

# Atlantis® CAD/CAM patient-specific abutments

## Key features

- Atlantis® abutments are patient-specific products for cement-, screw-, and attachment-retained implant restorations
- Atlantis® abutment BioDesign Matrix featuring:

Virtual Atlantis Design (VAD)	for high precision and a more natural esthetic result
Natural Shape	for optimal support and retention of the final restoration
Soft-tissue Adapt	for optimal support for soft-tissue sculpturing and adaptation to the finished crown
Custom Connect	for strong and stable fit

- Available for all major implant systems comprised in the Atlantis implant compatibility charts, including Ankylos, Astra Tech Implant System and Xive.

## Clinical results

The clinical use of Atlantis abutments has been described in case reports<sup>1-30</sup> and clinical studies<sup>31-51</sup> where esthetic results for titanium<sup>3-12, 18, 34, 35, 37</sup>, gold-shaded titanium<sup>20, 21, 33, 34, 37, 39</sup>, and zirconia<sup>13-17, 32, 35-38, 45-50</sup> abutments are reported. Clinical documentation on the Atlantis abutment reports on re-establishment and maintenance of the papilla<sup>7, 13, 31, 34, 49, 50</sup>, establishment of an optimal soft tissue contour and emergence profile<sup>3, 8, 11, 13</sup>, increased pink esthetic score<sup>48</sup> and patient satisfaction<sup>7, 19, 32, 35</sup>.

## Experimental results

Experimental studies report on different aspects of the Atlantis abutments<sup>52-66</sup>; including ideal fit between abutment and implant<sup>52, 53</sup>, accuracy of fabrication<sup>57</sup>, and ideal fit and retention of copings<sup>54</sup>. Moreover, good mechanical properties, including strength and probability to survive occlusal forces, have been reported for the Atlantis abutment in zirconia<sup>57, 60</sup>.

## Clinical advantages with using Atlantis® abutments

Scientific literature on Atlantis customized abutments have shown several clinical advantages such as:

- Reduced chairtime<sup>12</sup>
- Cost-effective and simplified treatment procedures<sup>10</sup>
- Reduced number of impression taking with duplicate abutments<sup>3-5, 11</sup>
- Compatibility and success when combined with several different implant interfaces<sup>50</sup>

