

Ultrasonography versus Radiography in the Assessment of Jawbone Density – New insight into an under recognized entity?

drlechner@aol.com
www.dr-lechner.de

Clinic
Integrative Dentistry
Munich Germany



Lechner J, Noumbissi S, von Baehr V.

*Titanium implants and silent
inflammation in jawbone –
a critical interplay of dissolved
titanium particles and cytokines
RANTES/CCL5 on overall
health?*

EPMA Journal (2018).

<https://doi.org/10.1007/s13167-018-0138-6>

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*Titanium implants and silent
inflammation in jawbone—a critical
interplay of dissolved titanium particles
and cytokines TNF- α and RANTES/CCL5
on overall health?*

**Johann Lechner, Sammy Noumbissi &
Volker von Baehr**

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personalized medicine

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DOI 10.1007/s13167-018-0138-6

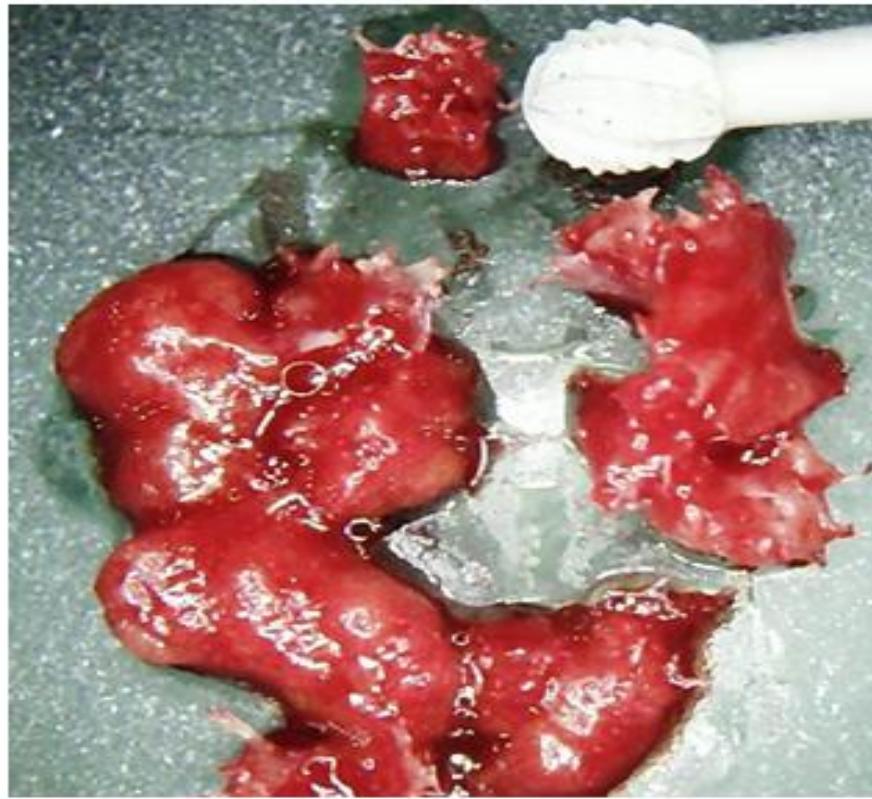


 Springer

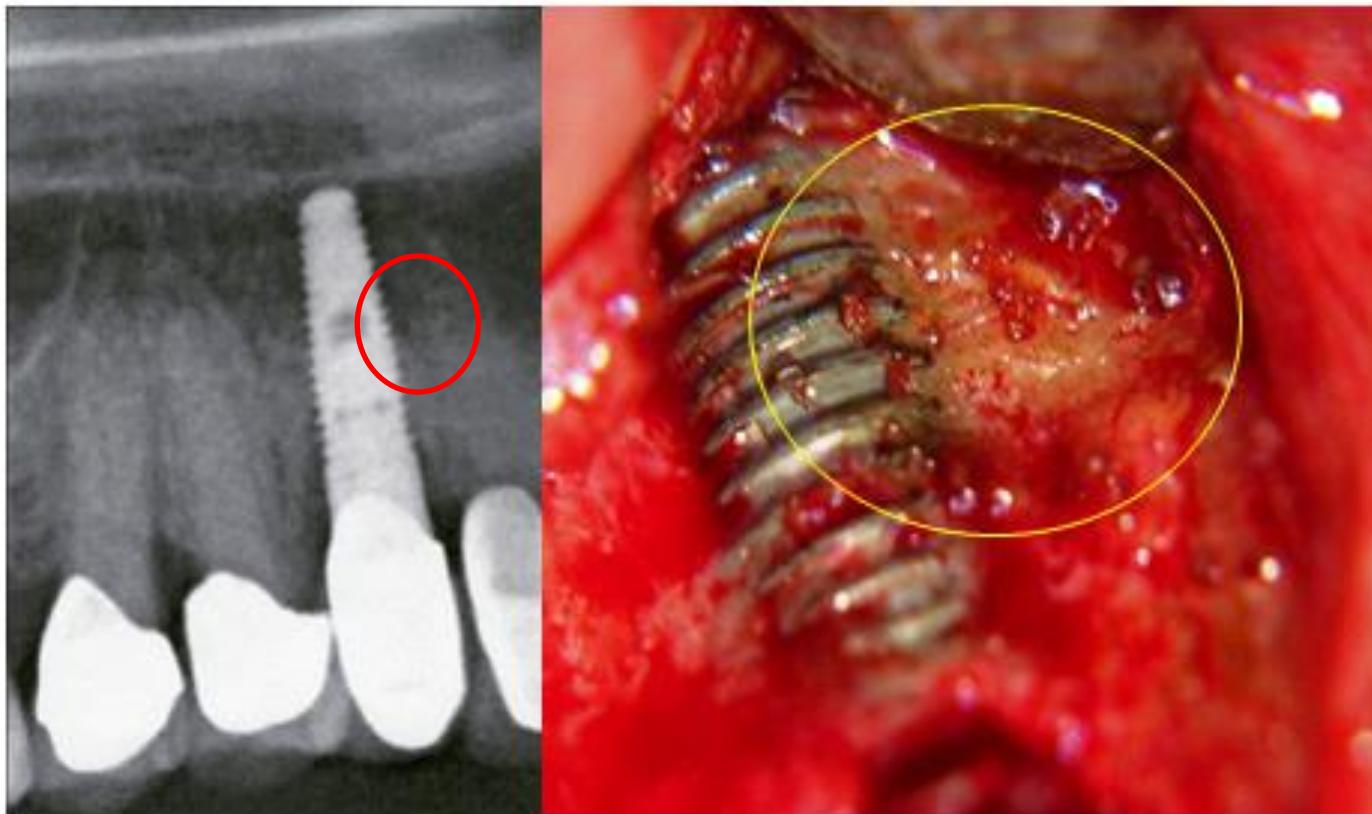
After inserting more than 4.000 ceramic implants
in the last 20 years



After cleaning out more than 40.000 jawbone cavitations
in the last 42 years in our Clinic in Munich

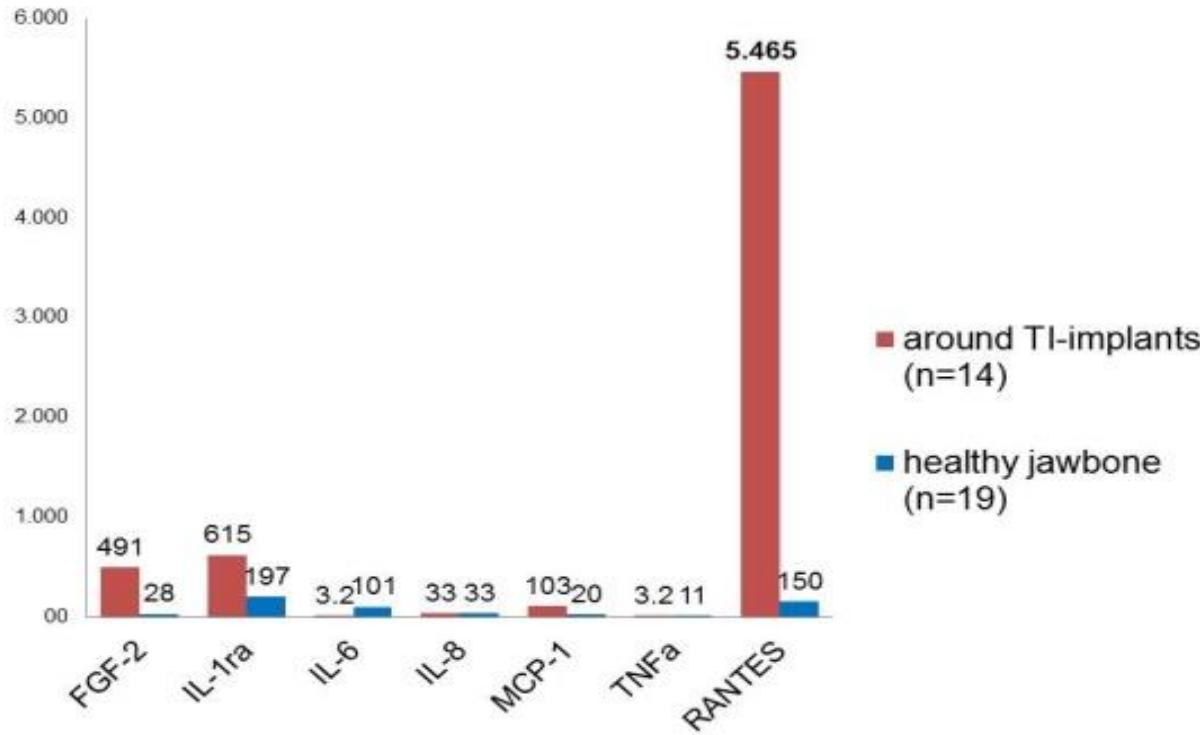


I noticed a strange entity around the implants:
Softened jawbone directly adjacent to the implant =
= ***Fatty Degenerative Osteonecrosis (FDOJ)***



So repeatedly the question came up:

- Is my idea of bone marrow really appropriate?
- Is there any **inflammation** not visible on X-ray and CBCT?



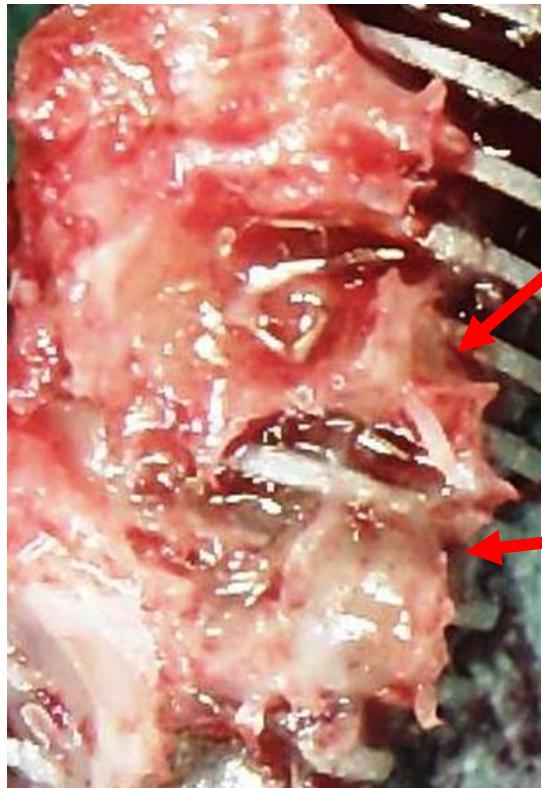
Our lab in Berlin analysed the softened bone around failed implants
for cytokines: Extreme **RANTES/CCL5** overexpression

RANTES is the „*fingerprint*“ of chronic inflammation in
the jawbone

Chronic RANTES expression is consistently propelling
inflammatory response inside the body!



