



A passion
for progress



Driven by science

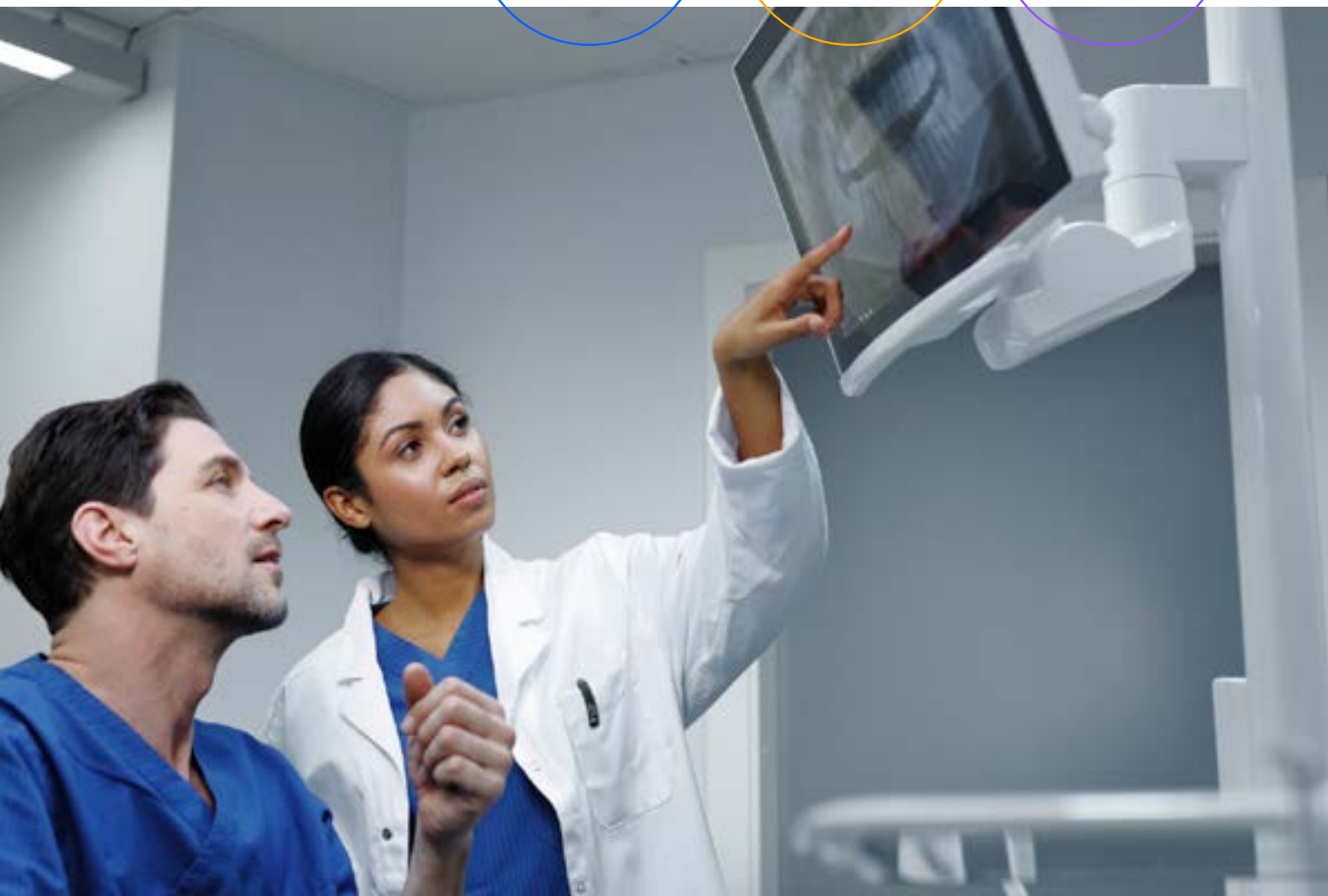
Like you, we believe that science matters. For more than four decades, Dentsply Sirona has collaborated with clinicians and scientists at the forefront of implant dentistry. Together, we have worked to pioneer innovations that deliver excellent outcomes across an array of fields. We instill clinician confidence through predictable and reliable results, natural esthetics and lasting bone care. The technology breakthroughs that drive these solutions—including the EV Implant Family—are recognized worldwide and supported by more than 1,400 scientific publications. It's a passion for discovery, data and innovation that is relentless. And always well documented.

