

Atlantis® patient-specific abutments

Atlantis CAD/CAM abutments are patient-specific products for cement-, screw-, and friction-retained implant restorations. Atlantis abutments are available for all major implant systems, and as part of a streamlined workflow for individually made restorations, Atlantis abutments is a way to bring modern digital design to patients.

Clinical results

The clinical use and predictability of Atlantis abutments has been evaluated in randomized controlled trials¹⁻¹² and other types of clinical studies¹³⁻²⁵ and case reports²⁶⁻⁴⁸, evaluating and reporting on esthetic results for titanium, gold-shaded titanium and zirconia abutments^{2, 49-60}. There is evidence of re-establishment and maintenance of the papilla⁶¹⁻⁶³, increased pink esthetic score^{6, 9, 53, 57, 64, 65} and favorable soft tissue color^{66, 67}. Furthermore, a number of articles elaborate on the influence of an optimal emergence profile with the right soft tissue contour⁶⁸⁻⁷¹.

The outcome relies on the patented building blocks in the BioDesign Matrix, featuring:

Virtual Atlantis Design (VAD)	Specialized software used to design the abutment, resulting in high precision and a natural esthetic result ⁷²
Natural Shape	For support and retention of the final restoration
Soft-tissue Adapt	Individualized emergence profile for soft tissue stability ^{63, 73} and adaptation to the finished crown
Custom Connect	Reliable fit when combined with the chosen of implant system ^{9, 10, 57}

Scientific literature on Atlantis abutments have shown several benefits for both clinicians and patients, such as:

- Reduced chairtime⁷⁴ by combining the treatment with digital impression taking^{75, 76}
- High patient satisfaction^{5, 67, 77} with digital impression taking⁷⁵
- Cost-effective and simplified treatment procedures^{70, 74, 78} with digital planning and surgical guides^{71, 79-81}

Conclusion

Atlantis abutments has been shown to give predictable esthetic results on a multitude of implant platforms. In a digital implant workflow together with digital impression taking and guided surgery, Atlantis abutments can deliver reduced chair time and cost-effective treatment procedures.

