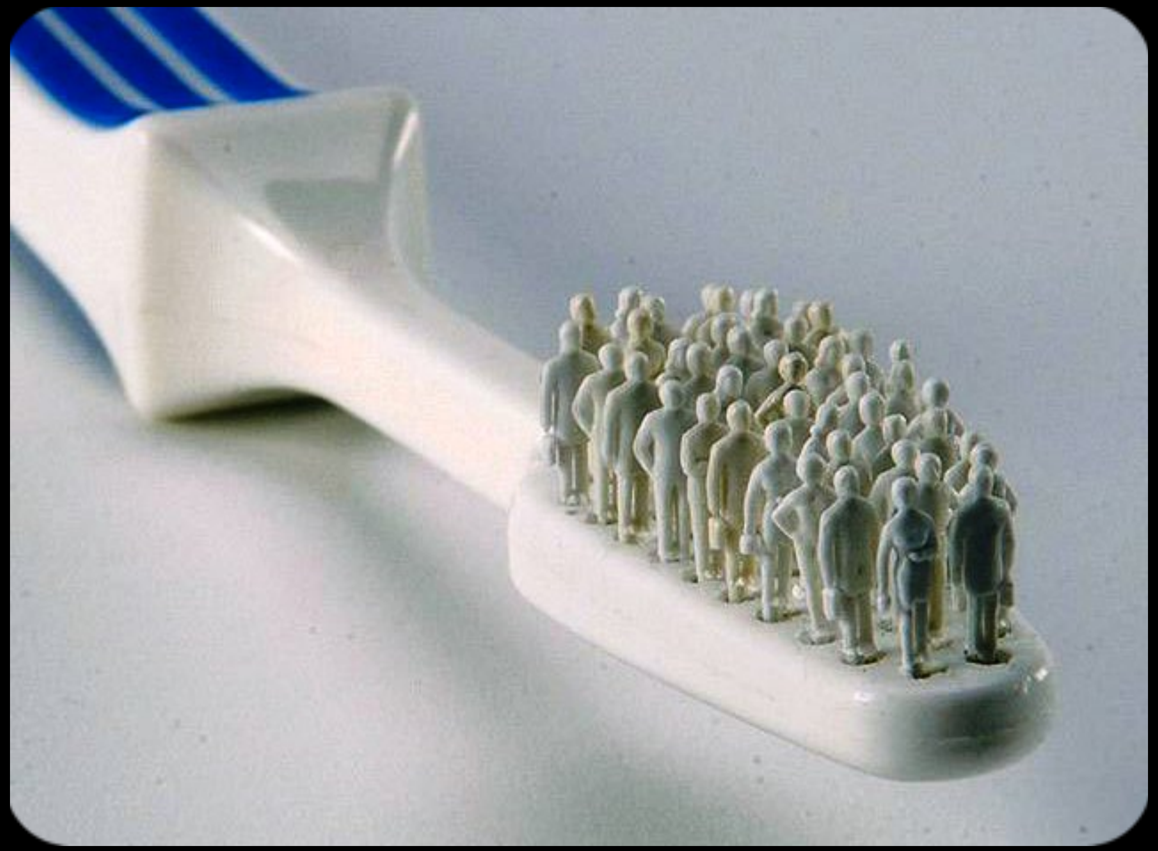
Semmelweis Egyetem Fogorvostudományi Kar
Fogászati és Szájsebészeti Oktató Intézet
Igazgató: dr. Kivovics Péter egyetemi docens
http://semmelweis-egyetem.hu/fszoi
http://www.facebook.com/fszoi

KÜLÖNBÖZŐ IMPLANTÁTUMOK TULAJDONSÁGAINAK ÖSSZEHASONLÍTÓ VIZSGÁLATA



Czinkóczky Béla, Katona István

MORFOLÓGIA

MENETEK

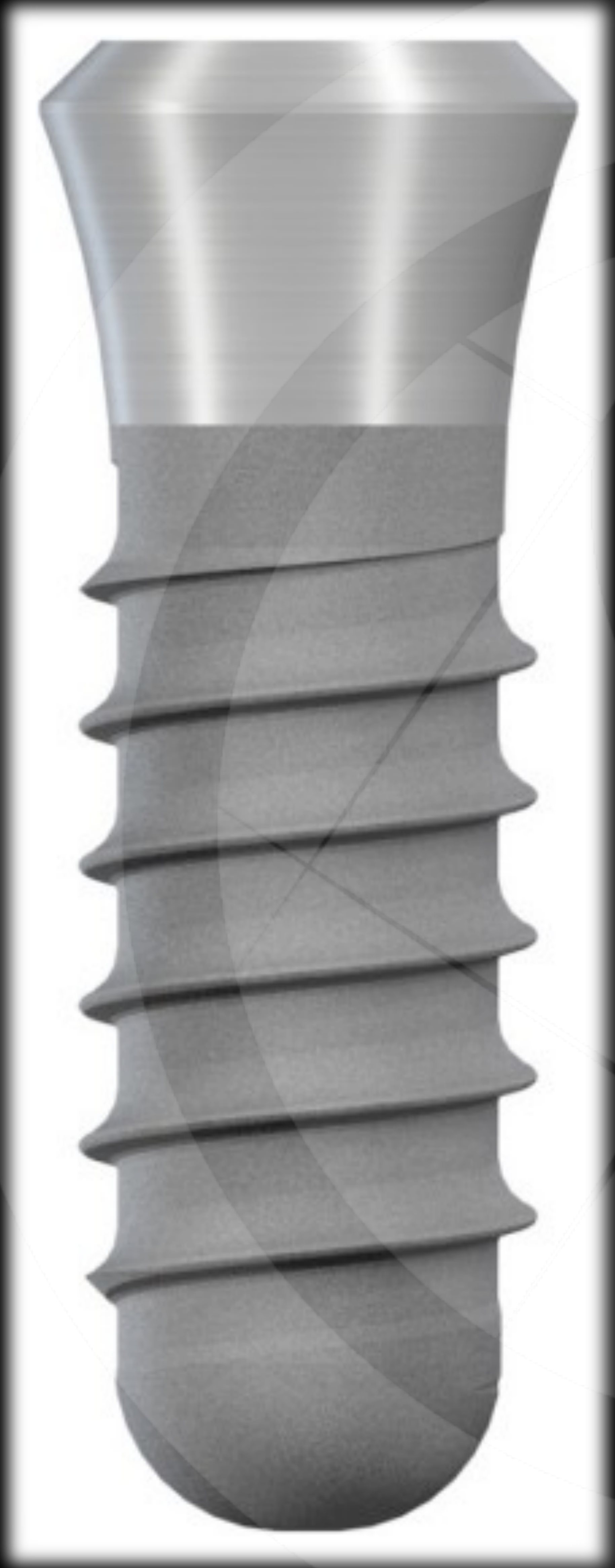
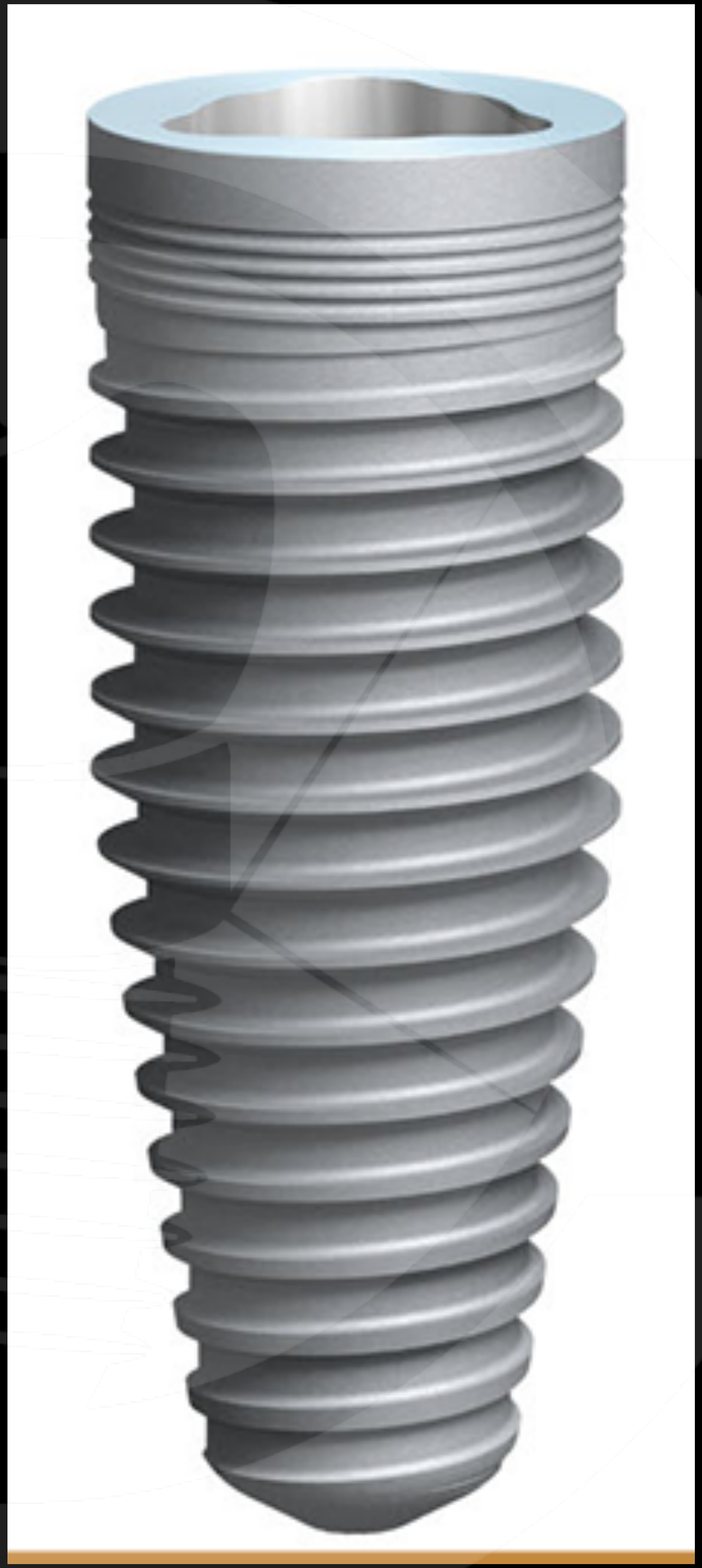
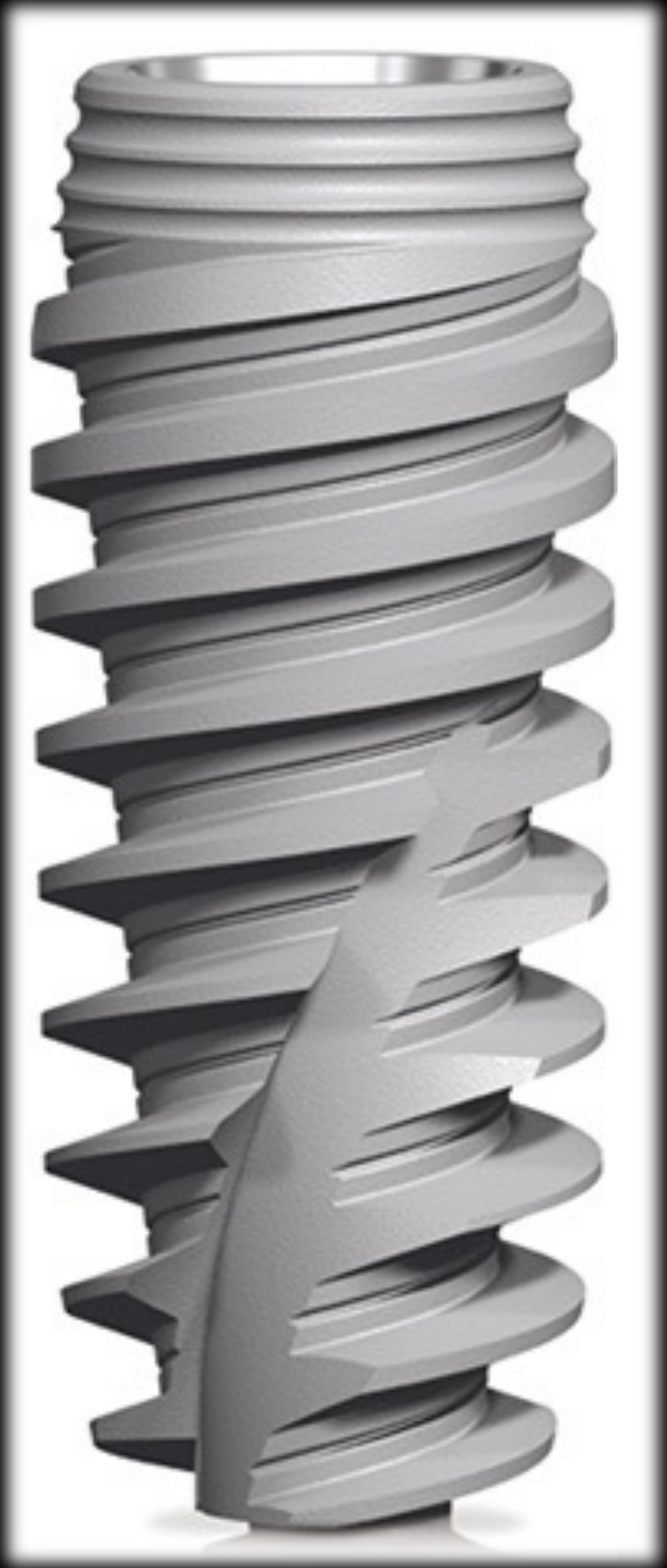
FELÜLETKEZELÉS