For a full reference list of Dentsply Sirona publications, please visit dentsplysirona.com/implants-science

>400
EXPERIMENTAL
STUDIES

>1,000
CLINICAL
STUDIES

>70,000
IMPLANTS IN
CLINICAL TRIALS





FOUR DECADES OF PROGRESS

1985. The first Astra Tech Implant in clinical trial at Karolinska Hospital University, Sweden¹

2004. The first chemically modified implant surface, OsseoSpeed, was launched after 14 years of research³

2007. Scientific data shows minimized micro-movements at Conical Seal Design, a feature that is part of the EV connection⁴

2012. Primary stability of Xive implant system, predecessor of OmniTaper EV Implant, presented for more than 4,000 implants in all bone qualities⁶

2020. Meta-analysis concluding that OsseoSpeed surface significantly maintains the bone better than competitor surfaces¹¹

1992. The first implant with MicroThread for single tooth replacement in clinical trial²

2011. A meta-analysis shows Astra Tech Implant System, original member of the EV Implant Family, maintains the bone significantly better than competitor brands⁵

2014. Astra Tech Implant System EV is launched. The next step in the continuous evolution of the system⁷⁻¹⁰

2021. The start of the Open Registry Study aiming for 500 clinicians evaluating the PrimeTaper EV Implant in all indications

The EV Implant Family

The EV Implant Family consists of three implant systems with different body shapes that share common DNA. Each design is based on clinical preference and/or patient situation, but they are unified by a unique set of key features, OsseoSpeed®, SoftTissue Chamber™ and Conical Seal Design™. Each feature is supported by solid evidence of pre-clinical and clinical documentation. Each implant system is designed to stimulate the healing process and helps deliver long-term function and natural-looking esthetics.



Astra Tech Implant® EV
Parallel walled



PrimeTaper EV™ Implant
Fully tapered



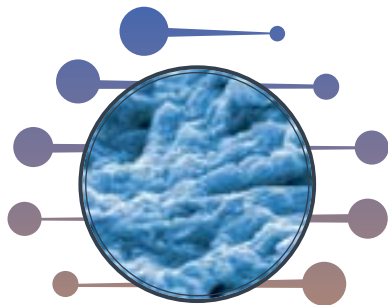
OmniTaper EV™ Implant
Apically tapered

1. 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(3):321-9. **2.** Palmer RM, Smith BJ, Palmer PJ, Floyd PD. A prospective study of Astra single tooth implants. *Clin Oral Implants Res* 1997;8(3):173-9. **3.** Ellingsen JE. Pre-treatment of titanium implants with fluoride improves their retention in bone. *J Mater Sci Mater Med* 1995;6:749-53. **4.** Zipprich H, Weigl P, Lauer H-C, Lange B. Micro-movements at the implant-abutment interface: measurements, causes and consequences. *Implantologie* 2007;15:31-45. **5.** Laurell L, Lundgren D. Marginal bone level changes at dental implants after 5 years in function: a meta-analysis. *Clin Implant Dent Relat Res* 2011;13(1):19-28. **6.** Degidi M, Dapirle G, Piattelli A. Primary stability determination by means of insertion torque and RFA in a sample of 4,135 implants. *Clin Implant Dent Relat Res* 2012;14(4):501-07. **7.** Johansson H, Hellqvist J. Functionality of a further developed implant system: Mechanical integrity (P339). *Clin Oral Implants Res* 2013;24(Supplement 9) 166-67. **8.** Dahlström M, Hellqvist J. Feasibility testing of a new abutment design (P323). *Clin Oral Implants Res* 2013;24(Supplement 9):158. **9.** Halldin A, Dahlström M. Optimization of preload and torsion by using a unique abutment screw design for each implant platform size (P332). *Clin Oral Implants Res* 2013;24(Supplement 9):162-63. **10.** Johansson H, Hellqvist J, Johansson S. Credibility of an up-dated implant system: implant-abutment leakage testing (P340). *Clin Oral Implants Res* 2013;24(Supplement 9):166-67. **11.** Norton MR, Astrom M. The influence of implant surface on maintenance of marginal bone levels for three premium implant brands: A systematic review and meta-analysis. *Int J Oral Maxillofac Implants* 2020;35(6):1099-111.

