Ankylos®
Excellence without exception
Ankylos is for people who demand excellent results. With more than 30 years’ proven clinical use and development, this innovative, world-class implant technology is thoroughly established and highly dependable. It allows your expertise and eye for detail to shine through. Because it is your skills and your experience that are the real key to improving your patients’ quality of life. And with Ankylos you can provide something that every single patient will continue to treasure – excellent anterior esthetics.
The true value of an implant system reveals itself with time. For over 30 years, the Ankylos implant system has stood for reliable, lasting esthetics. Numerous publications and long term clinical experience clearly demonstrate that Ankylos maintains hard and soft tissue stability, resulting in natural looking esthetics that last.

This success can be attributed to a number of key features in the Ankylos system design which, together, form the unique Ankylos TissueCare concept.

Ankylos®
Implanting
TissueCare

SoftTissue Chamber™

One fits all TissueCare connection

Progressive thread

Friadent® plus surface
The Ankylos implant system was designed in 1985, based on the idea that a prosthetic dental implant could be just as stable as a natural tooth. After more than 30 years in clinical use, the Ankylos system still represents exceptional quality, lasting hard and soft tissue maintenance and superior esthetics.

1987
First clinical use of a groundbreaking new implant system. Its innovative features include tapered connection, significant horizontal offset and progressive thread design.

2001
Introduction of the unique Ankylos SynCone concept for prosthetic overdentures.

2005
The Friadent implant surface and micro-rough implant shoulder are launched.

2008
Launch of Ankylos C/X implants, for use with both non-indexed (C) and indexed (X) prosthetic components.

2005
The Ankylos TissueCare concept is launched, offering a unique collection of tissue-stabilizing features.

2011
Introduction of titanium base, two-piece CAD/CAM abutments.

2012
Introduction of the SmartFix concept, a prosthetic solution for full arch restorations at an angle.
2012
Introduction of Atlantis patient-specific CAD/CAM abutments.

2013
Launch of 6.6 mm Ankylos, designed to reduce the need for vertical bone augmentation procedures.

2014
Launch of the world-exclusive WeldOne concept for stable, lasting chairside solutions.

2015
Introduction of the high cover screw.

2016
Launch of new Titanium Nitride (TiN) coated Ankylos drills without internal irrigation, for better contrast of depth marking.

2018
Acuris concept – fixed prosthetics (single crown) for the patient and removable for the dentist. Thanks to highly accurate conometric retention there is no need for cement or prosthetic screws. Introduced for Ankylos, Xive and Astra Tech Implant System EV.

2018
Azento is a convenient start-to-finish custom implant solution, enabling dentists to provide consistently excellent results.

2018
Launch of the Atlantis® Custom-Base solution with angulated screw access and Ankylos interface.
The Ankylos® TissueCare Concept

Scientifically and clinically proven to maintain hard and soft tissue over time, the Ankylos TissueCare concept combines a number of key features from the Ankylos implant system.

**SoftTissue Chamber™**

The TissueCare connection and micro-rough implant shoulder make subcrestal placement possible. Together with a horizontal offset and concave abutment design, they create a three dimensional chamber for soft tissue and bone, which in turn increases tissue stability.

**Friadent® plus surface**

The microstructure of the grit-blasted and high temperature-etched Friadent plus implant surface provides superior bone-to-implant contact, promotes early osseointegration and results in rapid bone formation.
Where Ankylos® goes, hard and soft tissue follow...

One fits all TissueCare connection

All abutments, regardless of size, share the same tapered connection, which simplifies the treatment process. A steep connection taper promotes friction lock and eliminates micromovement, thereby providing non-indexed prosthetics with an indexed option.

Progressive thread

The progressive thread design means the functional load is transferred to the apical part of the implant, creating primary stability and enabling immediate loading.

The Ankylos TissueCare concept provides lasting tissue stability and excellent esthetic results.