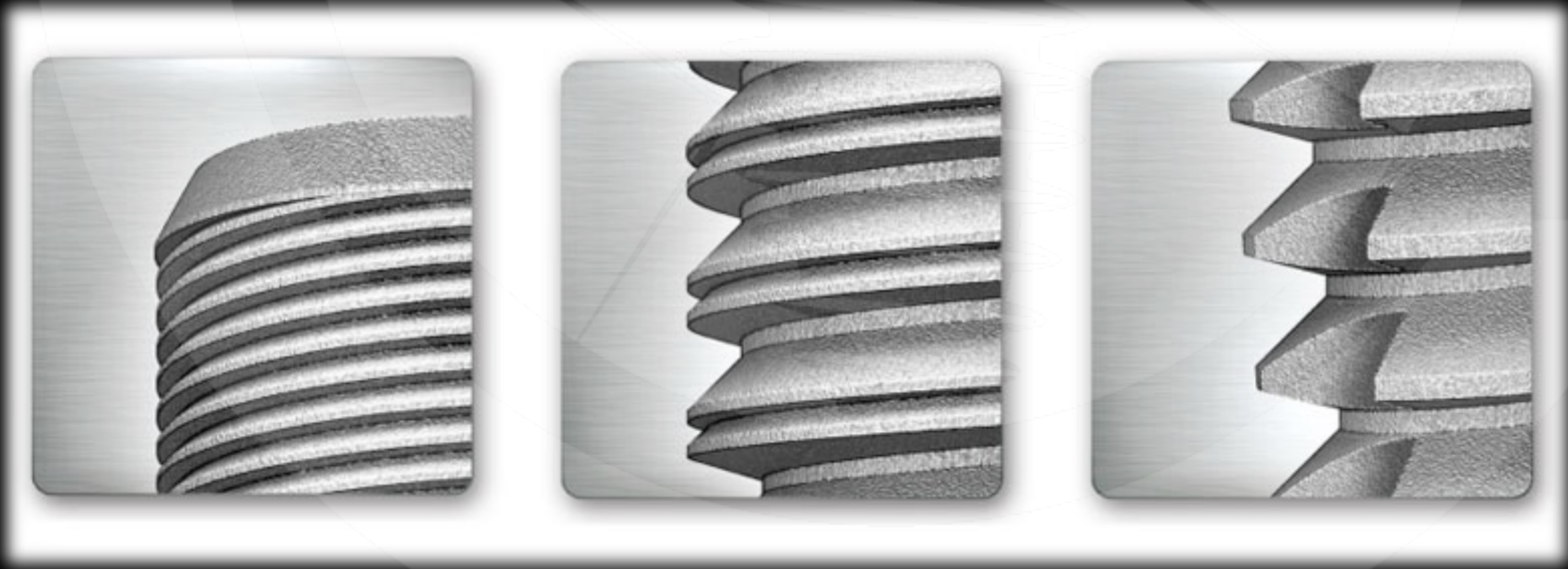
IMPLANTÁTUM-ABUTMENT KAPCSOLAT

TÖKÉLETES IMPLANTÁTUM...


