

The TissueCare Concept:
**A new definition of
tissue stability**

DENTSPLY
FRIADENT

A new definition of tissue stability.

The new view of things

Success in implant dentistry comes from a love of detail. Lasting success can only come to those who can see the interconnections and are also open to other points of view. DENTSPLY Friadent stands for new perspectives in implant dentistry. The new view of things is directed to long-term hard-tissue and soft-tissue stability and to lasting red-white esthetics.

Establish space for long-term results

Implant surface, position in the bone, type and geometry of the connection, to name only some examples: How bone and soft tissue remain stable and what leads to this result is determined by more than one factor. Research and clinical experience have shown what factors are the most important. Ultimately all details must interact together in the right way. This is the only way to achieve lasting success for implant-borne restorations.

- 1-No micromovement
- 2-Bacteria-proof connection
- 3-Platform-Switching
- 4-Subcrestal placement
- 5-Microroughness to the interface

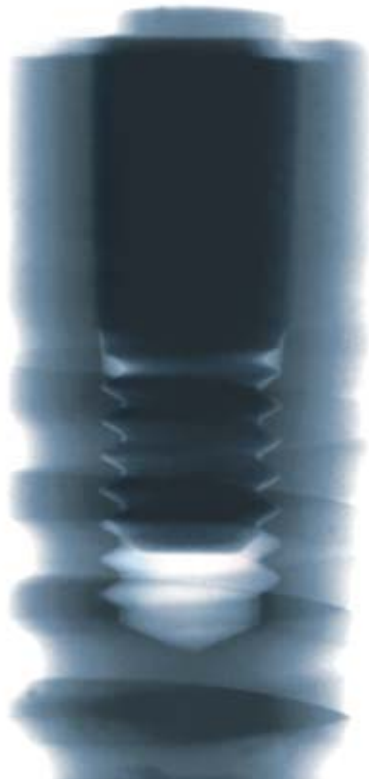
New perspectives – the success factors:

5 points for initial & lasting Tissue Stability:



- 1-No micromovement
- 2-Bacteria-proof connection
- 3-Platform-Switching
- 4-Subcrestal placement
- 5-Microroughness to the interface

X-ray image of the Ankylos implant-abutment connection before start of the test (x-ray image: Holger Zipprich/Dr. Paul Weigl, Frankfurt am Main)



X-ray image of the Ankylos implant-abutment connection after 1,000,000 load cycles (x-ray image: Holger Zipprich/Dr. Paul Weigl, Frankfurt am Main)




1-No micromovement.

Micromovement between implant and abutment irritates the peri-implant bone. The bone responds by resorption in the region of the implant shoulder, referred to as remodeling. However, keyed and friction-locked connections prevent micromovement. This results in a virtual single-component implant, which ensures tissue from the start.

Literature:

1. Abboud M, et al. Immediate loading of single-tooth implants in the posterior region. *Int J Oral Maxillofac Implants*. 2005 Jan-Feb;20(1):61-8.
2. Zipprich H et al. Failure mode of implant-abutment connections after horizontal cyclic loading, *Int Poster J Dent Oral Med* 2004, Vol 6 No 03, Poster 238.
3. Dibart S, Warbington ML, Su MF, Skobe Z. Evaluating the Bacterial Seal of an Implant-Abutment Connection. Poster presentation on the American Academy of Periodontology Meeting, Orlando, Florida in November, 2004.
4. Sethi A, Kaus T. An implant that does not smell - The Ankylos Implant. Featured in *Irish Dentist*-July 2002; *Probe*-July 2002; *Dentistry*-August 2003.