Fatty degenerative Osteonecrosis
(FDOJ)
at implant
↓
source of RANTES/CCL5
signaling kaskades



**Fatty degenerative Osteonecrosis
(FDOJ)
at implant**

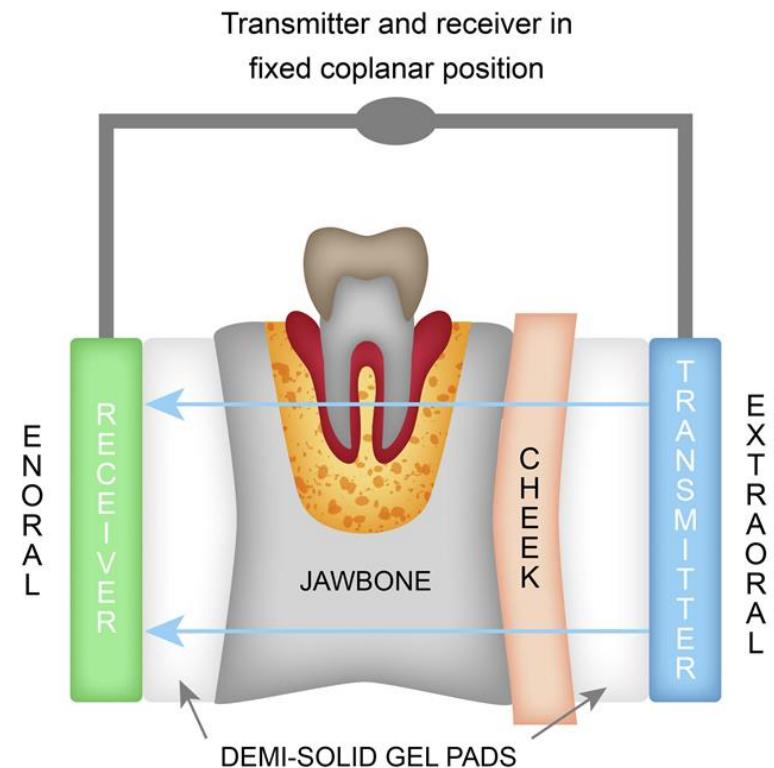
**source of RANTES/CCL5
signaling kaskades**

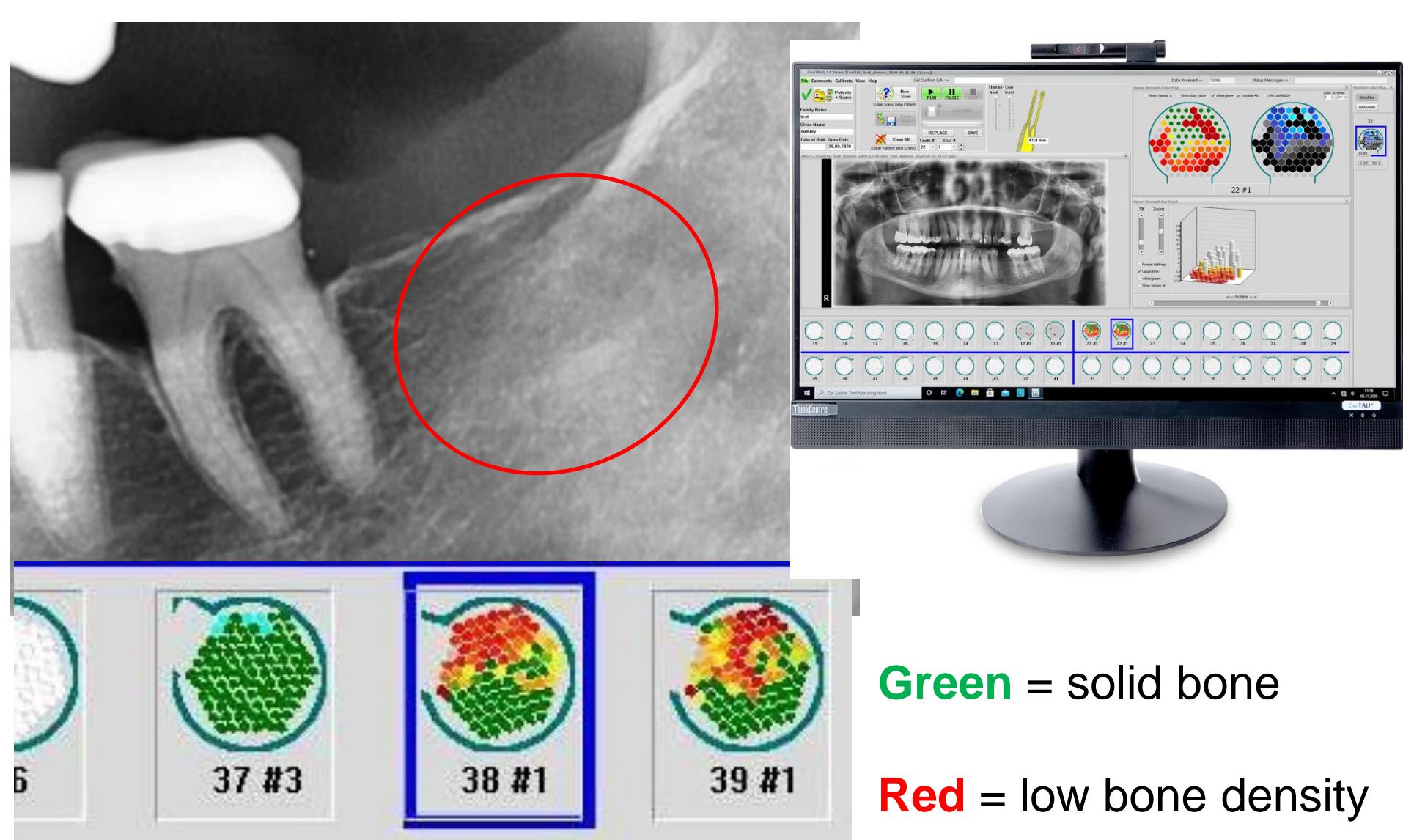
RANTES is the link to
„silent inflammation“

*being responsible for 80 % of chronic diseases
originating in the oral cavity“ Prof. Zeltner WHO*

How to detect and how to measure this diminished bone density?

New ultrasonography device called CaviTAU® .

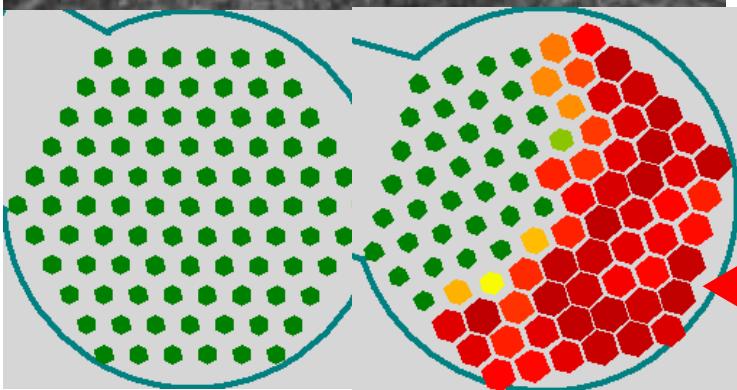




Green = solid bone

Red = low bone density

Orthopanto



Clinical example

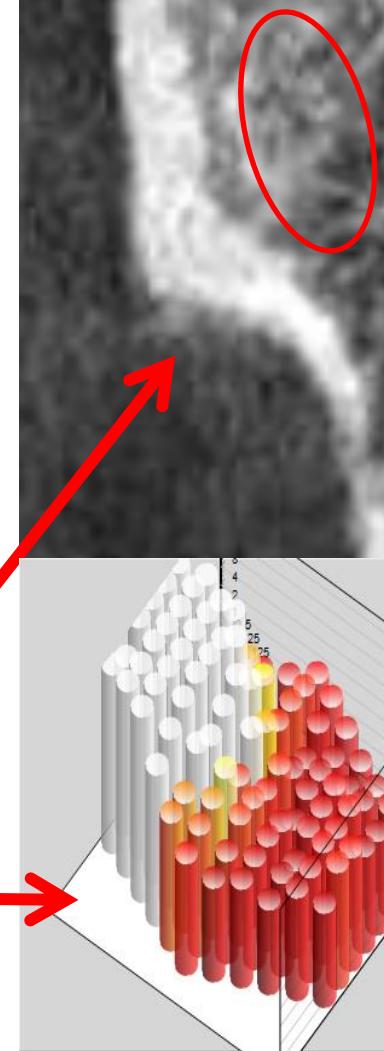
US versus Radio:

Patient 28 years old

Chronic Fatigue
Syndrome

Red indicates
inflammation

CBCT

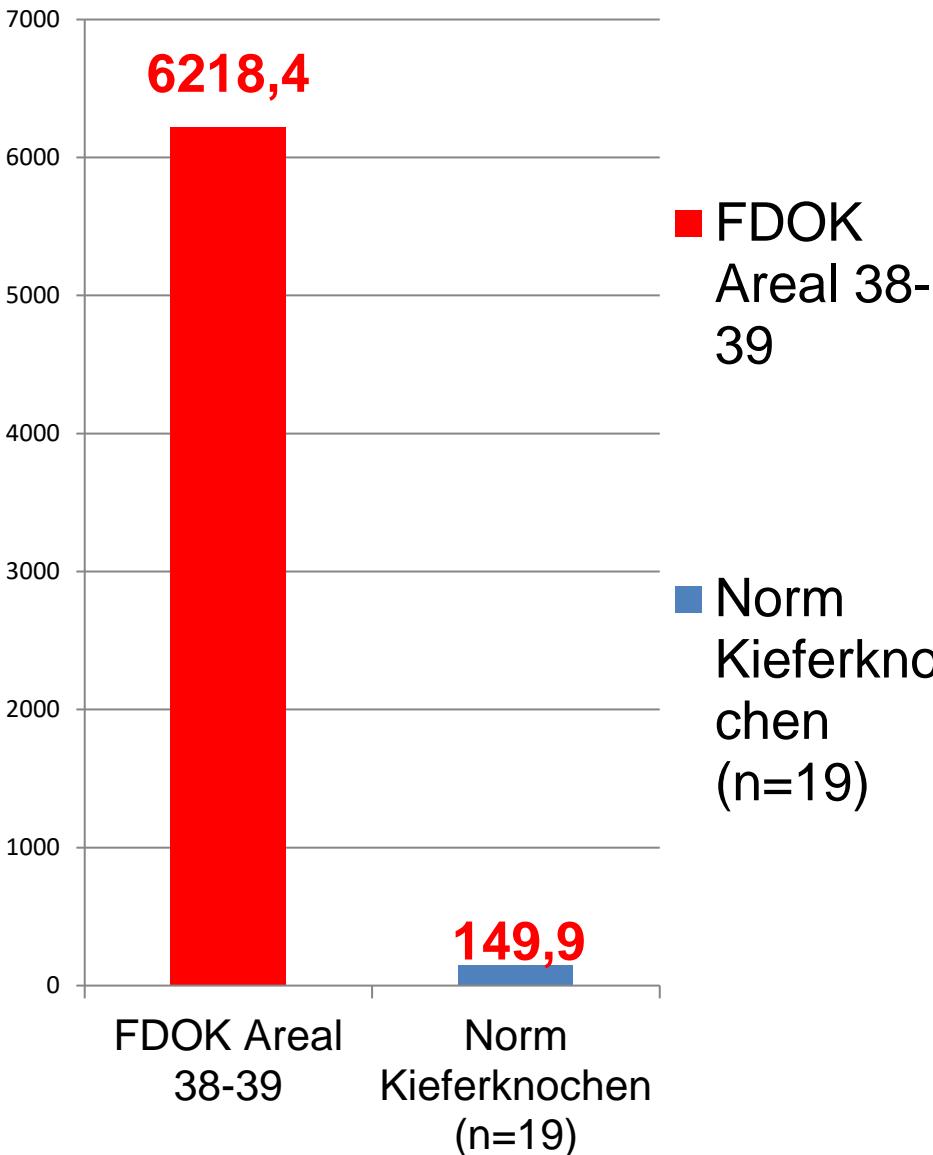




regio 38 /39: „....*Candida*..... *Aspergillus niger*

Mykotoxine, Aflatoxine und Gliotoxine

RANTES (pg/ml)



Proinflammatory Chemokine

RANTES

(regulated on activation, normal T cell

expressed and secreted)

„RANTES can have

detrimental effects via the

recruitment of immune cells

that enhance inflammatory

processes inside the

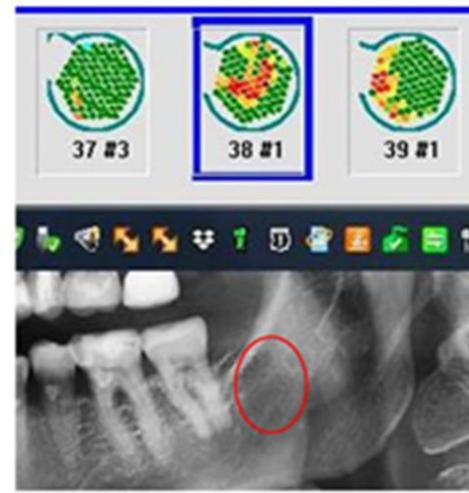
central nervous system“

(Appay, V., S. L.