RENEGADE-II

MORFOLÓGIA

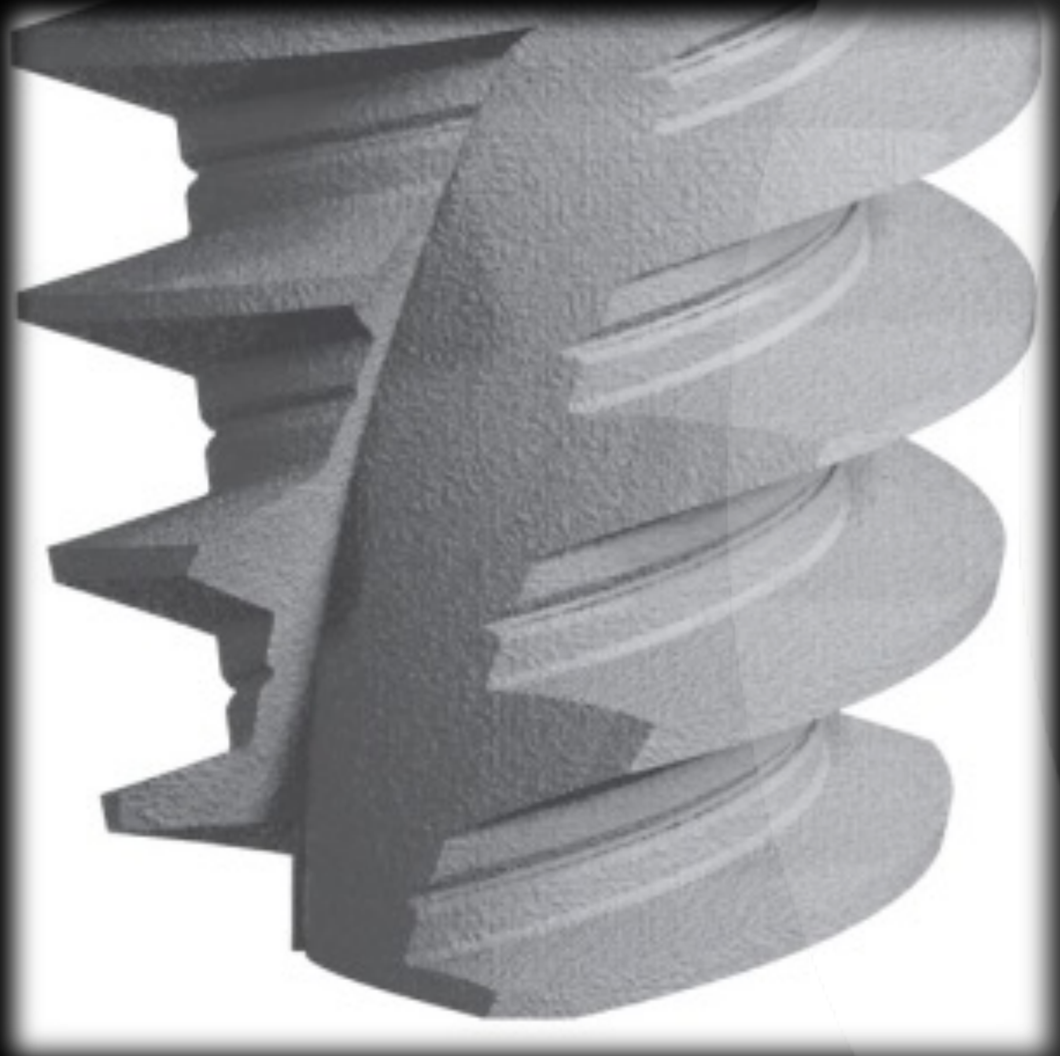





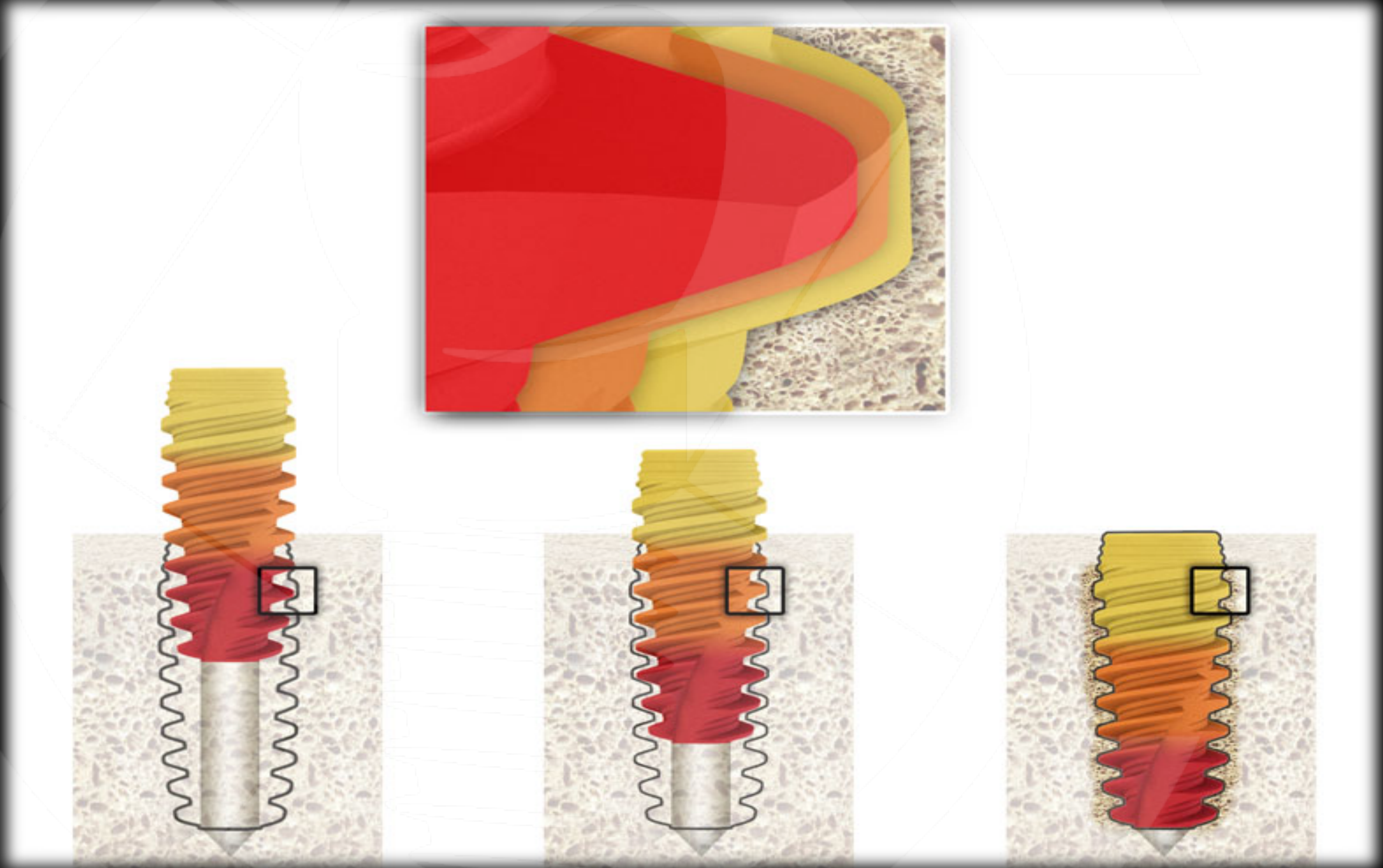


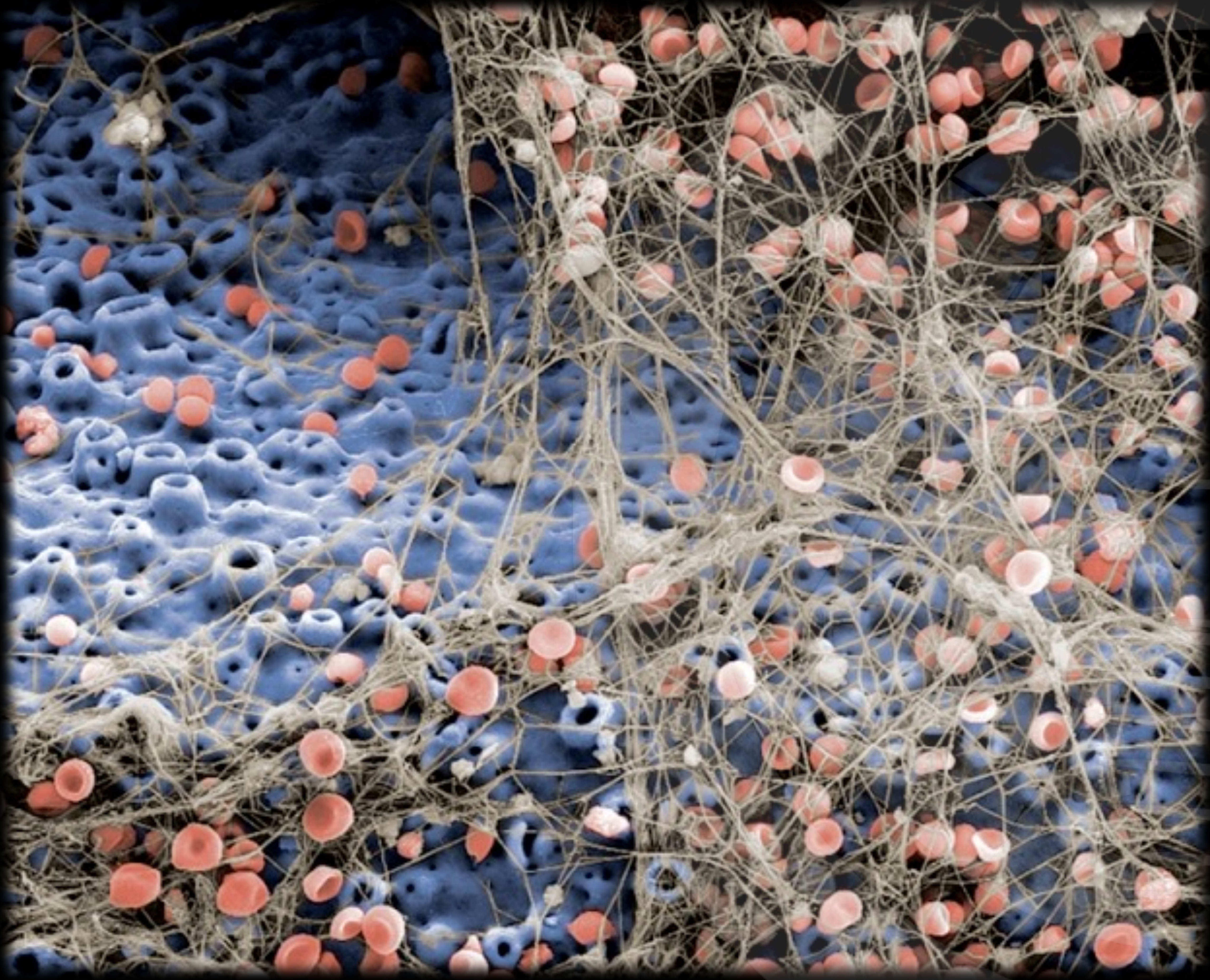
MENETEK

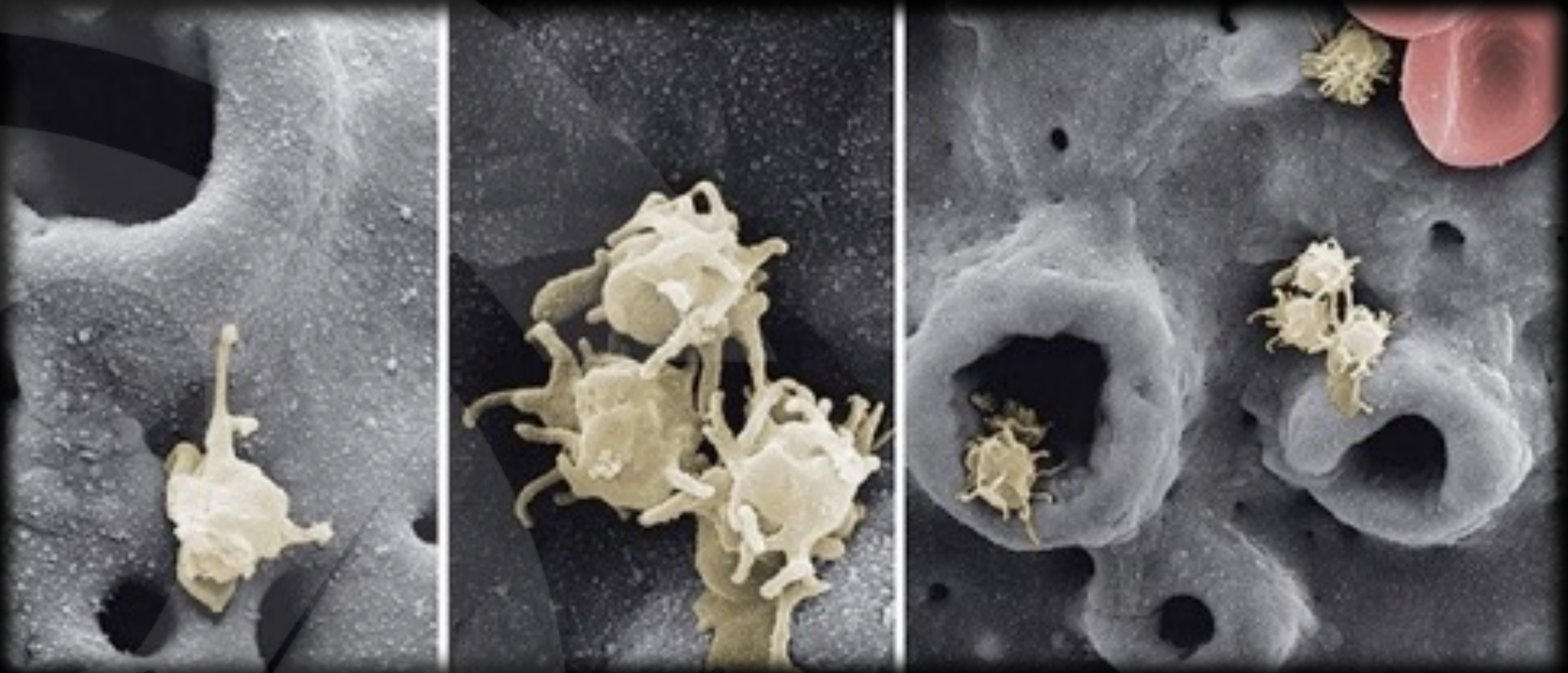
Hyo-Sook Ryu[1], Cheol Namgung[1], Jong-Ho Lee[2], Young-Jun Lim

The influence of thread geometry on implant osseointegration under immediate loading: a literature review

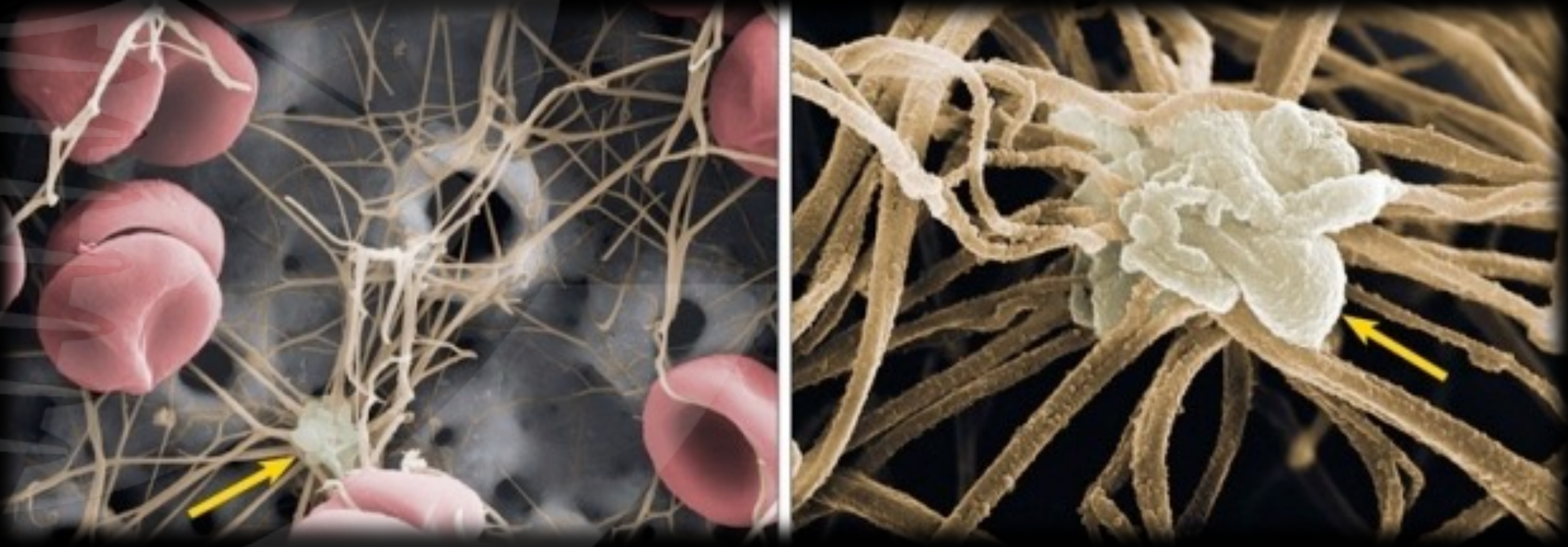








FELÜLETKEZELÉS



Fotók: dr. Peter Schüpbach

DR DIRK DUDDECK[1,2], DR HASSAN MAGHAIREH[3], DR FRANZ-JOSEF FABER[4] AND DR JÖRG NEUGEBAUER[1]: SEM surface analyses of 120 sterile-packed implants


TPS
20kV X70 200µm 17 38
TiUnite
Machined
SLA
Acid
15kV X5,000 5µm NCS-lab

Final report of the BDIZ EDI implant study 2014/15

SEM surface analyses of 120 sterile-packed implants

DR DIRK DUDDECK[1,2], DR HASSAN MAGHAIREH[3], DR FRANZ-JOSEF FABER[4] AND DR JÖRG NEUGEBAUER[1,5]

EDI Journal 1/2015 contained an interim report presenting the results for 65 implant systems from the 2014/15 BDIZ EDI implant study. This interim report had focused on notable analytical results for titanium implants and on the presentation of various surface structures of popular implant systems in titanium and its alloys [1]. The present report now also presents implants made of zirconia, tantalum and PEEK. Now that this study has been completed, a total of 120 different systems from 83 suppliers in 16 countries have been examined by scanning electron microscopy, doubling the number of implant systems analyzed by the BDIZ EDI Quality and Research Committee since the first study in 2008 [2,3]. In cooperation with the University of Cologne, extensive material contrast images were obtained and qualitative and quantitative elemental analyses performed on each of the implants examined, using the same study protocol.

Dental implants are an integral part of the therapeutic armamentarium of contemporary dental practices. With their excellent success rates, they have become the globally established treatment alternative to purely prosthetic solutions for tooth loss. And with the variety of implant systems offered, it has become ever more difficult for the dentist to choose just the right system for his or her practice and patients. Specific surface topographies, material properties that promote osseointegration or surface treatments are often emphasized in advertising as significant advantages to distinguish a given system from its many competitors. According to the Association of German Dental Manufacturers (VDDI), more than 1,300 different implant systems are currently available worldwide. Northern Italy alone probably has a hundred micro-enterprises that manufacture implants, primarily for regional dentists. But even though only a fraction, namely 120, of all the implant systems available in Europe could be included in this study, these represent the most important brands or major suppliers of implants.