Pioneering technology built into our DNA

From the start, we chose our own path. For decades, we have worked closely with scientists and clinicians around the world, emphasizing biology and biomechanical engineering in implant dentistry.

This pioneering approach led us to our breakthrough technologies featured in the Astra Tech Implant System EV.

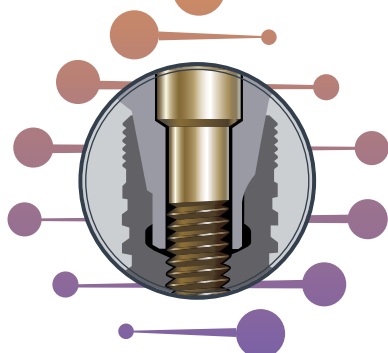


OsseoSpeed®

The first chemically-modified, moderately rough titanium surface with a unique nanoscale topography

SoftTissue Chamber™

The first horizontal offset design, (previously called Connective Contour)



EV connection with Conical Seal Design™

The first internal conical implant-abutment interface

The first indexed connection designed for patient-specific, CAD/CAM abutments with the one-position-only feature



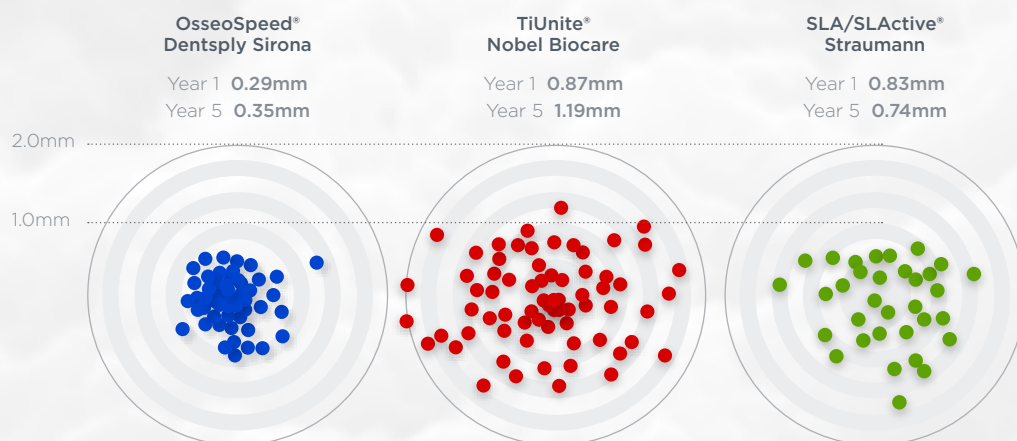
THANKS TO SCIENCE
PREDICTABLE,
RELIABLE HEALING

At the heart of our family of implants and prosthetics is a steadfast commitment to delivering natural esthetics over the long term. While clinicians can be confident they are providing the best possible care, patients can trust in dental health outcomes that stand the test of time.

OsseoSpeed®

The OsseoSpeed surface has been optimized for long-term predictability and clinical success. The solution presents clinical benefits that are proven and well-documented such as increased bone formation and stronger bone-to-implant contact. Its ability to maintain the marginal bone has been presented in a meta-analysis showing OsseoSpeed outperformed major competitors in both 1- and 5-year follow-ups.¹

OSSEOSPEED SHOWS BEST PREDICTABILITY¹



Each dot represents the reported mean marginal bone level change for the individual studies included in the meta-analysis. As well as the best marginal bone level change, the study also showed OsseoSpeed had much less variation across results from the 113 studies. This translates into predictable, successful outcomes that your patients deserve.