# References

1. Wadhvani C, Rapoport D, La Rosa S, 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 in PubMed](#)
2. 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 in PubMed](#)
3. 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 in PubMed](#)
4. Ganz SD. Ct-derived model-based surgery for immediate loading of maxillary anterior implants. *Pract Proced Aesthet Dent* 2007;19(5):311-8. [Abstract in PubMed](#)
5. Ganz S. Computer-milled patient-specific abutments: Incredibly quality with unprecedented simplicity. *Implantology* 2003 2003:37-44.
6. 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 in PubMed](#)
7. Holt LR. A case study: A custom posterior abutment compared with a prefabricated stock abutment. *Inside Dentistry* 2008;Sept:2-3.
8. Kerstein RB, Castellucci F, Osorio J. Ideal gingival form with computer-generated permanent healing abutments. *Compend Contin Educ Dent* 2000;21(10):793-7, 800-1. [Abstract in PubMed](#)
9. Kois JC, Kan JY. Predictable peri-implant gingival aesthetics: Surgical and prosthodontic rationales. *Pract Proced Aesthet Dent* 2001;13(9):691-8. [Abstract in PubMed](#)
10. Nazarian A. Easier implant restoration: Cad/cam generated implant abutments. *Contemporary Esthetics* 2007;Feb:44-48.
11. Schneider A, Kurtzman GM. Computerized milled solid implant abutments utilized at second stage surgery. *Gen Dent* 2001;49(4):416-20. [Abstract in PubMed](#)
12. Whitesides L. Evaluation of the atlantis abutment in implant restoration. *Inside Dentistry* 2006;Sept:98-99.
13. Petrungaro P, Smilanich M, Jimenez E. Use of ceramic abutments in the esthetic zone to enhance implant esthetics. *Inside Dentistry* 2007;Feb:2-5.
14. 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 in PubMed](#)
15. Whitesides LM. Solution for the challenging implant. *Dent Today* 2008;27(2):146, 48. [Abstract in PubMed](#)
16. Jackson BJ, Slavin MR. Treatment of congenitally missing maxillary lateral incisors: An interdisciplinary approach. *J Oral Implantol* 2012;E-pub Mar 14, doi:10.1563/AAID-JOI-D-12-000251. [Abstract in PubMed](#)
17. 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 in PubMed](#)
18. Bencharit S, Border MB, Mack CR, et al. Full-mouth rehabilitation for a patient with dentinogenesis imperfecta: A clinical report. *J Oral Implantol* 2014;40(5):593-600. [Abstract in PubMed](#)
19. Cardo Jr VA, Koschitzki E, Augenbaum N, 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* 2012;E-pub Oct 31, doi:10.1563/AAID-JOI-D-12-00124.1. [Abstract in PubMed](#)
20. Alhashim A, Kamel M, Brackett WW. Four-year follow-up of the rehabilitation of a mandibular arch with a cementable zirconia-reinforced fixed dental prosthesis: A clinical report. *J Prosthet Dent* 2012;108(3):138-42. [Abstract in PubMed](#)
21. Martin R. Astra Tech OsseoSpeed 3.0s implant. *Inside Dentistry* 2010;6(4):2-4.
22. Al-Ardah AJ, Alqahtani F, Lozada JL. 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 in PubMed](#)
23. Barwacz C, Hernandez MM. Direct extrinsic characterization maximizing esthetics of fixed interim restorations. *J Cosmetic Dentistry* 2013;29(1):122-31.
24. Raigrodski AJ, Schwedhelm ER, Chen YW. A simplified technique for recording an implant-supported ovate pontic site in the esthetic zone. *J Prosthet Dent* 2014;111(2):154-8. [Abstract in PubMed](#)
25. Barrero C, Bencharit S, Petrola F. Case report: Screw-retained zirconia implant restoration. *J Oral Implantol* 2015;E-pub Feb 2, doi:10.1563/aaid-joi-d-14-00027. [Abstract in PubMed](#)
26. Levin BP. The dual function of a dermal allograft in immediate implant therapy. *Int J Periodontics Restorative Dent* 2015;35(4):507-13. [Abstract in PubMed](#)
27. 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 in PubMed](#)
28. Maridati PC, Cremonesi S, Fontana F, et al. Management of d-ptfe membrane exposure for having final clinical success. *J Oral Implantol* 2015;E-pub Aug 24, doi:10.1563/aaid-joi-d-15-00074. [Abstract in PubMed](#)
29. Wilk BL. Intraoral digital impressioning for dental implant restorations versus traditional implant impression techniques. *Compend Contin Educ Dent* 2015;36(7):529-33. [Abstract in PubMed](#)
30. Mandelaris GA, Vlk 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 in PubMed](#)
31. Borges T, Lima T, Carvalho AC, et al. Clinical outcome of interproximal 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 in PubMed](#)
32. Noelken R, Neffe BA, Kunkel M, 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 in PubMed](#)
33. Esquivel-Upshaw JF, Clark AE, Shuster JJ, 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 in PubMed](#)
34. Borges T, Lima T, Carvalho A, 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(11):1222-7. [Abstract in PubMed](#)
35. 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 in PubMed](#)
36. Vera C, De Kok IJ, Chen W, 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 in PubMed](#)
37. Parpaola A, Norton MR, Cecchinato D, 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 in PubMed](#)
38. Buchi DL, Sailer I, Fehmer V, 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 in PubMed](#)
39. Esquivel-Upshaw JF, Mehler A, Clark AE, et al. Fracture analysis of randomized implant-supported fixed dental prostheses. *J Dent* 2014;42(10):1335-42. [Abstract in PubMed](#)