Background and objectives

There is commonly a significant discrepancy between the responsibility treatment providers must assume for the materials they use vis-a-vis their patients and their knowledge regarding the quality of these materials as confirmed by neutral and scientific sources. As stated in the interim report in the

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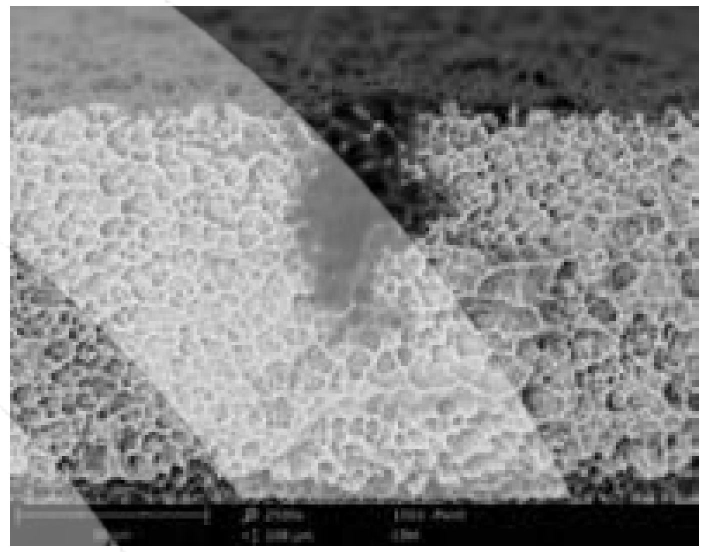
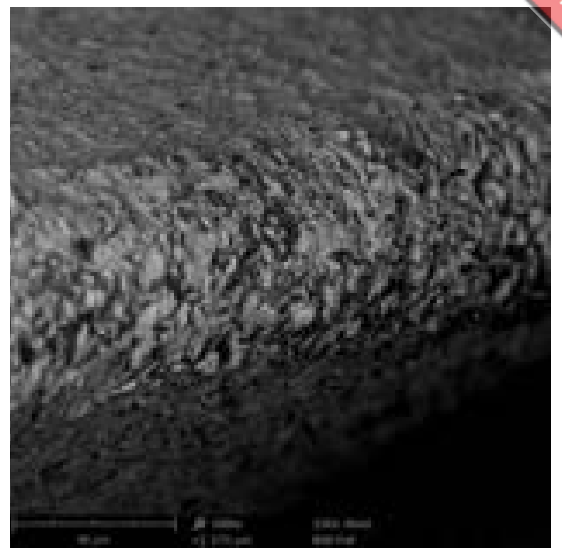
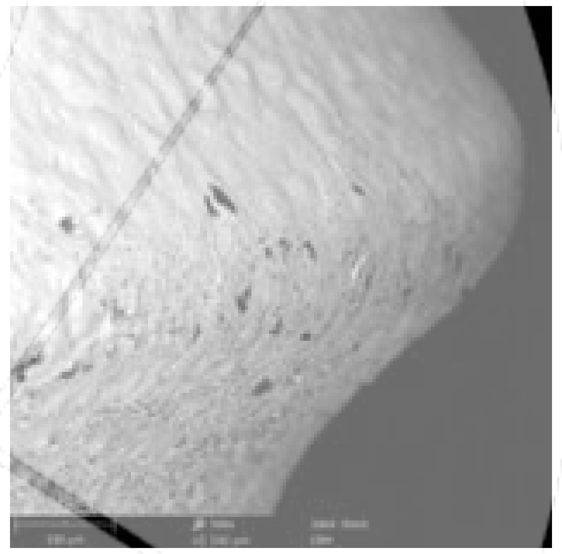
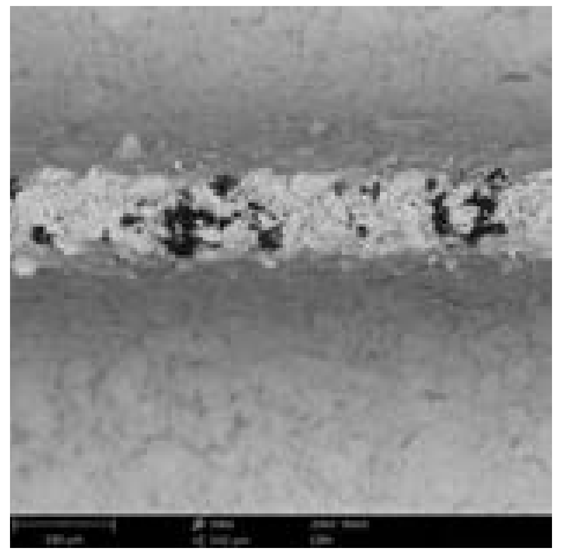
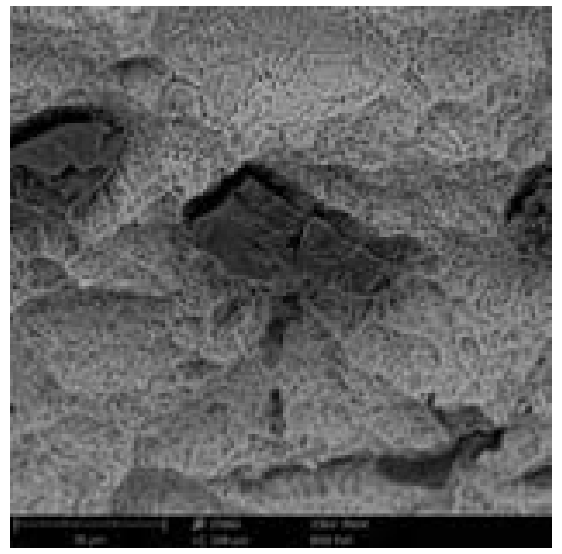
3 Clinical Teaching Fellow, University of Manchester · Implant Referral Practice – Leeds, UK · 9 Woodhouse Square · Leeds LS3 1AD · England
4 Centre for Dentistry and Oral and Maxillofacial Surgery, University of Cologne, Materials Science/Dental Materials Research · Kerpener Straße 32 · 50931 Köln · Germany
5 Dental Group Practice Dr G. Bayer, Dr F. Kistler, Dr S. Kistler, Dr A. Elbertzhagen, Dr J. Neugebauer · Von-Kühlmann-Straße 1 · 86899 Landsberg am Lech · Germany


21 | "Single spot", individual organic contaminant (x 2,500).


22 | Circumferential organic residue on a titanium implant (x 500).


23 | Organic residue on the outer thread structures (zirconia, x 500).


24 | Superficial organic particles (zirconia, x 500).

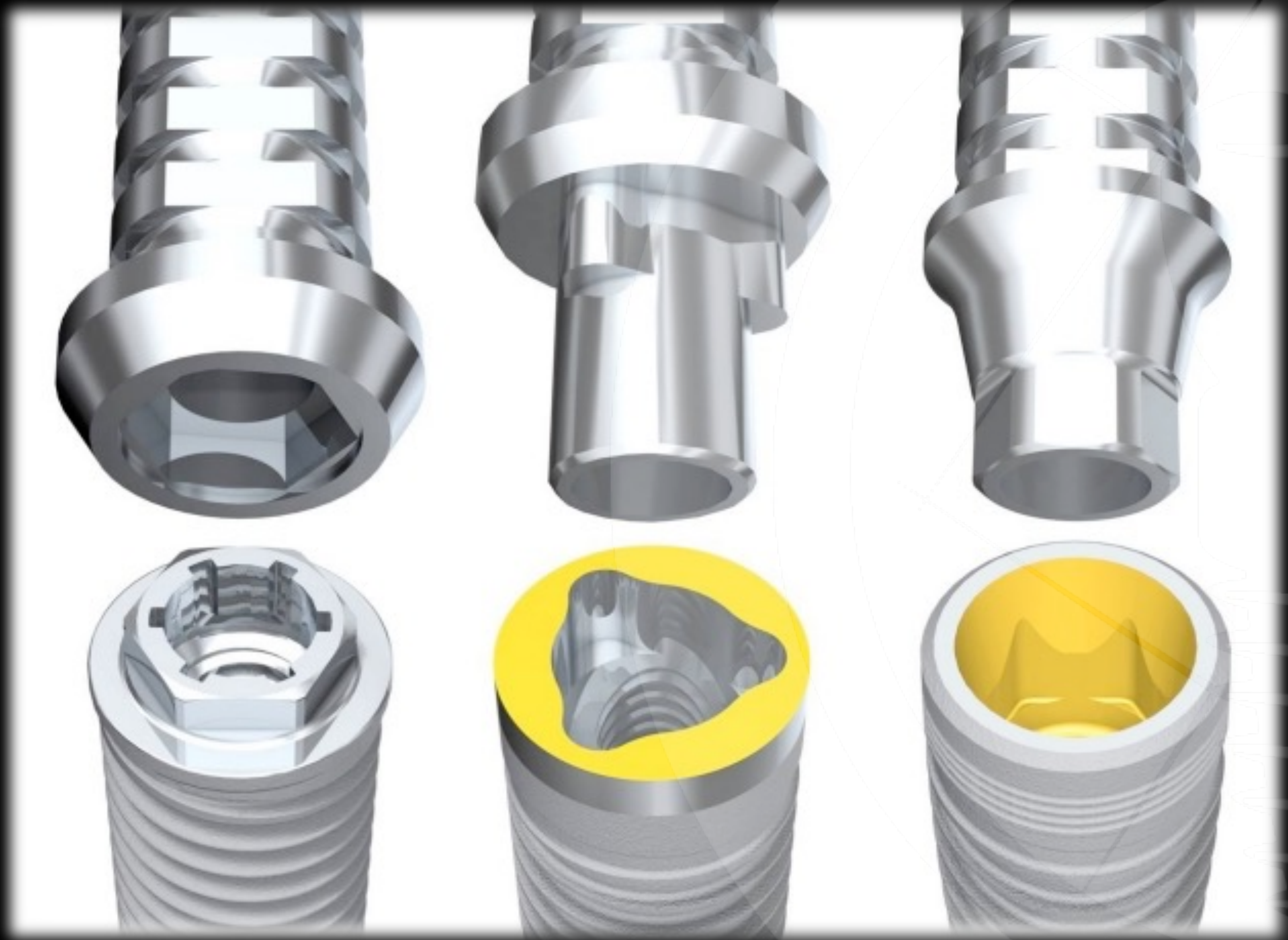

25 | Individual inclusions of sandblasting material (titanium, x 2,500).