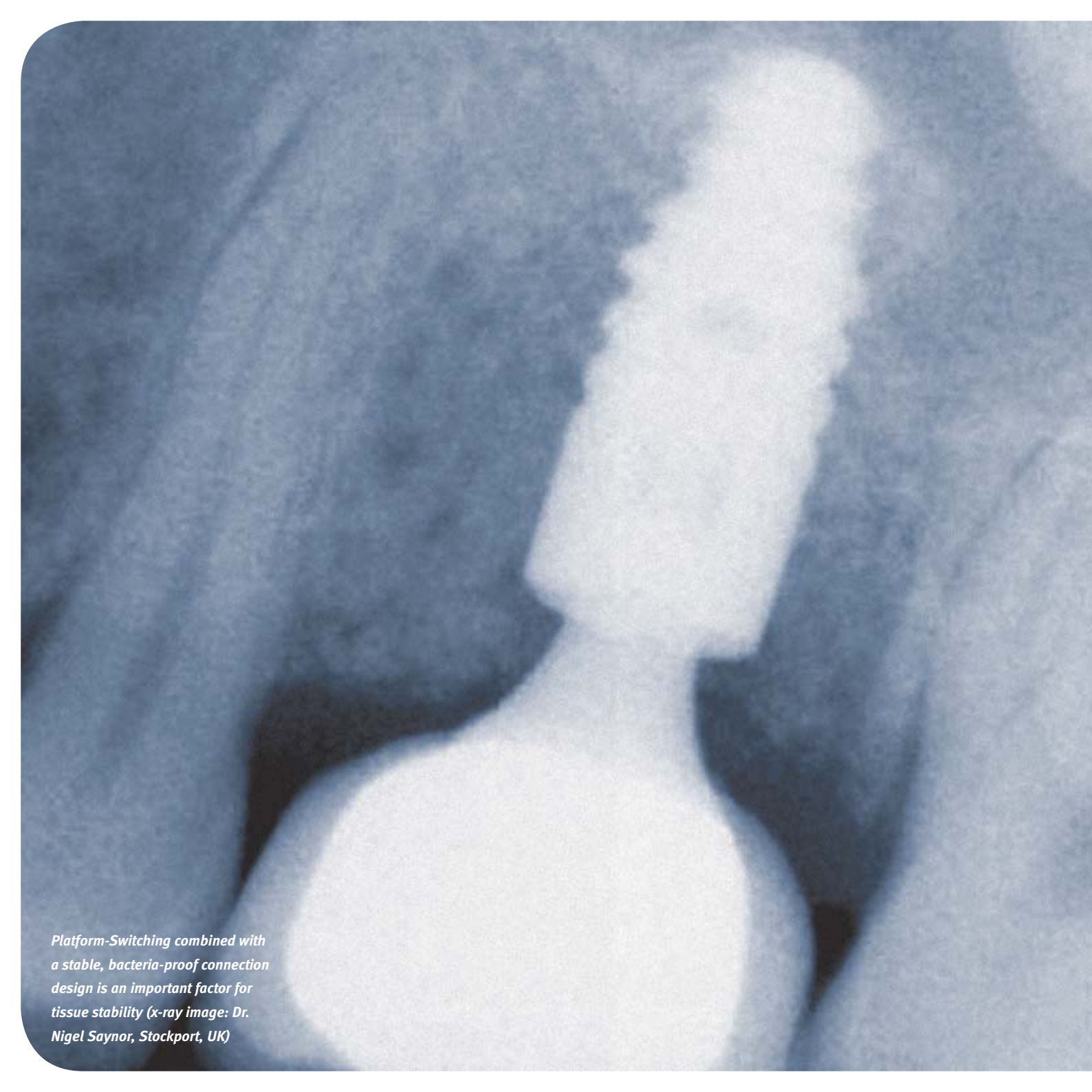
A bacteria-proof friction-locked connection is formed only if the taper is flush over its entire surface.

2-Bacteria-proof connection.

Gaps between the implant and abutment leave space for bacterial colonization. Chewing loads can cause a relative movement between the components, which results in a pumping effect. The resulting distribution of endotoxins in the tissue at the implant-abutment interface level causes an inflammation reaction. Bone is resorbed below the implant-abutment connection until the biological width is established. Only a bacteria-proof connection prevents bone resorption – and stabilizes the soft tissue.

Literature:

1. Brogini N, et al. Peri-implant inflammation defined by the implant-abutment interface. J Dent Res. 2006 May;85(5):473-8.
2. Mairgunther R, Nentwig GH. Das Dichtigkeitsverhalten des Verbindungssystems beim zweiphasigen Ankylos Implantat. Z Zahnärztl Implantol 1992 Jan;8(1):50-53.
3. Weigl P, New Prosthetic Restorative Features of the Ankylos Implant System. J Oral Implantol 2004;30(3):178-188.

An X-ray image of a hip joint, showing a total hip replacement. The femoral head is visible, and the acetabular cup is positioned with a platform-switching design. The surrounding bone structure is clearly visible, and the implant appears well-integrated.