SCIENTIFIC DOCUMENTATION

SCIENTIFIC REVIEW:

[OsseoSpeed more bone more rapidly](#)

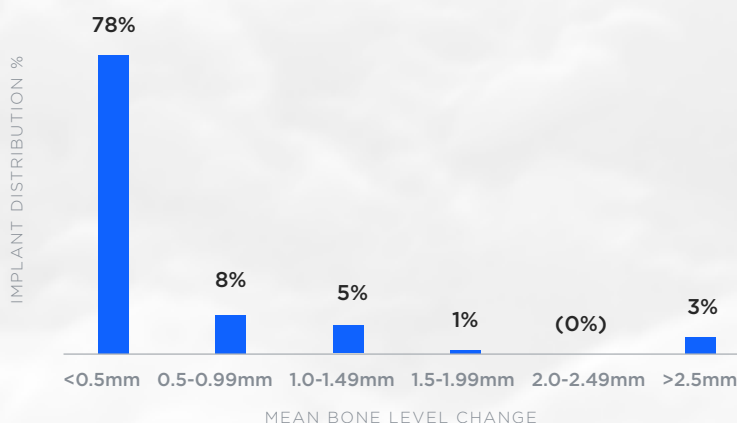
SCIENTIFIC HIGHLIGHTS:

[OsseoSpeed outperforms the competition](#)

[OsseoSpeed shows best predictability](#)

[OsseoSpeed 10 years of clinical success](#)

10 YEARS OF CLINICAL SUCCESS²



100%
IMPLANT,
AND PROSTHETIC
SURVIVAL

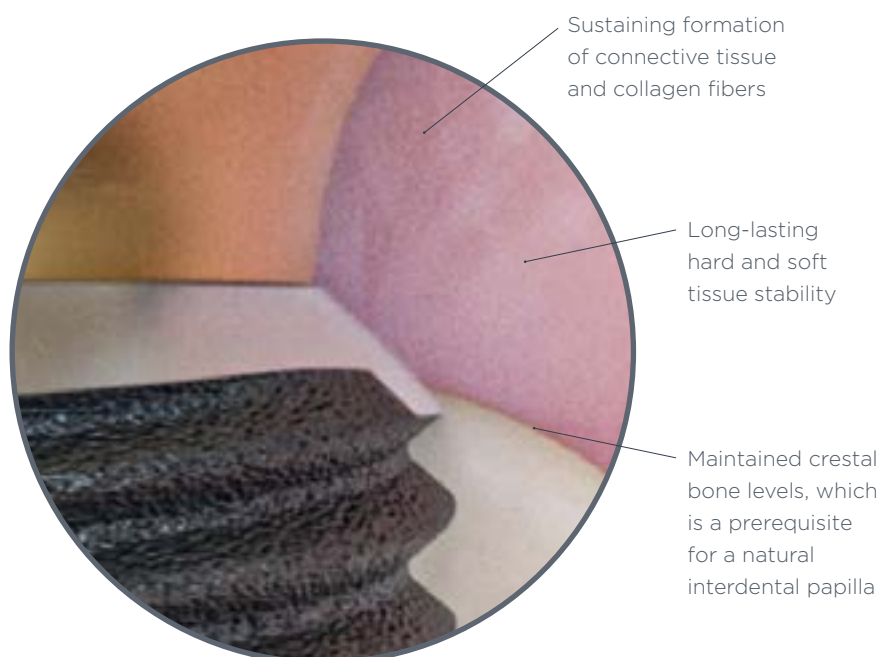
STUDY:
105 IMPLANTS
21 PATIENTS

¹ Norton MR, Astrom M. The influence of implant surface on maintenance of marginal bone levels for three premium implant brands: A systematic review and meta-analysis. Int. J. Oral Maxillofac. Implants 2020;35(6):1099-111. ² Windael S, Vervaeke S, Wijnen L, Jacquet W, De Bruyn H, Collaert B. Ten-year follow-up of dental implants used for immediate loading in the edentulous mandible: A prospective clinical study. Clin. Implant Dent. Relat. Res. 2018;20(4):515-21.

A PASSION FOR **PROGRESS**

SoftTissue Chamber™

A three-dimensional chamber is created between the horizontal offset on the implant and the outer design of the abutment. It allows for an increased connective soft tissue contact zone both in height and volume, which integrates with the transmucosal part of the implant, with the effect of sealing off and protecting the marginal bone.