Results

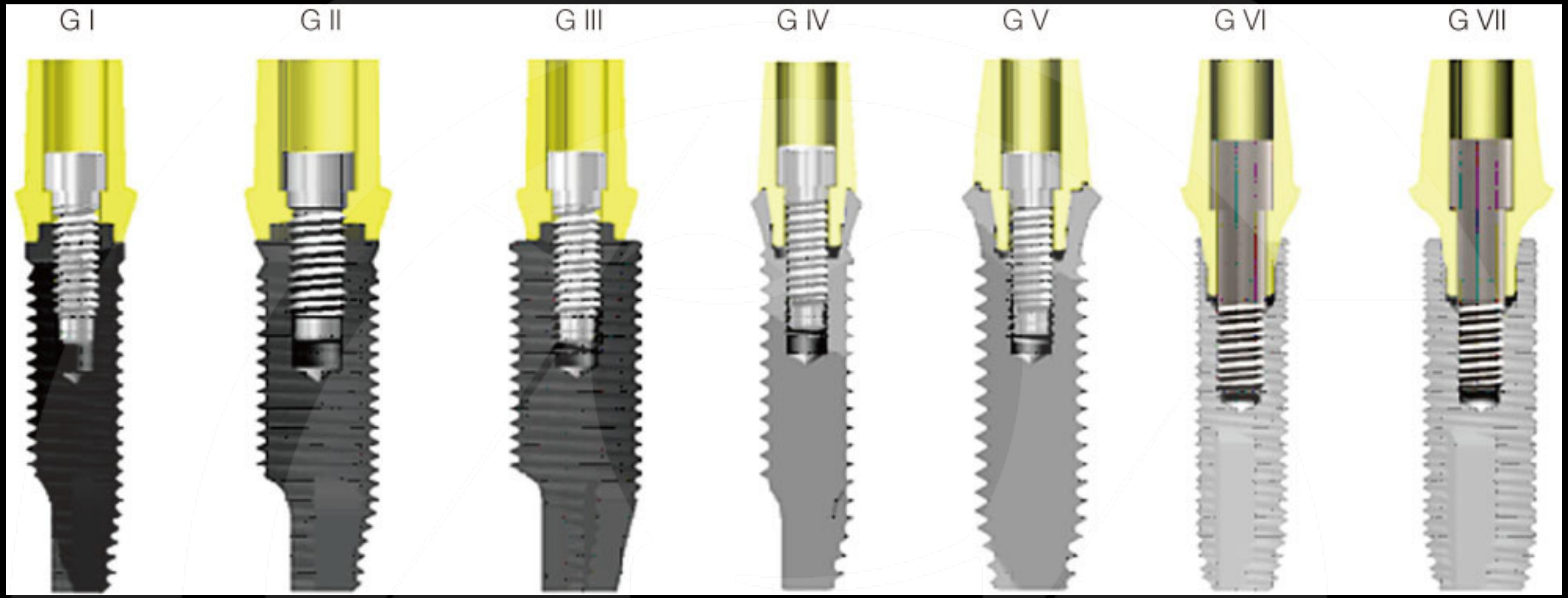
Minor amounts of carbonaceous residue remaining on the implant after the cleaning process are a not infrequent finding. Organic residue appears darker in the material contrast image than titanium or zirconia because carbon atoms have fewer electrons and therefore create fewer backscattered electrons in a SEM than atoms of higher atomic numbers. Soft, sometimes jagged edges are typical of organic contaminants. If there are only a few isolated spots like that, they will make up only a very small part of the total area, being of little consequence and no clinical relevance (Fig. 21). The figure shows a single organic impurity 10 to 20 µm in size on an otherwise largely residue-free implant. More conspicuous were systematically distributed organic residues on several implants that are in contact with their outer packaging. These typically featured circumferential organic contamination occurring only at the outer edge of the thread (Figs. 22 to 24), which suggests that contact with the packaging could be responsible.

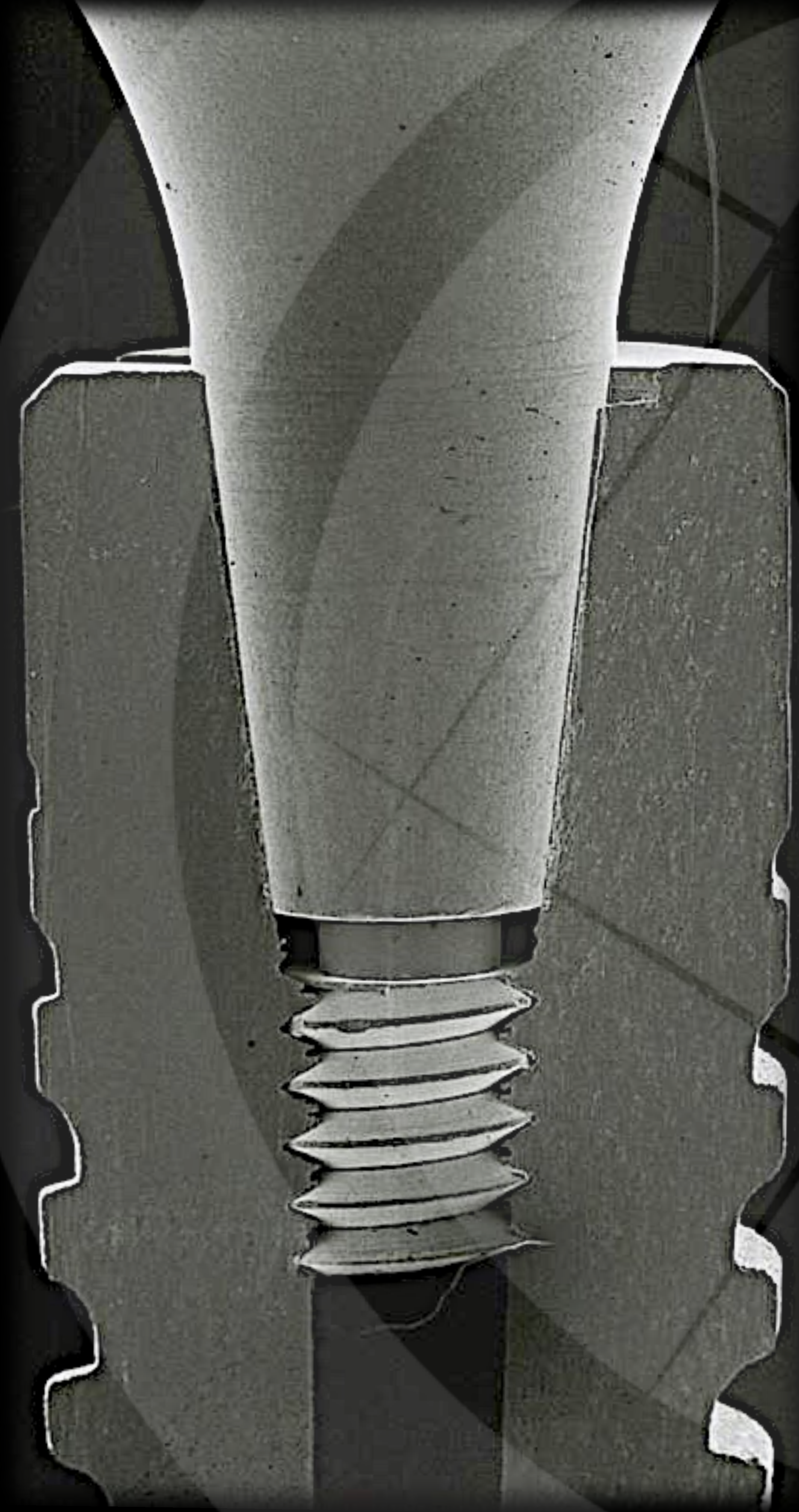
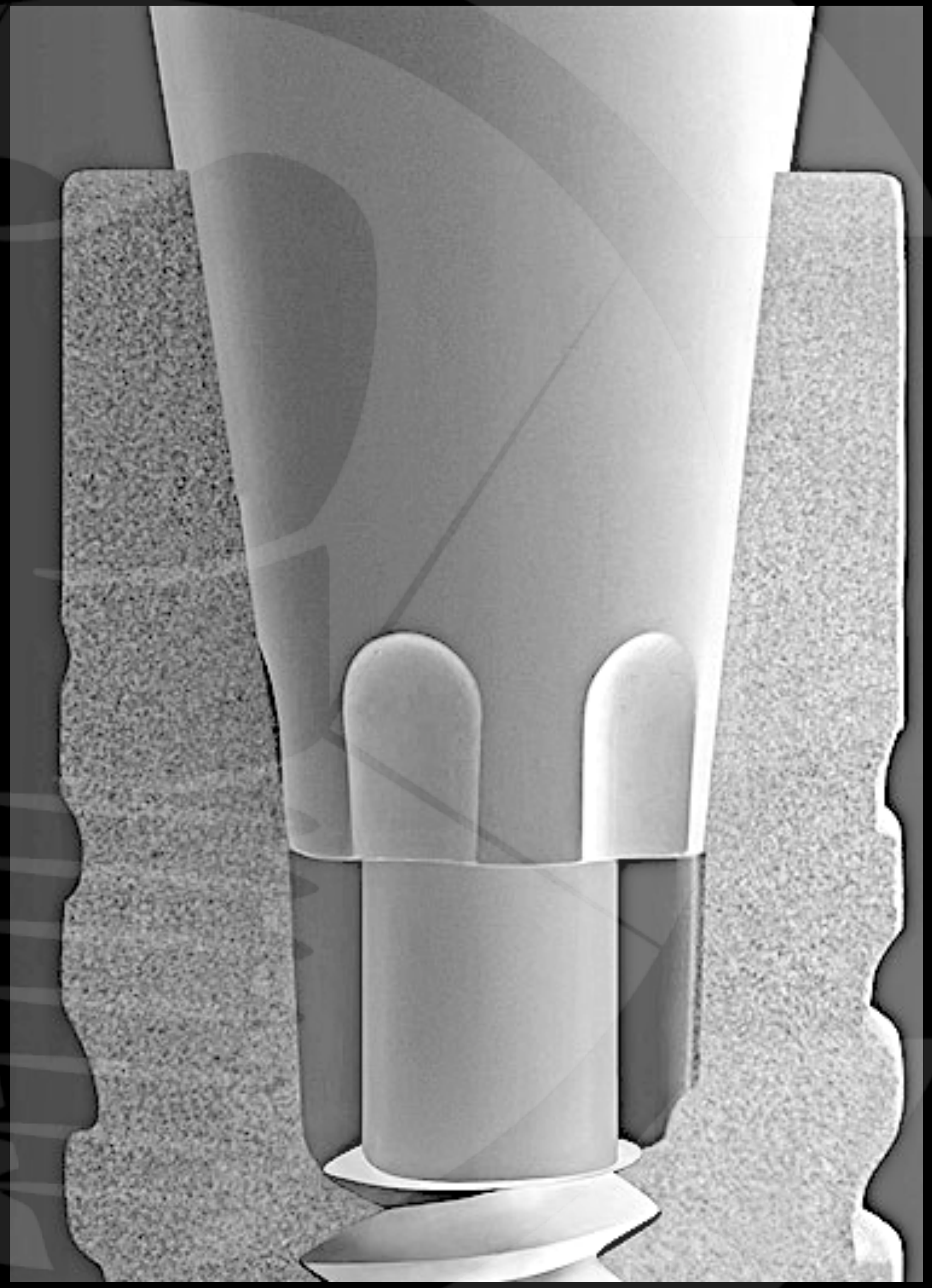
Some isolated implants exhibited inorganic residue from the sandblasting process, namely alumina particles 20 to 30 µm in size (Fig. 25), but in quantities of presumably limited clinical relevance.

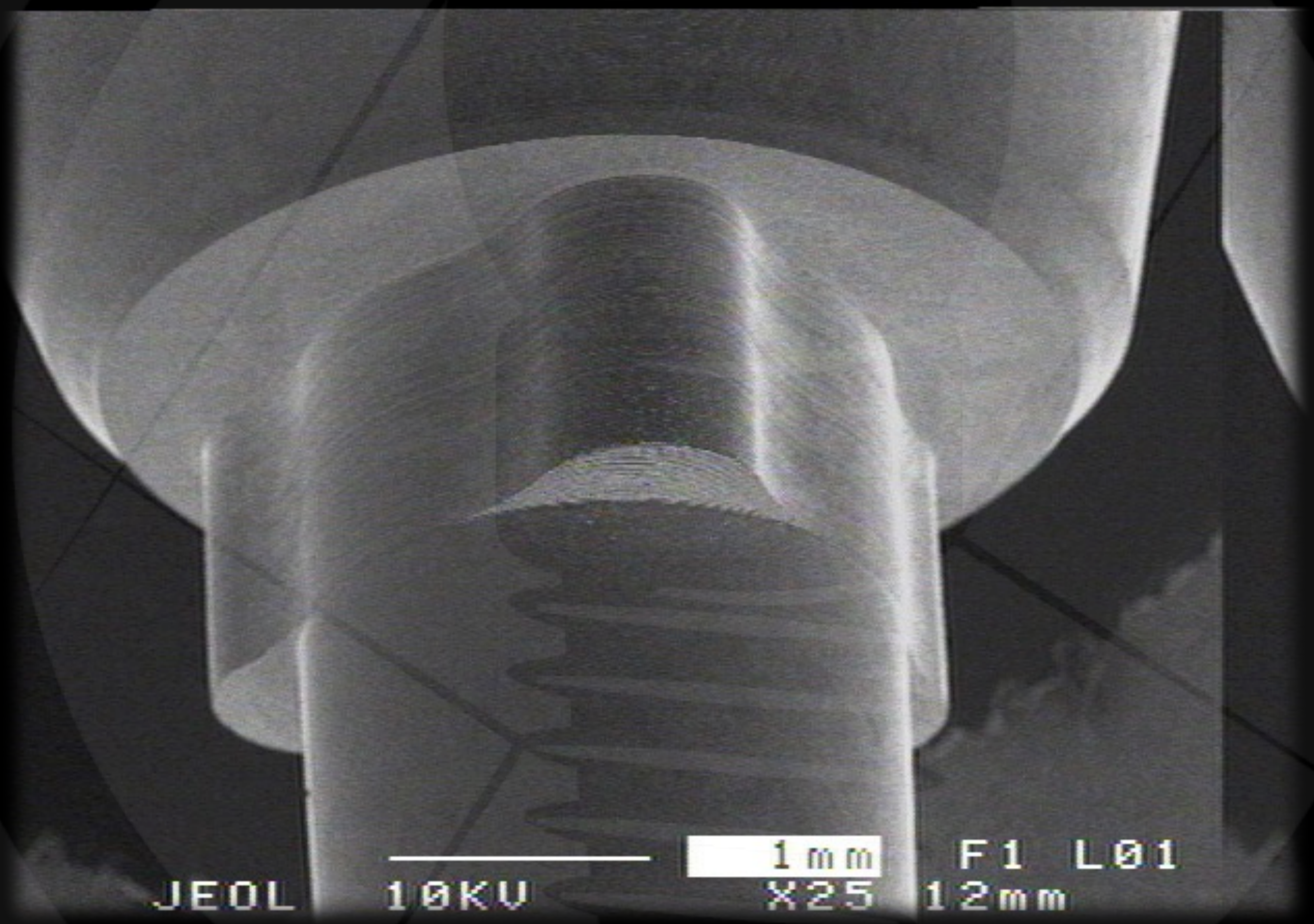
Unexpected inorganic residue findings included, in addition to the iron-copper-chromium particles described in the first part of the report, larger areas with intermittent chromium-nickel-steel particles 4 to 30 µm in size on one of the implants studied. The material contrast image had already presented them as strikingly bright and well-defined structures. These metallic particles might have originated as impurities within the blasting material or as abrasion residue from the CNC cutting tools that were subsequently embedded in the implant surface to the point where cleaning could not remove them (Figs. 26 and 27). Three spot analyses were carried out as part of the qualitative and quantitative elemental