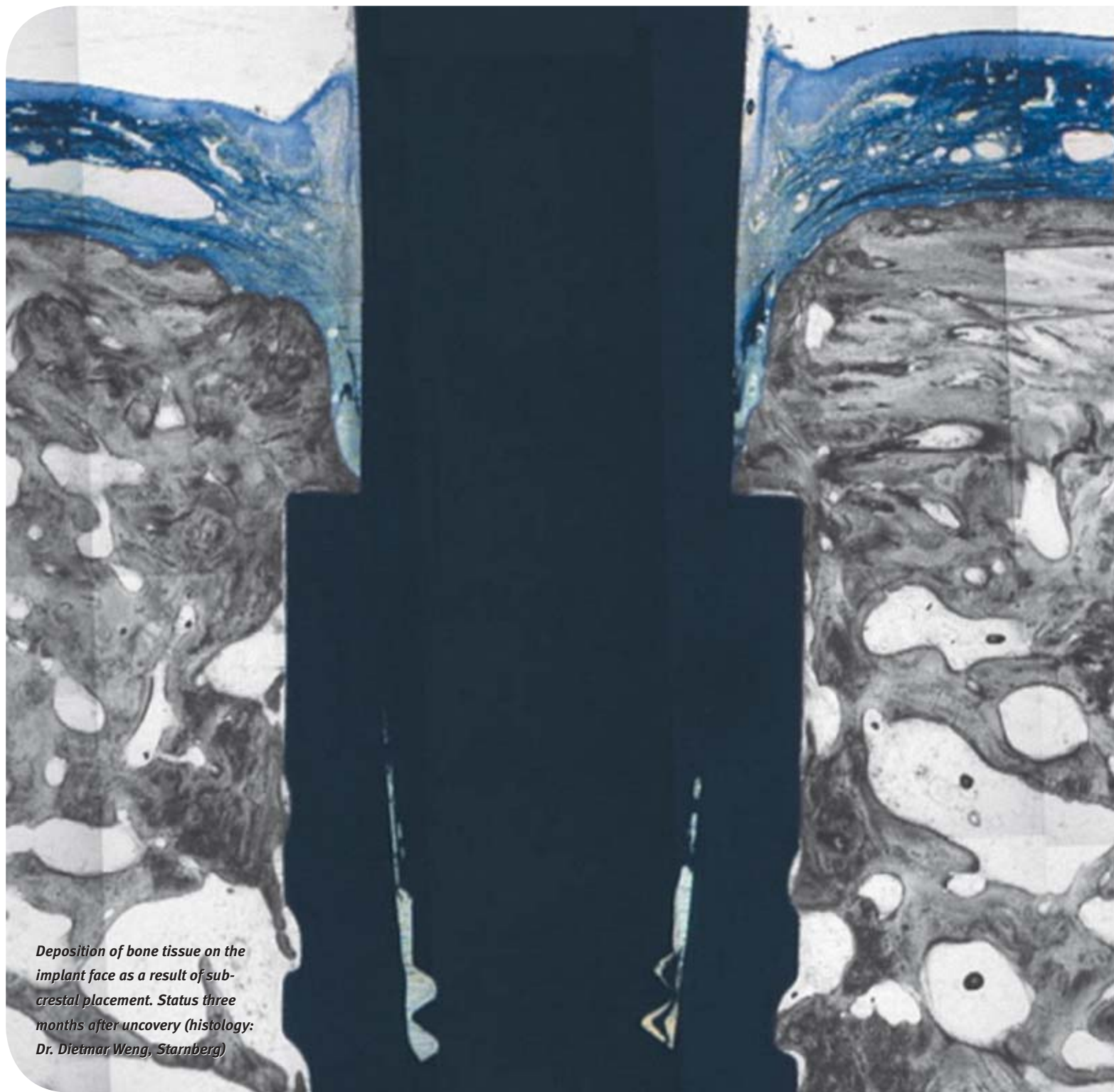
Platform-Switching combined with a stable, bacteria-proof connection design is an important factor for tissue stability (x-ray image: Dr. Nigel Saynor, Stockport, UK)

3-Platform-Switching.

Platform-Switching moves the transition between implant and abutment to a central position. It keeps mechanical and microbial influences away from the peri-implant tissue. The biological width is transferred from the vertical to the horizontal level. Platform-Switching is therefore an important factor for tissue stability – but only in connection with a stable, bacteria-proof connection design. The more slender abutment also provides more room for peri-implant soft tissue.