SCIENTIFIC DOCUMENTATION

SCIENTIFIC REVIEW:
[SoftTissue Chamber](#)

SCIENTIFIC HIGHLIGHT:
[Long-term esthetics](#)
[Predictable clinical outcome](#)

POSTER:
[Performance of a dental implant in everyday practice](#)

A recent study demonstrates high prosthetic success with stable soft tissue, high implant survival, and minimal marginal bone level changes after 4 years of follow-up with Astra Tech Implant System EV.¹

STUDY:
208 PATIENTS
385 IMPLANTS

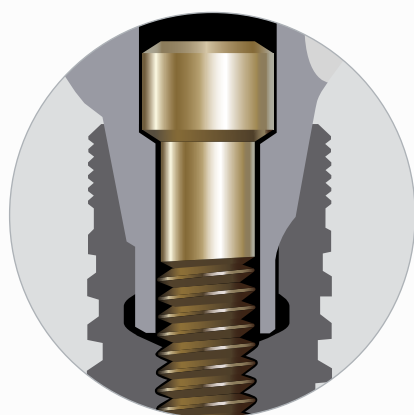
-0.06MM
MEAN MARGINAL
BONE LEVEL
CHANGE

99.2%
IMPLANT
SURVIVAL

1. Vervaeke S, Mertens C, Steveling H, Stoor P, Pin-Harry O, Cooper L, Abrahamsson P. A multi-center, retrospective study of the performance of a dental implant used in everyday practice (#PO-104). Clin Oral Impl Res 2022;33(S24):139.

EV connection with Conical Seal Design™

The EV connection provides a tight, strong and stable fit between implant and abutment, reduces peak stresses and thereby preserves the marginal bone.¹ The interior of the implant is sealed off from surrounding tissue, minimizing micromovements and microleakage.



Leakage of microbial content through the implant-abutment junction is a factor contributing to inflammatory reactions in the adjacent tissue. During the development of the implant-abutment connection, the assurance of a tight seal of this interface was considered an important aspect for the clinical outcome.¹

FIGURE 1: SCREW MECHANICS²



All abutment screws for Astra Tech Implant EV exceeded the preload of at least 250 N at the tightening torque of 25 Ncm.

Each individual abutment screw delivers controlled preload and reduced torsion at the recommended installation torque.

The individual abutment screws for Astra Tech Implant System EV are uniquely designed and have anodized-treated surfaces for color coding. The design ensures a controlled preload and reduces torsion stresses while using the uniform tightening torque of 25 Ncm. For Astra Tech Implant System a preload of at least 250 N is preferred.

The optimal screw achieves a sufficient preload while at the same time minimizing the amount of torsion in the screw.

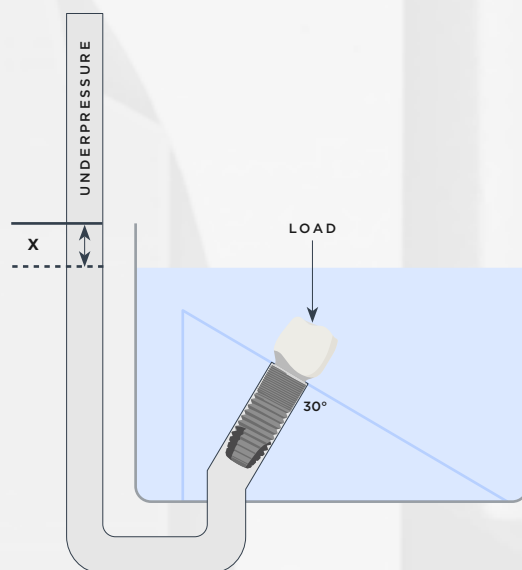
SCIENTIFIC DOCUMENTATION

SCIENTIFIC REVIEW:

[EV Connection](#)
[Atlantis Abutments](#)

INTERNAL POSTER:

[Optimization of preload and torsion](#)
[EV connection leakage testing](#)



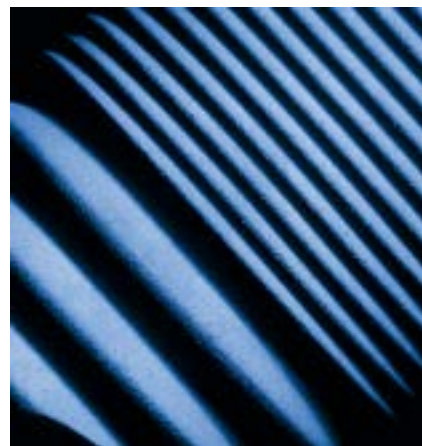
To verify the sealing of the implant-abutment connection, Dentsply Sirona has developed a method to test the integrity of the Conical Seal Design connection. OsseoSpeed EV implants and TiDesign EV abutments were mounted and loaded using a 30° off-axis cyclic load of 275 N for ten minutes.