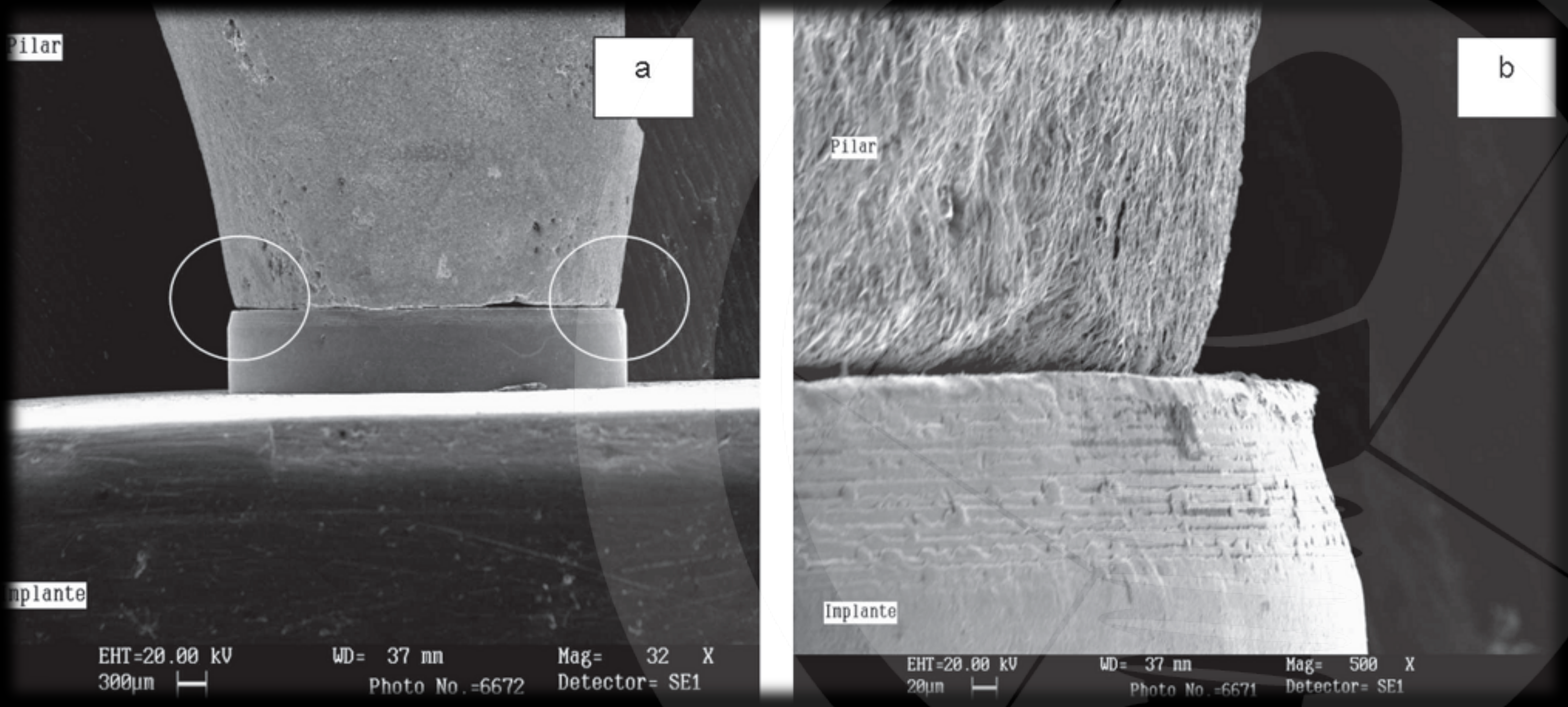


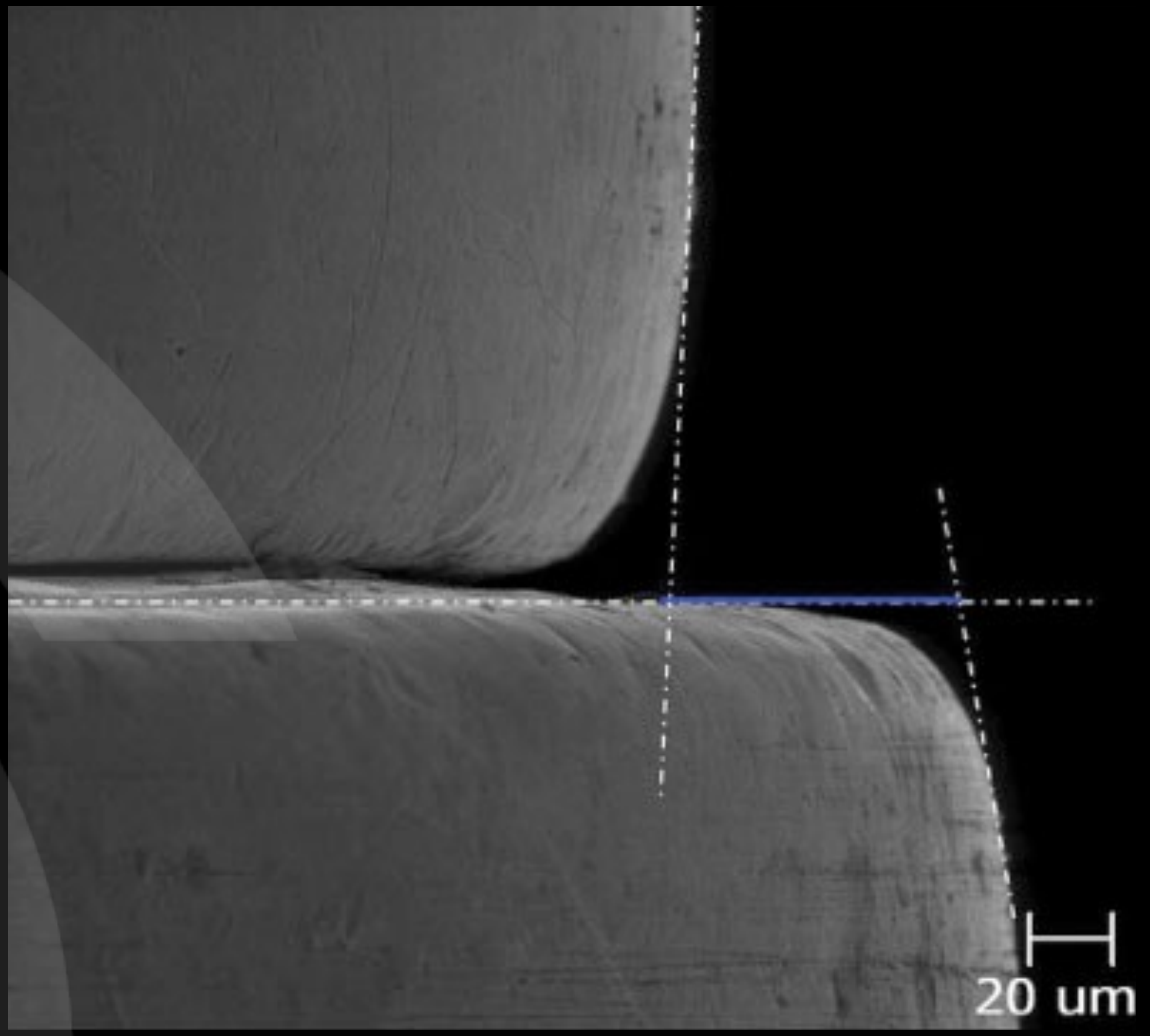
IMPLANTÁTUM-ABUTMENT KAPCSOLAT

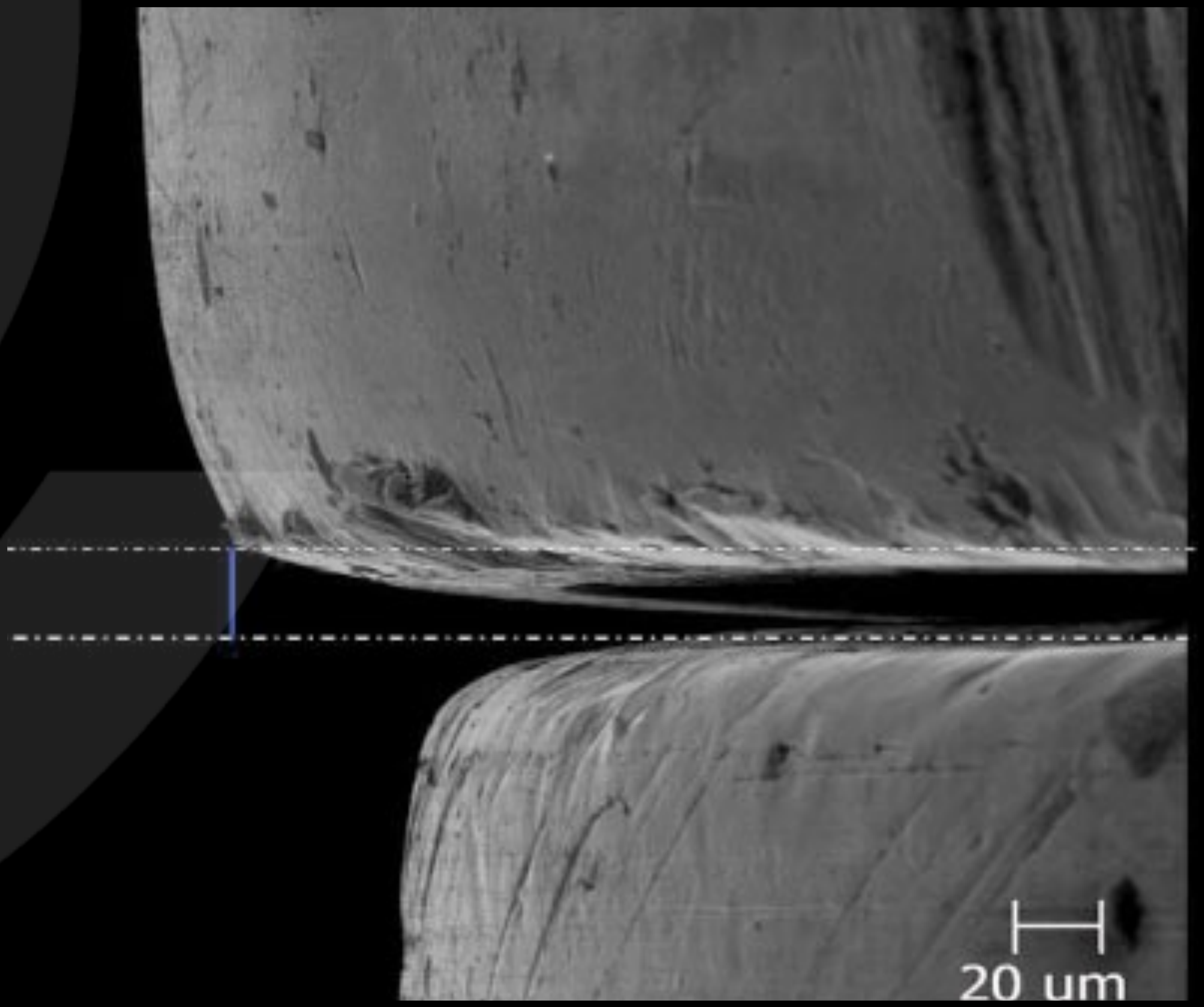

G I
G II
G III
G IV
G V
G VI
G VII

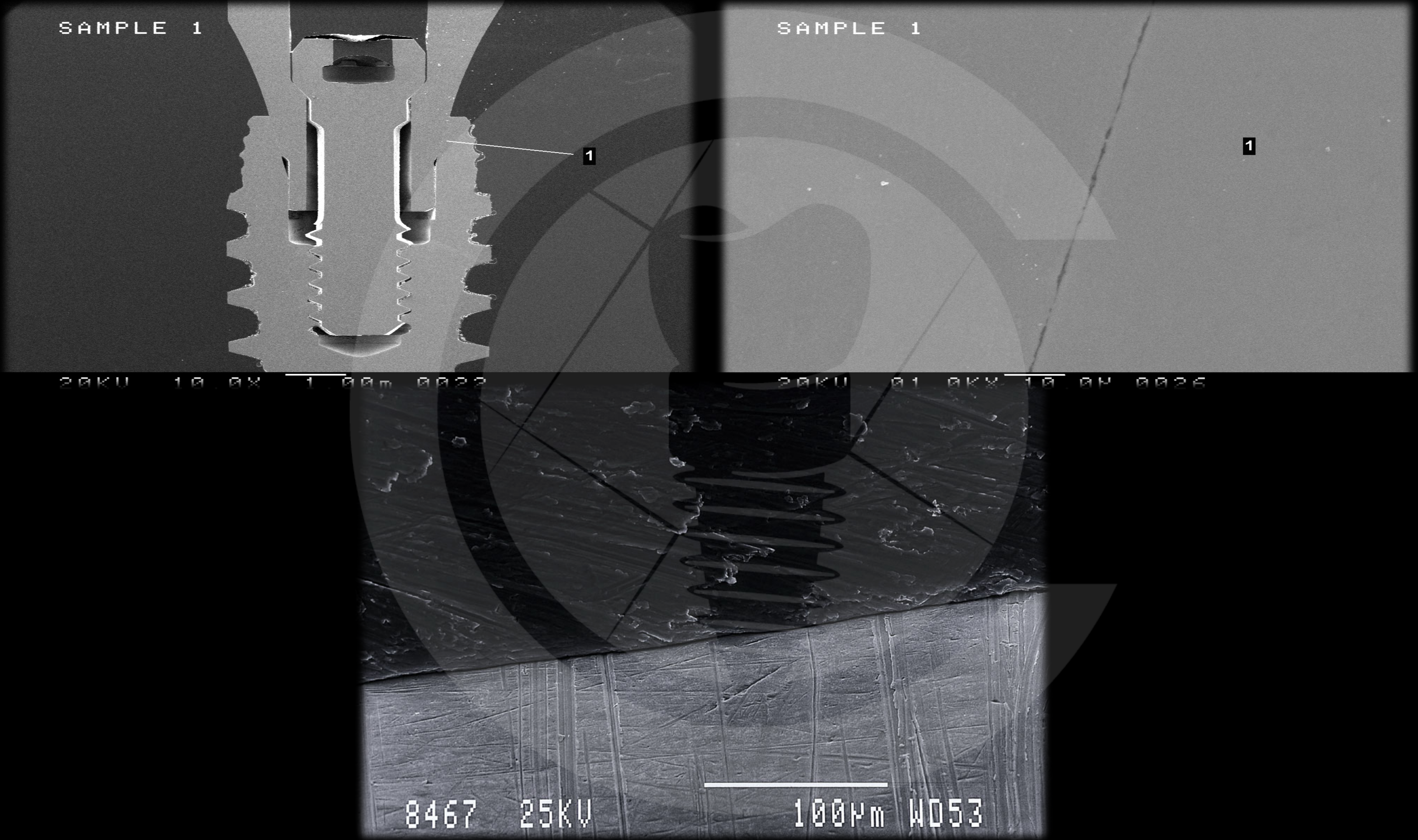


1mm F1 L01
JEOL 10KV X25 12mm



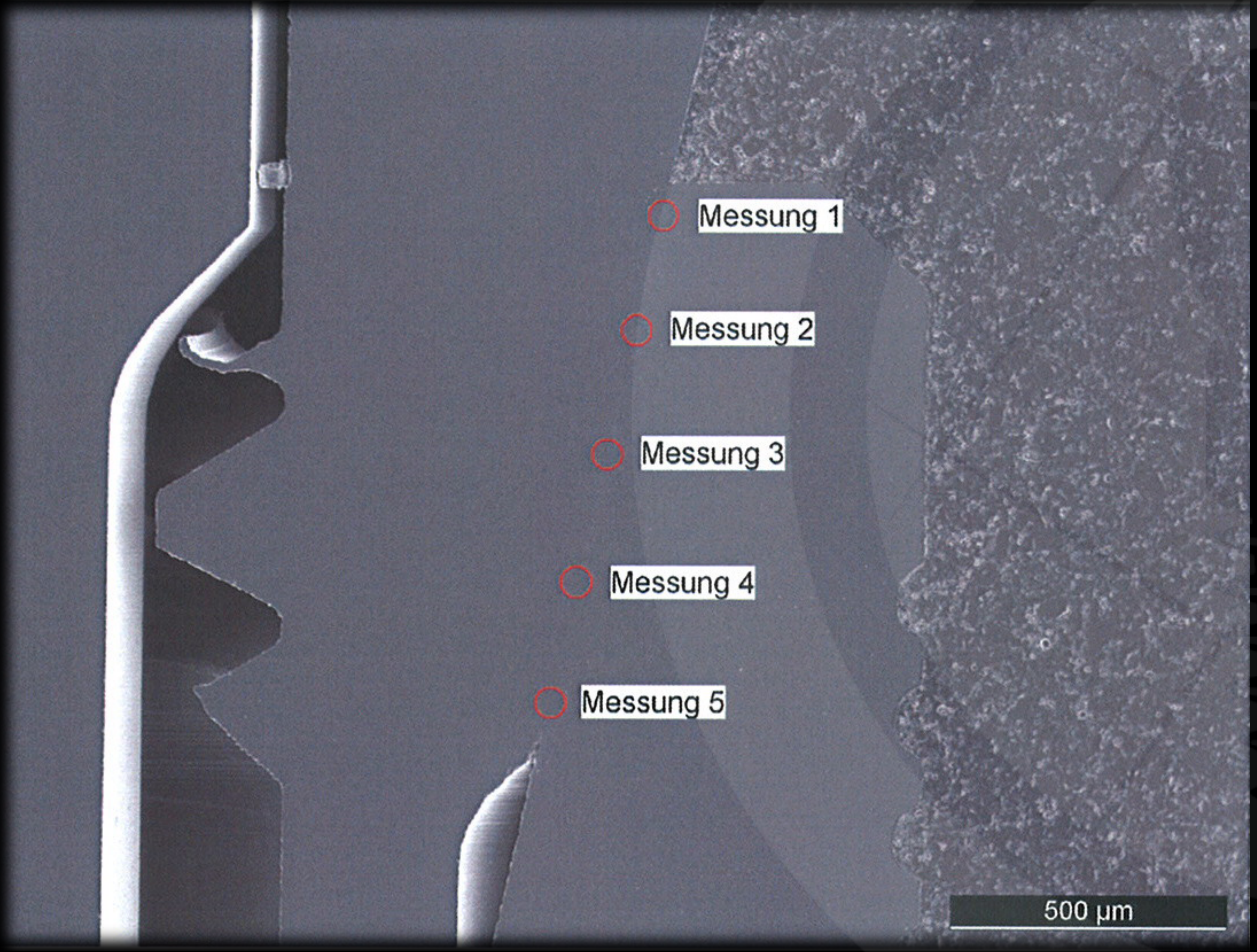


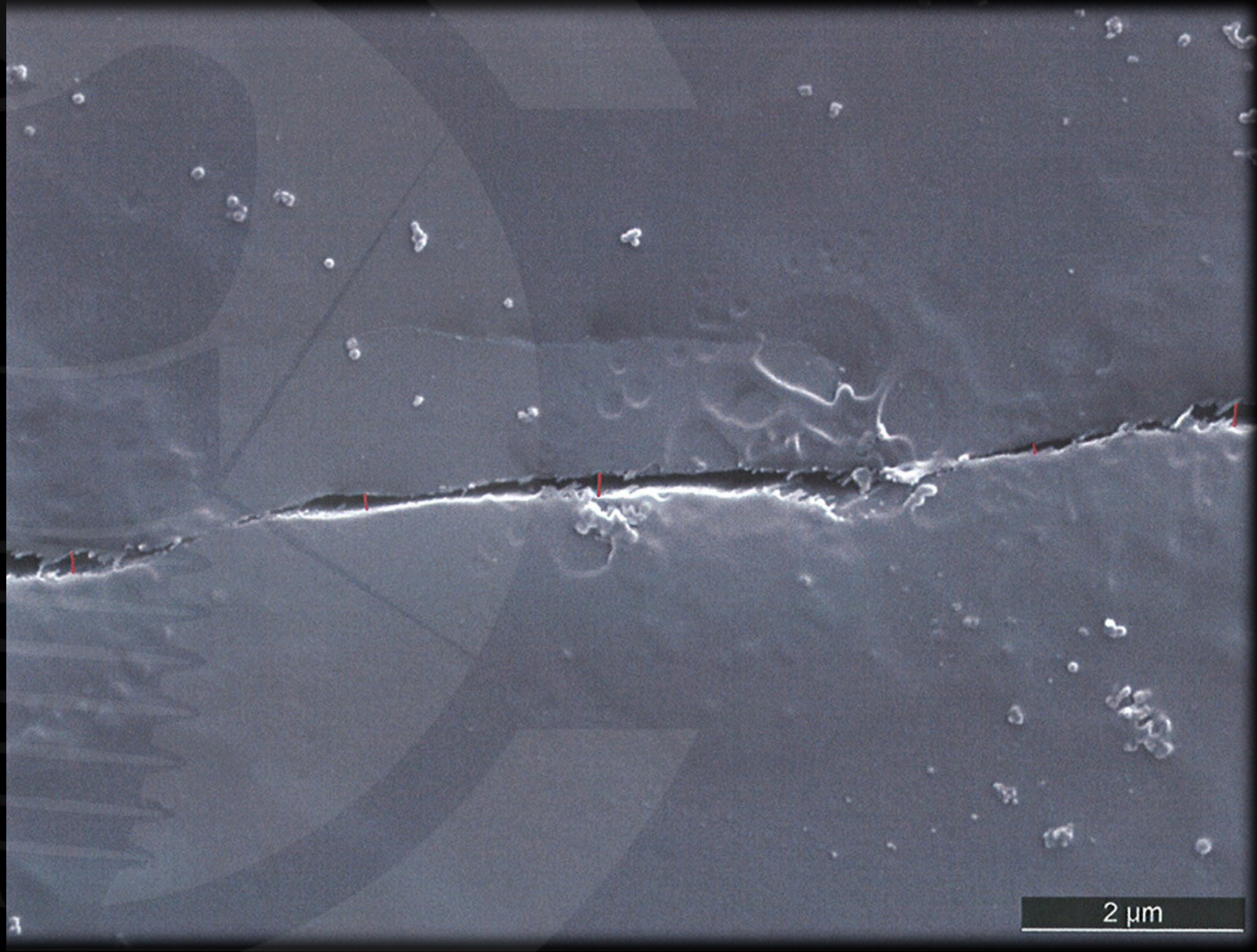


Karina Oliveira de Faria[I]; Clébio Domingues da Silveira-Júnior[I]; João Paulo da Silva-Neto[II]; Maria da Glória Chiarello de Mattos[III]; Marlete Ribeiro da Silva[II]; Flávio Domingues das Neves[I]: **Comparison of methods to evaluate implant-abutment interface**
Braz. J. Oral Sci. vol.12 no.1 Piracicaba Jan./Mar. 2013



