

ITI-Straumann implant system



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Department of Oro- Maxillofacial Surgery and Stomatology

„We have today close to

600

different implant systems...”

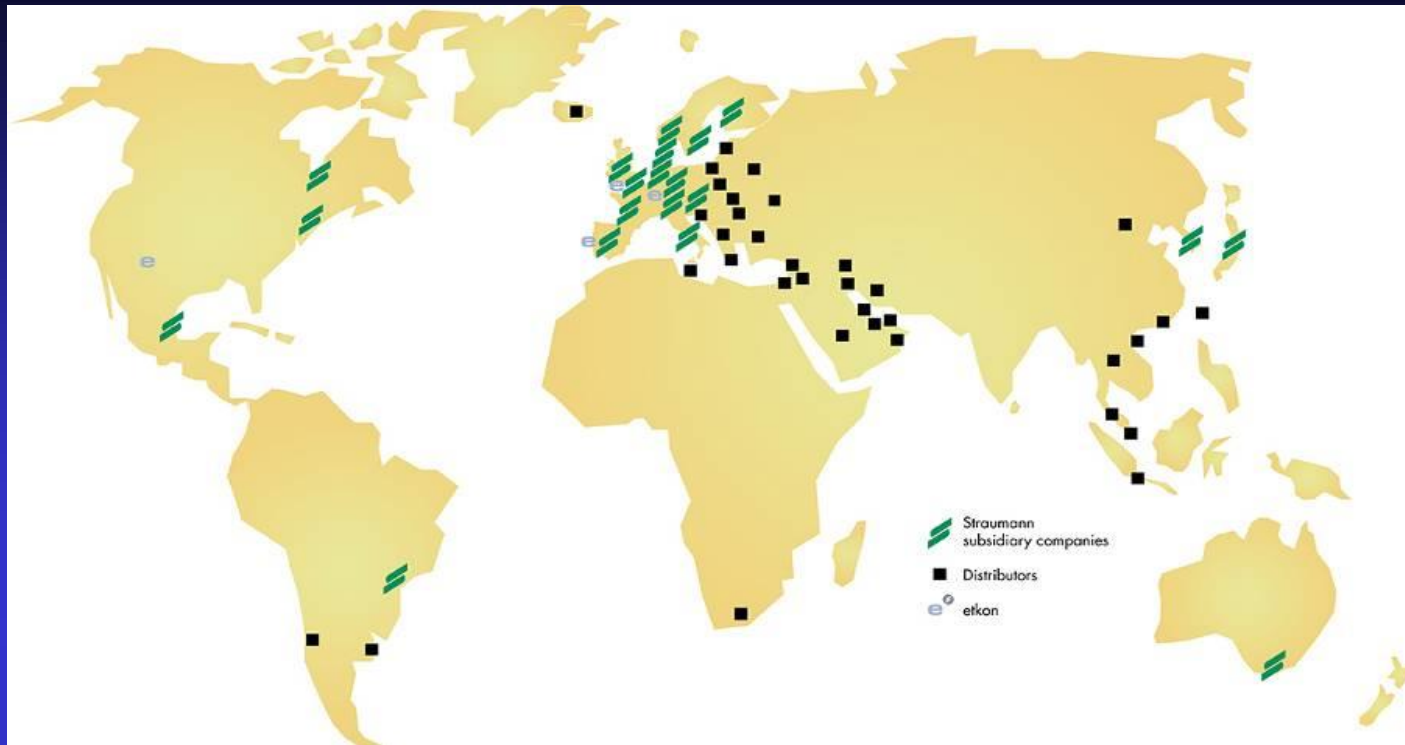
/Jokstad A.:Osseointegration and Dental Implants

Wiley-Blackwell **2009**/

What to know about Straumann company?

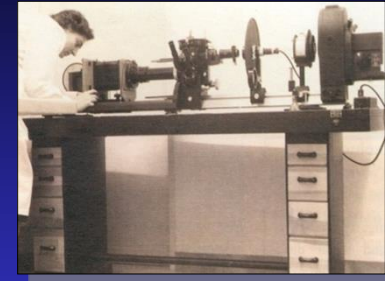


Straumann company
is a global leader
in implant dentistry
and oral tissue
regeneration



Straumann products and services are available in over 60 countries through 21 sales and marketing subsidiaries and a broad network of distributors

The brief history of Straumann company



1954 foundation of a Research Institute by Reinhardt Straumann

1954-1970 watch technology, production of metal alloys for orthopedy and implantology

1970-1990 screws for traumatology, oral implants

1980 ITI = International Team for Implantology together with the University of Bern

/A.Schroeder/

1990- oral implants



Main Production in Villeret Switzerland

- Built 2002, expanded 2005
- State of the art facility in the heartland of precision engineering
- 330 professionals, producing 4.5 million components per year
- Certified to ISO 9001, ISO 13485, ISO 14001



Old head office in Waldenburg



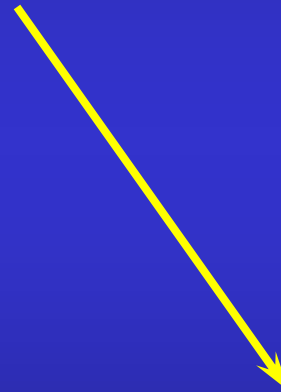
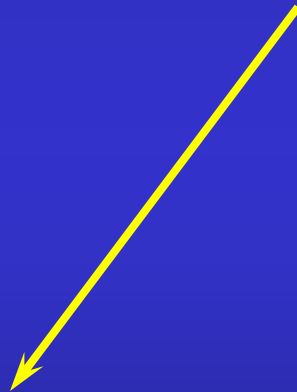
New head office in Basel /from 2005/



IMPLANT



IMPLANT SYSTEM



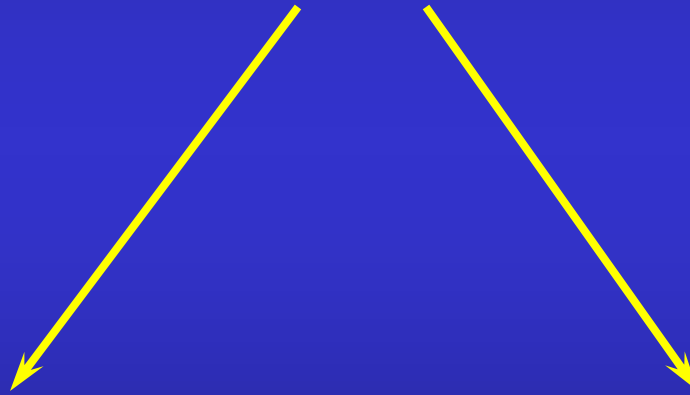
**SURGICAL
INSTRUMENTS**

**PROSTHETIC
ACCESSORIES**

IMPLANT



IMPLANT SYSTEM



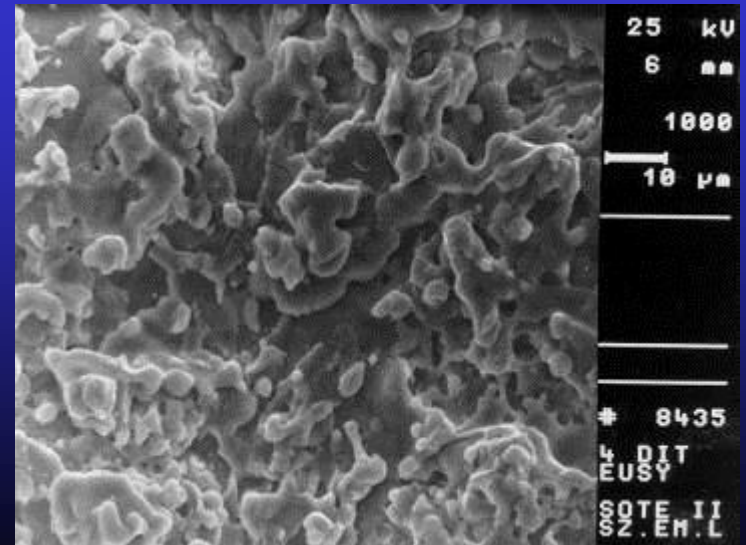
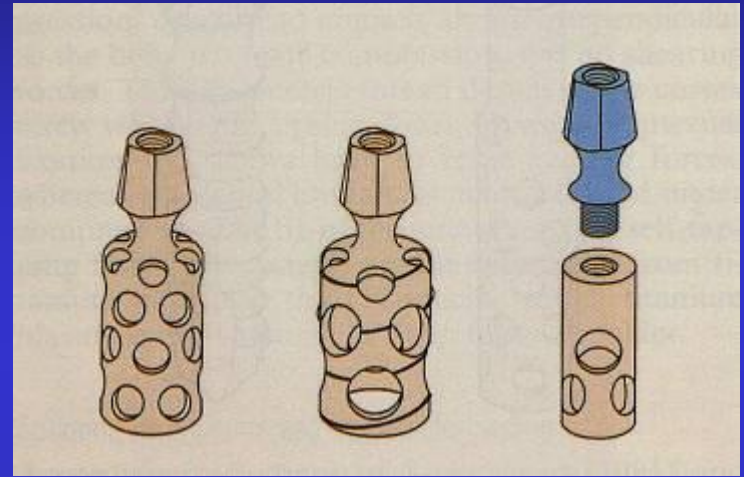
**SURGICAL
INSTRUMENTS**