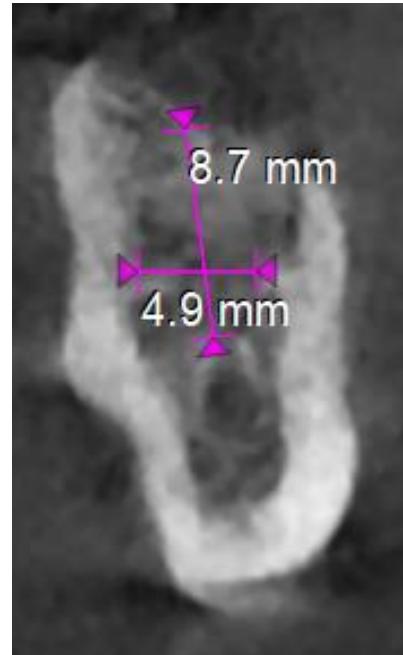
Rowland-Jones. 2001. RANTES: a versatile and
controversial chemokine. Trends Immunol. 22: 83-87)

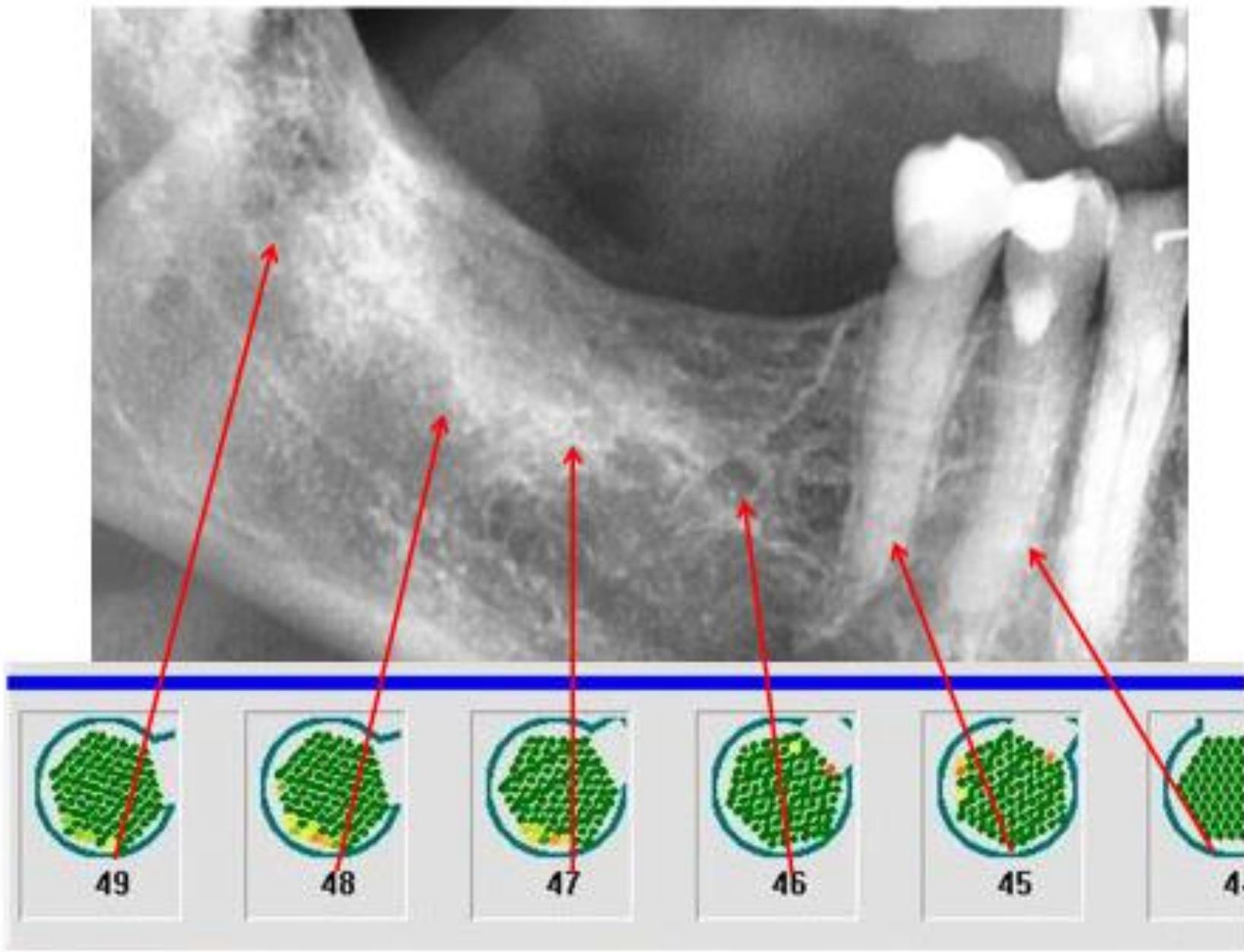
Ultrasonography versus radiography in the assessment of jawbone density

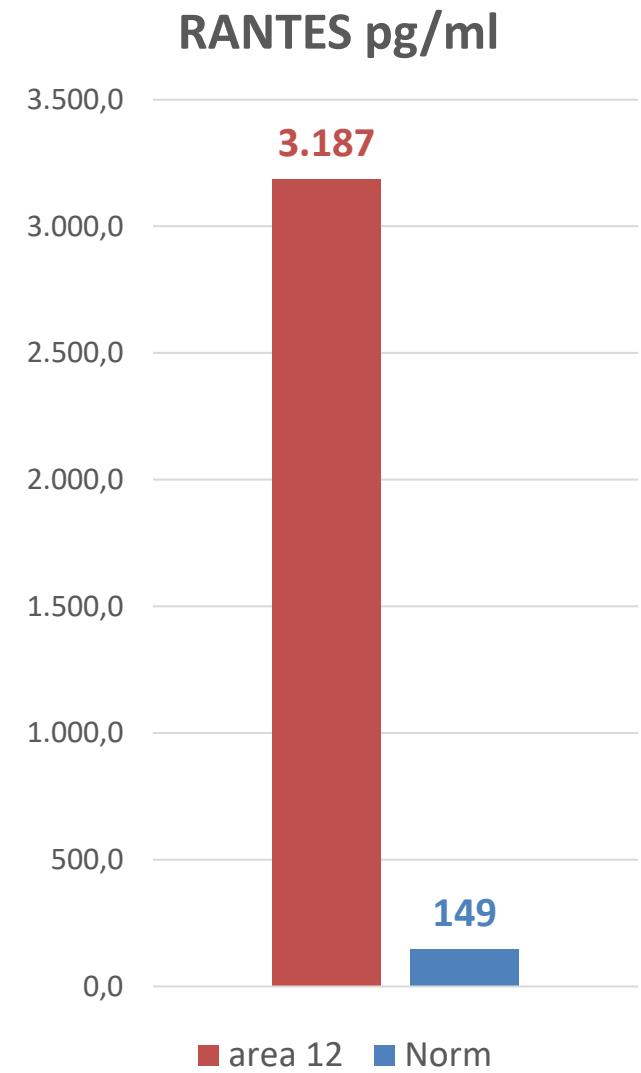
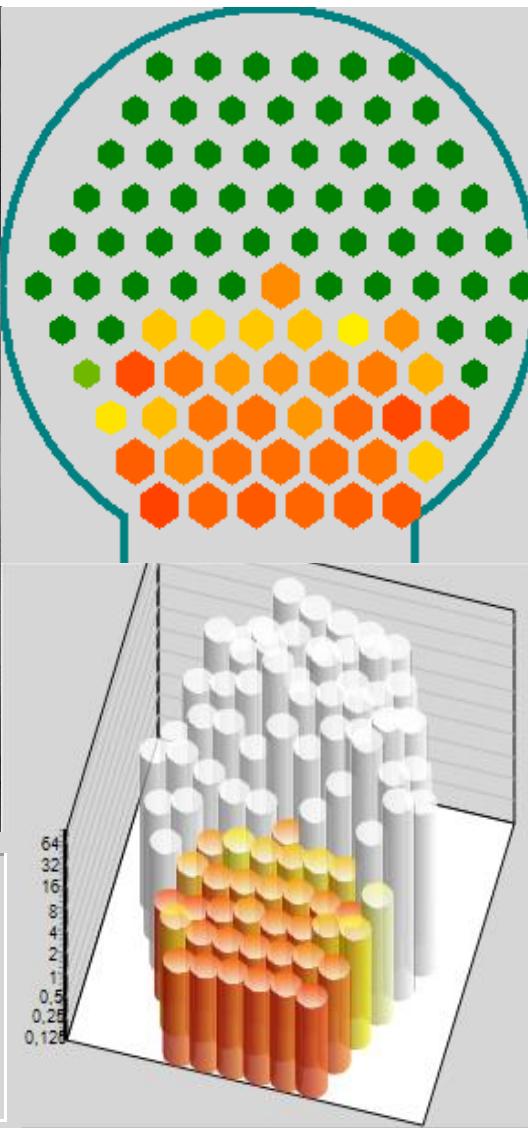
Is the jawbone
ready for implant insertion?



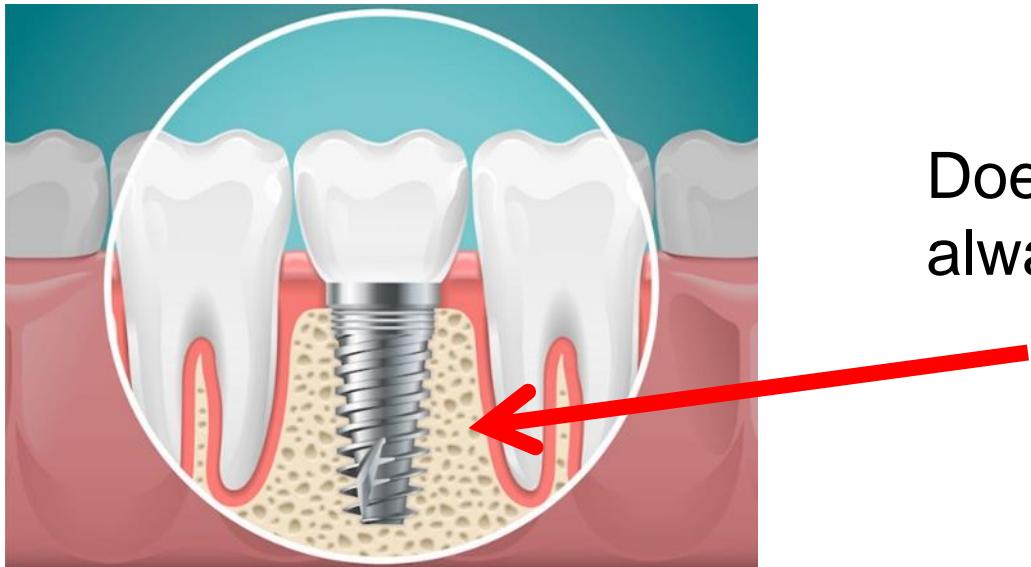
Why evaluate dentists so much the **QUANTITY** of
the implant site – length, width, depth –
and so little the **QUALITY** of the jawbone
at the implant site?





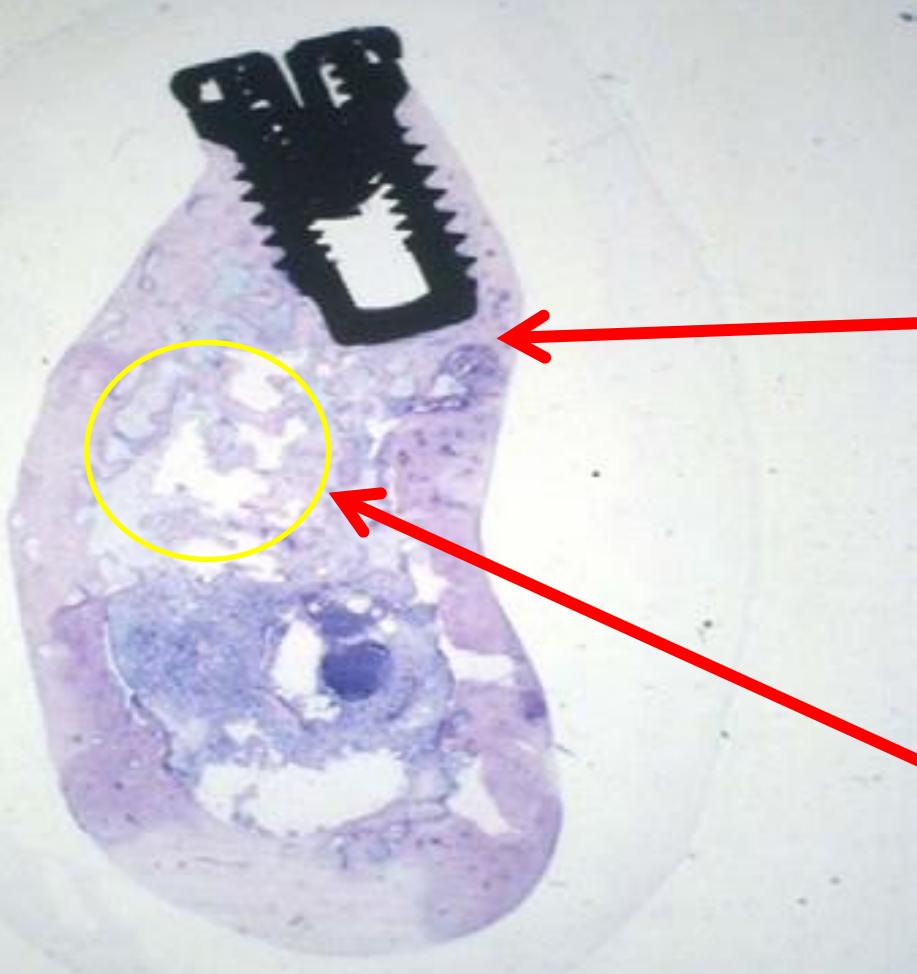


Ultrasonography versus radiography in the assessment of jawbone density on existing implants



Does the bone marrow
always look like this?