References

1. Brandenberger FD, et al. Randomized controlled clinical pilot study of all-ceramic single-tooth implant reconstructions: clinical and microbiological outcomes at one year of loading. *Clin Oral Implants Res* 2017;28(4):406-13. [Abstract](#)
2. Büchi DL, et al. All-ceramic single-tooth implant reconstructions using modified zirconia abutments: a prospective randomized controlled clinical trial of the effect of pink veneering ceramic on the esthetic outcomes. *Int J Periodontics Restorative Dent* 2014;34(1):29-37. [Abstract](#)
3. Esquivel-Uphshaw JF, et al. Randomized clinical trial of implant-supported ceramic-ceramic and metal-ceramic fixed dental prostheses: preliminary results. *J Prosthodont* 2014;23(2):73-82. [Abstract](#)
4. Ferrari M, et al. 3-year randomized controlled prospective clinical trial on different CAD-CAM implant abutments. *Clin Implant Dent Relat Res* 2016;18(6):1124-41. [Abstract](#)
5. Guljé FL, et al. Single crowns in the resorbed posterior maxilla supported by either 6-mm implants or by 11-mm implants combined with sinus floor elevation surgery: A 1-year randomised controlled trial. *Eur J Oral Implantol* 2014;7(3):247-55. [Abstract](#)
6. Schepke U, et al. Stock versus CAD/CAM customized zirconia implant abutments – clinical and patient-based outcomes in a randomized controlled clinical trial. *Clin Implant Dent Relat Res* 2017;19(1):74-84. [Abstract](#)
7. Schepke U, et al. Clinical Bonding of Resin Nano Ceramic Restorations to Zirconia Abutments: A Case Series within a Randomized Clinical Trial. *Clin Implant Dent Relat Res* 2016;18(5):984-92. [Abstract](#)
8. Hosseini B, et al. Effects of antibiotics on bone and soft-tissue healing following immediate single-tooth implant placement into sites with apical pathology. *J Oral Implantol* 2015;41(5):e202-11. [Abstract](#)
9. McGuire MK, et al. Esthetic outcomes in relation to implant-abutment interface design following a standardized treatment protocol in a multicenter randomized controlled trial – A cohort of 12 cases at 1-year follow-up. *Int J Periodontics Restorative Dent* 2015;35(2):149-59. [Abstract](#)
10. Cooper LF, et al. Prospective assessment of CAD/CAM zirconia abutment and lithium disilicate crown restorations: 2.4 year results. *J Prosthet Dent* 2016;116(1):33-9. [Abstract](#)
11. Eisner B, et al. Three-Year Results of a Randomized Controlled Clinical Trial Using Submucosally Veneered and Unveneered Zirconia Abutments Supporting All-Ceramic Single-Implant Crowns. *Int J Periodontics Restorative Dent* 2018;38(5):645-52. [Abstract](#)
12. Thoma DS, et al. Randomized controlled clinical study of veneered zirconia abutments for single implant crowns: Clinical, histological, and microbiological outcomes. *Clin Implant Dent Relat Res* 2018;E-pub Oct 17, doi: 10.1111/cid.12674. [Abstract](#)
13. Esquivel-Uphshaw J, et al. Peri-implant complications for posterior endosteal implants. *Clin Oral Implants Res* 2015;26(12):1390-6. [Abstract](#)
14. Esquivel-Uphshaw JF, et al. Fracture analysis of randomized implant-supported fixed dental prostheses. *J Dent* 2014;42(10):1335-42. [Abstract](#)
15. Guljé FL, et al. Impact of crown-implant ratio of single restorations supported by 6-mm implants: A short-term case series study. *Int J Oral Maxillofac Implants* 2016;31(3):672-5. [Abstract](#)
16. King P, et al. Clinical and radiographic evaluation of a small-diameter dental implant used for the restoration of patients with permanent tooth agenesis (hypodontia) in the maxillary lateral incisor and mandibular incisor regions: a 36-month follow-up. *Int J Prosthodont* 2016;29(2):147-53. [Abstract](#)
17. Norton MR. The Influence of Low Insertion Torque on Primary Stability, Implant Survival, and Maintenance of Marginal Bone Levels: A Closed-Cohort Prospective Study. *Int J Oral Maxillofac Implants* 2017;32(4):849-57. [Abstract](#)
18. Ocelik V, et al. On the bulk degradation of yttria-stabilized nanocrystalline zirconia dental implant abutments: an electron backscatter diffraction study. *J Mater Sci Mater Med* 2017;28(8):121. [Abstract](#)