**PROSTHETIC
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The history of Straumann implant system: **Implants**

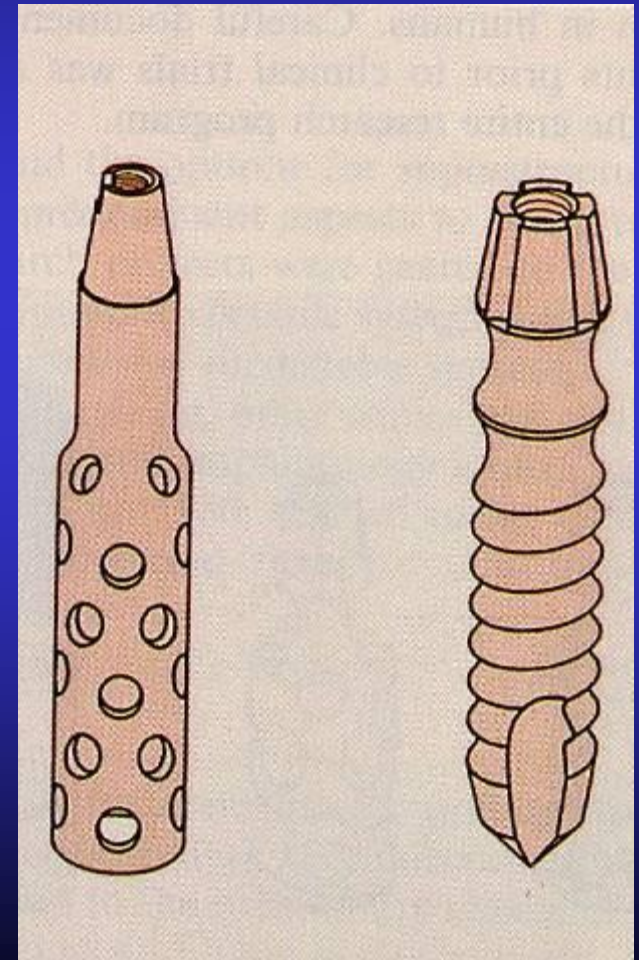
- 1974 Type C
TPS surface

TITAN PLASMA SPRAY coating

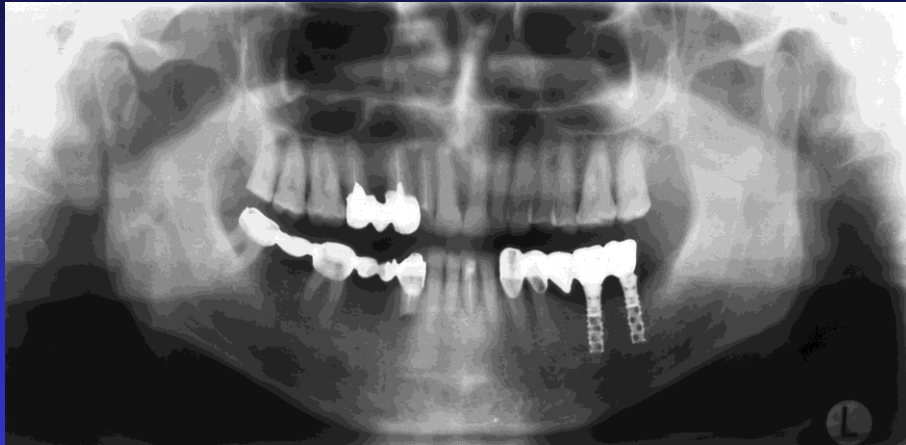


The history of Straumann implant system: **Implants**

- 1974 Type C TPS surface
- **1976 Type F, Screw**



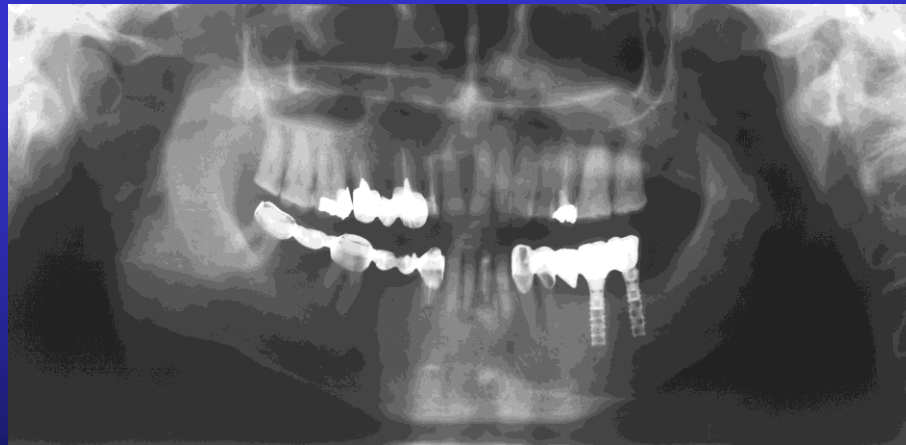
07.1993



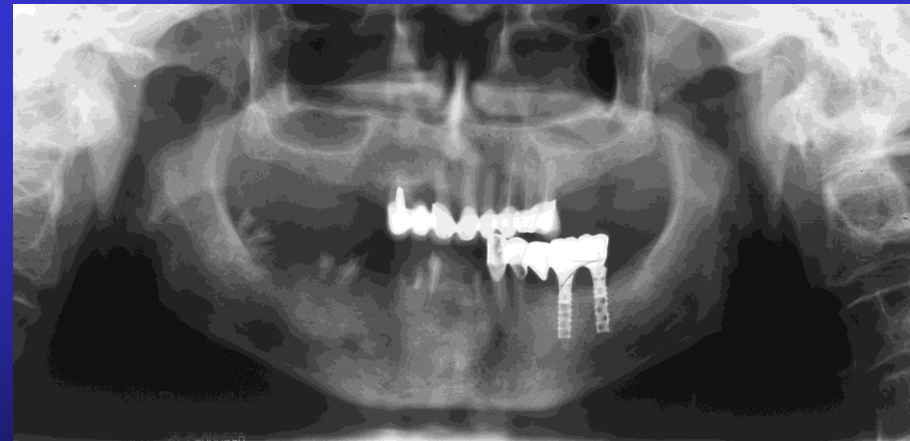
03.1995



10.1998

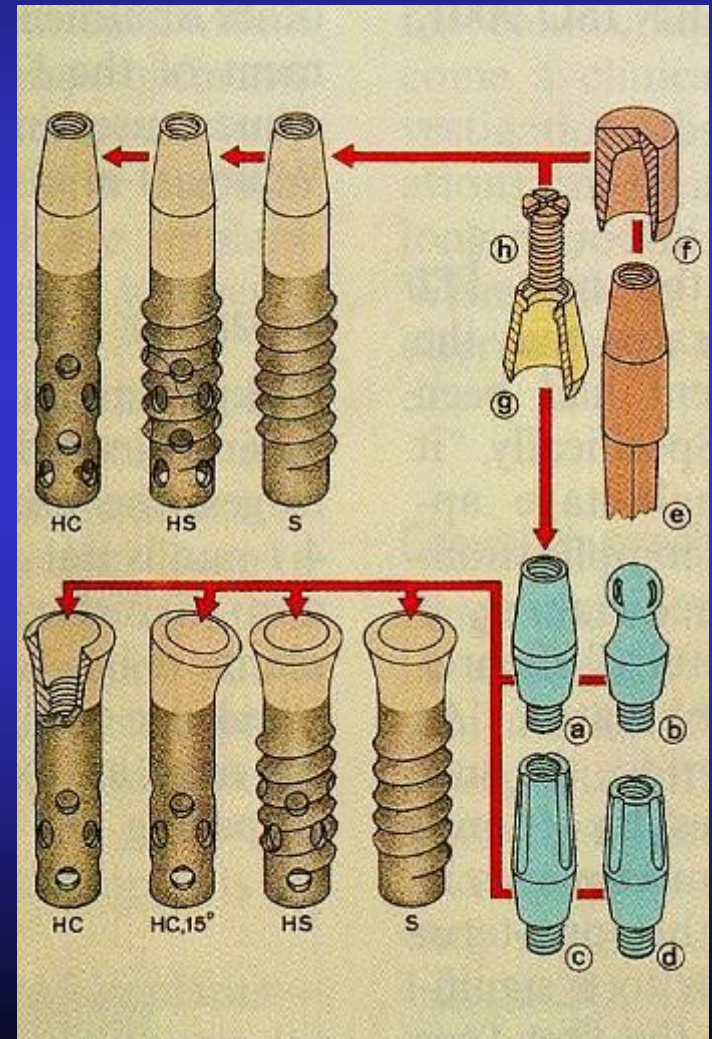


09.2008



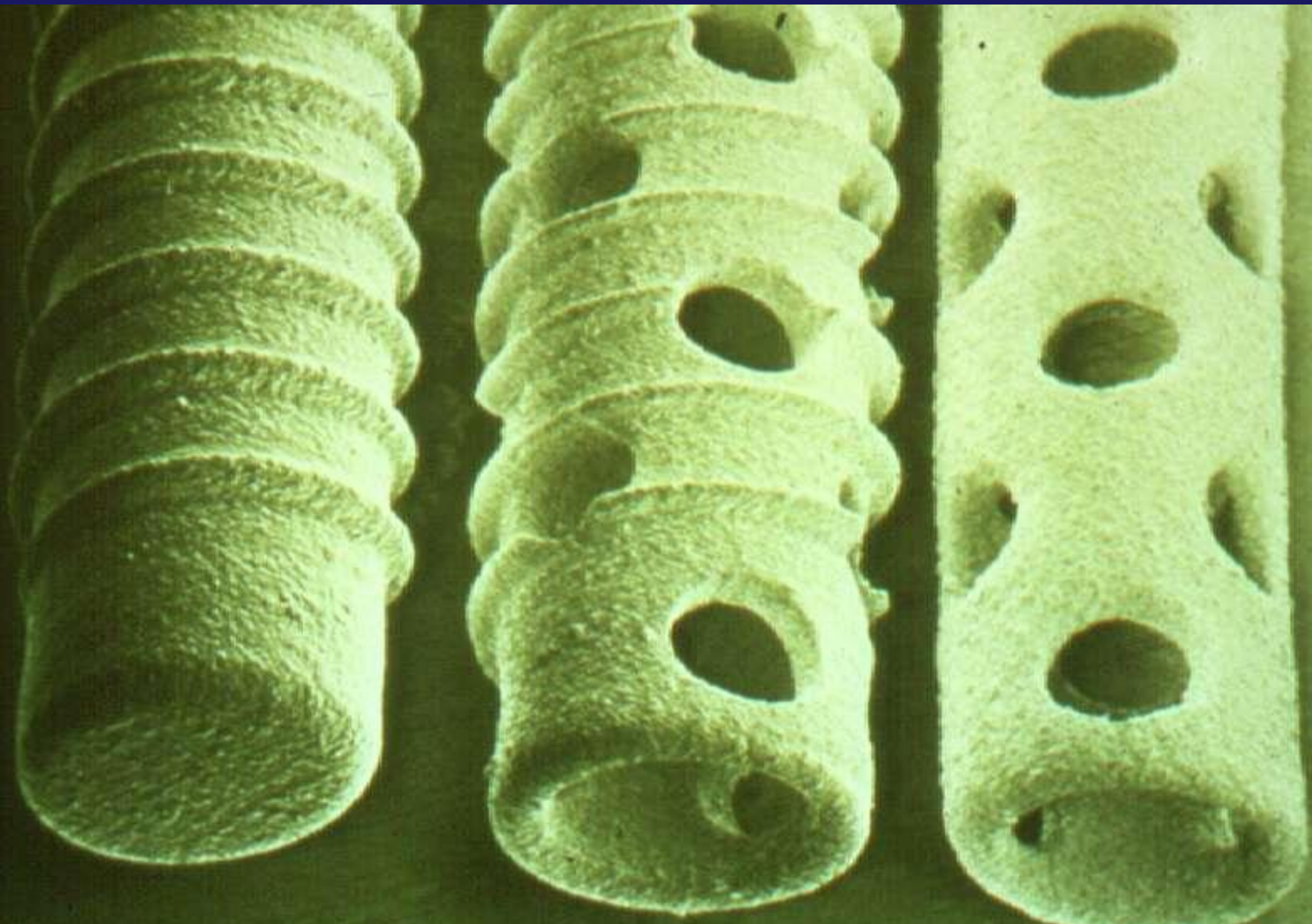
The history of Straumann implant system: **Implants**

- 1974 Type C TPS surface
- 1976 Type F, Screw
- **1986 Bonefit system**



Increasing the surface on macro and micro level

Bonefit implants

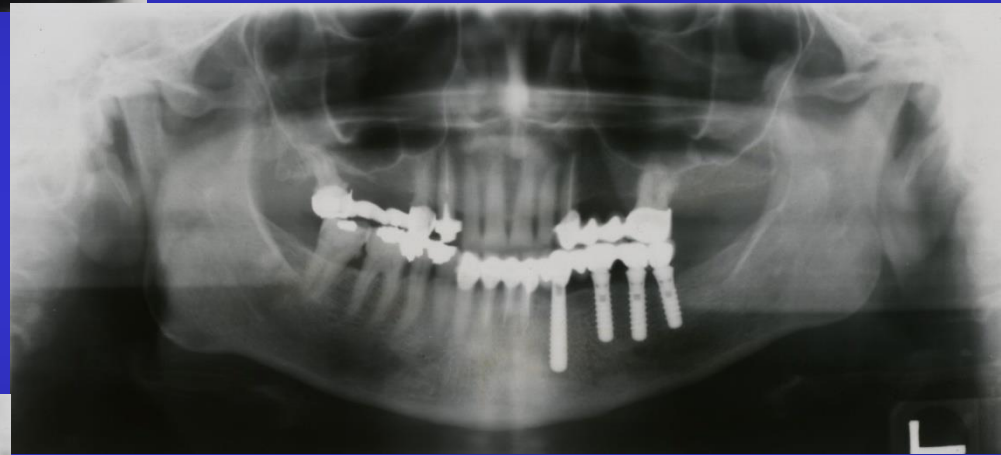


02.1992



Bonefit implants

10.1993

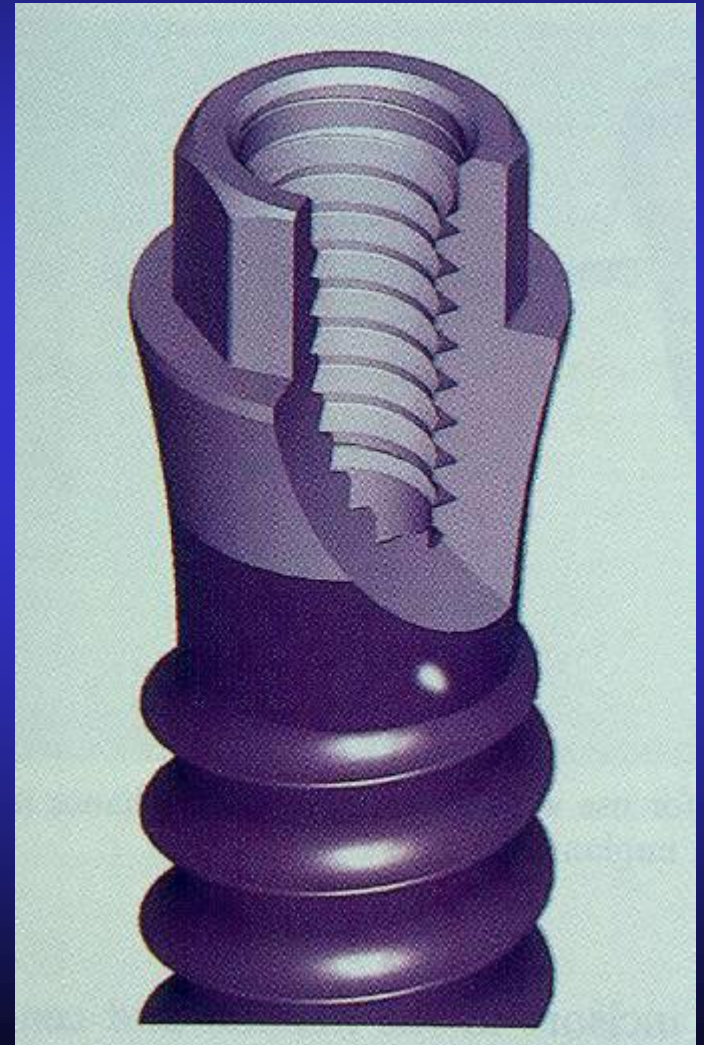


09.2006



The history of Straumann implant system: **Implants**

- 1974 Type C TPS surface
- 1976 Type F, Screw
- 1986 Bonenefit system
- **1996 3,3 mm \emptyset implant**



The history of Straumann implant system: **Implants**

- 1974 Type C TPS surface
- 1976 Type F, Screw
- 1986 Bonenefit system
- 1996 3,3 mm \emptyset implant
- **1997 SLA surface**

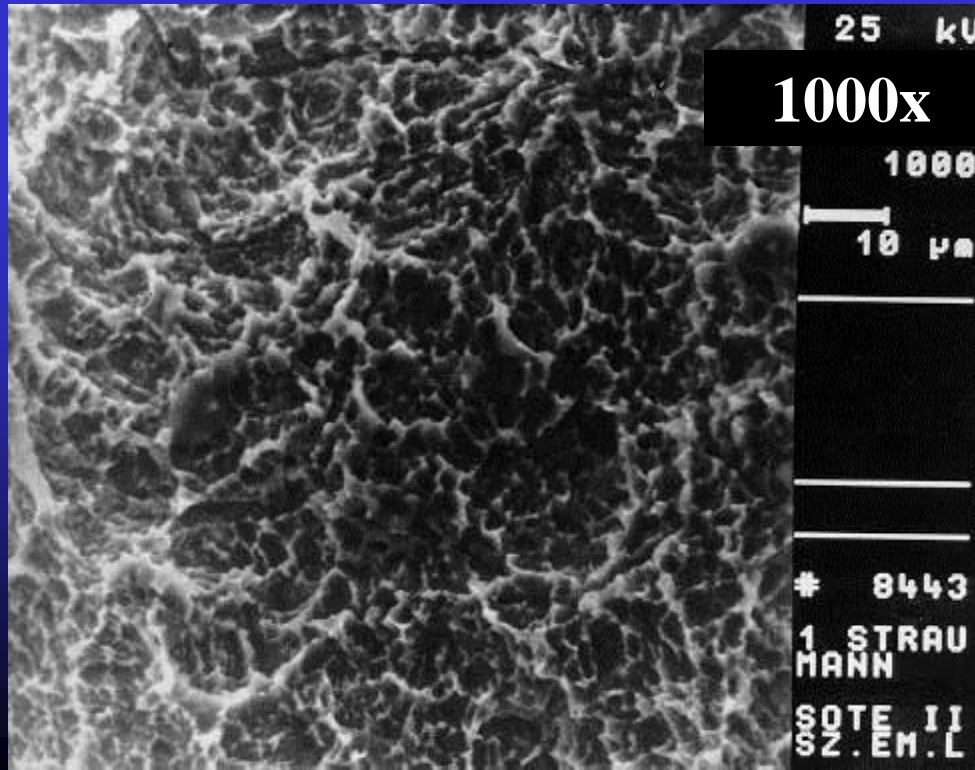
Sand –blasted

Large grit

Acid-etched

The main characteristics of ITI- Straumann system

- SLA implant surface



6 weeks healing time

The history of Straumann implant system: **Implants**

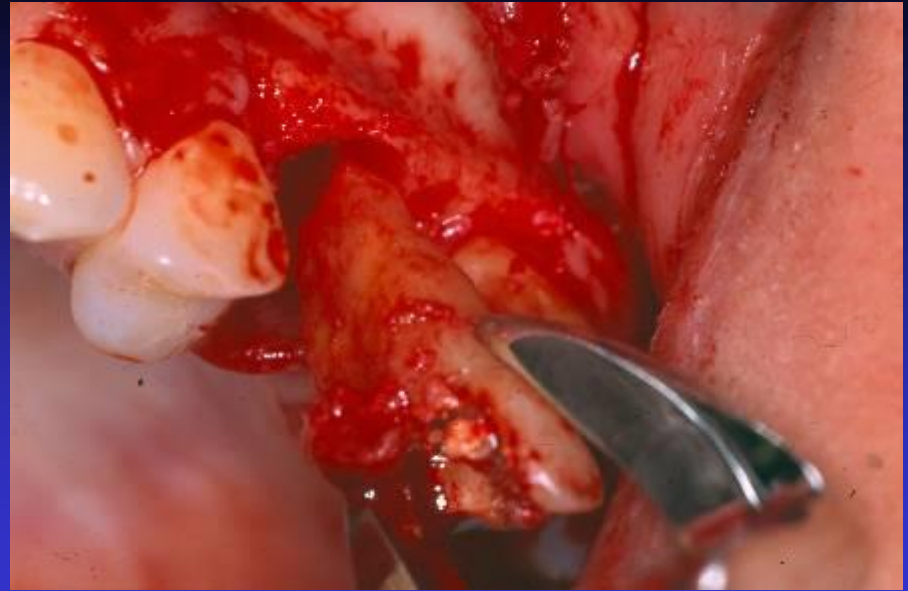
- 1974 Type C TPS surface
- 1976 Type F, Screw
- 1986 Bonelit system
- 1996 3,3 mm \varnothing implant
- 1997 SLA surface
- **2002 The new TE implant, for immediate implantation**