Stable peri-implant with hard and soft tissue after healing

Final restoration in place

Two years after prosthetic restoration

Four years after prosthetic restoration
SoftTissue Chamber™

The Ankylos SoftTissue Chamber provides a highly favorable three dimensional space for biological growth around the abutment. Thanks to a wide horizontal offset design and subcrestal implant placement, this biological space fills with a three dimensional network of connective tissue and collagen fibers. Which means a higher interdental papilla, lasting hard and soft tissue stability and superior esthetic results.

Positive tissue response

The SoftTissue Chamber creates enough space for bone to form over the implant shoulder, as well as plenty of connective tissue fibers for healthy, natural-looking soft tissue.

- An optimum biological space, thanks to a combination of subcrestal placement, a wide horizontal offset and a narrow, concave abutment emergence profile.
- Together with the unique properties of the TissueCare connection, such as the friction-lock design that eliminates all micromovement, the SoftTissue Chamber enables and optimizes one abutment-one-time treatment.
SoftTissue Chamber
- the home of lasting tissue stability

Horizontal offset
(platform switching)

Thanks to the geometry of the Ankylos TissueCare connection, the transition between implant and abutment shifts to a more central position. This horizontal offset creates the perfect conditions for hard and soft tissue stability at the implant shoulder. And when combined with other benefits like no micromovement and no bacterial growth, it also provides lasting tissue maintenance.

Micro-rough implant shoulder

The patented microstructure implant shoulder promotes bone formation up to the abutment. This supports the overlying soft tissue and creates the perfect conditions for stability and lasting tissue health.

Subcrestal placement

The unique friction-lock and keyed TissueCare connection creates such a close fit between the two components that subcrestal implant placement is possible. This leads to a positive bone response, enabling the desired emergence profile and transgingival healing. In other words, Ankylos offers the versatility of a two-piece system while maintaining healthy hard and soft tissue and keeping it free from irritation.
One fits all
TissueCare connection

- Friction-locked and keyed
- No micromovement
- Tight

One fits all connection

The friction-locked and keyed stability of the Ankylos TissueCare connection is similar to that of a one-piece implant. Its precision engineered design ensures optimum load bearing and eliminates any micromovement between the implant and abutment or mechanical irritation that might lead to bone resorption.

Designed for absolute tightness, the peri-implant bone and gingival structures do not treat the connection as a gap. This reduces bacterial colonization and the risk of inflammation.

One connection for all implants, regardless of implant diameter, means treatment is much simpler with the TissueCare connection.

Stability and lasting tissue health

- Provides exceptional tissue stability and eliminates all micromovement
- Ensures lasting tissue health and positive esthetic outcomes as a result

The TissueCare connection - unique freedom of non-indexed prosthetics with an indexing option.
Caring for tissue over time

One fits all – full surgical and prosthetic flexibility with interchangeable prosthetic components

Thanks to identical tapered connections, all Ankylos abutments are fully compatible with all Ankylos implants. This versatility simplifies the treatment process by reducing the number of prosthetic components and ensures optimum abutment fit, regardless of which implant is necessary to meet the surgical requirements.

Tapered connection with indexing option

The tapered TissueCare connection enables 360° alignment of the prosthetic abutments in any position. Abutments with a positioning aid index are also available, for those who prefer indexed prosthetics. In both cases, the keyed and friction-locked taper acts as an anti-rotation device and once the prosthetic restoration is fixed into place, the implant and abutment form an extremely stable and rotation-free unit.

Wide range of prosthetic options

The Ankylos system offers a wide variety of prosthetics, for various indications and preferred approaches. Each range contains abutments in several different sizes and designs, with or without a positioning aid (index), to ensure optimum functional and esthetic results for every patient.
Progressive thread

The progressive thread has been designed to match the bone structure and simplify insertion.

Design features

- Cylindrical geometry reduces load transfer to the cortical bone
- The gradual increase in thread depth improves the transfer of load to the cancellous bone

This results in a controlled loading force in the areas significant for the maintenance of crestal bone. Once the thread is in position it creates primary stability and enables immediate loading.

The innovative thread design ensures an even load distribution in the bone crest and lasting maintenance of the bone structure.
Friadent®
plus surface

All Ankylos C/X implants have a grit-blasted and high temperature-etched Friadent plus surface. The excellent properties of this microstructure provide superior bone-to-implant contact and promote early osseointegration, as documented in numerous in vitro and in vivo studies.