No fluid leakage was detected for any of the tested assemblies.³

1. Toia M, Galli S, Cecchinato D, Wennerberg A, Jimbo R. Clinical evidence of osseospeed EV implants: A retrospective study and characterization of the newly introduced system. *Int. J. Periodontics Restorative Dent.* 2019;39(6):863-74. 2. Halldin A, Dahlström M. Optimization of preload and torsion by using a unique abutment screw design for each implant platform size (P332). *Clin. Oral Implants Res.* 2013;24((Supplement 9)):162-63. 3. Johansson H, Hellqvist J, Johansson S. Credibility of an up-dated implant system: implant abutment leakage testing (P340). *Clin. Oral Implants Res.* 2013;24((Supplement 9)):166-67.

Astra Tech Implant[®] EV

This versatile and unique implant range — parallel walled, conical, sloped, short, narrow and wide — is designed to meet the demands of different anatomical situations.



MicroThread[®]

This is an implant design feature – and an industry first – using retention elements at the implant neck, resulting in biomechanical bone stimulation and maintained marginal bone levels.

As bone tissue is designed to carry loads, MicroThread mechanically stimulates the surrounding bone in order to preserve it. This is especially important at the implant-bone interface located at the marginal cortical bone, because it is here that peak stresses occur.

After comparing 840 threads of different shapes and sizes, these minute threads were identified as the optimal profile for stress distribution.²

PROVEN EXCELLENT CLINICAL OUTCOMES FOR SHORT IMPLANTS AFTER FIVE YEARS¹

STUDY:
67 IMPLANTS
50 PATIENTS

98.5%
IMPLANT
SURVIVAL*

-0.12MM
MARGINAL
BONE LEVEL
CHANGE*

6MM OSSEOSPEED IMPLANTS

STUDY:
70 IMPLANTS
51 PATIENTS

100%
IMPLANT
SURVIVAL*

-0.18MM
MARGINAL
BONE LEVEL
CHANGE*

11-15MM OSSEOSPEED IMPLANTS PLACED IN CONJUNCTION WITH BONE GRAFTING

*at implant level

SCIENTIFIC DOCUMENTATION

SCIENTIFIC REVIEWS:

[Marginal Bone Maintenance](#)
[MicroThread](#)
[Astra Tech Implant System](#)
[Short Implants](#)
[Profile Implants](#)

SCIENTIFIC HIGHLIGHT:

[Proven long-term for short implants](#)



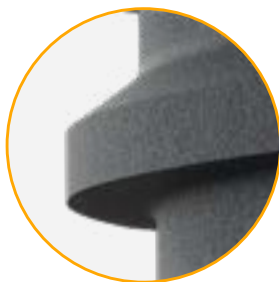
1. Thoma DS, Haas R, Sporniak-Tutak K, et al. Randomized controlled multicentre study comparing short dental implants (6mm) versus longer dental implants (11-15mm) in combination with sinus floor elevation procedures: 5-Year data. J Clin Periodontol 2018;45(12):1465-74. 2. Hansson S, Werke M. The implant thread as a retention element in cortical bone: the effect of thread size and thread profile: A finite element study. J Biomech 2003;36(9):1247-58.

PrimeTaper EV™ Implant

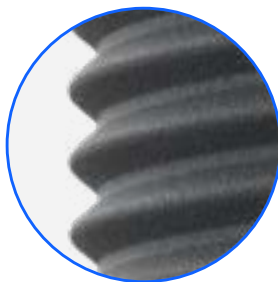
The unique, progressive design, with self-cutting threads to cut quickly and engage without excess torque, shortens the implant installation procedure.