19. Toia M, et al. Clinical Evidence of OsseoSpeed EV Implants: A Retrospective Study and Characterization of the Newly Introduced System. *Int J Periodontics Restorative Dent* 2017;E-pub Aug 23, doi: 10.11607/prd.2549. [Abstract](#)
20. Wasiluk G, et al. Incidence of undetected cement on CAD/CAM monolithic zirconia crowns and customized CAD/CAM implant abutments. A prospective case series. *Clin Oral Implants Res* 2017;28(7):74-78. [Abstract](#)
21. Vera C, et al. Evaluation of post-implant buccal bone resorption using cone beam computed tomography: a clinical pilot study. *Int J Oral Maxillofac Implants* 2012;27(5):1249-57. [Abstract](#)
22. Fabbri G, et al. Clinical Evaluation of the Influence of Connection Type and Restoration Height on the Reliability of Zirconia Abutments: A Retrospective Study on 965 Abutments with a Mean 6-Year Follow-Up. *Int J Periodontics Restorative Dent* 2017;37(1):19-31. [Abstract](#)
23. Levin BP, Chu SJ. Changes in Peri-implant Soft Tissue Thickness with Bone Grafting and Demis Allograft: A Case Series of 15 Consecutive Patients. *Int J Periodontics Restorative Dent* 2018;38(5):719-27. [Abstract](#)
24. Noelen R, et al. Influence of soft tissue grafting, orofacial implant position, and angulation on facial hard and soft tissue thickness at immediately inserted and provisionalized implants in the anterior maxilla. *Clin Implant Dent Relat Res* 2018;E-pub Aug 9, doi: 10.1111/cid.12643. [Abstract](#)
25. Schepke U, et al. Adhesive Failure of Lava Ultimate and Lithium Disilicate Crowns Bonded to Zirconia Abutments: A Prospective Within-Patient Comparison. *Int J Prosthodont* 2018;31(3):208-10. [Abstract](#)
26. Al-Ardah AJ, et al. Three-year follow-up of a single immediate implant placed in an infected area: a new approach for harvesting autogenous symphysis graft. *J Oral Implantol* 2014;40(2):211-6. [Abstract](#)
27. Alhashim A, et al. Four-year follow-up of the rehabilitation of a mandibular arch with a cementable zirconia-reinforced fixed dental prosthesis: a clinical report. *J Prosthodont* 2012;10(3):158-42. [Abstract](#)
28. Alqahtani F. Full-mouth rehabilitation of severely worn dentition due to soda swishing: a clinical report. *J Prosthodont* 2014;23(1):50-7. [Abstract](#)
29. Barrero CH, et al. Case Report: Screw-Retained Zirconia Implant Restoration. *J Oral Implantol* 2016;42(4):359-62. [Abstract](#)
30. Bencharit S, et al. Utilization of demineralized bone matrix to restore missing buccal bone during single implant placement: Clinical report. *J Oral Implantol* 2016;42(6):490-97. [Abstract](#)
31. Bencharit S, et al. Full-mouth rehabilitation for a patient with dentinogenesis imperfecta: a clinical report. *J Oral Implantol* 2014;40(5):593-600. [Abstract](#)
32. Cardo VA, Jr, et al. Replacement of an implant and prosthesis in the premaxilla due to a malposition and prosthetic failure: a clinical case letter. *J Oral Implantol* 2014;40(6):751-4. [Abstract](#)
33. Farahani A, Zadeh HH. Adjunctive orthodontic applications in dental implantology. *J Oral Implantol* 2015;41(4):501-8. [Abstract](#)
34. Ganz S. Computer-aided patient-specific abutments: incredibly quality with unprecedented simplicity. *Implantology* 2003;37-44.
35. Happe A, Kunz A. Complex fixed implant-supported restoration in a site compromised by periodontitis: A case report. *Int J Esthet Dent* 2016;1(2):186-202. [Abstract](#)
36. Jackson BJ, Slavin MR. Treatment of congenitally missing maxillary lateral incisors: An interdisciplinary approach. *J Oral Implantol* 2013;39(2):187-92. [Abstract](#)
37. Keith JD, Jr. Localized ridge augmentation with a block allograft followed by secondary implant placement: a case report. *Int J Periodontics Restorative Dent* 2004;24(1):11-7. [Abstract](#)
38. Levin BP. The dual function of a dermal allograft in immediate implant therapy. *Int J Periodontics Restorative Dent* 2015;35(4):507-13. [Abstract](#)
39. Levin BP, Wilk BL. The teamwork approach to esthetic tooth replacement with immediate implant placement and immediate temporization. *Compend Contin Educ Dent* 2015;36(9):682-8. [Abstract](#)