Or: Is the implant connected to persisting bone marrow defects?

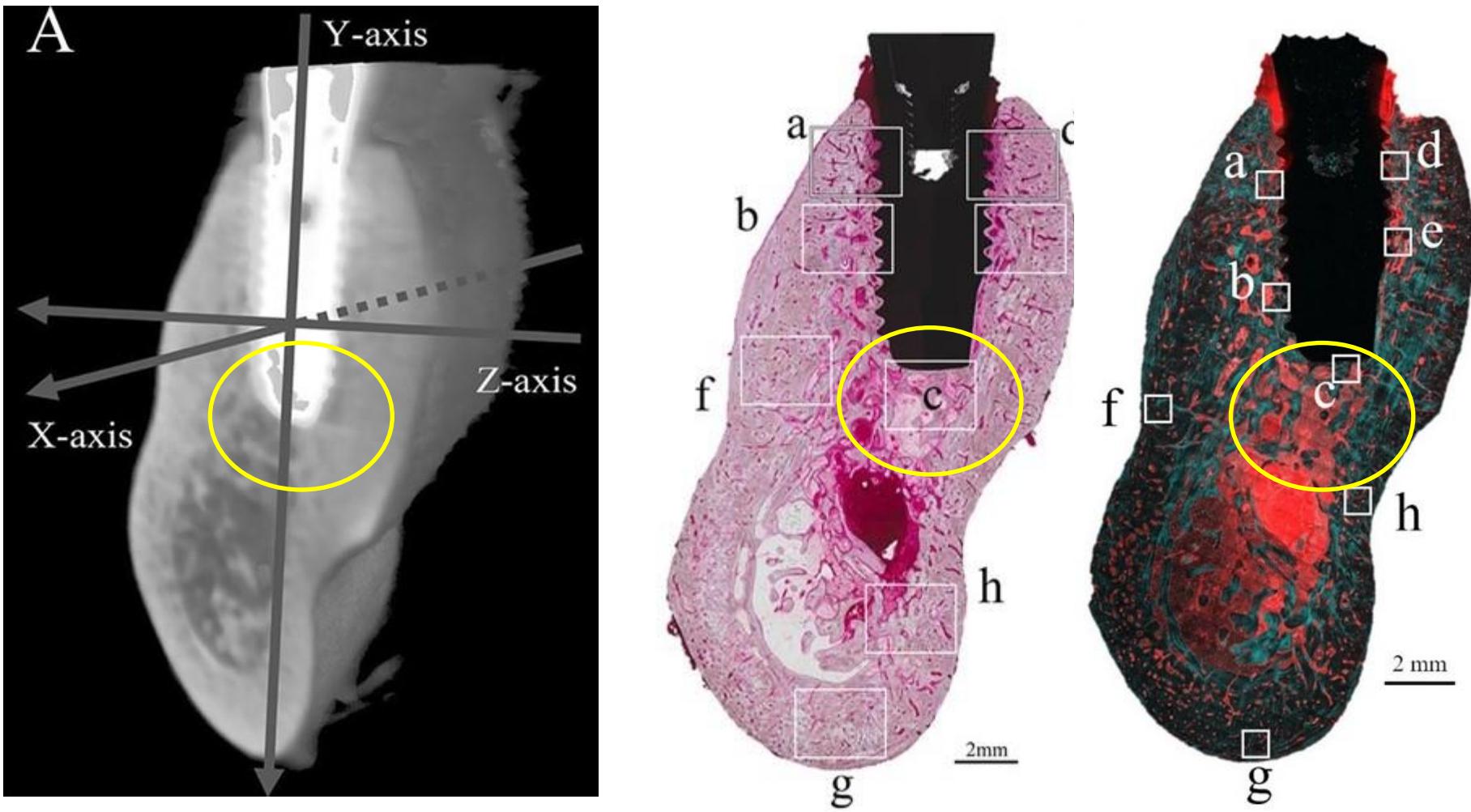


Branemark implant

(by permission Albrektsson et al ClinImplant dent rel res 2014)

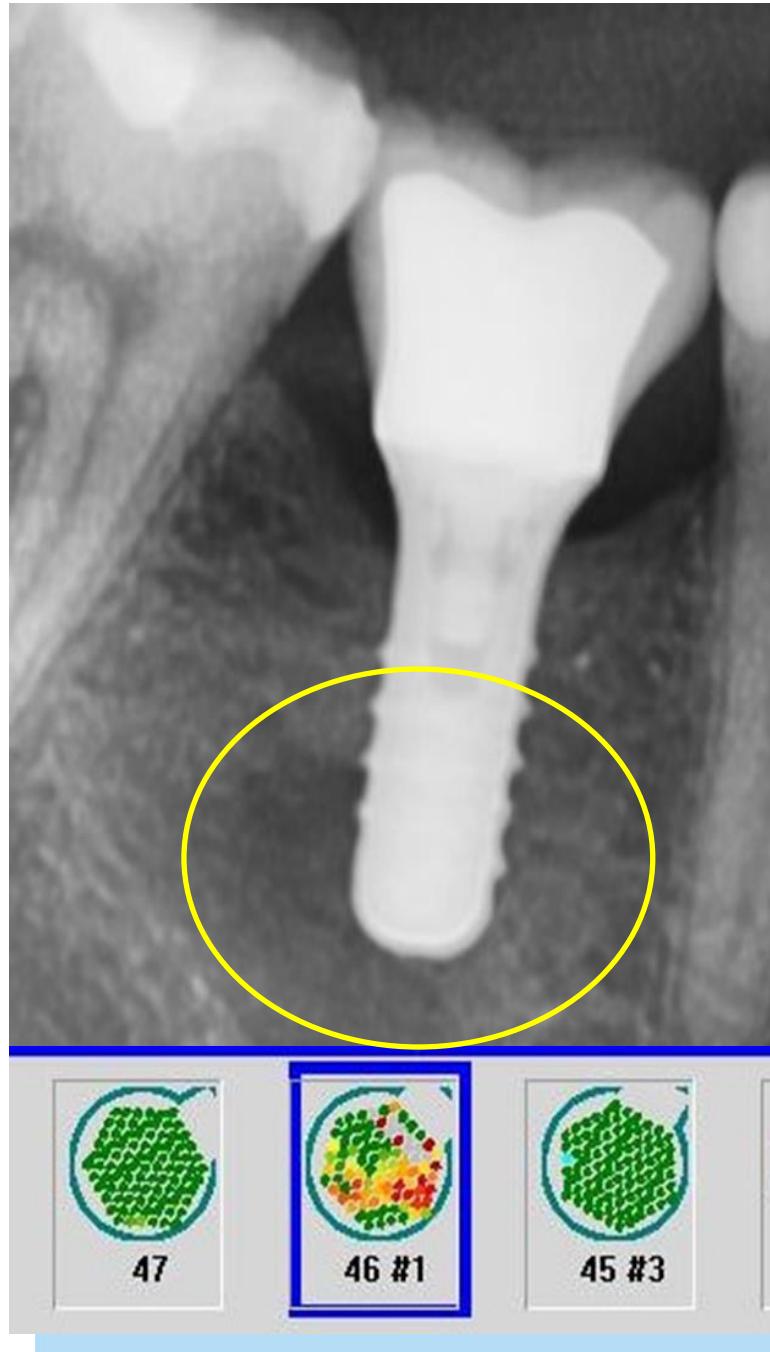
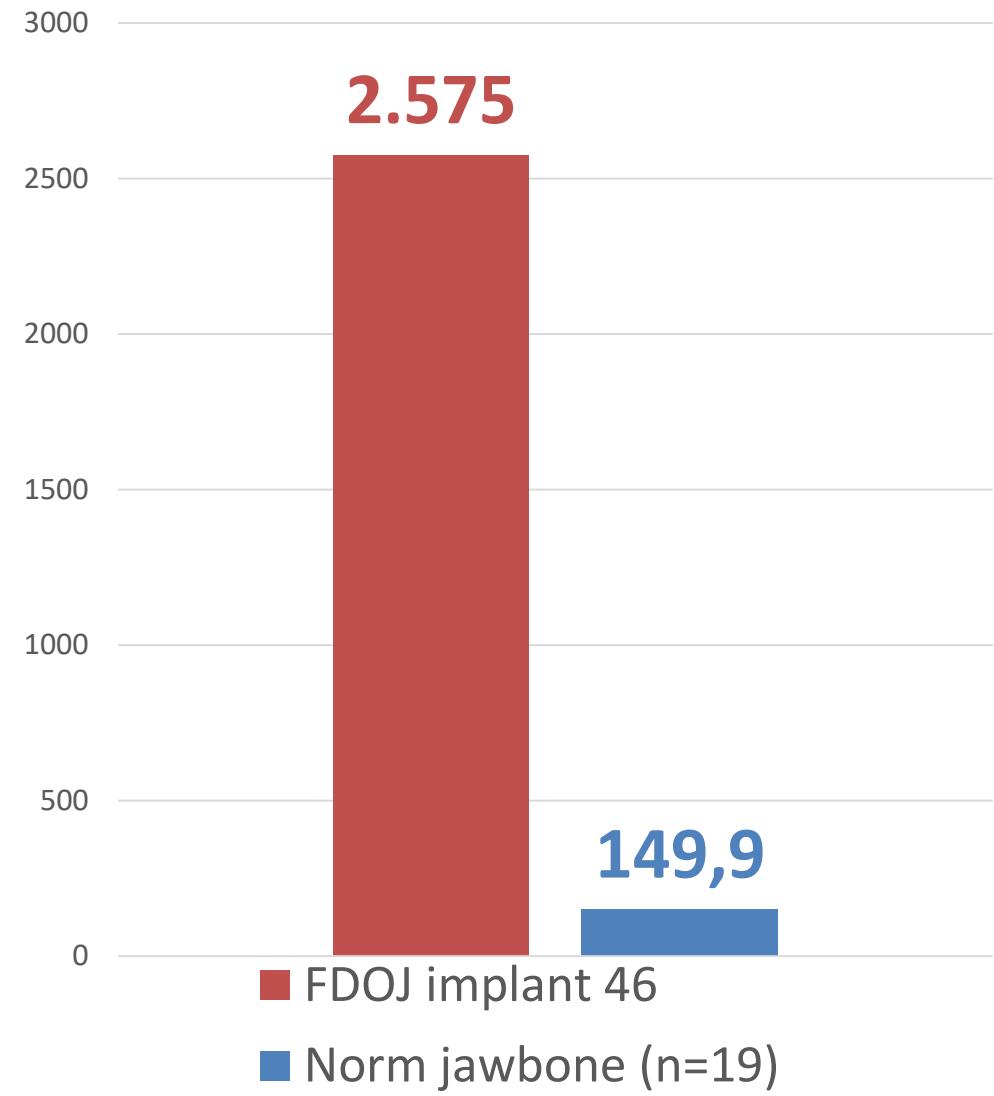
Bony cortical
sheath
on implant