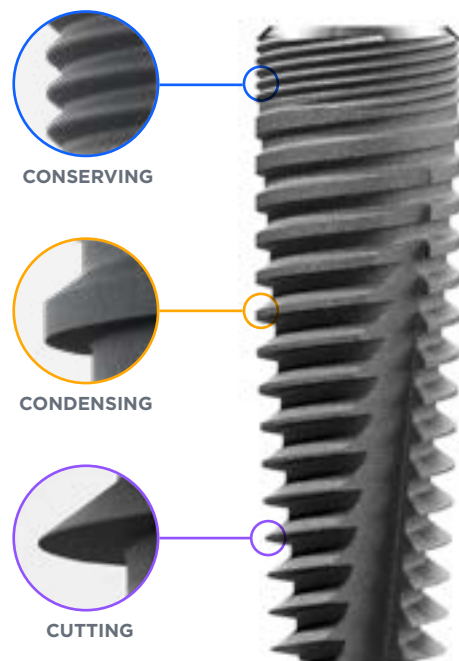
The triangular thread at the apex does the cutting, which helps draw the implant into the osteotomy.



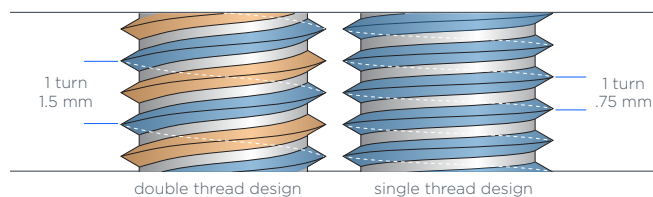
The square thread compresses the bone, creating a progressive increase in insertion torque.



The MicroThread® contributes to the implant's stability and cortical bone maintenance.



The pitch of the macro thread is 0.75 mm. With one turn, the implant advances 1.5 mm into the osteotomy. This leads to a stable and fast installation procedure.



Images courtesy of Dr. Mischa Krebs, Alzey, Germany.



Immediate installation of PrimeTaper EV.



Immediate temporization with TempAbutment EV.



Post-op one week after implant placement.



Permanent restoration (PR) with TiDesign EV, four months after implant placement.



PR with a cement retained Zirconia crown.

SCIENTIFIC DOCUMENTATION

SCIENTIFIC REVIEW:
[MicroThread](#)

INTERNAL POSTER:
[PrimeTaper EV clinical research program](#)

OmniTaper EV™ Implant

The OmniTaper EV Implant is built on over 20 years of clinical success and efficiency with the Xive implant system.

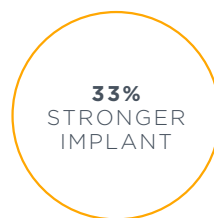
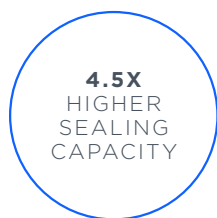
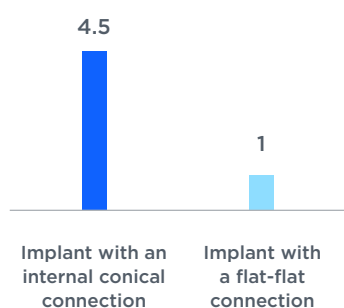
In addition, the OmniTaper EV Implant incorporates proven implant design features — the OsseoSpeed surface and the EV conical connection from the Astra Tech Implant System EV.

Xive® Philosophy

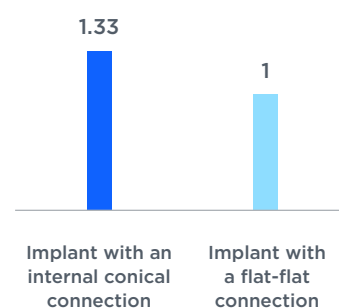
This is a combination of a bone-specific preparation protocol and the condensing thread design. This gives clinicians an adjustable protocol depending on bone quality and control of bone condensation and torque stabilization.¹

THE INTERNAL CONICAL EV CONNECTION OUTPERFORMS FLAT-TO-FLAT DESIGN IN LEAKAGE AND FATIGUE STRENGTH TEST²

SEALING CAPACITY



30° FATIGUE STRENGTH



The images are from an ongoing study on OmniTaper EV Implant, demonstrating installation in different positions and bone qualities.

Images courtesy of Dr. Peter Gehrke, Dr. Thomas Dietrich, and Dr. Alessandro Ponte.