Literature:

1. Lazzara RJ, Porter SS. Platform-Switching: a new concept in implant dentistry for controlling postrestorative crestal bone levels. *Int J Periodontics Restorative Dent.* 2006 Feb;26(1):9-17.
2. Chiche F, The concept of Platform-Switching. *Journal de Parodontologie & d'Implantologie Orale (JPIO)* 2005; 30-36.
3. Weng D, Richter EJ: Die Implantat-Abutment-Verbindung - vom mechanischen zum biologischen Aspekt des Mikrospalts. *Implantologie* 2005;13(2):125-130.



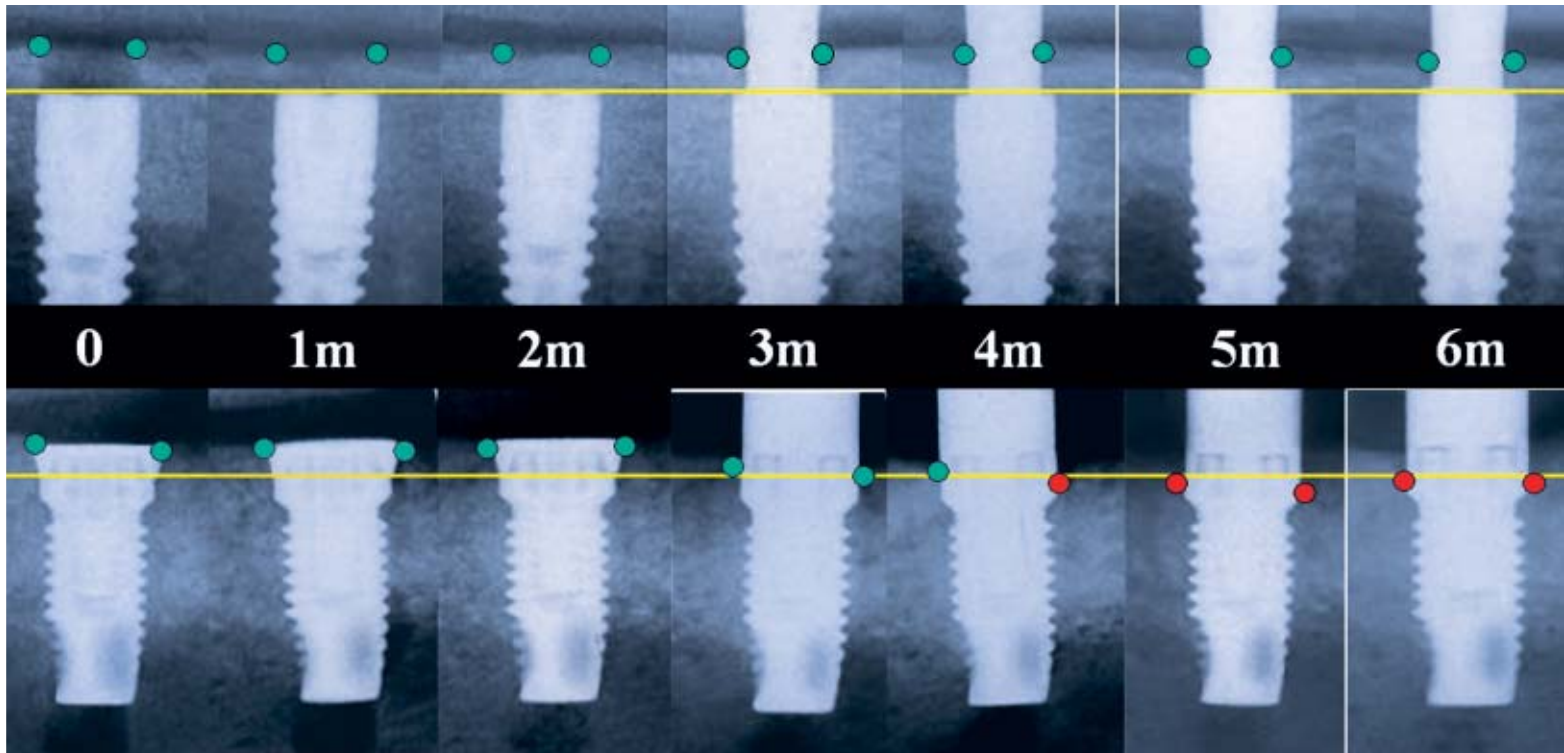
Deposition of bone tissue on the implant face as a result of sub-crestal placement. Status three months after uncover (histology: Dr. Dietmar Weng, Starnberg)

4-Subcrestal placement.