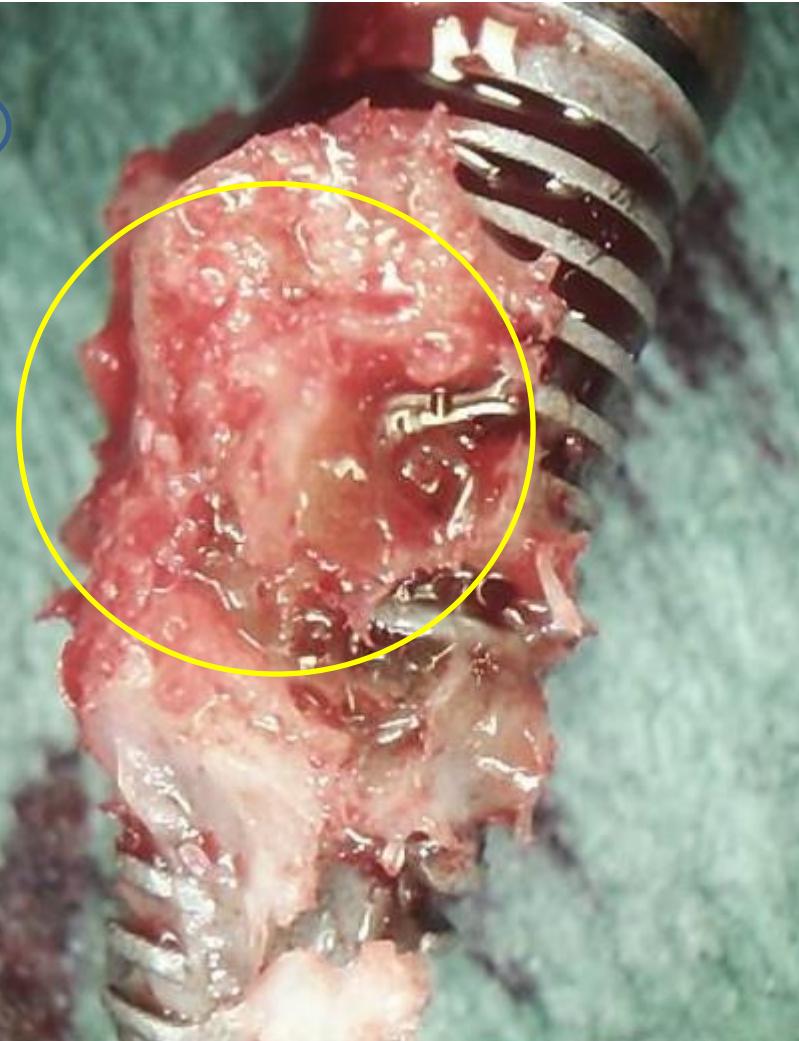
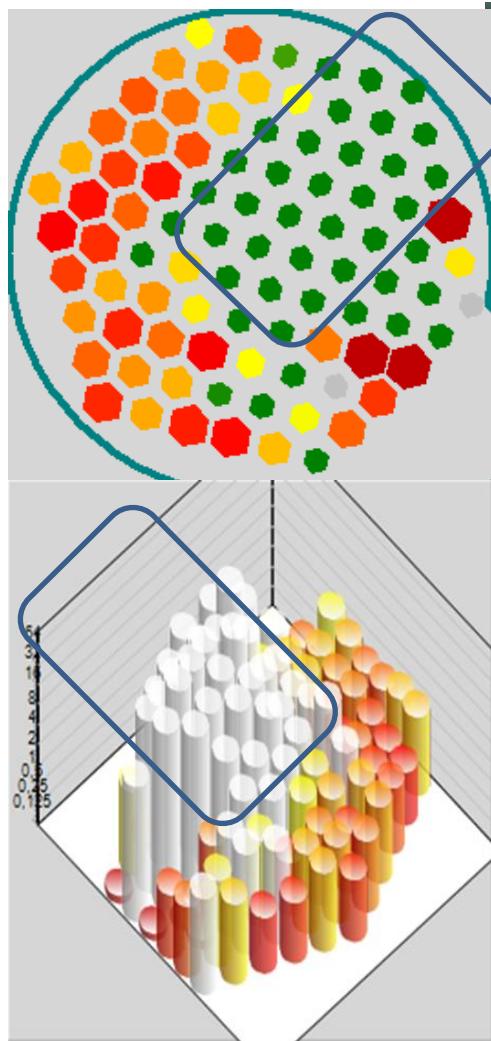
Medullary
Osteonecrosis?
RANTES
Expression?



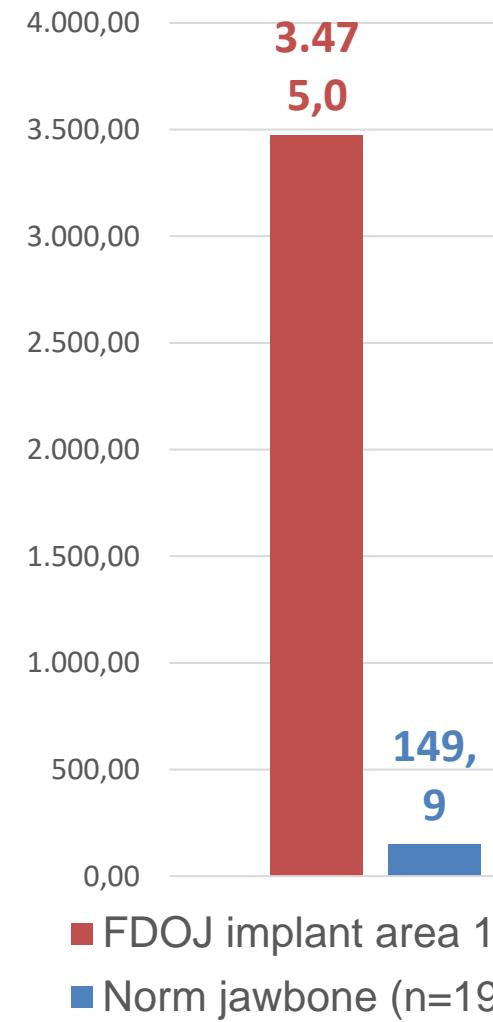
Koresawa *et al.* Micro/nanostructural properties of peri-implant jaw bones: a human cadaver study International Journal of Implant Dentistry (2022) 8:17
<https://doi.org/10.1186/s40729-022-00417-3>

RANTES pg/ml

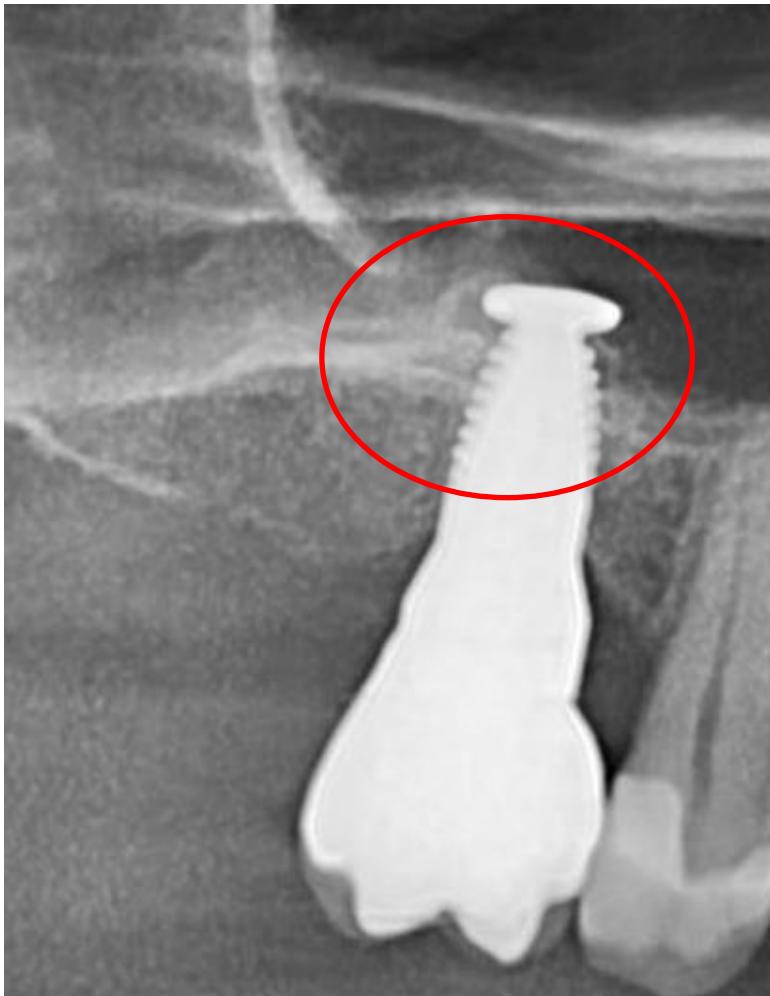




RANTES pg/ml



Case #1: Chronic facial pain after implant

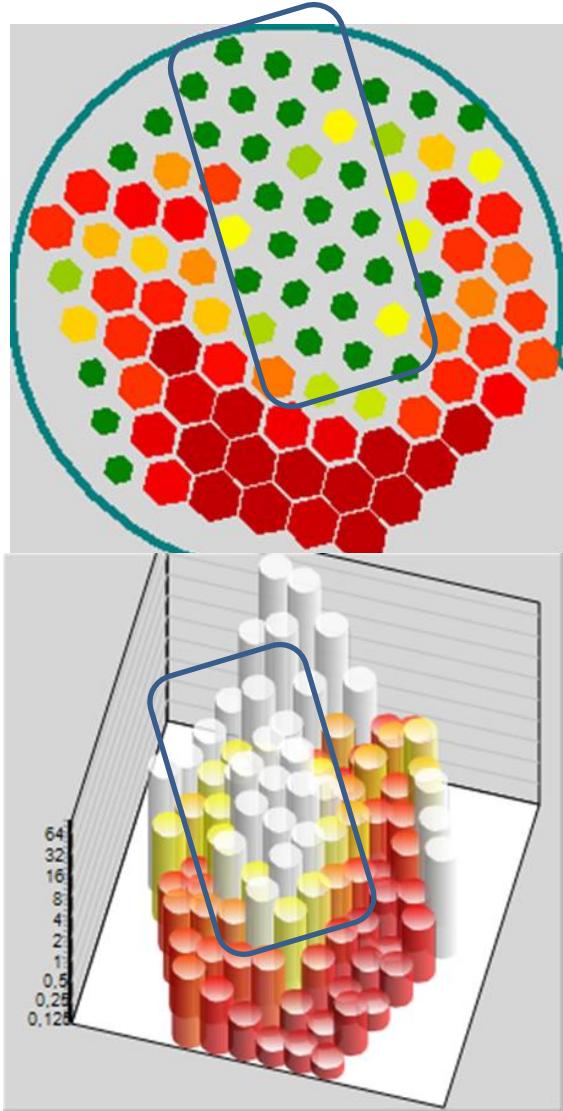
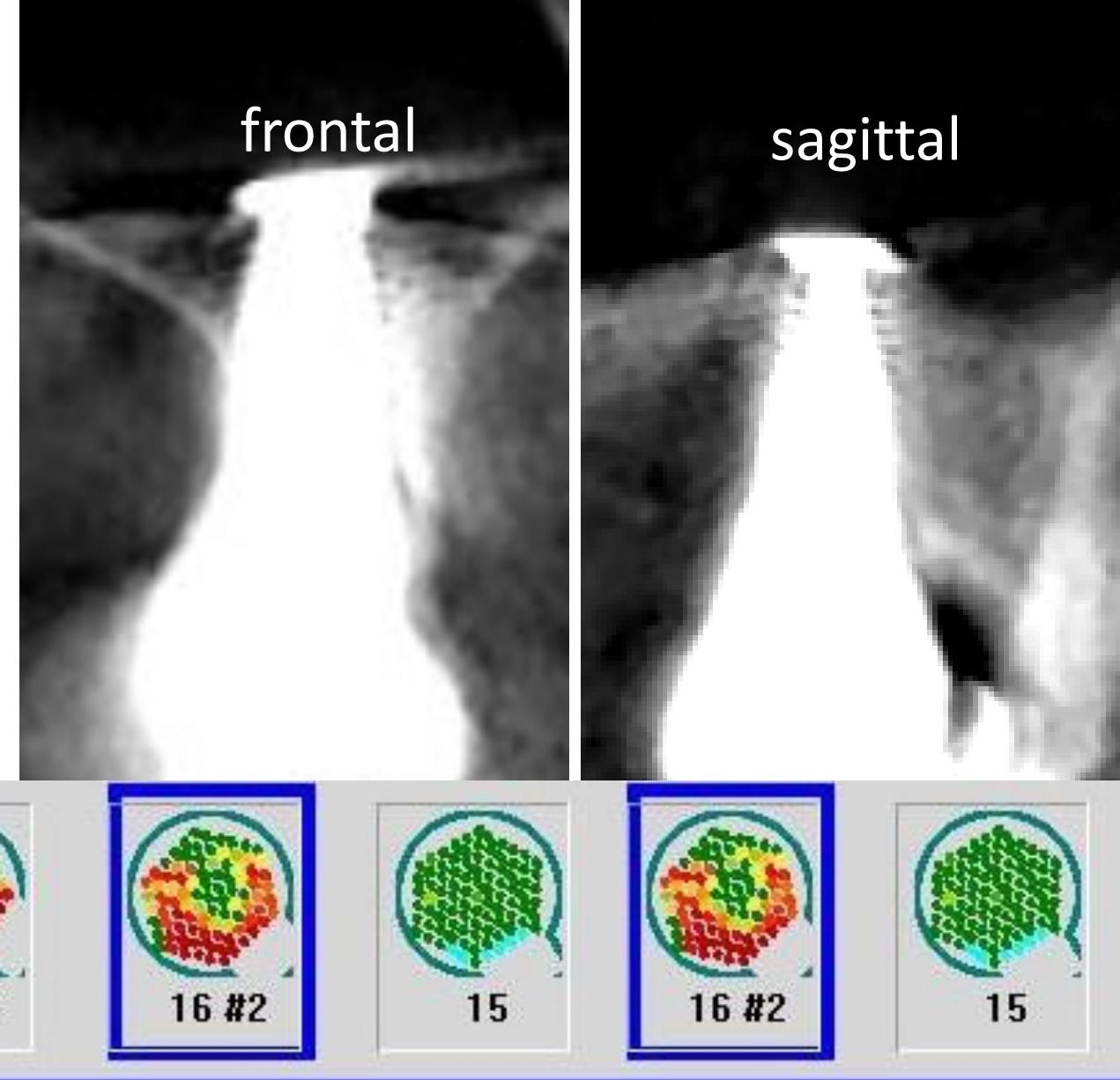


History: Immediate implant at root filling right upper first molar 9 months ago; external sinus lift; implant is well osseointegrated; since 6 months **chronic pain in upper jawbone right side.**