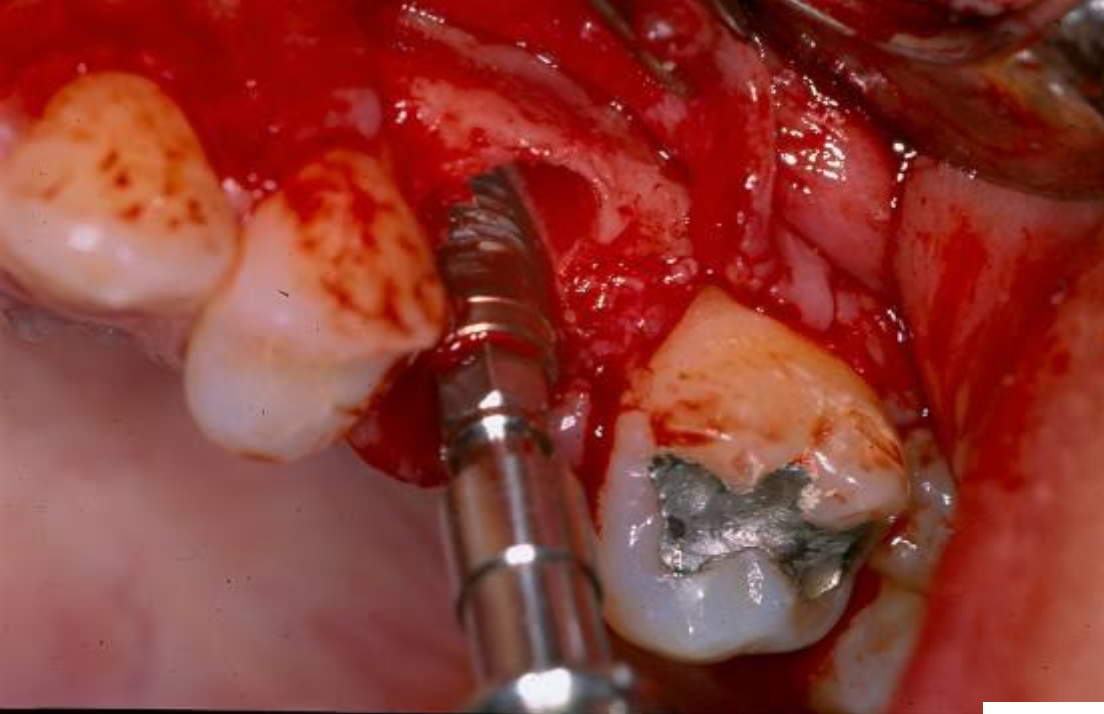




Case presentation











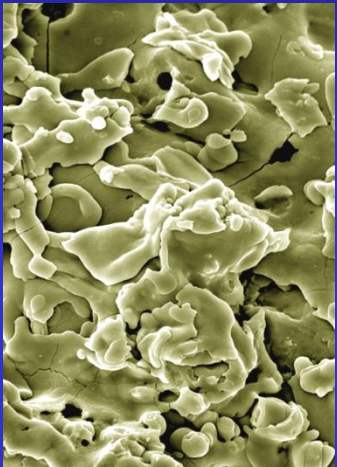


The history of Straumann implant system: **Implants**

- 1974 Type C TPS surface
- 1976 Type F, Screw
- 1986 Bonelit system
- 1996 3,3 mm ø implant
- 1997 SLA surface
- 2002 The new TE implant, for immediate implantation
- **2006 SLActive surface**
/3-4 weeks healing time/

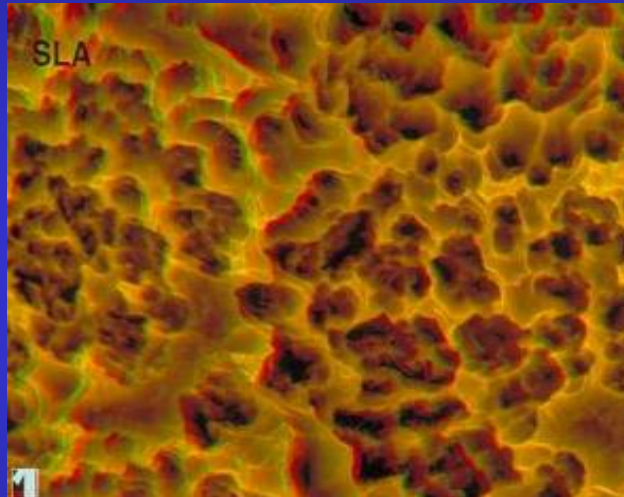
Development of the surface of Straumann implants

1974



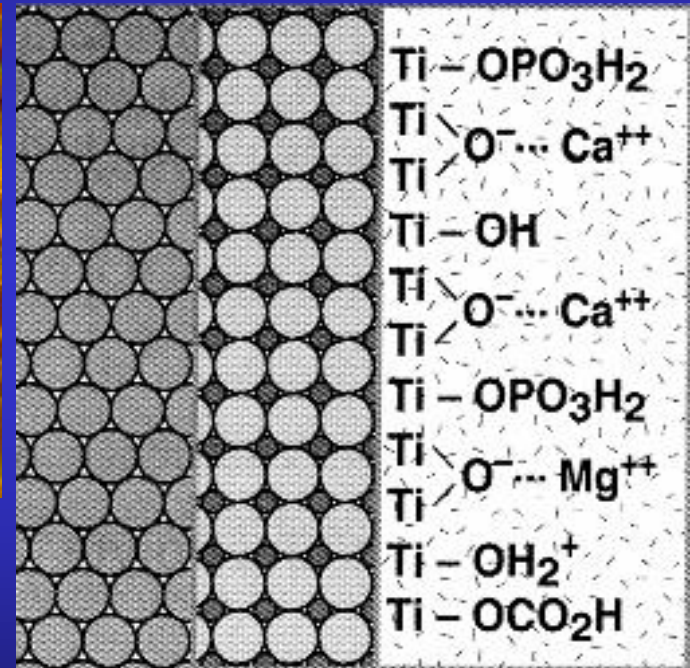
Straumann® TPS
(Macro)

1998



Straumann® SLA
(Micro)

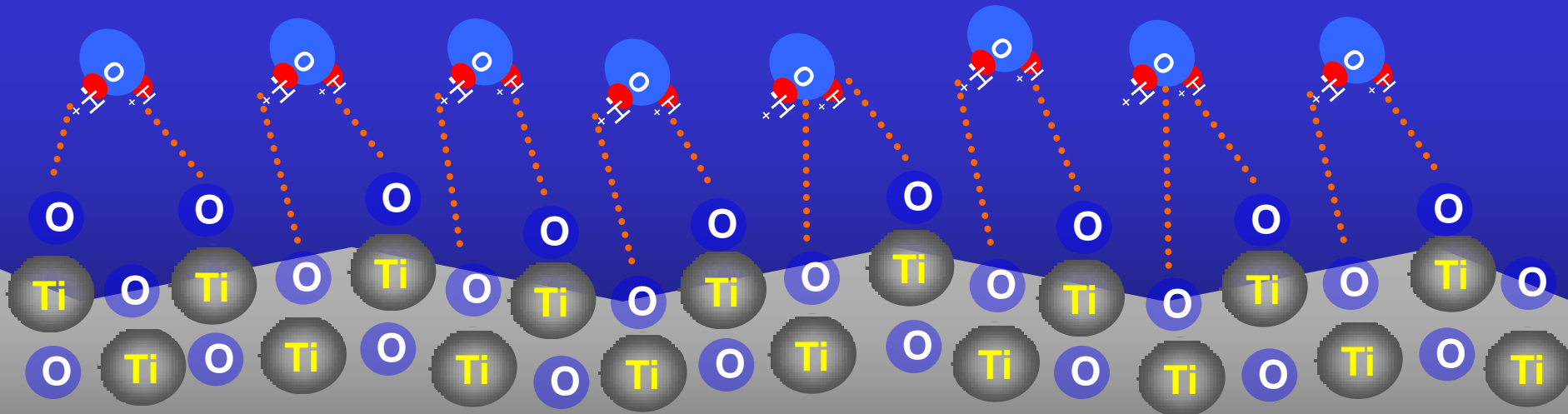
2005



Straumann® SLActive
(Molekular)