Implant position in 21 in an extraction socket with bone quality and quantity 4A



Implant position in 36 in a healed site with bone quality and quantity 2B



Implant position in 25 in a healed site with bone quality and quantity 3A



Implant position in 45 in a healed site with bone quality and quantity 2A



SCIENTIFIC DOCUMENTATION

SCIENTIFIC HIGHLIGHT:

[OmniTaper EV sealing capacity](#)

INTERNAL POSTER:

[OmniTaper EV ongoing clinical study](#)

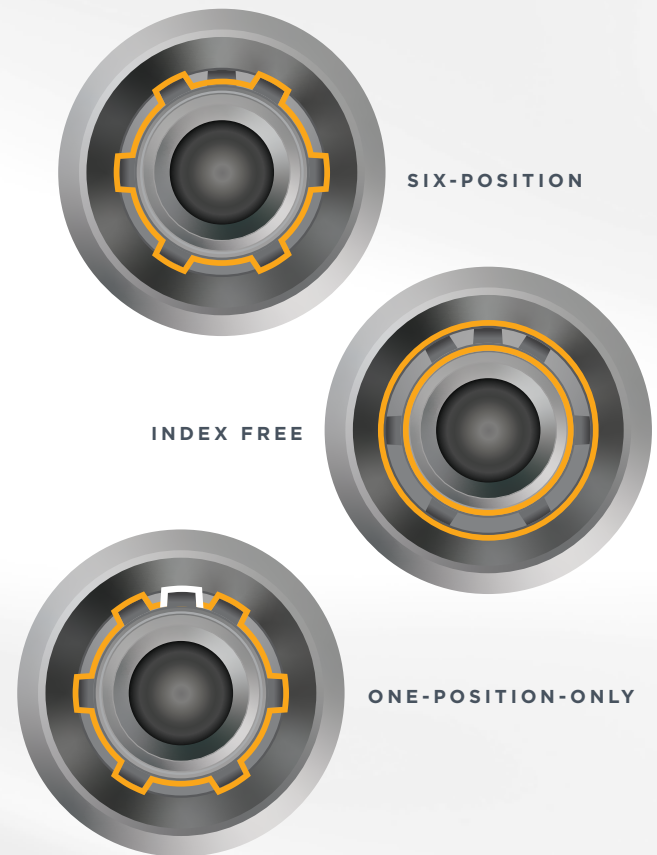
¹. Degidi M, Daprile G, Piattelli A. Primary stability determination by means of insertion torque and RFA in a sample of 4,135 implants. Clin Implant Dent Relat Res 2012;14(4):501-07 ². Scientific highlight on internal R&D test report: The implant-abutment conical EV connection outperforms flat-to-flat in leakage and fatigue strength test.

A natural connection to the EV Implant Family: Atlantis® Abutments and the digital workflow

The unique interface design provides three indexing options; six positions and non-indexed for access to the EV Prosthetics assortment compatible with all implants in the family; one-position-only, for precision placement of Atlantis patient-specific abutments.

Atlantis patient-specific solutions make it possible to design each abutment in relation to the edentulous space and the surrounding teeth for high precision and a more natural esthetic result. A unique anatomical shape and emergence profile nourishes soft tissue management and provides excellent support and retention of the final restoration. The combination of biological, anatomical and engineering parameters provide the beneficial conditions for healing soft tissue and adapting it to the finished crown.

ONE INTERFACE —
THREE INDEXING SOLUTIONS



SCIENTIFIC DOCUMENTATION

SCIENTIFIC REVIEW:
[Atlantis Abutments](#)

MAINTAINED MARGINAL BONE LEVELS WITH ATLANTIS ABUTMENTS



Images courtesy of Dr M. Norton





Our progress continues.

When you approach every implant with a total focus on biological and biomechanical principles based on sound science, bold new breakthroughs are possible. For almost four decades, we have collaborated with clinicians and scientists to push the limits of what implants can do.

Our commitment to innovation is built on the foundation of our Astra Tech Implant® EV that incorporates core technologies that support you every day:

OsseoSpeed®. A unique nanoscale topography designed for long-term predictability

Soft Tissue Chamber™. A three-dimensional approach to increasing soft tissue volume for natural esthetics.

EV connection with Conical Seal Design™. A biomechanical fit that seals the implant's interior and minimizes microleakage.

Count on Dentsply Sirona's legacy of scientific progress to keep you advancing with confidence.