**Up to our US diagnosis
clueless dentists.**

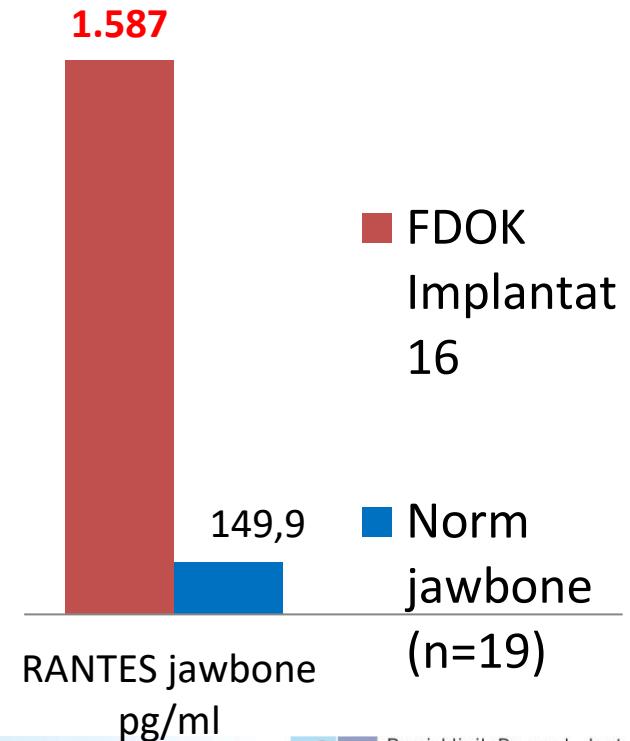
frontal

sagittal

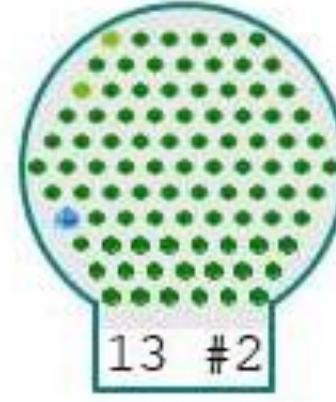
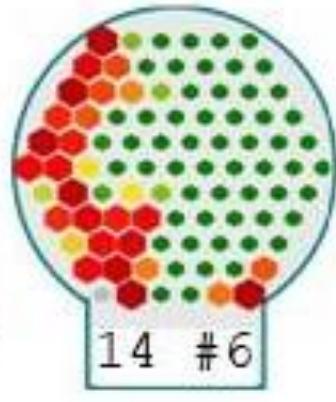
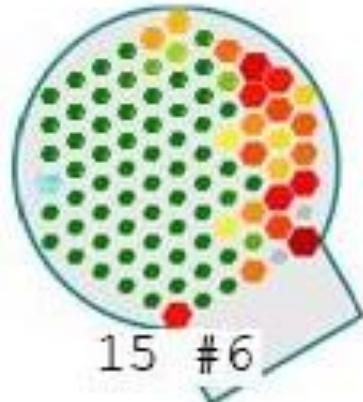


Histology and RANTES multiplex analysis of the apical peri-implant tissue confirmed the result of the ultrasonographic measurement. It thus became obvious that neither OPG nor CBCT detected the inflammatory area. .

*Histo: „.....apikal regio 16 with an already older scarring **apical granuloma** with foreign body granulomas around partially birefringent **foreign material**. Sample material consisting predominantly of **fibrous connective tissue** with foreign body giant cells. Minimal chronic inflammatory cellular infiltration only.“*

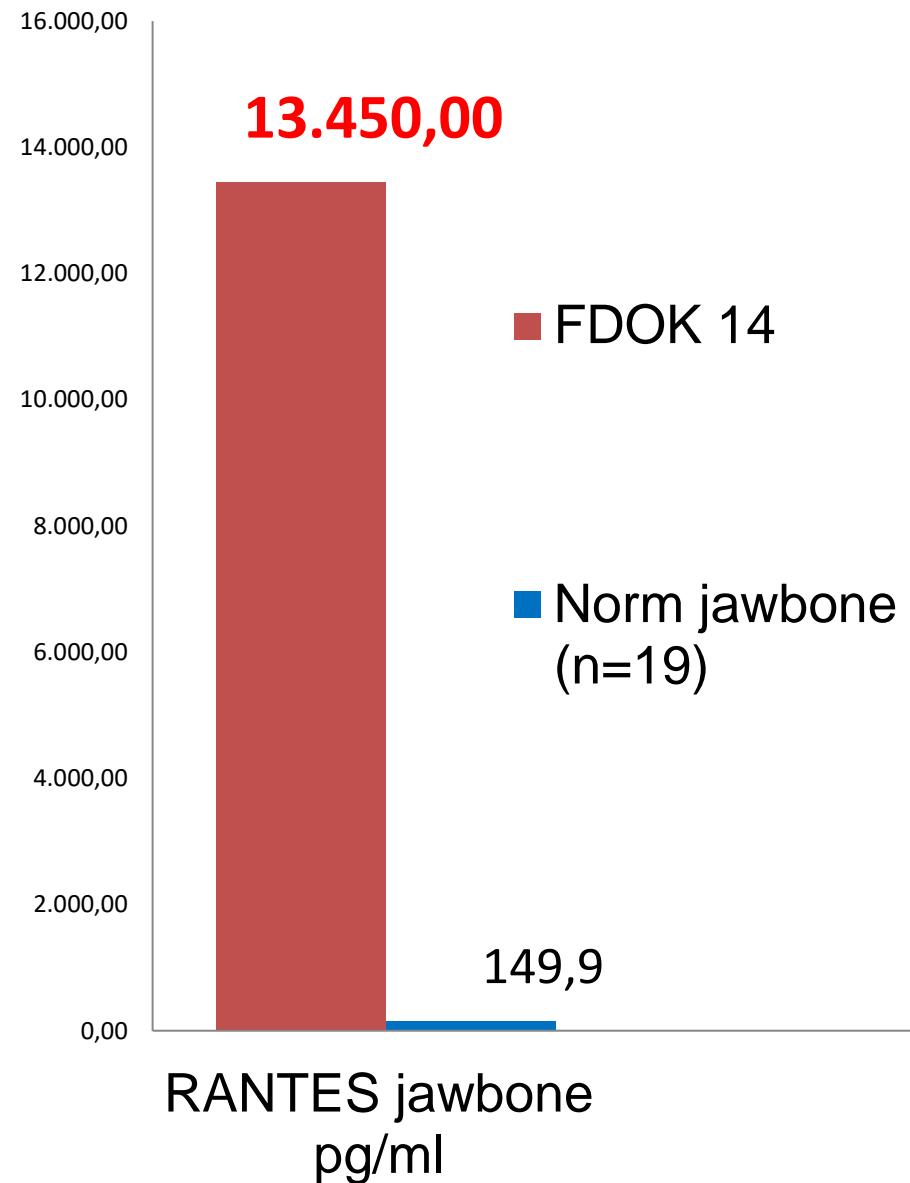


Case #2: Chronic facial pain after implant

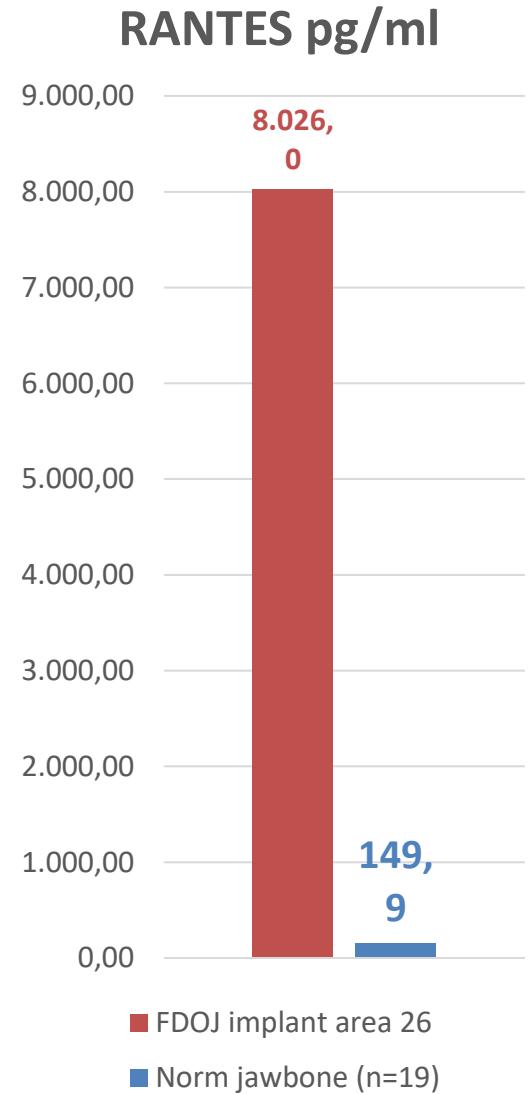
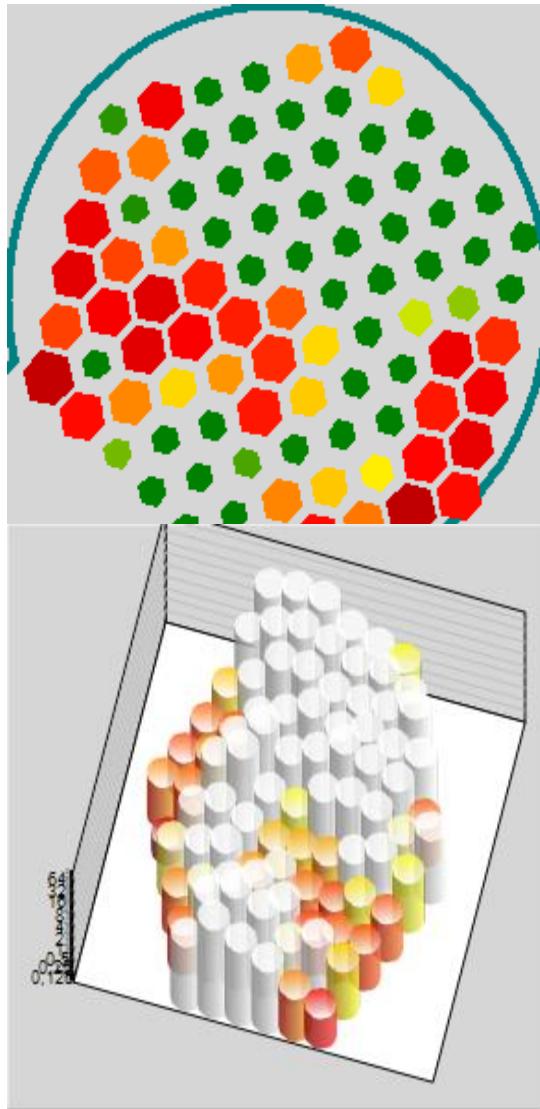
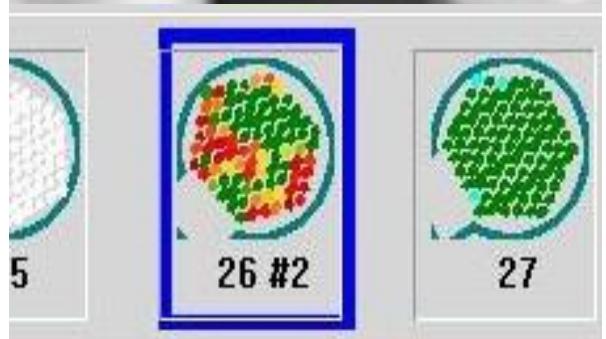


*„Excide from the oral cavity
(regio 14) with scarring, with
bone tissue in depth, with
band-like accentuated **chronic**
and **florid inflammation.***

*Small foci of inflammatory
superimposed stratified
epithelia are also seen. From a
morphological point of view, a
radicular cyst would be
conceivable.“*