Surface and macro design - the perfect combination

- Extremely receptive to new cell growth as the surface is hydrophilic, which stimulates primary cell apposition
- Unique, three dimensional micro design that promotes the apposition of bone-forming cells and ensures optimum osseointegration
- Rapid new bone formation and increased bone maturation in the early stages creates excellent interface stability

In addition to the benefits of the progressive thread and its unique design, the Friadent plus surface provides superior bone-to-implant contact and primary stability, which enables immediate loading.

(Images 1-3 courtesy of R Sammons et al., Birmingham, UK and image 4 courtesy of M Weinländer et al., Graz, Austria)
Clinical experience

The Ankylos implant system is scientifically and clinically proven to maintain hard and soft tissue over time, with excellent esthetics and high patient satisfaction. Extensive literature evaluating over 55,000 implants shows safe and predictable treatment outcomes for the Ankylos implant system, with >97% implant survival rate after 5 years or more of follow-up.

>55,000 implants

97% success rate after 5 years or more of follow-up

>17,000 patients

Long-term evaluation of peri-implant bone loss
(after up to 204 months of follow-up)

- Implants: 12,737
- Patients: 4,206
- Horizontal: < 1 mm 85.7%
- Vertical: < 1 mm 85.2%

Conclusion: High implant survival rate and low rates of peri-implant bone loss observed in 125 implants followed for 17 years.

Tapered connection
Single implants replacing molars

- Implants: 233
- Minimum years: 5
- Maximum years: 7.37
- Average years: 6.3
- Failures (1): 0.5%
- Loosening of abutment (3): 1.3%
- Abutment fracture (0): 0%

Conclusion: High prosthetic reliability observed in 233 implants followed for at least 5 years.

6-year multicentered clinical study

- Study centers: 34
- Dentists: 80
- Implants placed during 2.5 years: 1500
- Patients: 450
- Study follow-up: 3–5 years
- Implant survival: 97.5%

Conclusion: Survival rate of 97.5% in 1,500 implants followed for 3 to 5 years.


Restoration of maxillary lateral incisor – five-year follow-up

1 Control image after final restoration of tooth 12 shows excellent bone apposition
2 & 3 The situation after almost a year (Mar 2006)
4 Clinical situation one year later (Feb 2007)
5 Perfectly maintained peri-implant bone, five years after insertion

Two patients from a study carried out between 1991 and 2011 by the University of Frankfurt, involving over 4,000 patients and 12,000 implants

Male patient, born 1955
1a Image taken in 1997, after implant placement
1b Image taken in 2010, demonstrating 13 years of tissue stability

Male patient, born 1976
2a Image taken in 1993, after implant placement
2b Image taken in 2015, demonstrating 19 years of tissue stability

Immediate implant procedure after removal of a fractured lateral incisor – restoration of the Ankylos® implant

X-rays showing stable crestal bone level above the implant shoulder over time:
1 During the provisionalization stage
2 After completion of the final restoration
3 After two years
4 After four years
5 After six years
6 & 7 After eight years of use

Mandibular restoration using the SynCone® concept – thirteen years post-op

1 & 2 Clinical situation 13 years after implant placement
3 X-ray taken 13 years after the procedure
Ankylos®
at a glance

Indications

• The Ankylos C/X implant system is for single-stage or two-stage surgical procedures and cemented, removable or screw-retained restorations.

• The Ankylos C/X implant system can be used for immediate placement and function on single tooth and/or multiple tooth applications when adequate primary stability is achievable, with appropriate occlusal loading, in order to restore chewing function. Multiple tooth applications may be splinted.