SAMPLE 1
1
20KV 10.0X 1.00m 0022
SAMPLE 1
1
20KV 01.0KX 10.0µ 0026
8467 25KV 100µm WD53


Messung 1
Messung 2
Messung 3
Messung 4
Messung 5
500 µm


2 µm

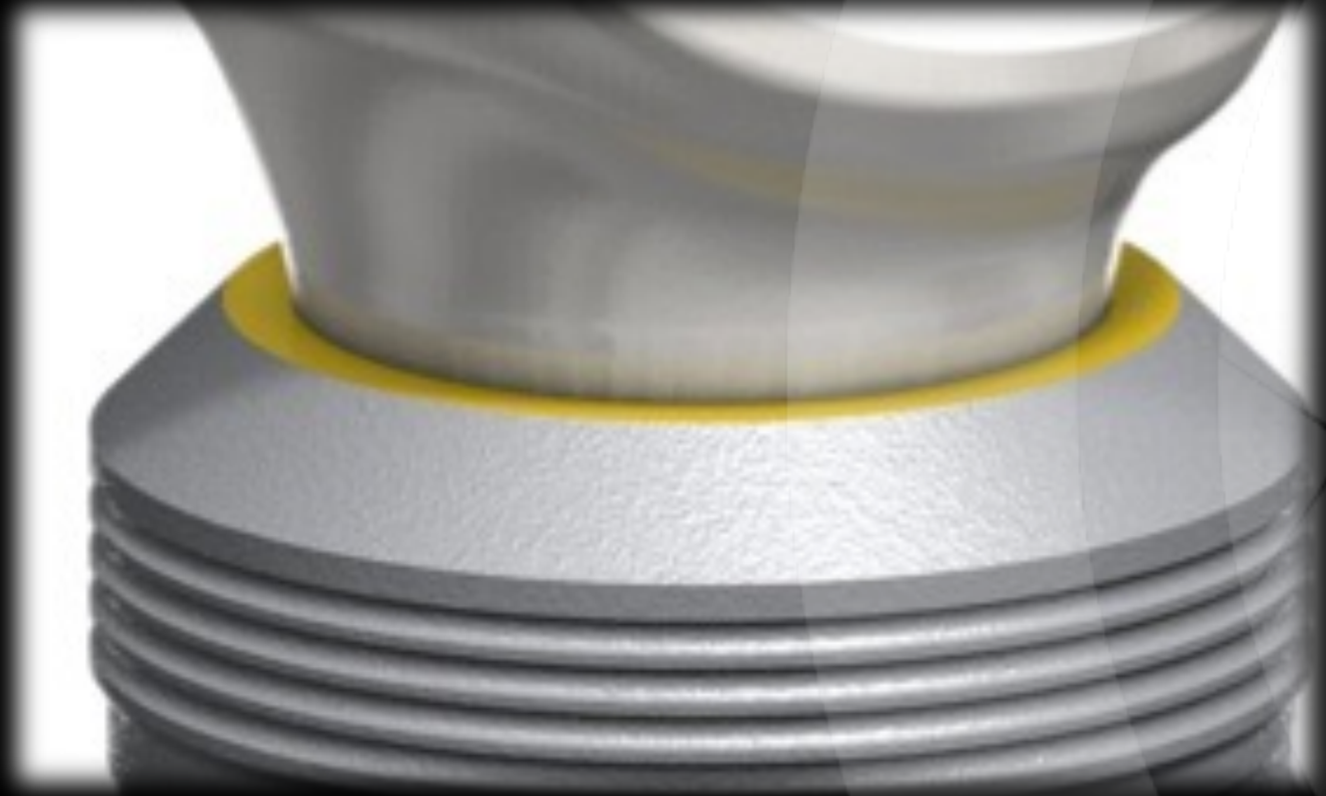
Implant included in the evaluation: NobelActive RP 4.3

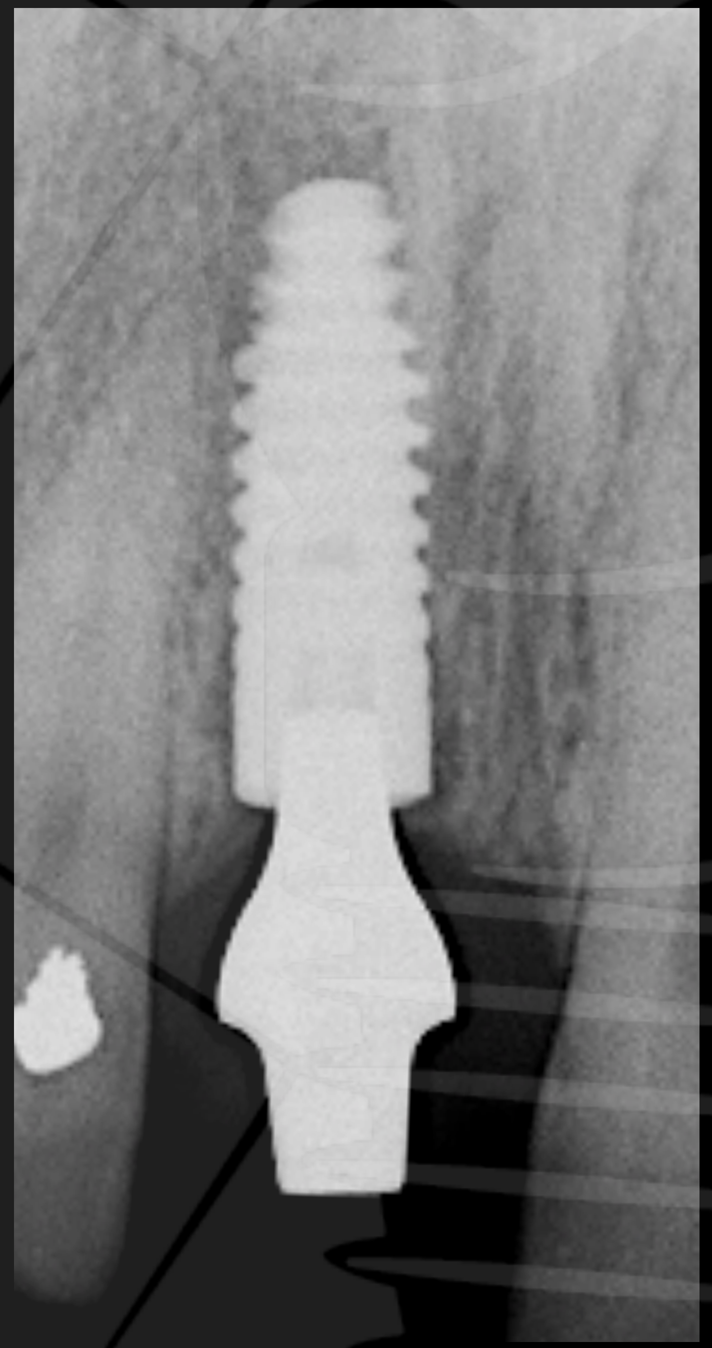
Result test no 1: No load applied.
Microgap measured to 0.1-0.5µm

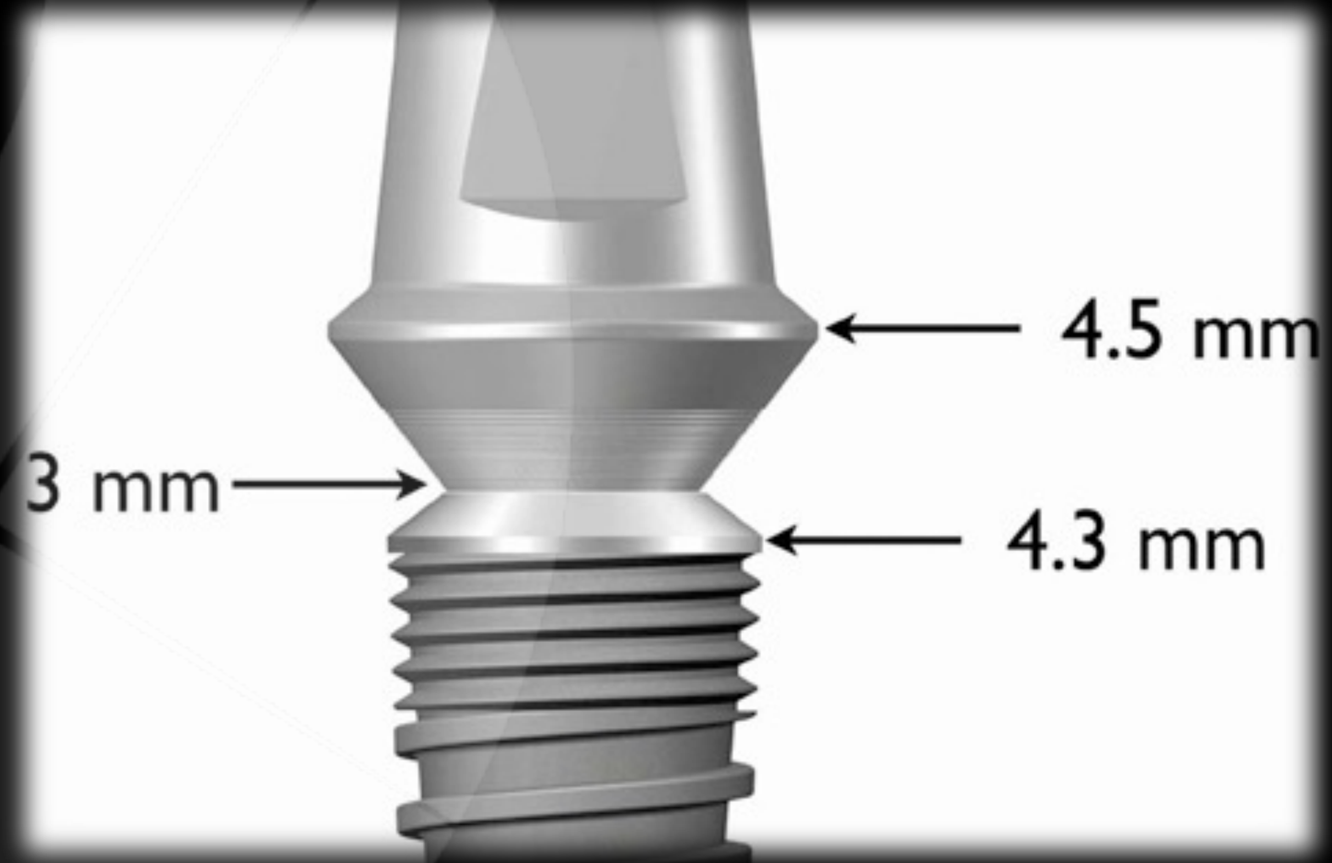
Result test no 2: 100N applied 90° perpendicular to implant axis.
Microgap measured to 30 µm

J of Synchrotron Radiation, 2010, Issue 17, 289-294, A Rack

PLATFORM SWITCHING







ÖSSZEFOGLALÁS

AZ IMPLANTÁTUMOK KÜLÖNBÖZŐ TULAJDONSÁGAI
AZ ELTÉRŐ ANATÓMIAI ÉS PROTETIKAI SZITUÁCIÓKTÓL FÜGGŐEN
ELŐNYNEK, VAGY ÉPPEN ***HÁTRÁNYNAK***
MINŐSÜLHETNEK.

KÖSZÖNJÜK A FIGYELMET