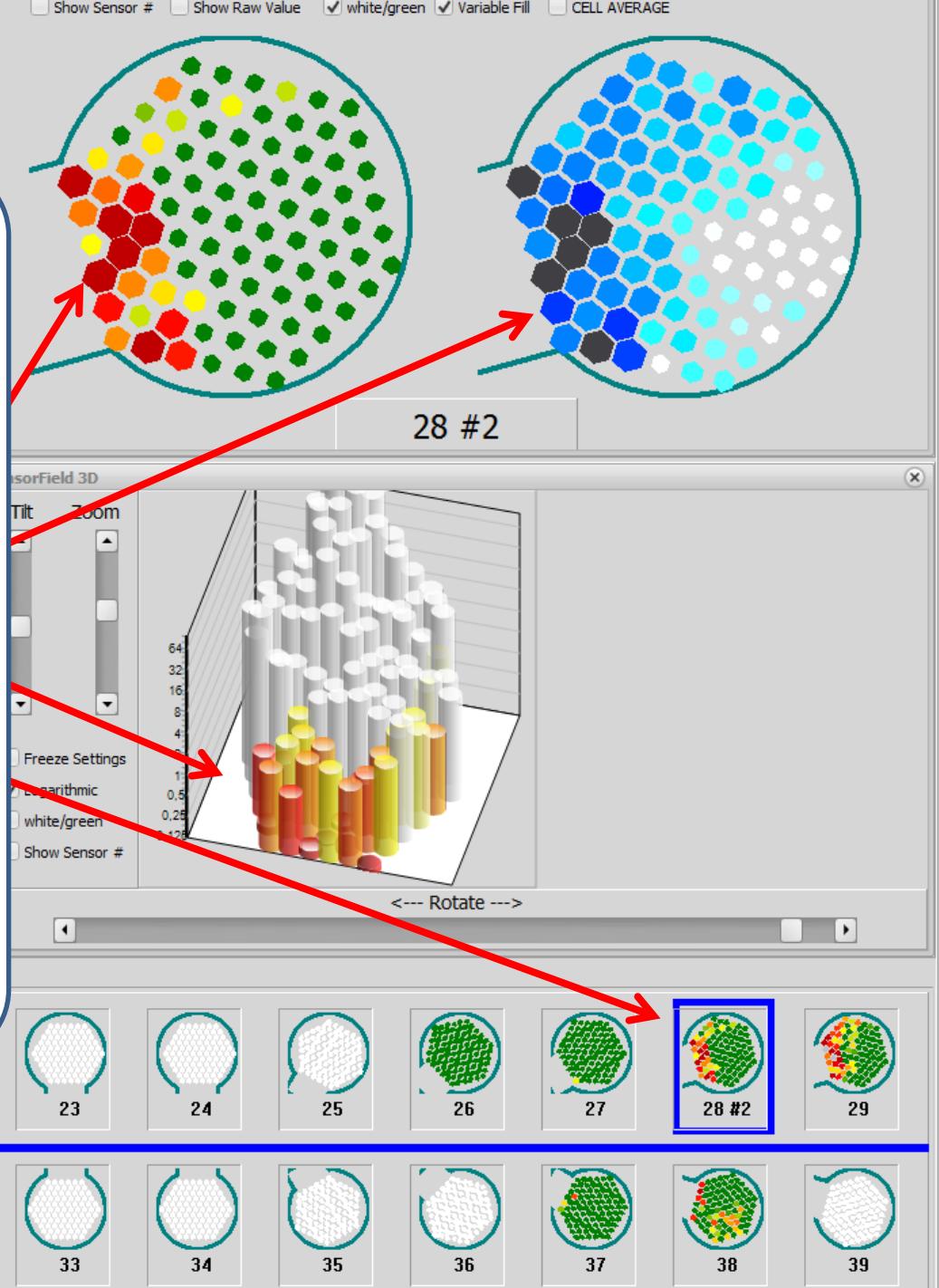
Case #3: Chronic headache/migraine after implant

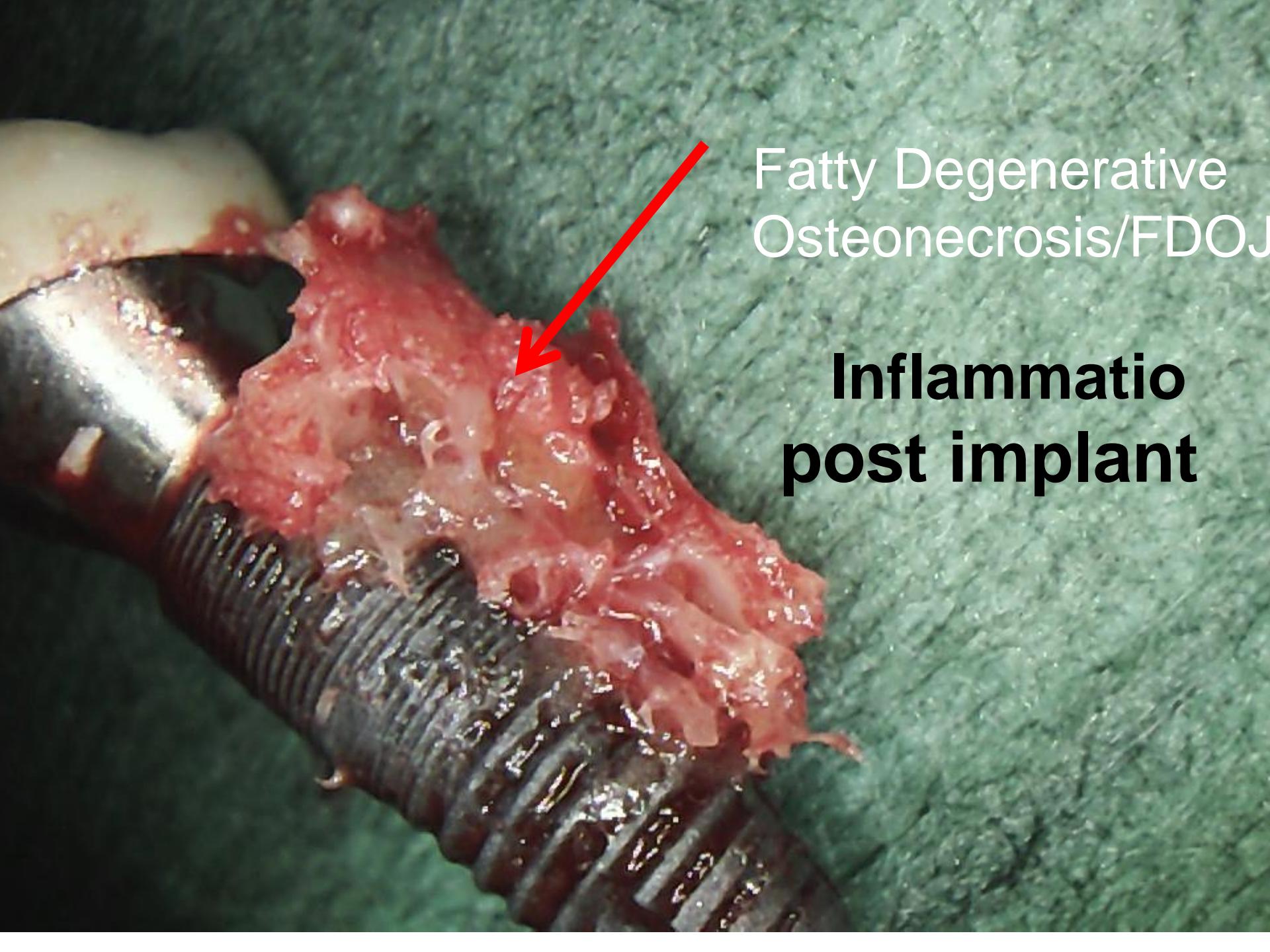


Breast Cancer left



Case #4:
Decreased
Bone density/
"Osteolysis"
directly at
implant
distally from
27 to regio 28



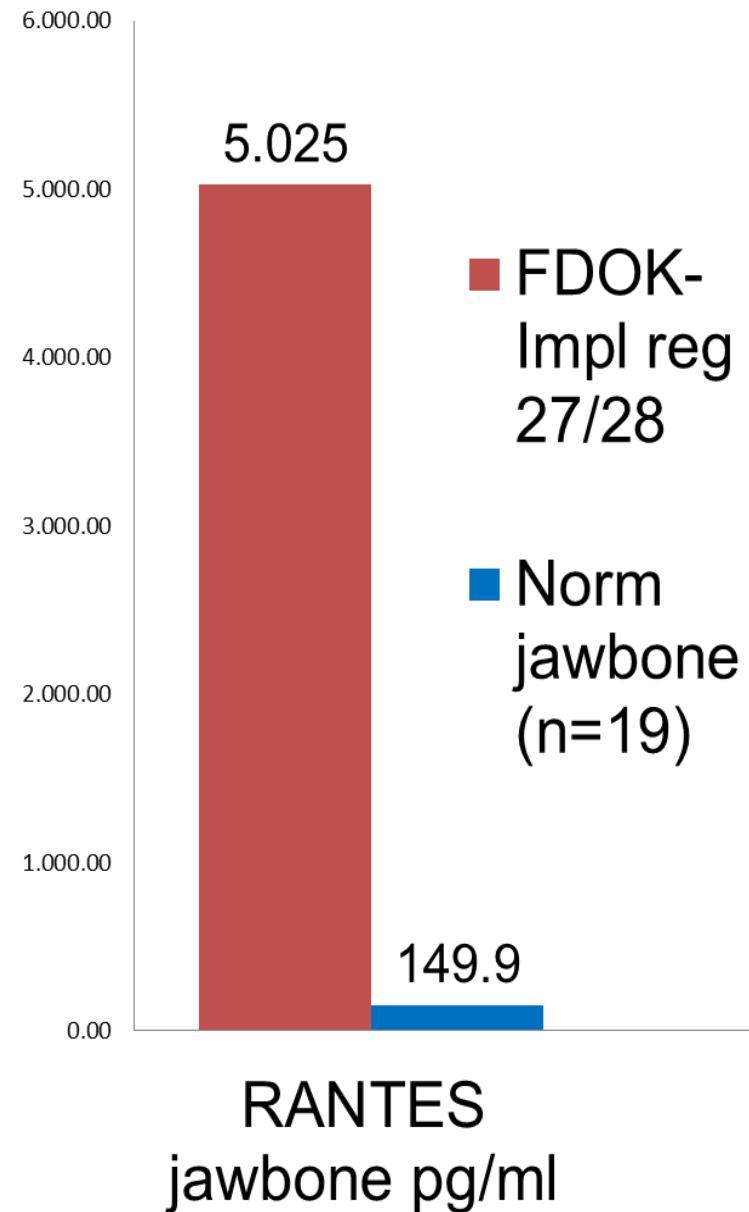


Fatty Degenerative
Osteonecrosis/FDOJ

Inflammatio
post implant

*„PE regio 28/29: Adipose tissue from medulla.... The cytoplasm with substantial **myxoid transformation** of cytoplasmic contents consistent with **trophic disturbances**, but otherwise no relevant inflammation and no atypia.“*

Note: „*Trophic disturbance*“ = dysfunctional bone metabolism = diminished bone density.



What does the scientific literature say about RANTES/CCL5 and tumors?

Searching for "*Cancer review ... or Breast cancer ...or Prostate cancer...or Colon cancer* AND **RANTES/CCL5**" in the GoogleScholar science database reveals surprising results:



Cancer review AND RANTES CCL5 seit 2013 4.450 |

Breast cancer AND RANTES CCL5 seit 2000 5.770

Prostate cancer AND RANTES CCL5 seit 2000 3.660

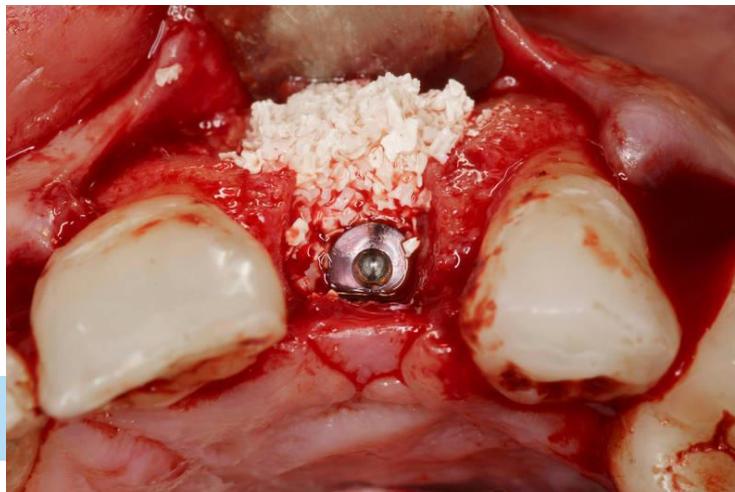
Colon cancer AND RANTES CCL5 seit 2000 7.290