The establishment of a natural emergence profile is favored by subcrestal placement. Bacteria-proof connections without micromovement prevent the bone resorption that normally occurs and they are also tolerated by the bone when placed at a greater depth. Platform-Switching in combination with subcrestal placement and microstructured implant shoulders enables bone apposition to the abutment and this also ensures excellent red esthetics over the long term.

Literature:

1. Hammerle CH, et al. The effect of subcrestal placement of the polished surface of ITI implants on marginal soft and hard tissues. Clin Oral Implants Res 1996 Jun;7(2):111-9.
2. Weng D, Richter EJ: Die Implantat-Abutment-Verbindung – vom mechanischen zum biologischen Aspekt des Mikrospalts. Implantologie 2005;13(2):125-130.
3. Doring K, et al. Functional and esthetic considerations for single-tooth Ankylos implant-crowns: 8 years of clinical performance. J Oral Implantol 2004;30 (3, spec. issue):198-209.



In the course of a radiographic and histological animal study the implant shoulders were placed 1.5 mm below the bone margin in the front tooth region in accordance with an esthetic indication to simulate the submerged position of the implant-abutment connection site in the area of the bone support of the papillae.

Standardized X-ray images were taken at monthly intervals. In addition to other results the peri-implant bone margin around the tapered connection remained significantly higher than that of a blunt abutment connection with an external hexagon over the six months of the trial.

(X-ray images: Dr. Dietmar Weng, Starnberg)

5-Microroughness to the interface.

A microstructured implant shoulder favors apposition of bone cells. With a subcrestal position this means that bone can also be deposited on the horizontal shoulder surface. This also provides additional support for the overlying soft tissue – for successful long-term results.

Literature:

1. Sammons RL, et al. Comparison of osteoblast spreading on microstructured dental implant surfaces and cell behaviour in an explant model of osseointegration. A scanning electron microscopic study. Clin Oral Implants Res. 2005 Dec;16(6):657-66.
2. Di Iorio, D., T. Traini, et al. (2005). "Quantitative evaluation of the fibrin clot extension on different implant surfaces: An in vitro study." J Biomed Mater Res B Appl Biomater 74(1): 636-42.
3. Degidi et al. "Immediately loaded titanium implant with a tissue stabilizing/maintaining design ("beyond platform switch") retrieved from man after 4 weeks: a histological and histomorphometrical evaluation: A case report" COIR 2007, accepted for publication.

New perspectives: Space for stable esthetics.

The key factors in implant dentistry are long-term function and esthetics. The prerequisite is stable peri-implant tissue. It can best be achieved with tight, rigid connections and deep positioning. The geometry in the emergence region provides amply space for thick, healthy soft tissue and implant-borne restoration that have a natural appearance. This opens up new perspectives – for lasting red-white esthetics.

*1 | Stable peri-implant hard and soft tissue after uncover. 2 | 24 months after prosthetic restoration.
3 | 48 months after prosthetic restoration. 4 | Clinical situation (photos: Dr. Nigel Saynor, Stockport, UK).*







The **Ankylos** implant system from DENTSPLY Friadent is known for long-term high-end esthetics. The unique TissueCare Connection with its influence on the retention of the structure of hard and soft tissue, the system-inherent Platform-Switching, the microroughness of the implant shoulder, and the option of subcrestal placement has redefined the demand for tissue stability and bone retention.

7-002005/002

Manufacturer and distributor:

FRIADENT GmbH · P. O. Box 71 01 11 · D-68221 Mannheim/Germany

Phone: + 49 6 21 43 02-12 88 · Fax: + 49 6 21 47 13 06

e-Mail: info@friadent.de · Internet: <http://www.friadent.de>

Distributor for UK and Ireland:

DENTSPLY Friadent UK & Ireland · Leeds House · Amberley Court

Country Oak Way · Crawley RH11 7XL

Phone: + 44 1293 53 6321 · Fax: + 44 1293 53 6276

e-Mail: cmeldrum@friadent.org.uk

DENTSPLY
FRIADENT