Osseointegration of titanium implants

Metal surface, metal bond
Dipole zone
delocalised electrons



TiO

Ti₂O

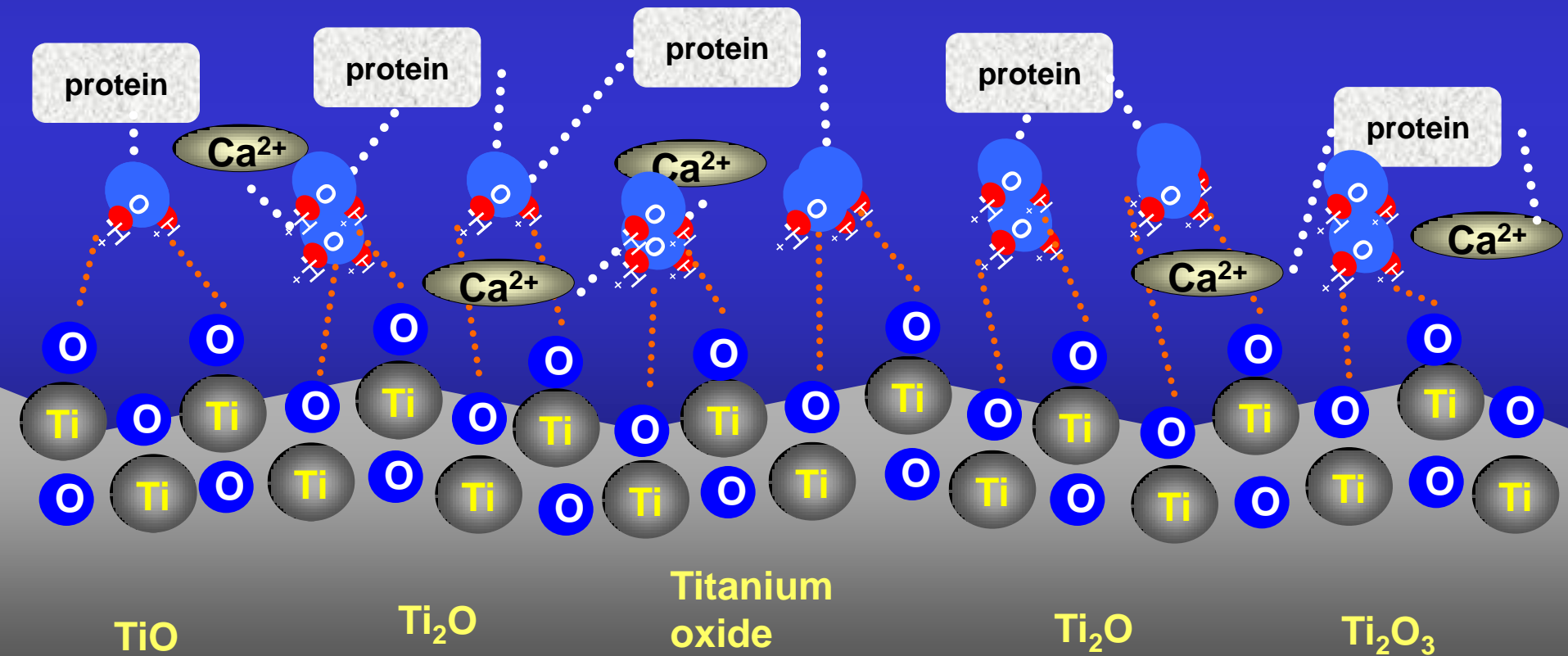
Titanium
oxide

Ti₂O

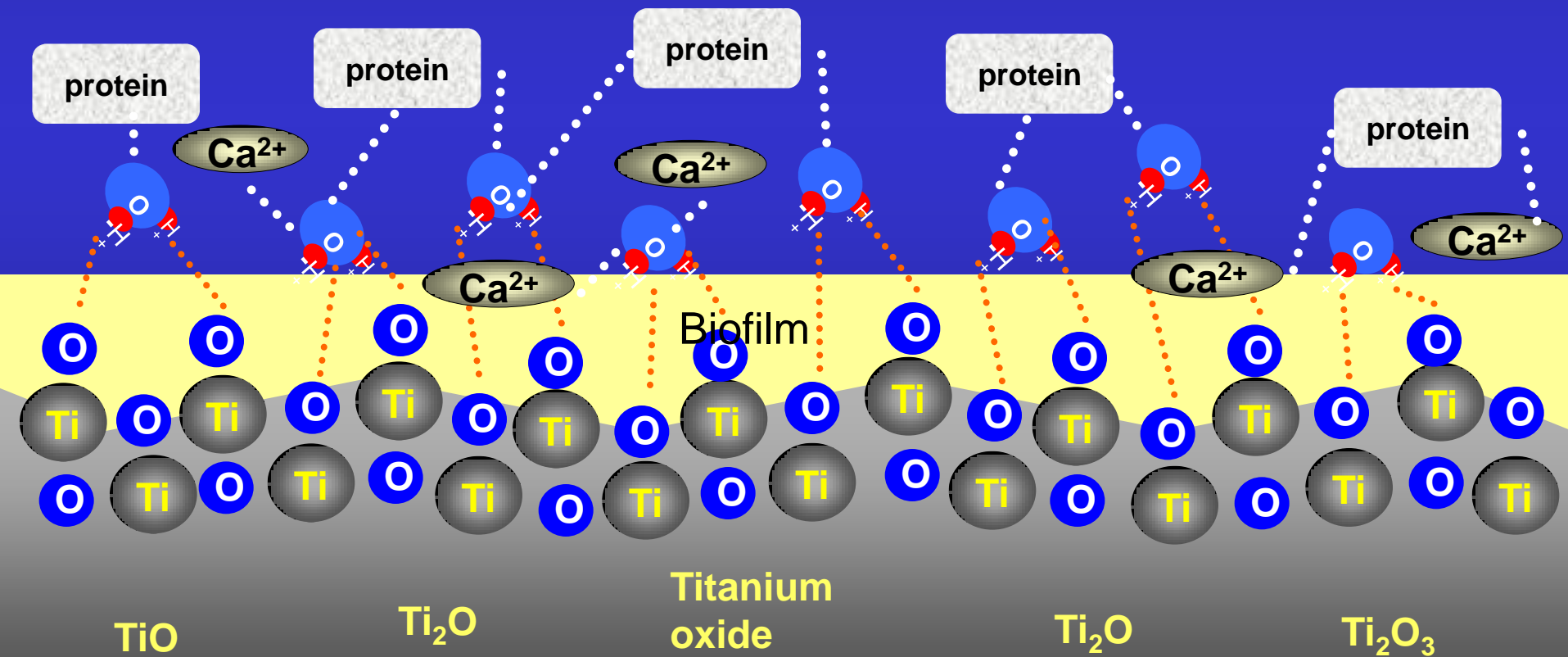
Ti₂O₃

Osseointegration of titanium implants

Ions, serum proteins

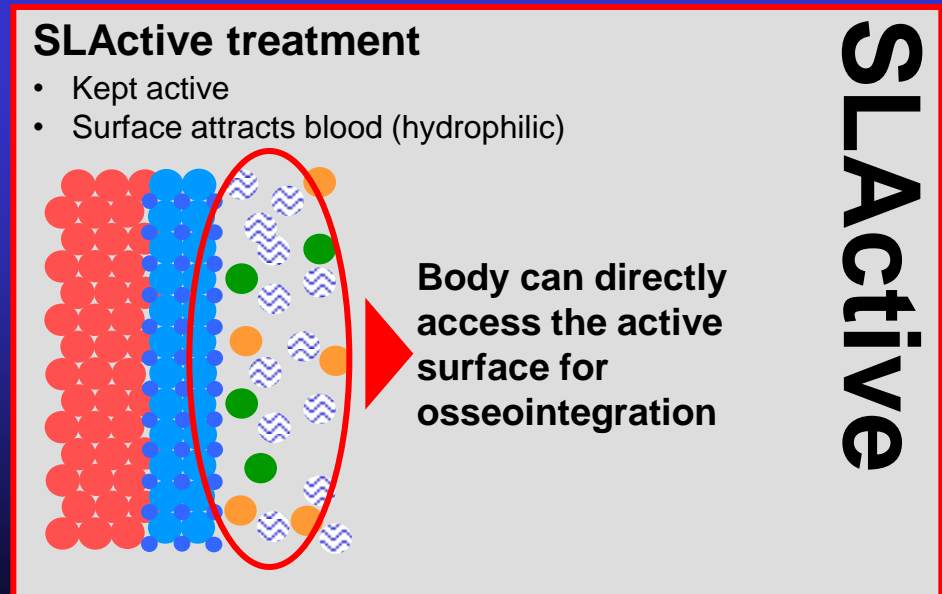
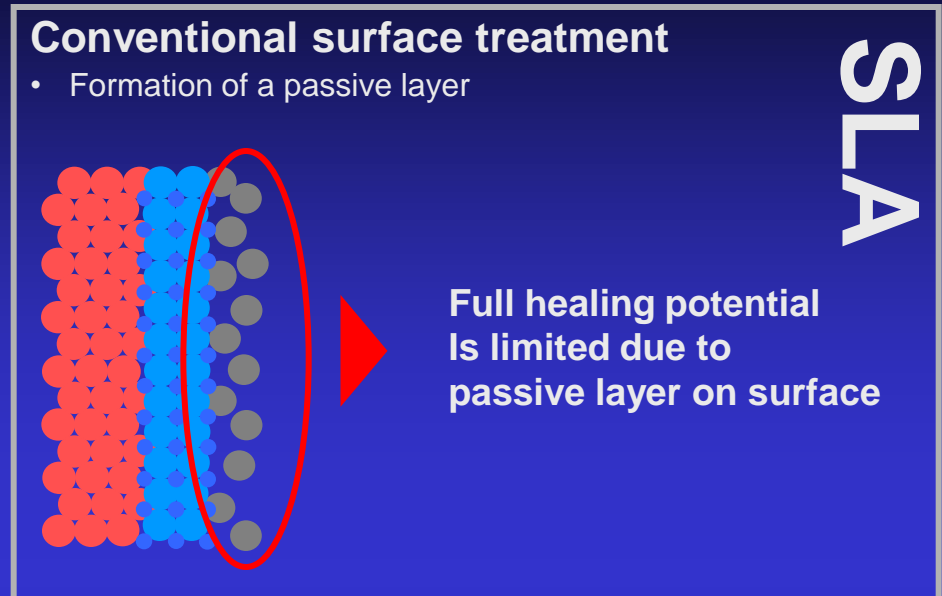
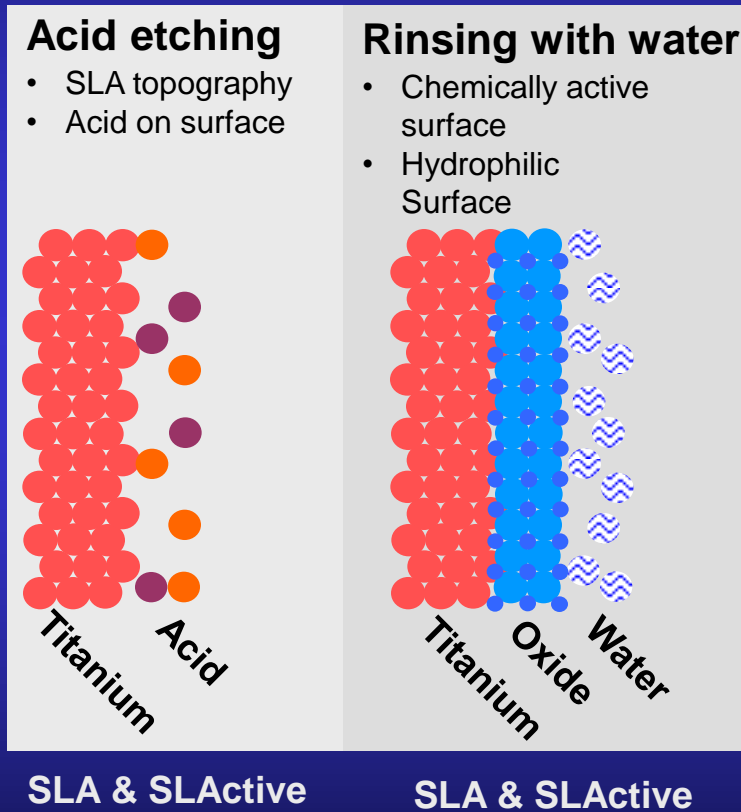


Osseointegration of titanium implants



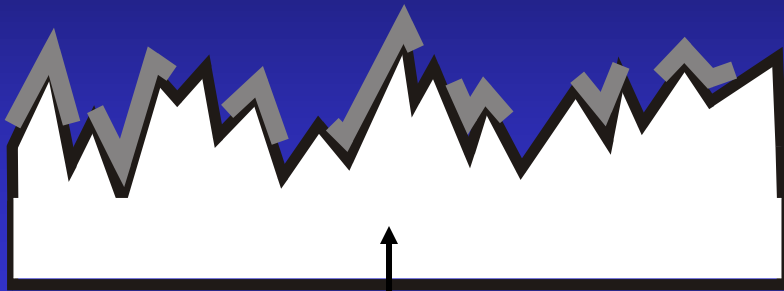
Difference between SLA and SLActive

Innovation production process



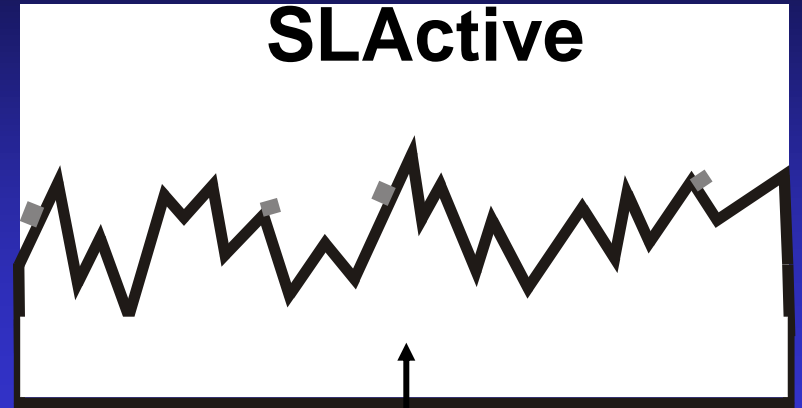
Preservation of SLActive in ideal condition

SLA



Surface partially covered with hydrocarbons due to atmospheric contact

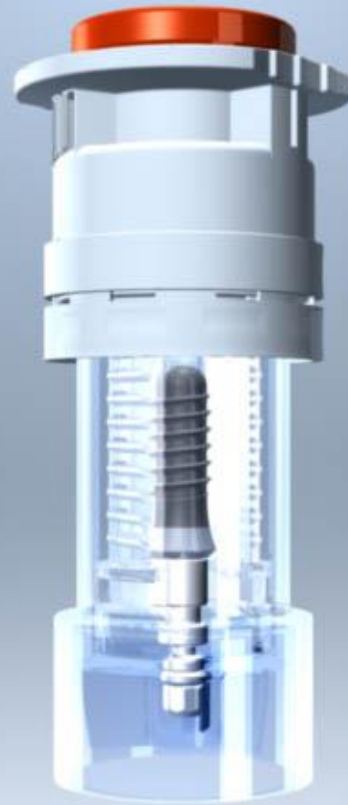
SLActive



Surface not covered with hydrocarbons

➔ providing a **greater accessible surface area**

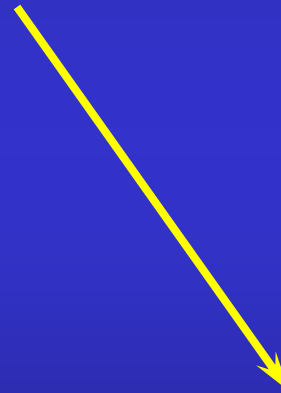
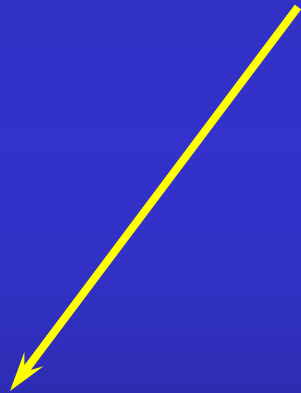
A watertight **plastic vial** has been developed which allows implants with SLActive to be preserved in this activated and hydrophilic state until used by the dental professional.



IMPLANT



IMPLANT SYSTEM



**SURGICAL
INSTRUMENTS**

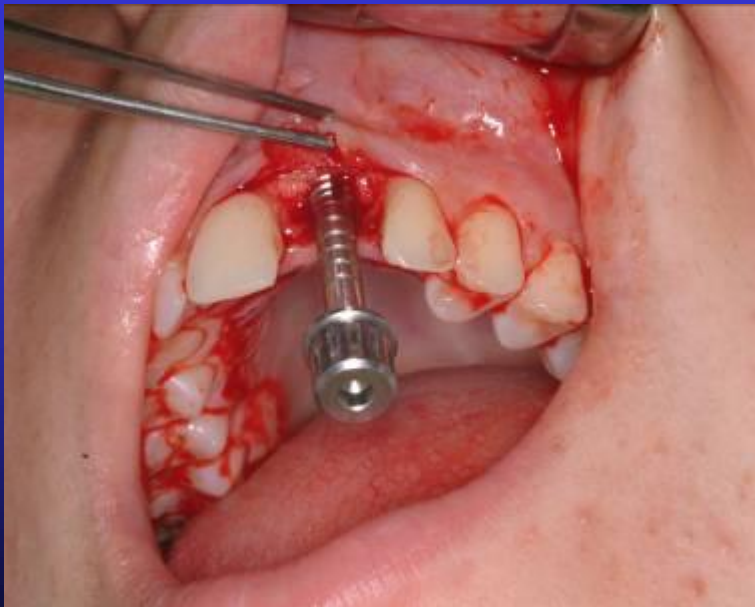
/Surgical technique/

**PROSTHETIC
ACCESSORIES**

Placement of ITI Straumann implant



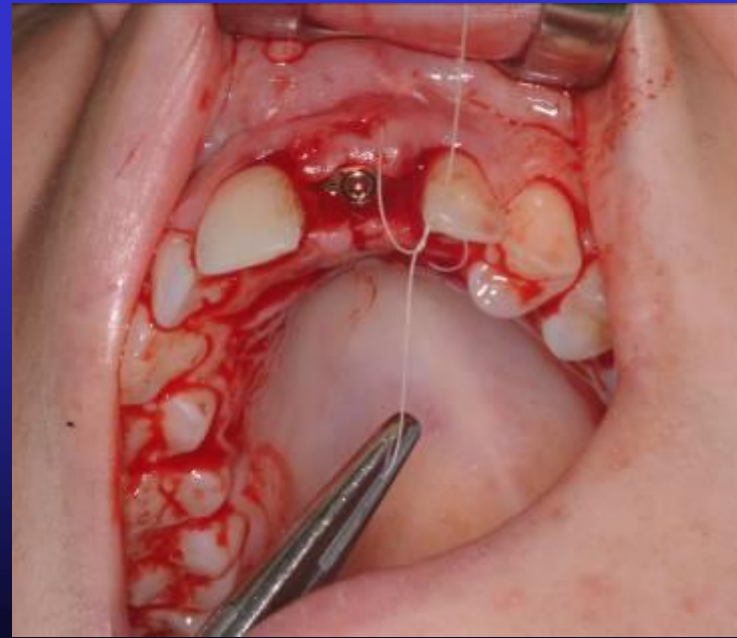
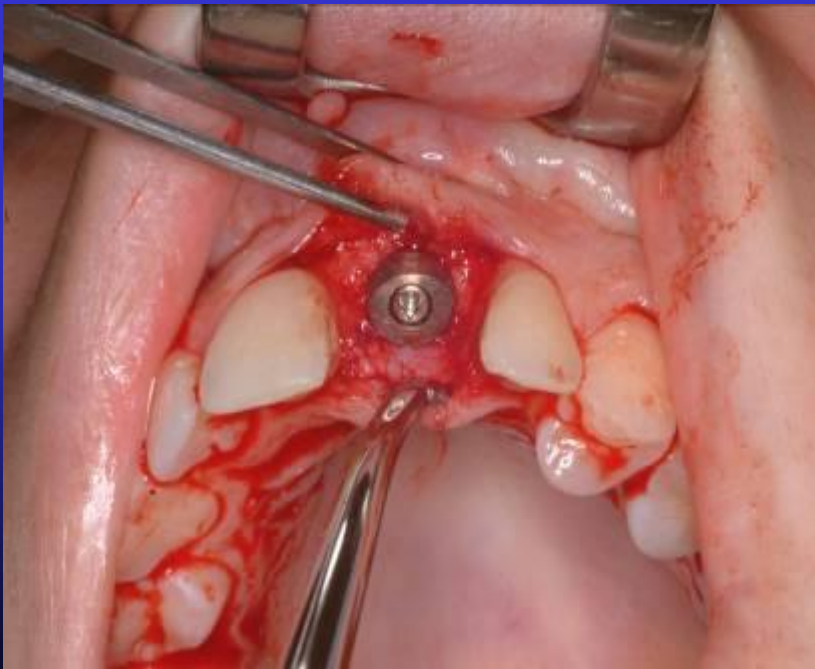
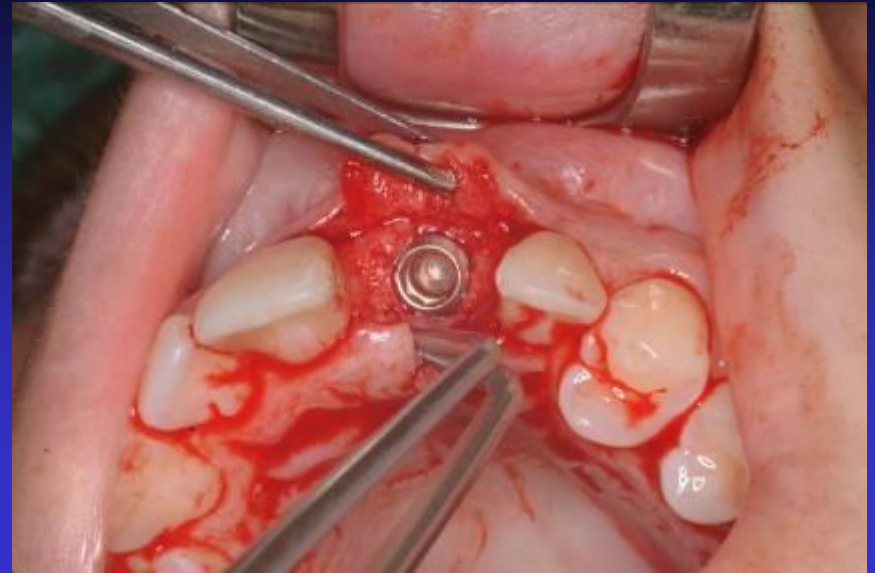
Placement of ITI Straumann implant