40. Brandenberg FD, Sailer I, Fehmer V, 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* 2016. [Abstract in PubMed](#)
41. Esquivel-Upshaw J, Mehler A, Clark A, et al. Peri-implant complications for posterior endosteal implants. *Clin Oral Implants Res* 2015;26(12):1390-6. [Abstract in PubMed](#)
42. Ferrari M, Tricarico MG, Cagidiaco MC, et al. 3-year randomized controlled prospective clinical trial on different cad-cam implant abutments. *Clin Implant Dent Relat Res* 2016;E-pub Mar 14, doi:10.1111/cid.12418. [Abstract in PubMed](#)
43. Schepke U, Meijer HJ, Vermeulen KM, 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* 2015;E-pub Oct 12, doi:10.1111/cid.12382. [Abstract in PubMed](#)
44. Thoma DS, Brandenberg F, Fehmer V, 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* 2015;E-pub Apr 15, doi:10.1111/cid.12333. [Abstract in PubMed](#)
45. Kim A, Campbell SD, Viana MA, et al. Abutment material effect on peri-implant soft tissue color and perceived esthetics. *J Prosthodont* 2015;E-pub Sep 23, doi:10.1111/jopr.12360. [Abstract in PubMed](#)
46. McGuire MK, Scheyer T, Ho DK, 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 in PubMed](#)
47. Thoma DS, Brandenberg F, Fehmer V, et al. The esthetic effect of veneered zirconia abutments for single-tooth implant reconstructions: A randomized controlled clinical trial. *Clin Implant Dent Relat Res* 2015;E-pub Dec 16, doi:10.1111/cid.12388. [Abstract in PubMed](#)
48. Barwacz CA, Stanford CM, Diehl UA, et al. Electronic assessment of peri-implant mucosal esthetics around three implant-abutment configurations: A randomized clinical trial. *Clin Oral Implants Res* 2015;E-pub June 21, doi:10.1111/cir.12640. [Abstract in PubMed](#)
49. Cooper LF, Reside G, Stanford C, 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 in PubMed](#)
50. Cooper LF, Stanford C, Feine J, et al. Prospective assessment of cad/cam zirconia abutment and lithium disilicate crown restorations: 2.4 year results. *J Prosthet Dent* 2016;E-pub Jan 28, doi:10.1016/j.prosdent.2015.08.023. [Abstract in PubMed](#)
51. Wasiluk G, Chomik E, Gehrke P, 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* 2016. [Abstract in PubMed](#)
52. Apicella D, Veltri M, Chieffi N, et al. Implant adaptation of stock abutments versus cad/cam abutments: A radiographic and scanning electron microscopy study. *Annali di Stomatologia* 2010;1(3-4):9-13. [Abstract in PubMed](#)
53. Sumi T, Braian M, Shimada N, et al. Characteristics of implant-cad/cam abutment connections of two different internal connection systems. *J Oral Rehabil* 2012;39(5):391-8. [Abstract in PubMed](#)
54. Ganz SD, Desai N, Weiner S. Marginal integrity of direct and indirect castings for implant abutments. *Int J Oral Maxillofac Implants* 2006;21(4):593-9. [Abstract in PubMed](#)
55. Baldassarri M, Hjerpe J, Romeo D, et al. Marginal accuracy of three implant-ceramic abutment configurations. *Int J Oral Maxillofac Implants* 2012;27(3):537-43. [Abstract in PubMed](#)
56. Gigandet M, Bigolin G, Faoro F, et al. Implants with original and non-original abutment connections. *Clin Implant Dent Relat Res* 2014;16(2):303-11. [Abstract in PubMed](#)
57. Kerstein RB, Radke J. A comparison of fabrication precision and mechanical reliability of 2 zirconia implant abutments. *Int J Oral Maxillofac Implants* 2008;23(6):1029-36. [Abstract in PubMed](#)
58. Millen CS, Reuben RL, Ibbetson RJ. The effect of coping/veneer thickness on the fracture toughness and residual stress of implant supported, cement retained zirconia and metal-ceramic crowns. *Dent Mater* 2012;28(10):e250-8. [Abstract in PubMed](#)
59. Dhingra A, Weiner S, Luke AC, et al. Analysis of dimensional changes in the screw and the surface topography at the interface of a titanium screw and a zirconia abutment under cyclic loading: An in vitro study. *Int J Oral Maxillofac Implants* 2013;28(3):661-9. [Abstract in PubMed](#)
60. Muhlemann S, Truninger TC, Stawarczyk B, et al. Bending moments of zirconia and titanium implant abutments supporting all-ceramic crowns after aging. *Clin Oral Implants Res* 2014;25(1):74-81. [Abstract in PubMed](#)
61. Yilmaz B, Gilbert AB, Seidt JD, et al. Displacement of implant abutments following initial and repeated torquing. *Int J Oral Maxillofac Implants* 2015;30(5):1011-8. [Abstract in PubMed](#)
62. Yilmaz B, Salaita LG, Seidt JD, et al. Load to failure of different titanium abutments for an internal hexagon implant. *J Prosthet Dent* 2015;114(4):513-6. [Abstract in PubMed](#)
63. Yilmaz B, Salaita LG, Seidt JD, et al. Load to failure of different zirconia abutments for an internal hexagon implant. *J Prosthet Dent* 2015;114(3):373-7. [Abstract in PubMed](#)
64. Gilbert AB, Yilmaz B, Seidt JD, et al. Three-dimensional displacement of nine different abutments for an implant with an internal hexagon platform. *Int J Oral Maxillofac Implants* 2015;30(4):781-8. [Abstract in PubMed](#)
65. Joda T, Burki A, Bethge S, et al. Stiffness, strength, and failure modes of implant-supported monolithic lithium disilicate crowns: Influence of titanium and zirconia abutments. *Int J Oral Maxillofac Implants* 2015;30(6):1272-9. [Abstract in PubMed](#)
66. Kelly JR, Rungruanpanut P. Fatigue behavior of computer-aided design/computer-assisted manufacture ceramic abutments as a function of design and ceramics processing. *Int J Oral Maxillofac Implants* 2016;31(3):601-9. [Abstract in PubMed](#)