40. Maridati PC, et al. Management of d-PTFE membrane exposure for having final clinical success. *J Oral Implantol* 2016;42(3):289-91. [Abstract](#)
41. Raigrodski AJ, et al. A simplified technique for recording an implant-supported ovate pontic site in the esthetic zone. *J Prosthet Dent* 2014;111(2):154-8. [Abstract](#)
42. Rojas-Vizcaya F. Rehabilitation of the maxillary arch with implant-supported fixed restorations guided by the most apical buccal bone level in the esthetic zone: a clinical report. *J Prosthet Dent* 2012;107(4):213-20. [Abstract](#)
43. Taylor TD, et al. Titanium tattooing associated with zirconia implant abutments: a clinical report of two cases. *Int J Oral Maxillofac Implants* 2014;29(4):598-60. [Abstract](#)
44. Wadhwaní C, et al. Radiographic detection and characteristic patterns of residual excess cement associated with cement-retained implant restorations: a clinical report. *J Prosthet Dent* 2012;107(3):151-7. [Abstract](#)
45. Watkin A, Kerstein RB. Improving darkened anterior peri-implant tissue color with zirconia custom implant abutments. *Compend Contin Educ Dent* 2008;29(4):238-40, 42. [Abstract](#)
46. Whitesides LM. Solution for the challenging implant. *Dent Today* 2008;27(2):146, 48. [Abstract](#)
47. Yoda N, et al. Bone morphological effects on post-implantation remodeling of maxillary anterior buccal bone: A clinical and biomechanical study. *J Prosthodont Res* 2017;6(4):393-402. [Abstract](#)
48. Martin R. Astra Tech OsseoSpeed 3.0S implant. *Inside Dentistry* 2010;6(4):2-4.
49. Barwacz C, Hernandez MM. Direct extrinsic characterization maximizing esthetics of fixed interim restorations. *J Cosmetic Dentistry* 2013;29(1):122-31.
50. Gil MS, et al. A prospective clinical trial to assess the optical efficacy of pink neck implants and pink abutments on soft tissue esthetics. *J Esthet Restor Dent* 2017;29(6):409-15. [Abstract](#)
51. Levin BP, Wilk BL. Immediate provisionalization of immediate implants in the esthetic zone: a prospective case series evaluating implant survival, esthetics, and bone maintenance. *Compend Contin Educ Dent* 2013;34(5):352-61. [Abstract](#)
52. Noelen R. Immediate implant placement in the aesthetic zone using the OsseoSpeed Profile EV implant. *Australasian Dental Practice* 2017;28(4):170-74. [Abstract](#)
53. Noelen R, et al. Maintenance of marginal bone support and soft tissue esthetics at immediately provisionalized OsseoSpeed implants placed into extraction sites: 2-year results. *Clin Oral Implants Res* 2014;25(2):214-20. [Abstract](#)
54. Thoma DS, et al. Randomized controlled clinical trial of all-ceramic single tooth implant reconstructions using modified zirconia abutments: Radiographic and prosthetic results at 1 year of loading. *Clin Implant Dent Relat Res* 2016;18(3):462-72. [Abstract](#)
55. Thoma DS, et al. The Esthetic Effect of Veneered Zirconia Abutments for Single-Tooth Implant Reconstructions: A Randomized Controlled Clinical Trial. *Clin Implant Dent Relat Res* 2016;18(6):1210-17. [Abstract](#)
56. Kois JC, Kan R. Predictable peri-implant gingival aesthetics: surgical and prosthetic rationales. *Pract Proced Aesthet Dent* 2001;13(9):691-8. [Abstract](#)
57. Barwacz CA, et al. Electronic assessment of peri-implant mucosal esthetics around three implant-abutment configurations: a randomized clinical trial. *Clin Oral Implants Res* 2016;27(6):707-15. [Abstract](#)
58. Ferrari M, et al. Effect of different prosthetic abutments on peri-implant soft tissue: A randomized controlled clinical trial. *Am J Dent* 2015;28(2):85-9. [Abstract](#)
59. Noelen R, et al. Clinical and esthetic outcome with immediate insertion and provisionalization with or without connective tissue grafting in presence of mucogingival recessions: A retrospective analysis with follow-up between 1 and 8 years. *Clin Implant Dent Relat Res* 2018;E-pub Mar 18, doi: 10.1111/cid.12595. [Abstract](#)