results

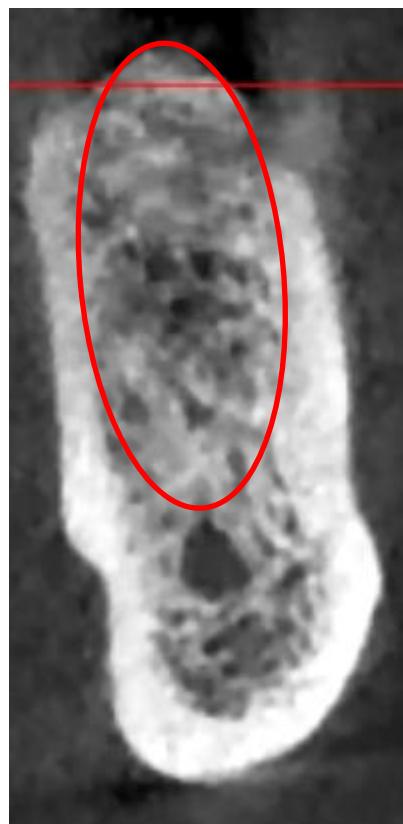
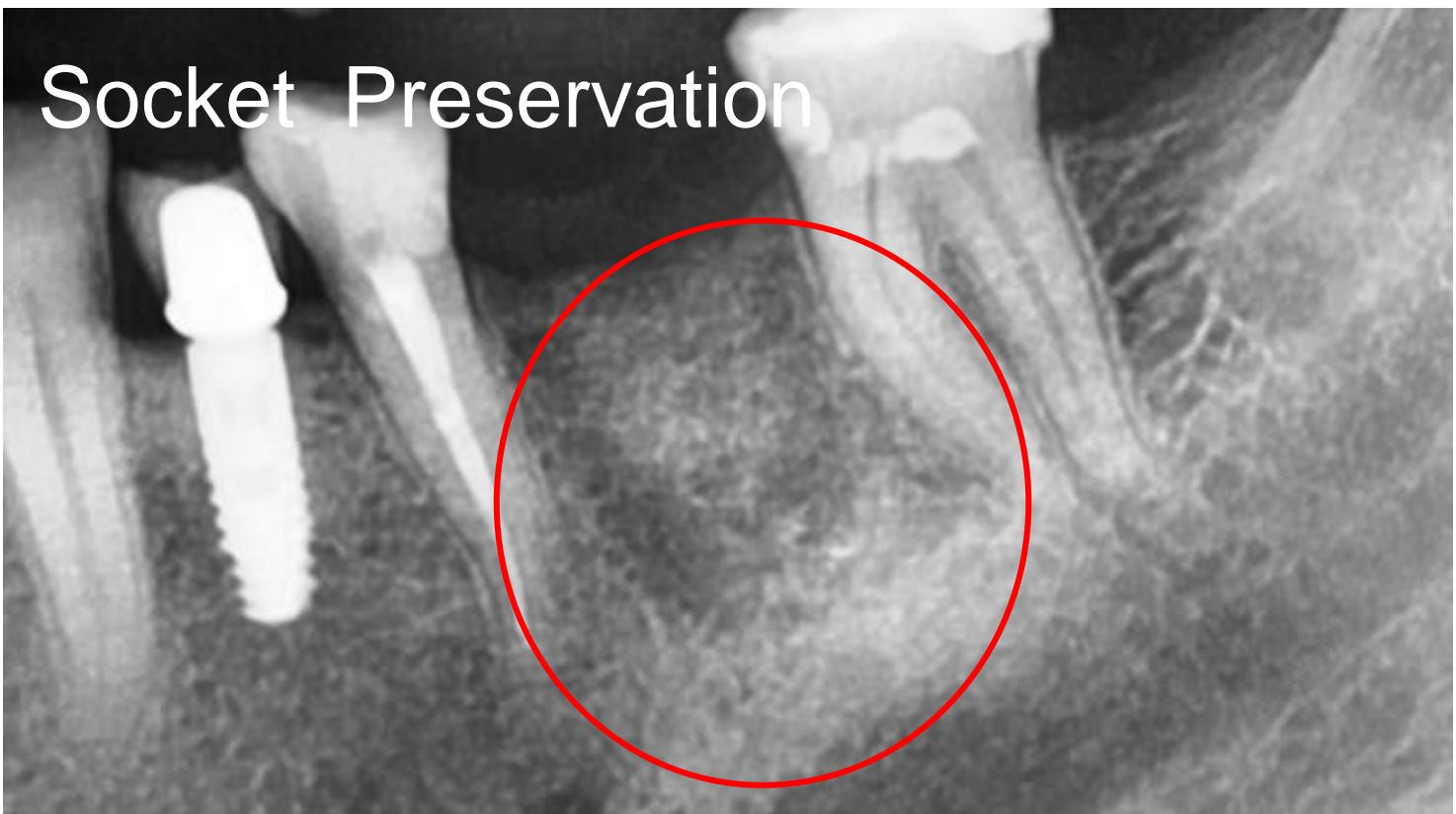
Ultrasonography versus radiography in the assessment of jawbone density

III

Insight on biointegration and bone healing protocols

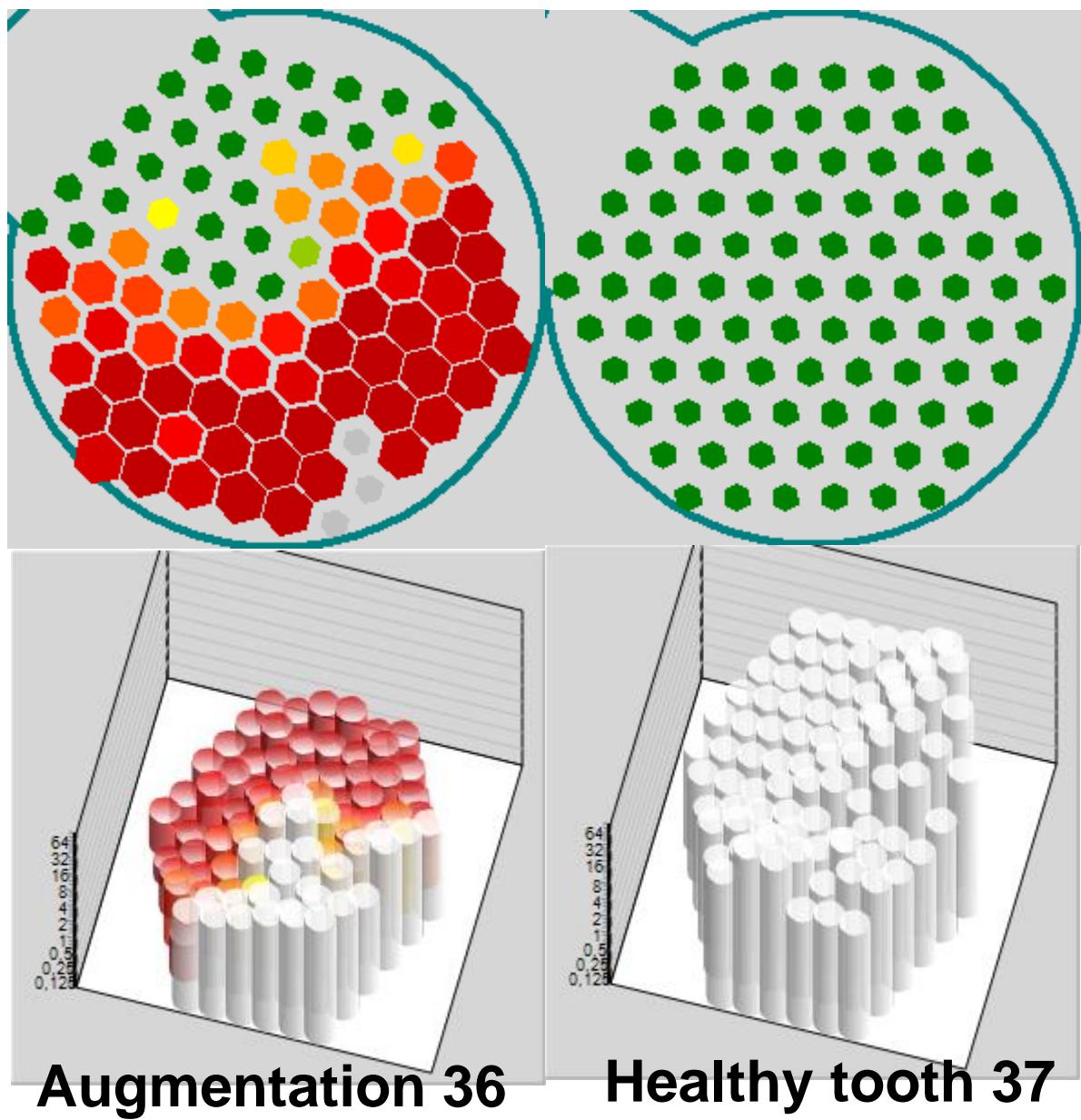
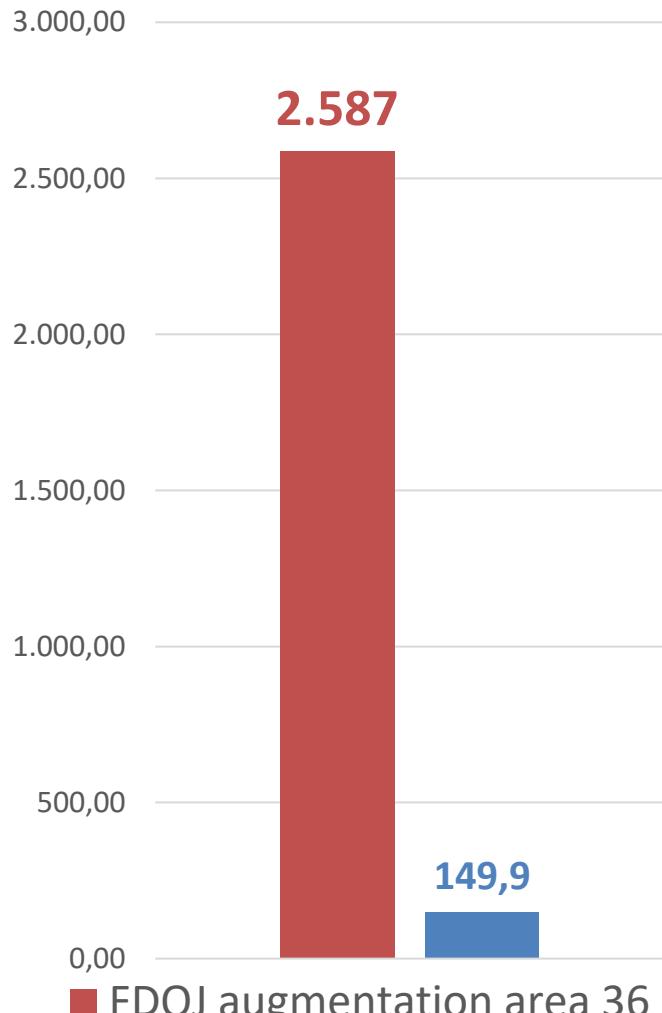


Socket Preservation



?

RANTES pg/ml



I hope I gave you an useful insight into jawbone by ultrasonography beyond radiography and a widened approach towards „**Jawbone Management**“

Dectecting
pre- and post-implant
inflammation

www.cavitaude.com

CaviTAU® complies with the essential requirements set out in Medical Device Directive 93/42/EEC and MEDDEV 2.7/1 Rev.4.



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Hand out on science based papers on RANTES/CCL5 and ultrasonography in new Integrative Oral Medicine

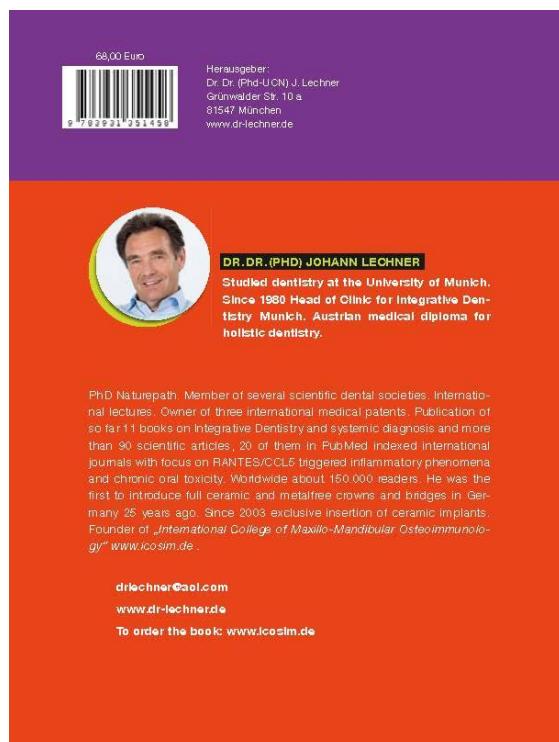
1. Is CaviTAU® validated?
This QR code opens 2 publications for the science based validation of CaviTAU® and free PDF downloads.

2. Is CaviTAU® of beneficial outcome in practice?
This QR code opens 2 publications on the scientific case presentation of CaviTAU®.

3. Is the research on RANTES/CCL5 in jawbone marrow defects science based validated?
This QR code opens all 15 scientific publications of Dr. Dr. (PhD) Johann Lechner and free PDF downloads.

4. Are there any scientific publications on the chronic-toxic and chronic-immune problems of endodontically treated teeth?
This QR code opens 2 publications on the scientific validation of root fillings with OroTox®.

Book „Cavitated Osteonecrosis in Jawbone“:
From neglected local inflammation to endangering systemic diseases. Ultrasonography CaviTAU® radiation-free imaging in **Maxillo-mandibular Osteoimmunology**



CAVITATIONAL OSTEONECROSIS IN JAWBONE

From neglected local inflammation to endangering systemic diseases.

DR. DR. (PHD) JOHANN LECHNER



Cavitated Osteonecrosis in Jawbone
From neglected local inflammation to endangering systemic diseases.

A Guide to JawBone Detox

CaviTAU® | Mehlbeerenstr. 2 | 82024 Taufkirchen | Germany | Fon: +49 89 244 15 44 60 | Fax: +49 89 244 15 44 69
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