Placement of ITI Straumann implant

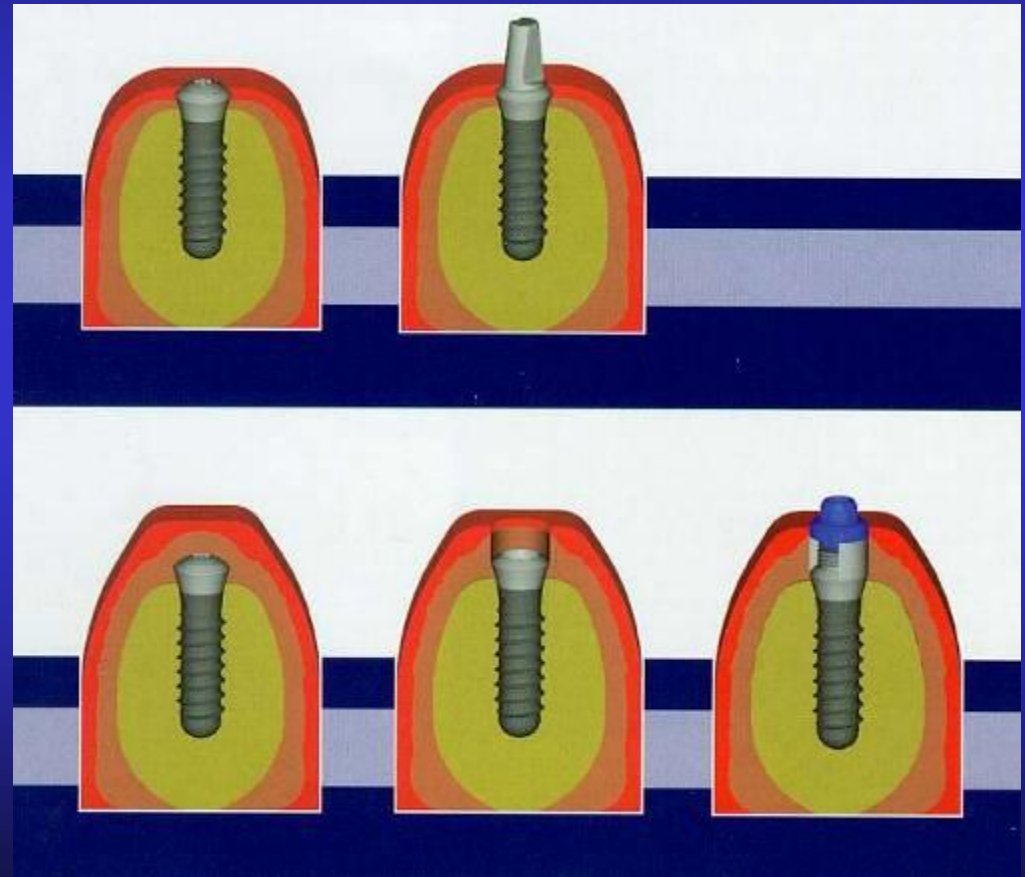


Placement of ITI Straumann implant



The main characteristics of ITI Straumann system

- Planned for transmucosal healing



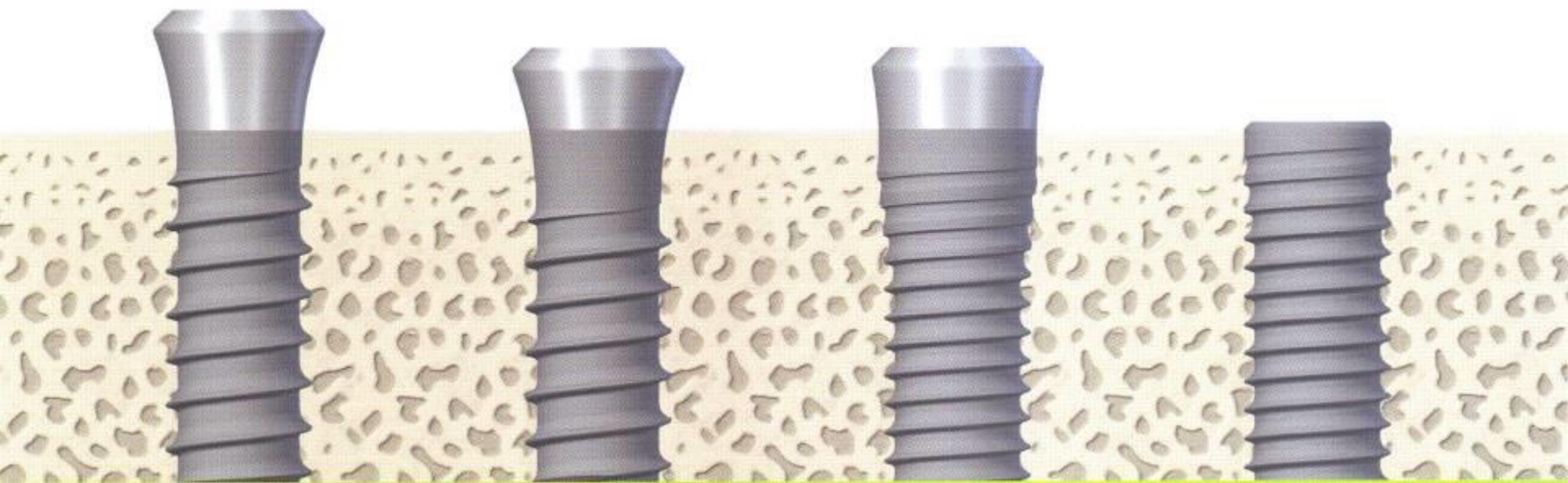
Tissue Level / transmucosal/ Straumann Implants



Changes in the concept of the form of Straumann implants

Tissue level implants

Bone level



Straumann®
Standard

1986

Straumann®
Standard Plus

Straumann®
Tapered Effect

2002

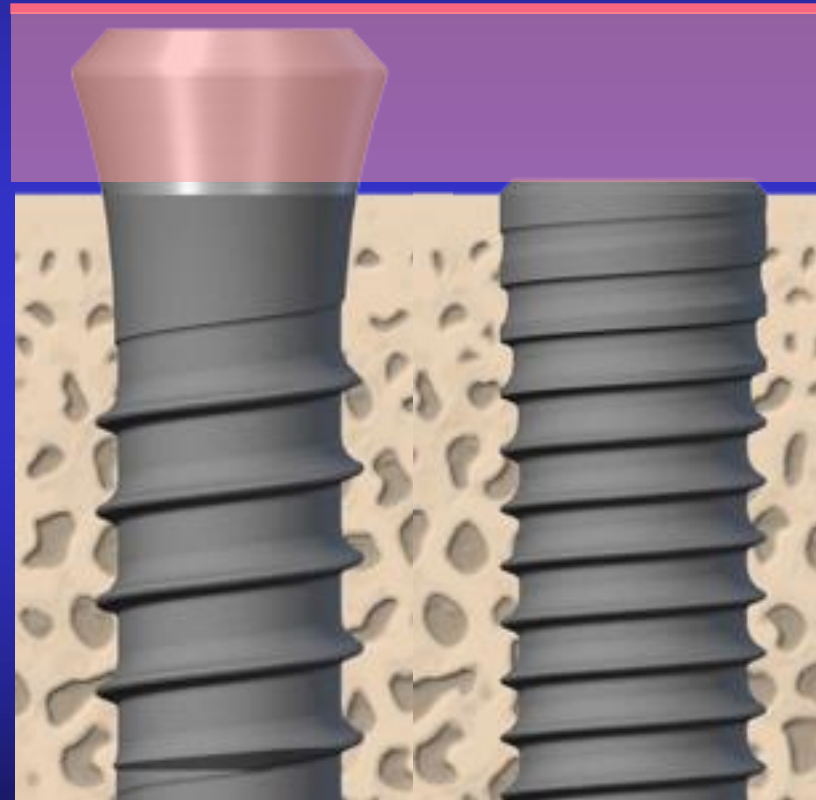
Straumann®
Bone Level

2007

Bone Level /BL/ implant 2007

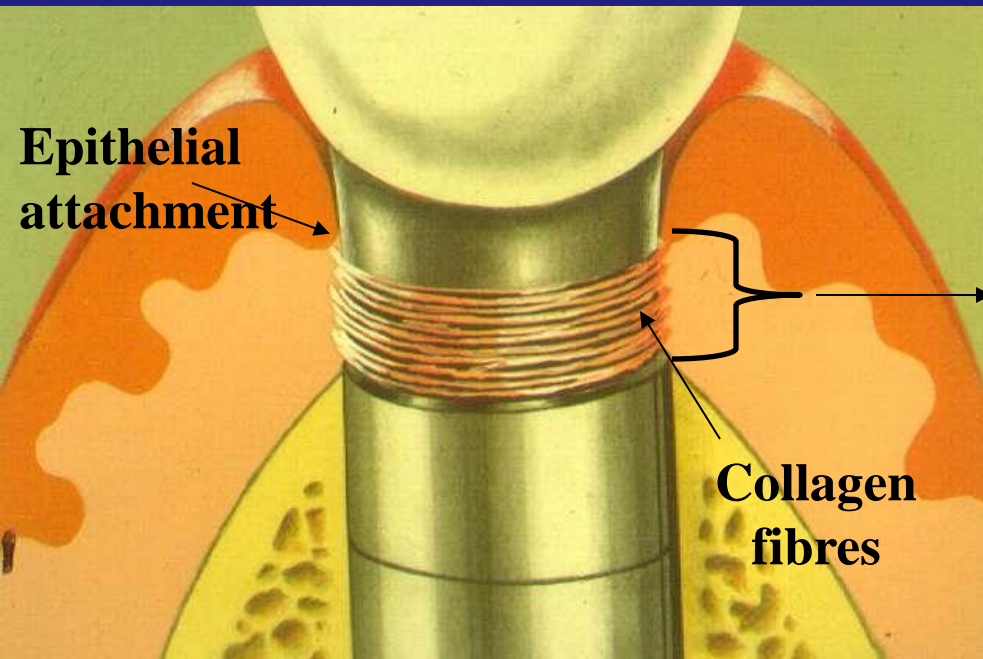
RN

BL



- **Bone level design**

Biologic width



A constant vertical dimension of periodontal, **periimplant** soft tissues

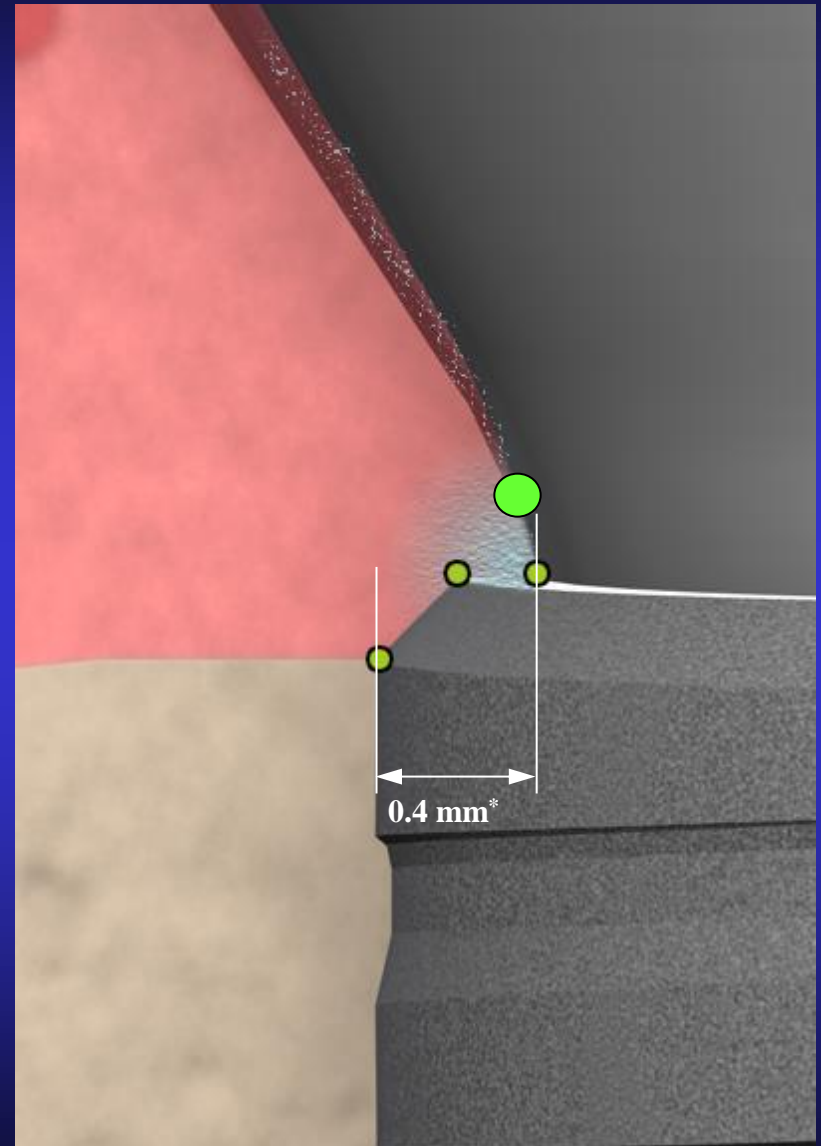
Hermann JS, Buser D, Schenk RK, Schoolfield JD, Cochran DL.:

Biologic Width around one-and two-piece titanium implants

Clinical Oral Implants Research 12, 2001; 559-571

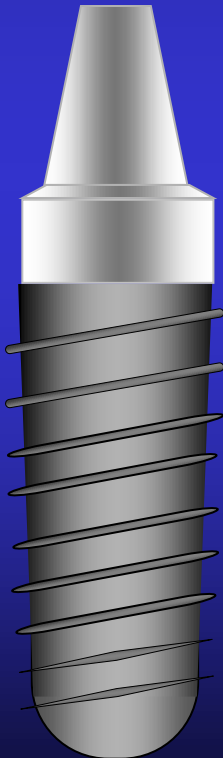
Bone Control Design

- Horizontal biological width: preservation of marginal bone



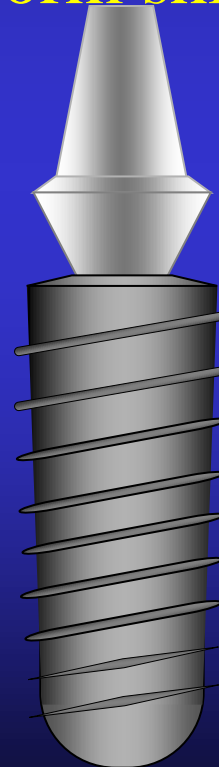
Implant-abutment connection

Marginal

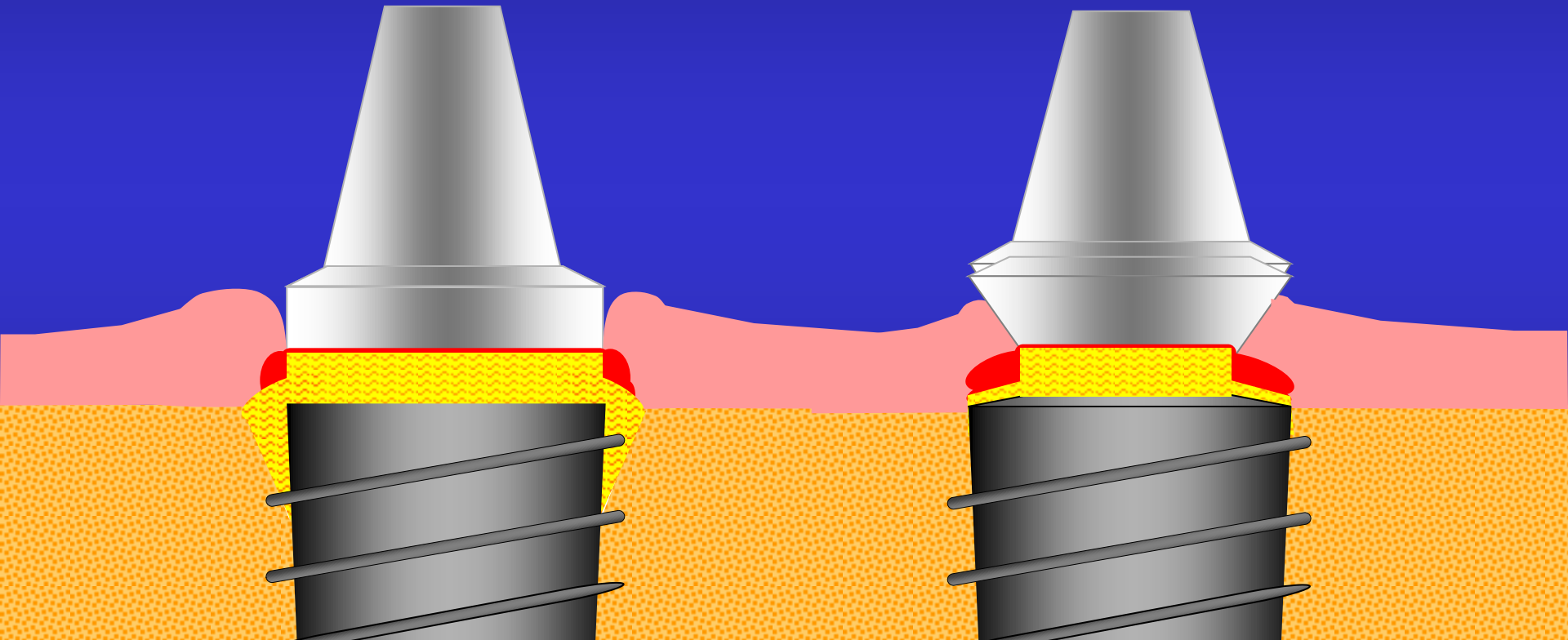


Central

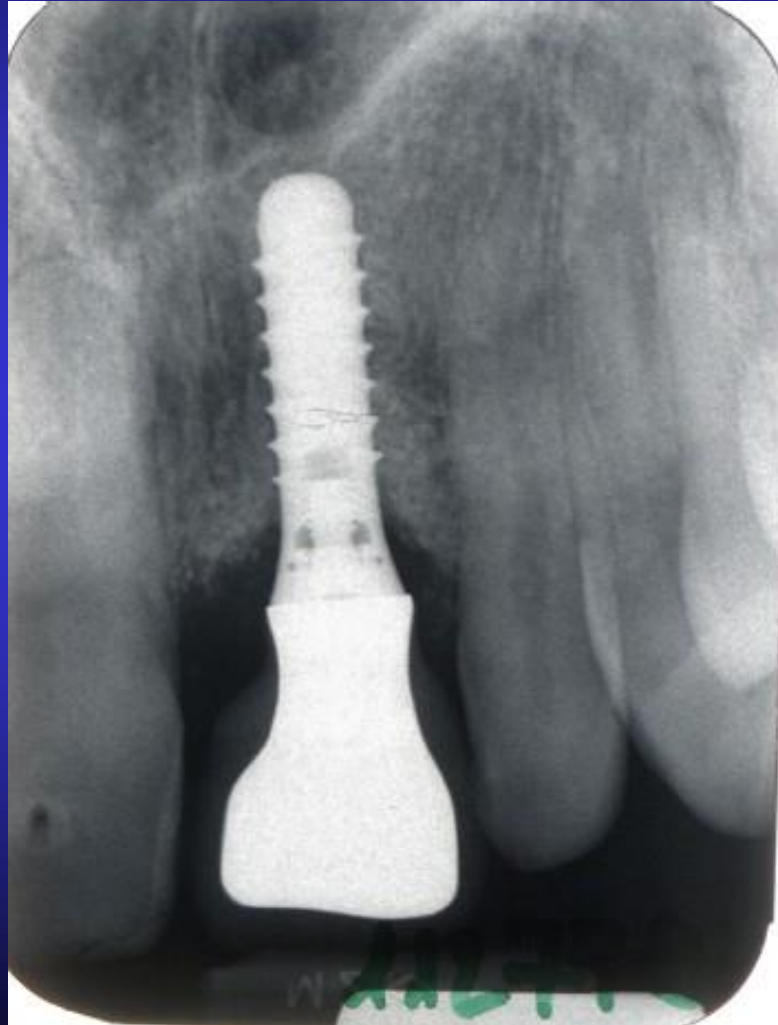
/platform switching,
platform shifting/



The changes in biological width after placement of abutment



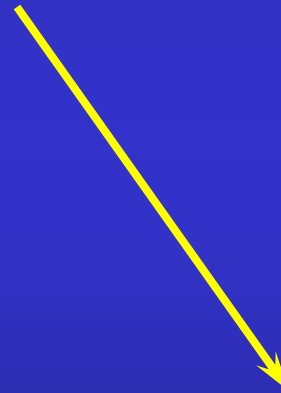
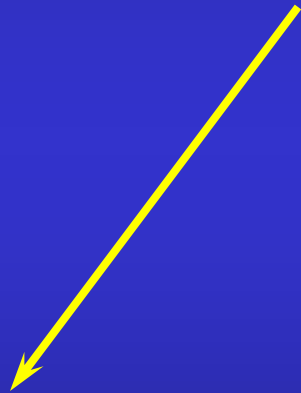
V-form bone loss around the marginal portion of implant



IMPLANT



IMPLANT SYSTEM



**SURGICAL
INSTRUMENTS**

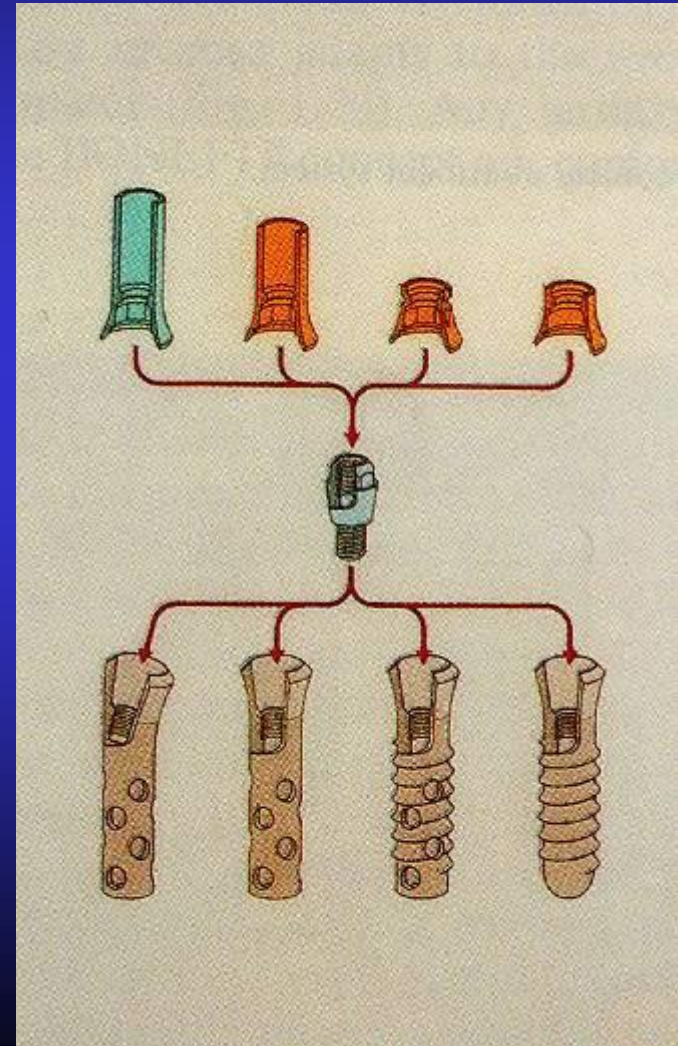
**PROSTHETIC
ACCESSORIES**

The history of ITI Straumann implant system: **Abutments**

- 1986 Bonelit system

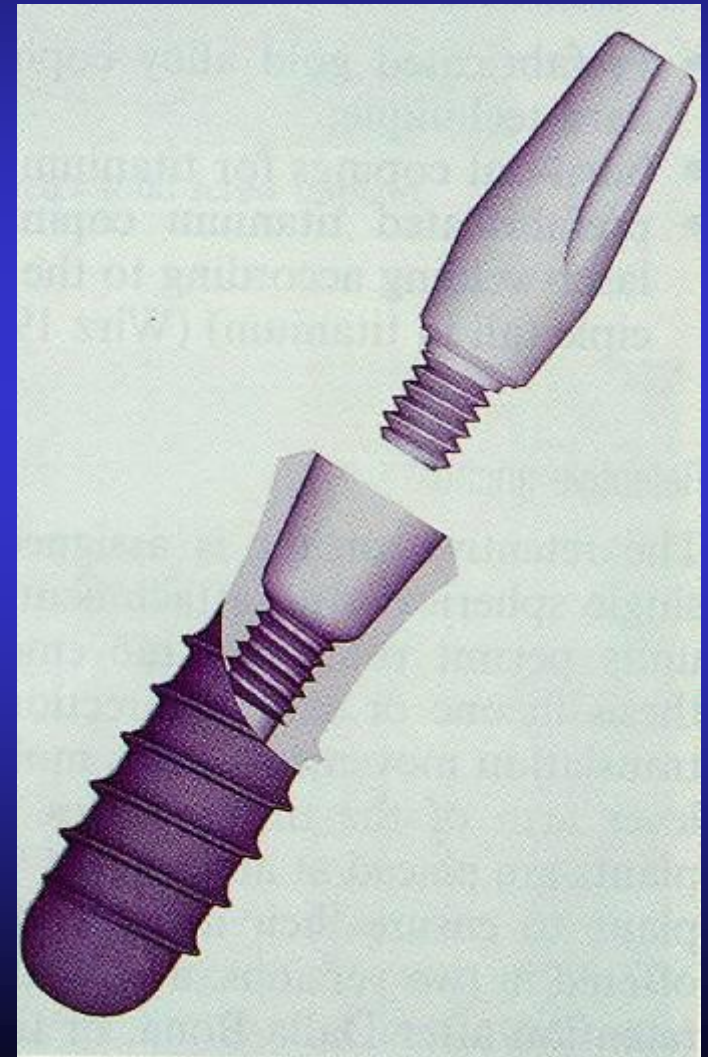
- 1991 Octa
abutments

Tapered connection

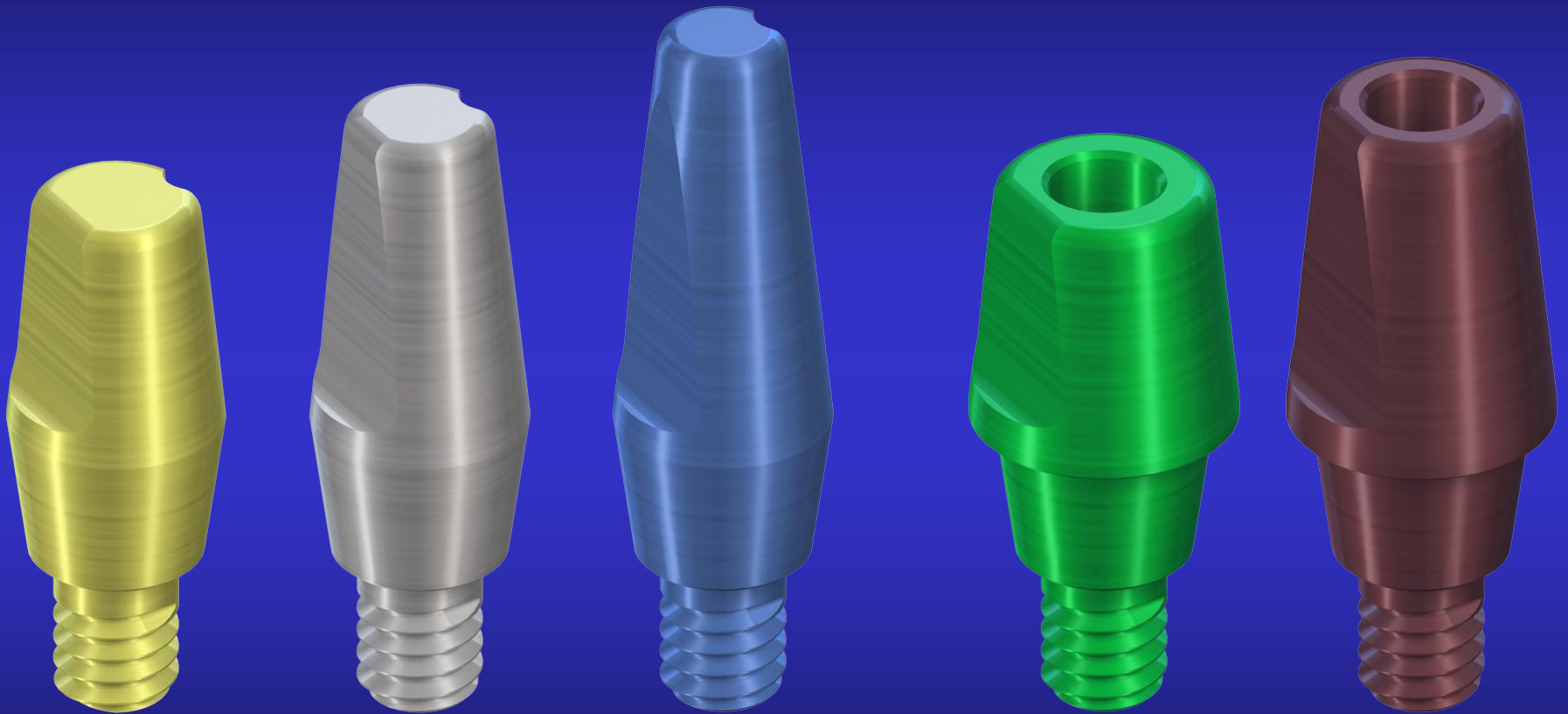


The history of ITI Straumann system: **Abutments**

- 1986 Bonenefit system
- 1991 Octa abutments
- **1994-1997**
Concept of
cementable
abutment



Straumann Solid abutments



RN

4,0 mm

RN

5,5 mm

RN

7,0 mm

WN

4,0 mm

WN

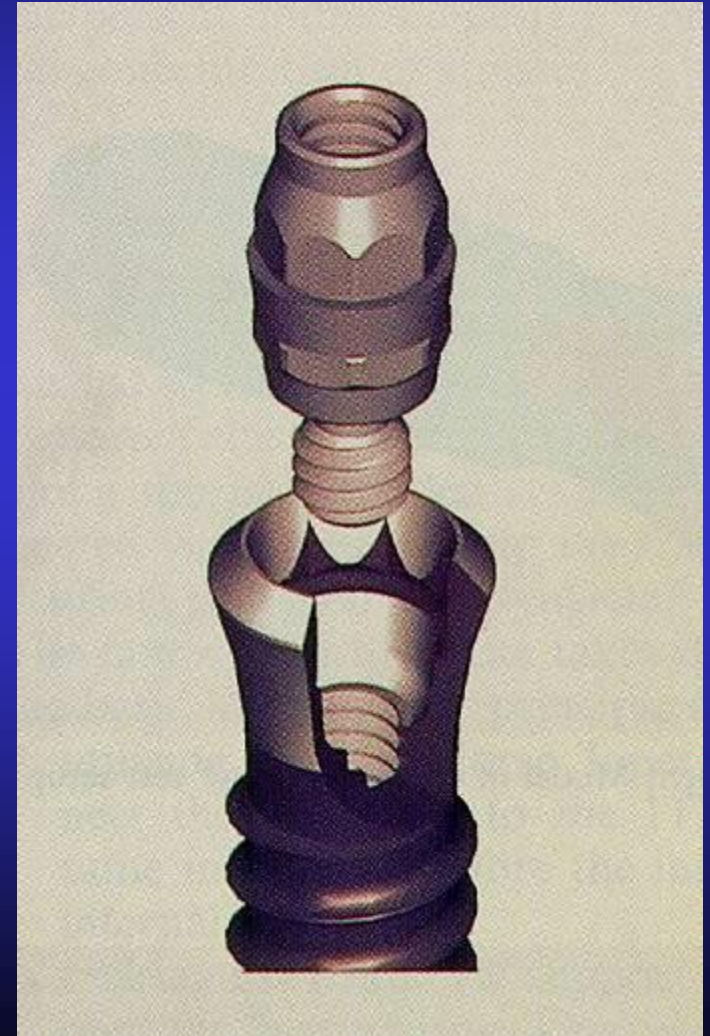
5,5 mm

Upper free-end situation,
cement retained FPD



The history of ITI Straumann system: **Abutments**

- 1986 Bonelit system
- 1991 Octa abutments
- 1994-1997 Cementable abutments
- **1999 SynOcta abutments**
Morse-taper connection

