubMed](#)
43. Makkonen TA, Holmberg S, Niemi L, Olsson C, Tammisalo T, Peltola J. A 5-year prospective clinical study of Astra Tech dental implants supporting fixed bridges or overdentures in the edentulous mandible. *Clin Oral Implants Res* 1997;8(6):469-75. (ID No. 75181) [Abstract in PubMed](#)
44. Palmer RM, Howe LC, Palmer PJ. A prospective 3-year study of fixed bridges linking Astra Tech ST implants to natural teeth. *Clin Oral Implants Res* 2005;16(3):302-7. (ID No. 78300) [Abstract in PubMed](#)
45. Norton MR. The Astra Tech single-tooth implant system: a report on 27 consecutively placed and restored implants. *Int J Periodontics Rest Dent* 1997;17(6):575-83.
46. Norton MR. Marginal bone levels at single tooth implants with a conical fixture design. The influence of surface macro- and microstructure. *Clin Oral Implants Res* 1998;9(2):91-9. [Abstract in PubMed](#)
47. Steveling H, Roos J, Rasmusson L. Maxillary implants loaded at 3 months after insertion: results with Astra Tech implants after up to 5 years. *Clin Impl Dent Rel Res* 2001;3(3):120-4. (ID No. 75414) [Abstract in PubMed](#)
48. Wennström JL, Ekestubbe A, Gröndahl K, Karlsson S, Lindhe J. Implant-supported single-tooth restorations: a 5-year prospective study. *J Clin Periodontol* 2005;32(6):567-74. (ID No. 78476) [Abstract in PubMed](#)
49. Thor A, Wannfors K, Sennerby L, Rasmusson L. Reconstruction of the severely resorbed maxilla with autogenous bone, platelet-rich plasma, and implants: 1-year results of a controlled prospective 5-year study. *Clin Impl Dent Rel Res* 2005;7(4):209-20. (ID No. 79032) [Abstract in PubMed](#)
50. Weibrich G, Buch RS, Wegener J, Wagner W. Five-year prospective follow-up report of the Astra tech standard dental implant in clinical treatment. *Int J Oral Maxillofac Implants* 2001;16(4):557-62. [Abstract in PubMed](#)
51. Toljanic JA, Baer RA, Ekstrand K, Thor A. Implant rehabilitation of the atrophic edentulous maxilla including immediate fixed provisional restoration without the use of bone grafting: a review of 1-year outcome data from a long-term prospective clinical trial. *Int J Oral Maxillofac Implants* 2009;24(3):518-26. [Abstract in PubMed](#)
52. Gotfredsen K, Karlsson U. A prospective 5-year study of fixed partial prostheses supported by implants with machined and TiO<sub>2</sub>-blasted surface. *J Prosthodont* 2001;10(1):2-7. [Abstract in PubMed](#)
53. van Steenberghe D, De Mars G, Quirynen M, Jacobs R, Naert I. A prospective split-mouth comparative study of two screw-shaped self-tapping pure titanium implant systems. *Clin Oral Implants Res* 2000;11(3):202-9. [Abstract in PubMed](#)
54. Wennström JL, Ekestubbe A, Gröndahl K, Karlsson S, Lindhe J. Oral rehabilitation with implant-supported fixed partial dentures in periodontitis-susceptible subjects. A 5-year prospective study. *J Clin Periodontol* 2004;31(9):713-24. (ID No. 78275) [Abstract in PubMed](#)
55. Yi SW, Ericsson I, Kim CK, Carlsson GE, Nilner K. Implant-supported fixed prostheses for the rehabilitation of periodontally compromised dentitions: a 3-year prospective clinical study. *Clin Impl Dent Rel Res* 2001;3(3):125-34. (ID No. 75415) [Abstract in PubMed](#)
56. Stanford CM, Åström M, Berglundh T, Wagner W, Baena R, Norton MR, et al. Evaluation of the effectiveness of dental implant therapy in a practice based network (FOCUS). *Int J Oral Maxillofac Implants* 2010;25(2):367-73. [Abstract in PubMed](#)
57. Chang M, Wennström JL. Bone alterations at implant-supported FDPs in relation to inter-unit distances: a 5-year radiographic study. *Clin Oral Implants Res* 2010;E-pub Apr 5, DOI:10.1111/j.1600-0501.2009.01893.x. [Abstract in PubMed](#)
58. Sbordone L, Toti P, Menchini-Fabris F, Sbordone C, Guidetti F. Implant success in sinus-lifted maxillae and native bone: a 3-year clinical and computerized tomographic follow-up. *Int J Oral Maxillofac Implants* 2009;24(2):316-24. [Abstract in PubMed](#)