60. Noelen R, et al. Immediate and flapless implant insertion and provisionalization using autogenous bone grafts in the esthetic zone: 5-year results. *Clin Oral Implants Res* 2018;29(3):320-27. [Abstract](#)
61. Borges T, et al. The influence of customized abutments and custom metal abutments on the presence of the interproximal papilla at implants inserted in single-unit gaps: a 1-year prospective clinical study. *Clin Oral Implants Res* 2014;25(1):122-7. [Abstract](#)
62. Borges T, et al. Clinical outcome of inter-proximal papilla between a tooth and a single implant treated with CAD/CAM abutments: a cross-sectional study. *J Oral Maxillofac Res* 2012;3(3). [Abstract](#)
63. Lops D, et al. Interproximal Papilla Stability Around CAD/CAM and Stock Abutments in Anterior Regions: A 2-Year Prospective Multicenter Cohort Study. *Int J Periodontics Restorative Dent* 2017;37(5):657-65. [Abstract](#)
64. Cooper LF, et al. A multicenter randomized comparative trial of implants with different abutment interfaces to replace anterior maxillary single teeth. *Int J Oral Maxillofac Implants* 2015;30(3):622-32. [Abstract](#)
65. Barwacz CA, et al. Pink Esthetic Score Outcomes Around Three Implant-Abutment Configurations: 3-Year Results. *Int J Oral Maxillofac Implants* 2018;33(5):1126-35. [Abstract](#)
66. Ferrari M, et al. Influence of abutment color and mucosal thickness on soft tissue color. *Int J Oral Maxillofac Implants* 2017;32(2):393-99. [Abstract](#)
67. Kim A, et al. Abutment Material Effect on Peri-implant Soft Tissue Color and Perceived Esthetics. *J Prosthodont* 2016;25(8):634-40. [Abstract](#)
68. Kerstein RB, et al. Ideal gingival form with computer-generated permanent healing abutments. *Compend Contin Educ Dent* 2000;21(10):793-7, 800-1. [Abstract](#)
69. Petruccaro P, et al. Use of ceramic abutments in the esthetic zone to enhance implant esthetics. *Inside Dentistry* 2007;Feb:2-5.
70. Schneider A, Kurtzman GM. Computerized milled solid implant abutments utilized at second stage surgery. *Gen Dent* 2001;49(4):416-20. [Abstract](#)
71. Ganz SD. Defining new paradigms for assessment of implant receptor sites. The use of CT/CBCT and interactive virtual treatment planning for congenitally missing lateral incisors. *Compend Contin Educ Dent* 2008;29(5):256-8, 60-2, 64-7. [Abstract](#)
72. Parpaille A, et al. Virtual abutment design: a concept for delivery of CAD/CAM customized abutments-- report of a retrospective cohort. *Int J Periodontics Restorative Dent* 2013;33(1):51-8. [Abstract](#)
73. Lops D, et al. Soft tissues stability of cad-cam and stock abutments in anterior regions: 2-year prospective multicenter cohort study. *Clin Oral Implants Res* 2015;26(12):1456-42. [Abstract](#)
74. Whitesides L. Evaluation of the Atlantis abutment in implant restoration. *Inside Dentistry* 2006;Sept:98-99.
75. Schepke U, et al. Digital versus analog complete-arch impressions for single-unit premolar implant crowns: Operating time and patient preference. *J Prosthet Dent* 2015;114(3):403-6. [Abstract](#)
76. Wilk BL. Intraoral digital impressioning for dental implant restorations versus traditional implant impression techniques. *Compend Contin Educ Dent* 2015;36(7):529-33. [Abstract](#)
77. Van Nimwegen WG, et al. Immediate implant placement and provisionalization in the aesthetic zone. *J Oral Rehabil* 2016;43(10):745-52. [Abstract](#)
78. Nazarian A. Easier implant restoration: CAD/CAM generated implant abutments. *Contemporary Esthetics* 2007;5:44-48.
79. Ganz SD. Use of stereolithographic models as diagnostic and restorative aids for predictable immediate loading of implants. *Pract Proced Aesthet Dent* 2003;15(10):763-71. [Abstract](#)
80. Ganz SD. CT-derived model-based surgery for immediate loading of maxillary anterior implants. *Pract Proced Aesthet Dent* 2007;19(5):311-8. [Abstract](#)
81. Mandelaris GA, Vik SD. Guided implant surgery with placement of a presurgical CAD/CAM patient-specific abutment and provisional in the esthetic zone. *Compend Contin Educ Dent* 2014;35(7):494-504. [Abstract](#)

To read more Scientific Reviews please see: www.dentsplysirona.com/implants/science