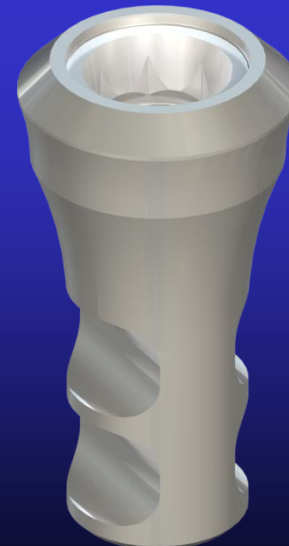


SynOcta cementable abutments

RN



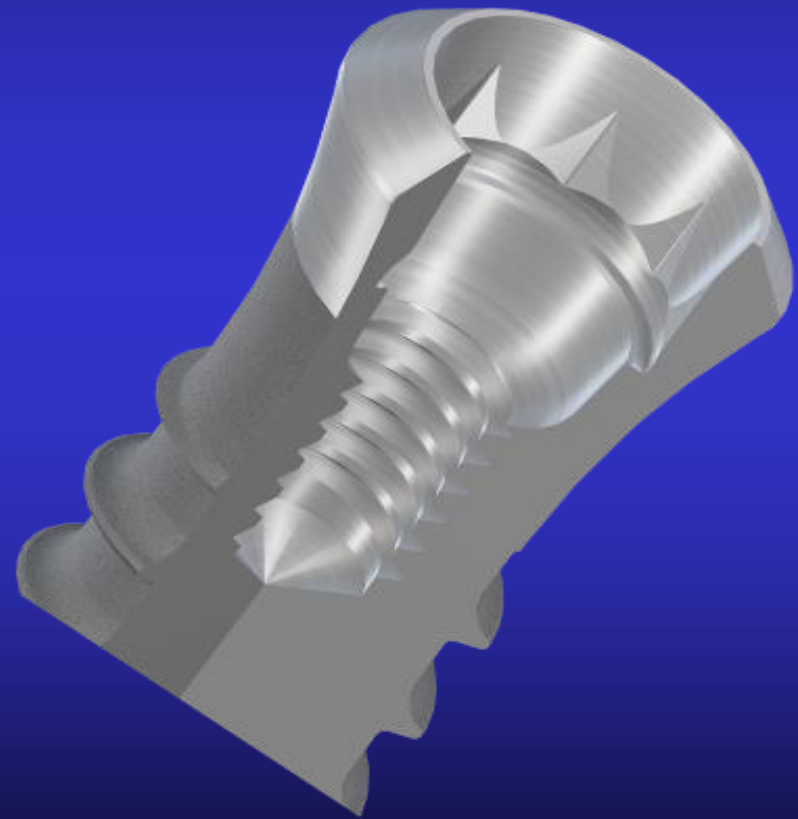
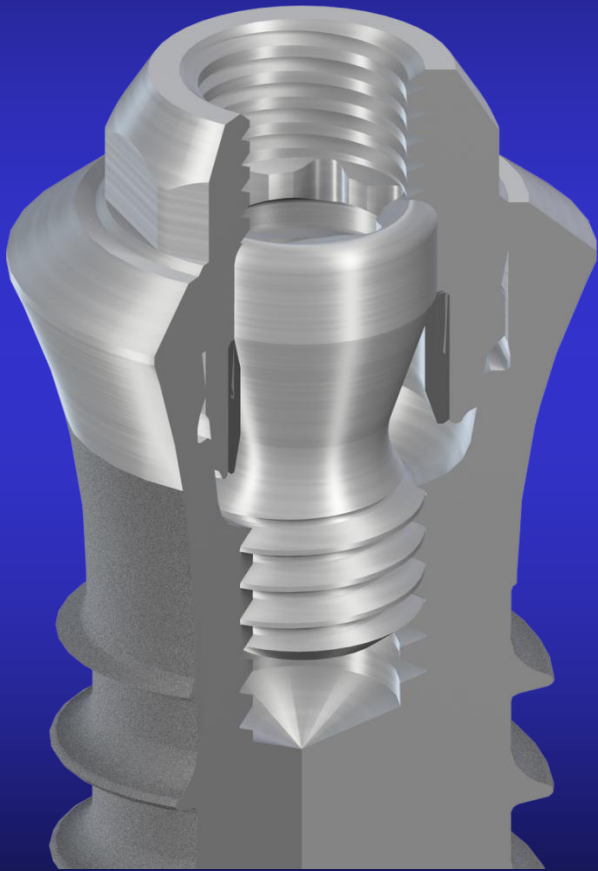
WN





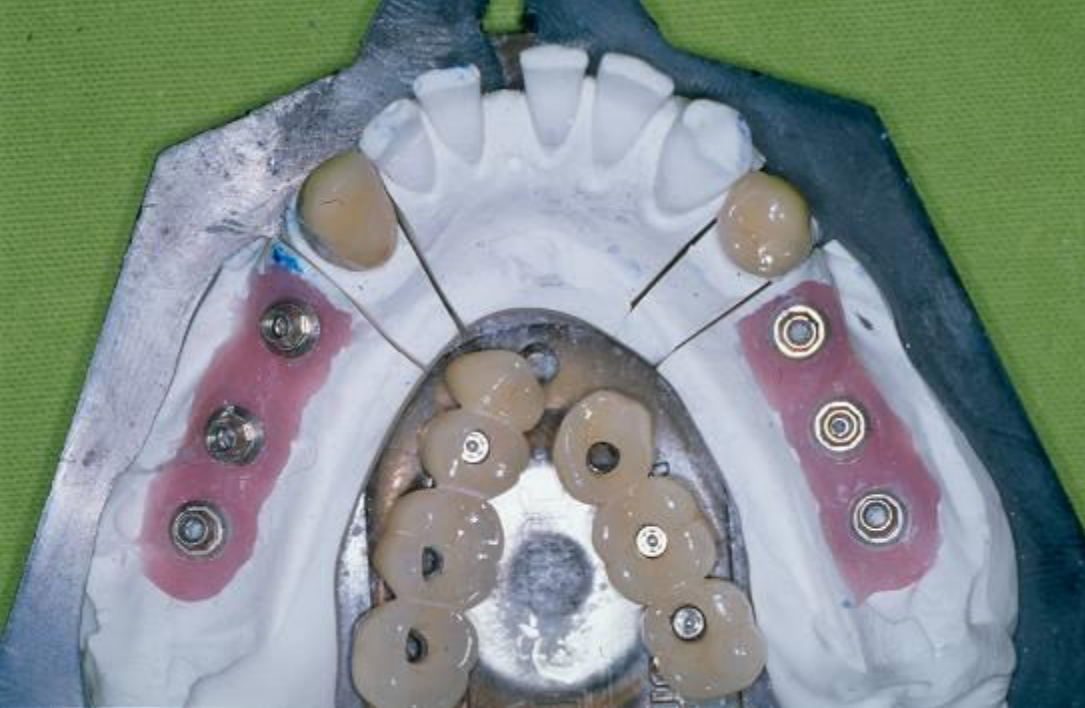
Straumann® SynOcta abutment for screw retention

/Inner octagon and morse taper connection/



**Bilateral free-end
situations, screw retained
FPDs by synOcta
abutments.**









The history of ITI Straumann system: **Abutments**

- 1986 Bonelit system
- 1991 Octa abutments
- 1994-1997 Cementable abutments
- 1999 SynOcta abutments



- **2006 Zirconium-oxide, custom-made abutments /CARES/**

Straumann® CARES / Computer Aided REstoration Service /



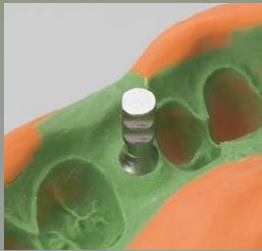
Narrow CrossFit



Regular CrossFit

CARES-etkon – wax up abutment

Dentist



Impression

Dental lab



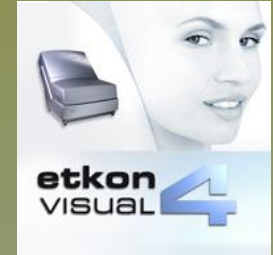
Wax-up sleeve



Modeling



Scan



Order



Completion

Dental lab

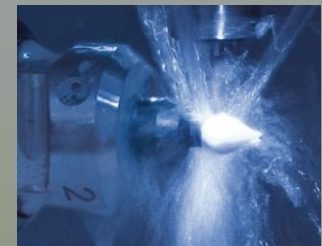


Finish

STMN



Delivery



Manufacture

Zirconia abutment on SynOcta meso-abutment and full ceramic crown



The history of ITI-Straumann implant system: **Abutments**

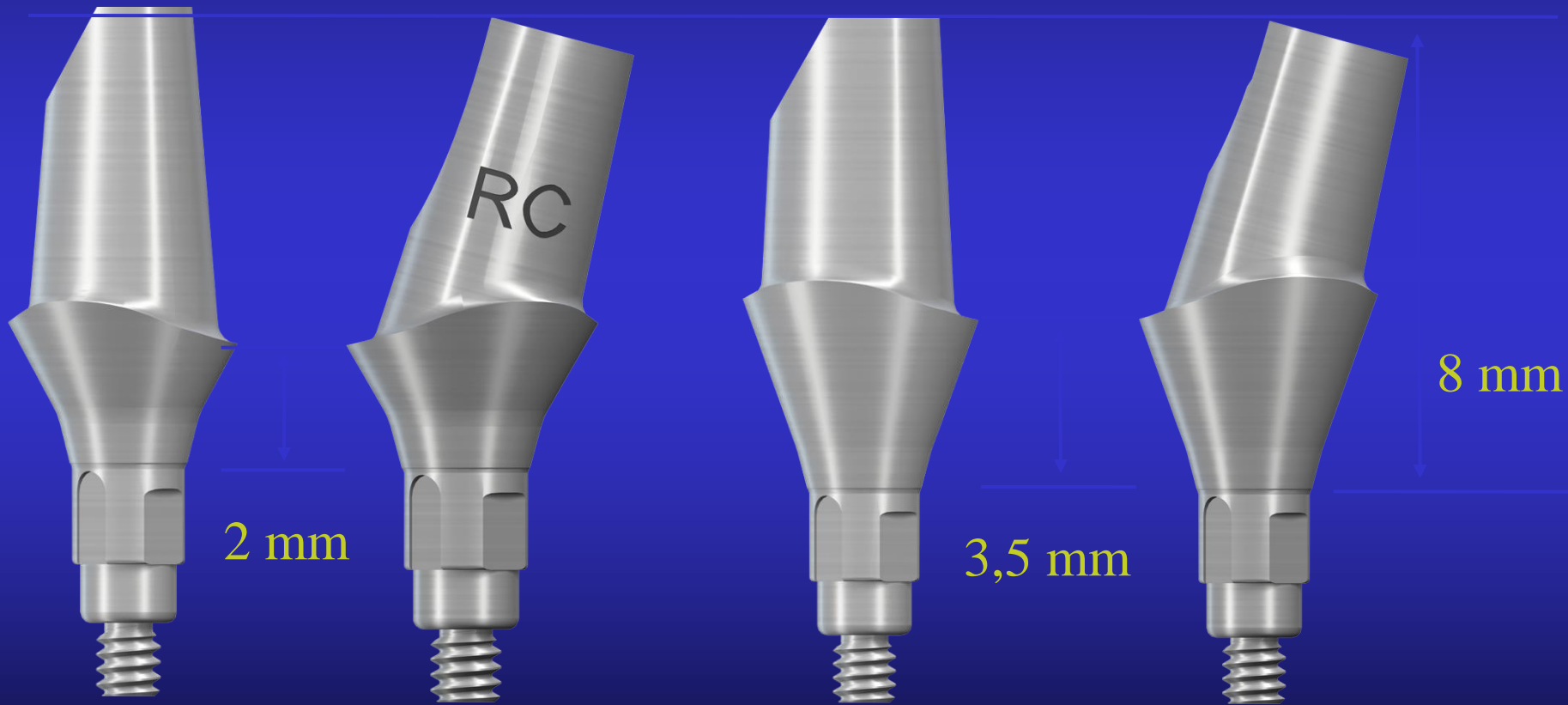
- 1986 Bonelit system
- 1991 Octa abutments
- 1994-1997 Cementable abutments
- 1999 SynOcta abutments
- 2007 **Cross-fit connection at Bone Level implant**



Zirconia abutment connected to implant with full ceramic crown



BL implant: anatomic abutment for cementation



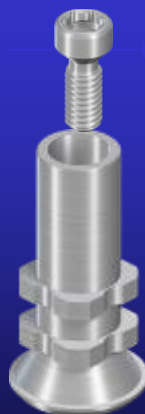
BL implant: multi-base abutment and its components