Implants

Implant geometry
• Cylinder screws

Implant material
• Pure titanium grade 2 (ISO 5832-2)

Implant surface
• Friadent plus microstructure (grit-blasted and high-temperature etched)

Implant-abutment connection
• Keyed and friction-locked tapered connection (TissueCare connection) with optional index

Implant diameters and lengths

<table>
<thead>
<tr>
<th>Diameters</th>
<th>3.5 mm (A)</th>
<th>4.5 mm (B)</th>
<th>5.5 mm (C)</th>
<th>7.0 mm (D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lengths</td>
<td>6.6 mm</td>
<td>6.6 mm</td>
<td>6.6 mm</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>8 mm</td>
<td>8 mm</td>
<td>8 mm</td>
<td>8 mm</td>
</tr>
<tr>
<td></td>
<td>9.5 mm</td>
<td>9.5 mm</td>
<td>9.5 mm</td>
<td>9.5 mm</td>
</tr>
<tr>
<td></td>
<td>11 mm</td>
<td>11 mm</td>
<td>11 mm</td>
<td>11 mm</td>
</tr>
<tr>
<td></td>
<td>14 mm</td>
<td>14 mm</td>
<td>14 mm</td>
<td>14 mm</td>
</tr>
<tr>
<td></td>
<td>17 mm</td>
<td>17 mm</td>
<td>17 mm</td>
<td>–</td>
</tr>
</tbody>
</table>
Surgical instrument set

The Ankylos modular plastic surgical kits contain all of the necessary instruments for standard surgical procedures. There are three versions of the Ankylos surgical kit: one for machine-driven procedures (A and B implants only), one for manual procedures and one for guided surgery.

Drill preparation

Externally irrigated drills with diameter and length markers.

Implant 900

Induction drive unit with preset programs for augmentation and implant placement.

Prosthetic restorations

<table>
<thead>
<tr>
<th></th>
<th>Single-tooth crowns</th>
<th>Fixed bridges</th>
<th>Removable dentures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance anterior C/ or /X</td>
<td>x</td>
<td>x</td>
<td>-</td>
</tr>
<tr>
<td>Titanium base C/ or /X</td>
<td>x</td>
<td>x</td>
<td>-</td>
</tr>
<tr>
<td>Atlantis CAD/CAM abutments</td>
<td>x</td>
<td>x</td>
<td>-</td>
</tr>
<tr>
<td>Regular C/ or /X</td>
<td>x</td>
<td>x</td>
<td>-</td>
</tr>
<tr>
<td>Balance posterior C/</td>
<td>x</td>
<td>x</td>
<td>-</td>
</tr>
<tr>
<td>Standard C/ abutment</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Balance base abutment C/ and SmartFix concept</td>
<td>-</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

Single-tooth restoration in front-tooth region only (regions 13–23 and 33–43)
Esthetic solutions

Balance anterior C/ or /X abutment
- Anatomically shaped abutments for challenging esthetic indications

Titanium base C/ or /X
- Titanium base for individual metal-reinforced ceramic abutments

Atlantis patient-specific abutments for Ankylos
- Patient-specific abutments
- Available in titanium, gold-colored titanium and zirconia

Crown and bridge abutments

Regular C/ or /X abutment
- For various types of fixed prosthetics

Balance posterior C/
- For various types of fixed prosthetics

Standard C/ abutment
- One abutment-one-time concept
- Transfer on abutment level

Acuris C/ conometric abutment
- Friction-retained restoration for single tooth
- Fixed restoration, yet retrievable by the clinician

Full arch restorations

Balance base abutment C/ narrow
- Foundation for bar and bridge construction
- SmartFix concept with 15° and 30° angled abutments
- By using the SmartFix concept, augmentation and critical anatomical areas can be avoided

Snap attachment C/
- For fixing mandible dentures in edentulous patients

Locator R-Tx C/ abutment
- For fixing mandible dentures in edentulous patients

SynCone C/ abutment
- For fast and economical construction of removable dentures based on prefabricated conical crowns

Atlantis conus abutment
- Consists of patient-specific Atlantis conus abutments together with prefabricated SynCone caps

Atlantis implant suprastructures
- CAD/CAM structures for retaining bar and bridge structures

Ankylos WeldOne
- Innovative intraoral welding concept
- Facilitates sturdy, lasting chairside solutions
Key references:

The Ankylos TissueCare concept


Soft and hard tissue maintenance


Long-term follow-up


Esthetic evaluation and patient satisfaction