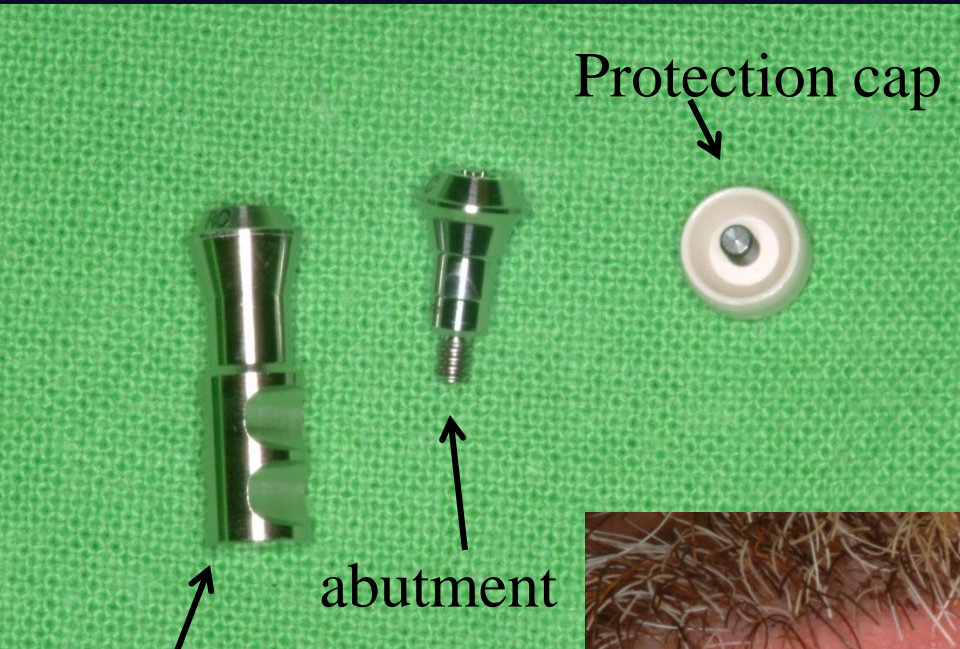
abutment

impression

protection

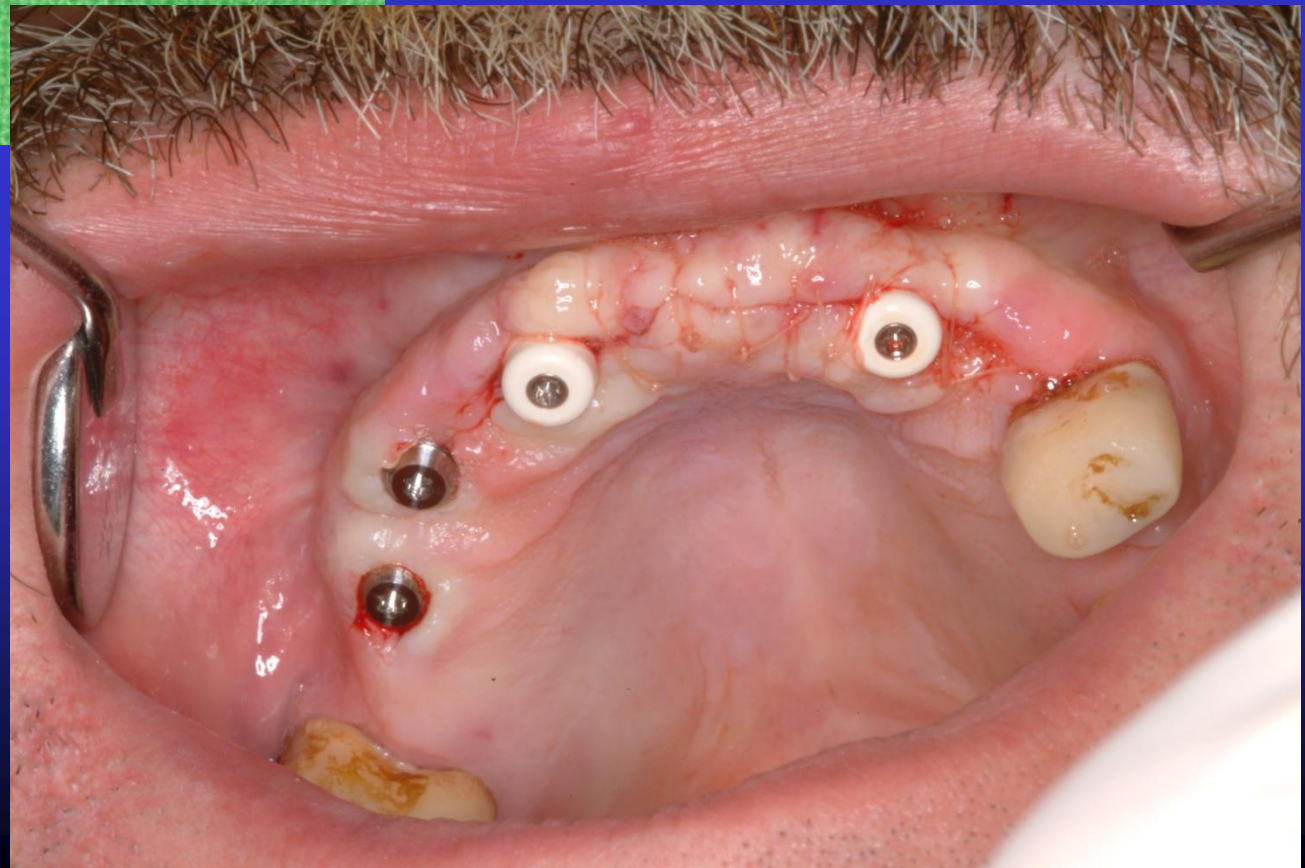
Dental lab





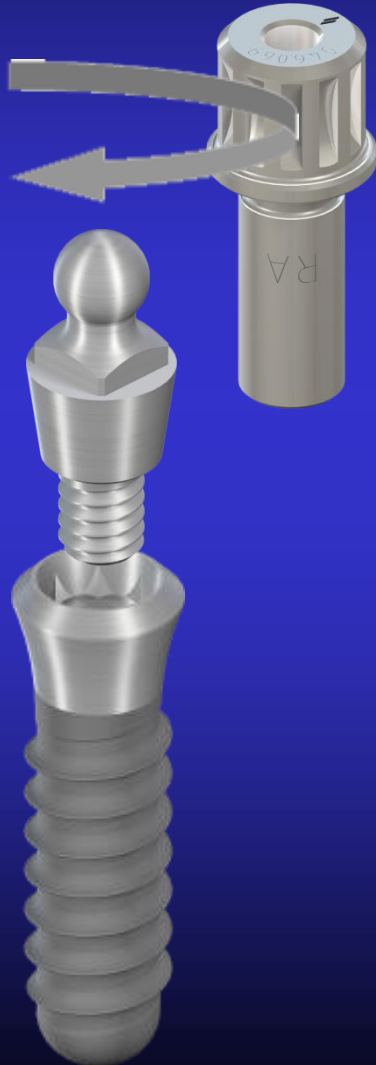
Multi-base abutment in the mouth

technical
analog



Ball attachment for edentulous jaws

35 Ncm

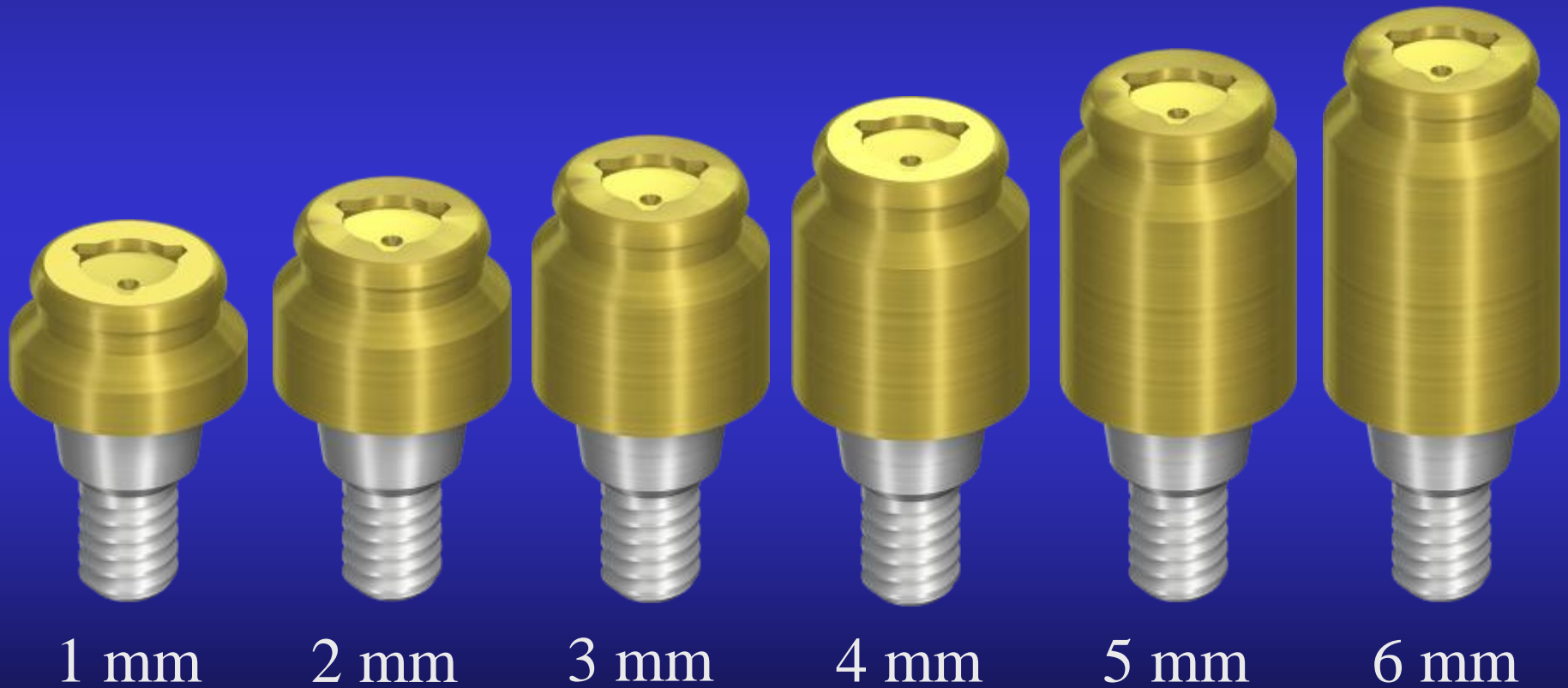




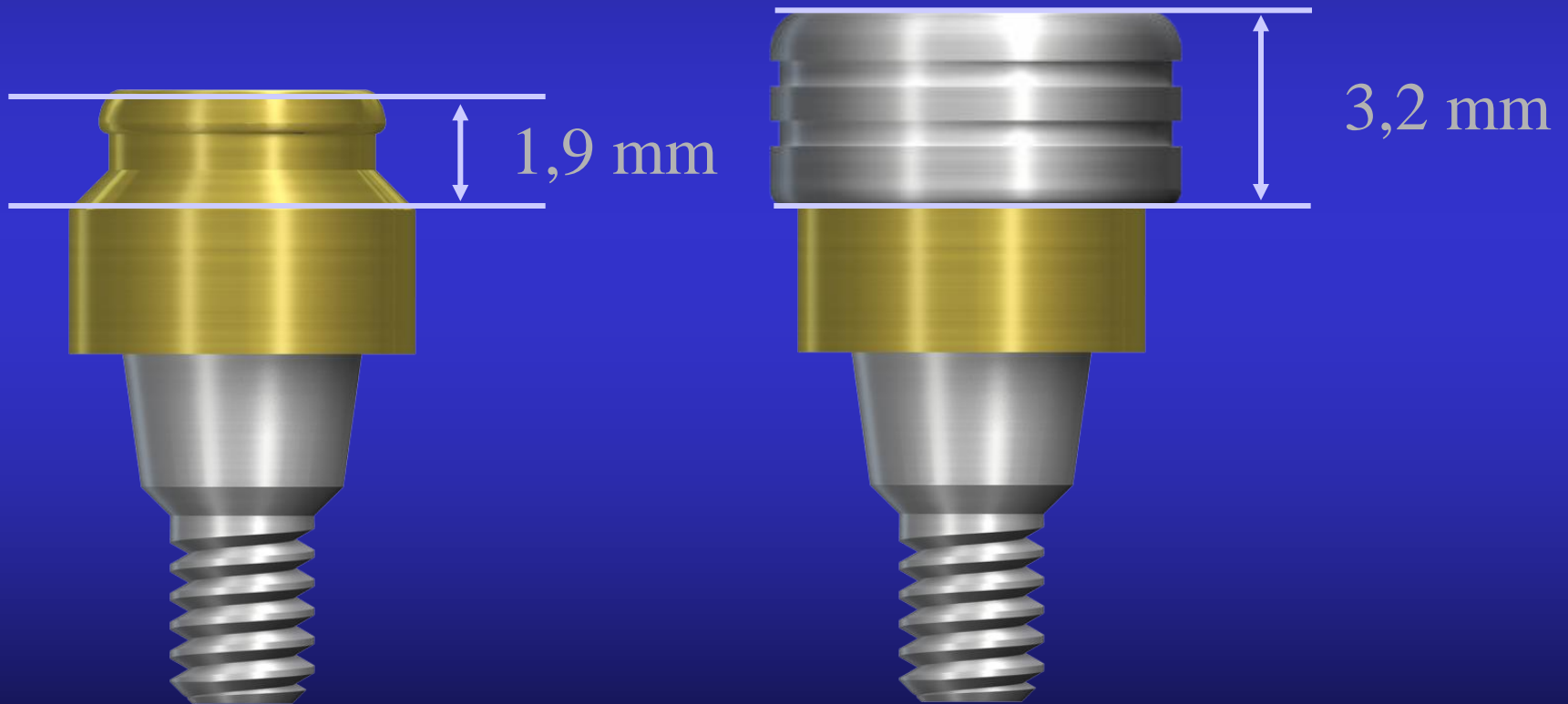
Ball attachments
with overdenture



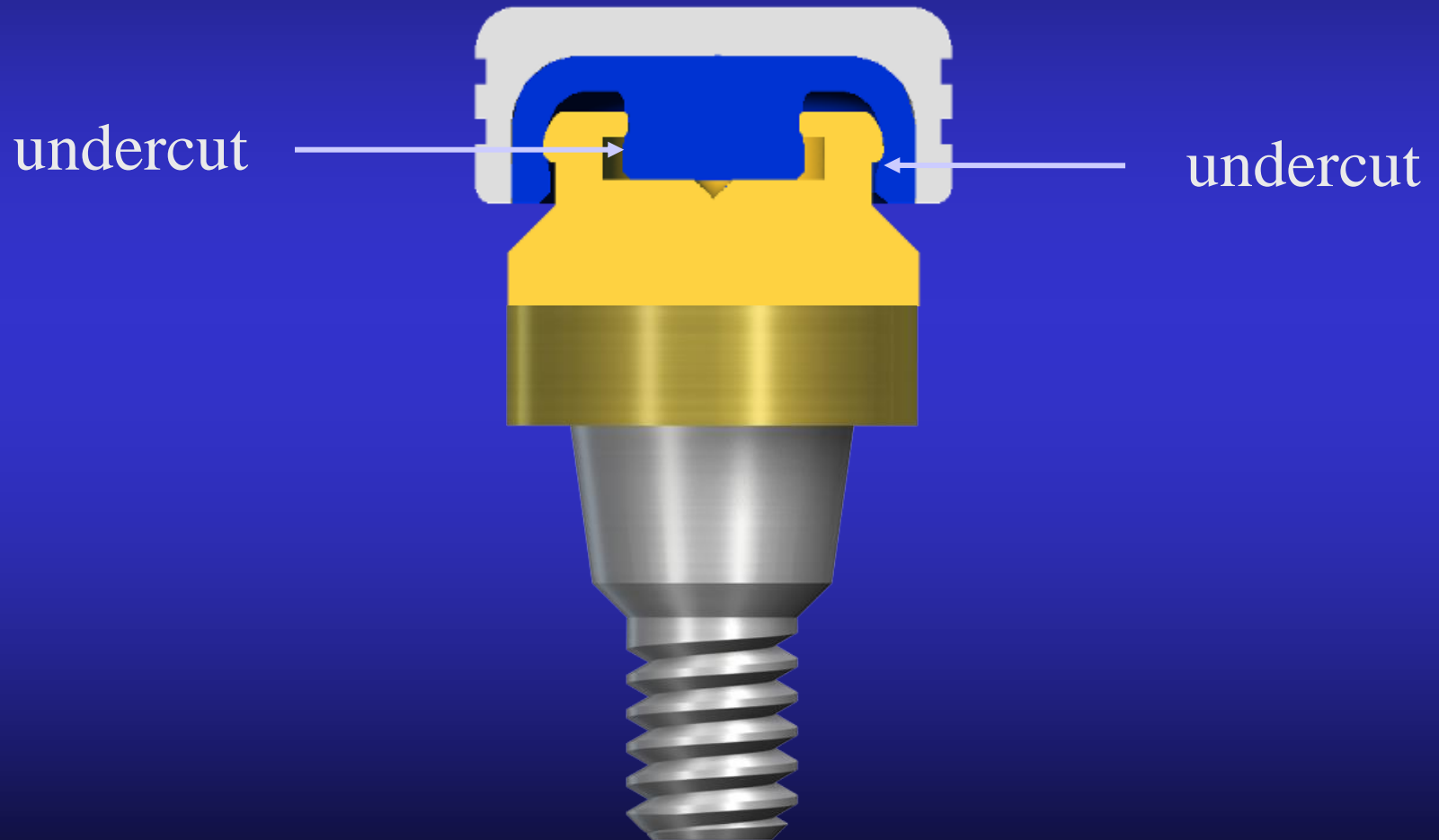
LOCATOR[®] abutments for edentulous jaws



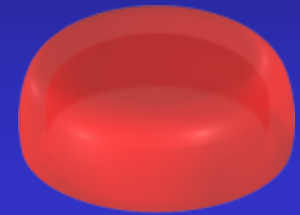
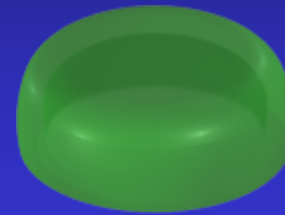
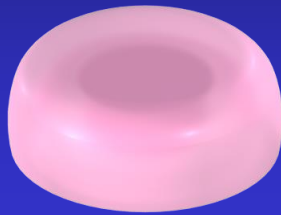
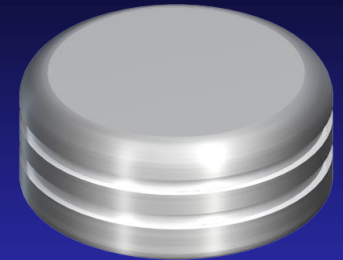
Parts of Locator[®] attachment



Double retention of Locator abutment



Retentive forces of Locator[®] inserts

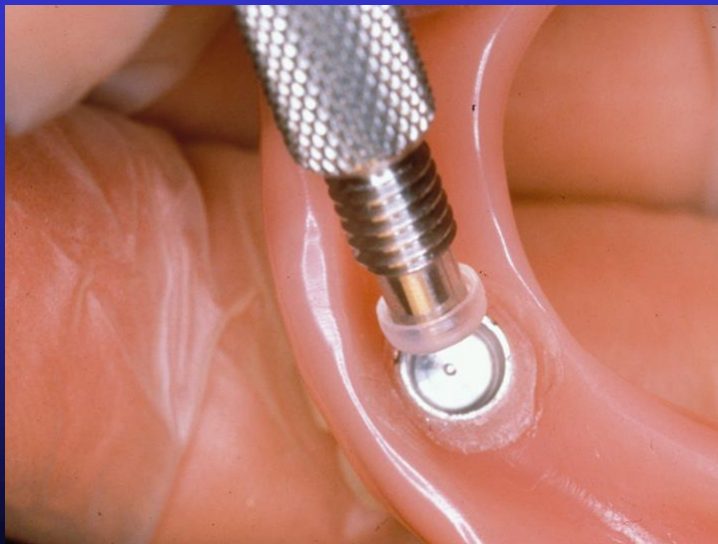


white	pink	blue	green	red
1°-10° *	1°-10° *	1°-10° *	11°-20° *	11°-20° *
5 lbs**	3 lbs**	1,5 lbs**	3-4 lbs**	1,5 lbs**
2,27 kg	1,36 kg	0,68 kg	1,36-1,84 kg	0,23 kg

* For axial correction

** lbs = retentive force

Placement of Locator inserts



For the examination!

The main characteristics of ITI- Straumann implant system:

- Originally planned for tissue level healing.
Change in concept: Bone Level implant
- Evidence based implant surfaces /SLA, SLActive/
- Tapered, morse-tapered abutment connection. Platform shifting at Bone Level implant



Do you like my teeth?