

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

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Integrative Dentistry

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Titanium implants and silent inflammation in jawbone – a critical interplay of dissolved titanium particles and cytokines RANTES/CCL5 on overall health? EPMA Journal (2018).

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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 Noubissi & Volker von Baehr

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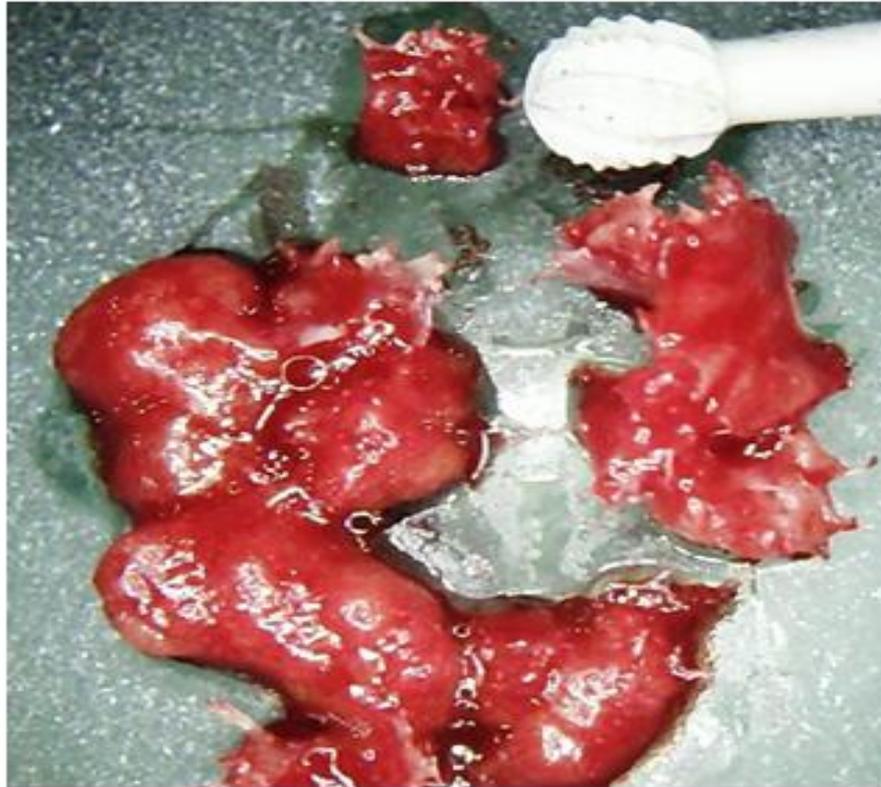


 Springer

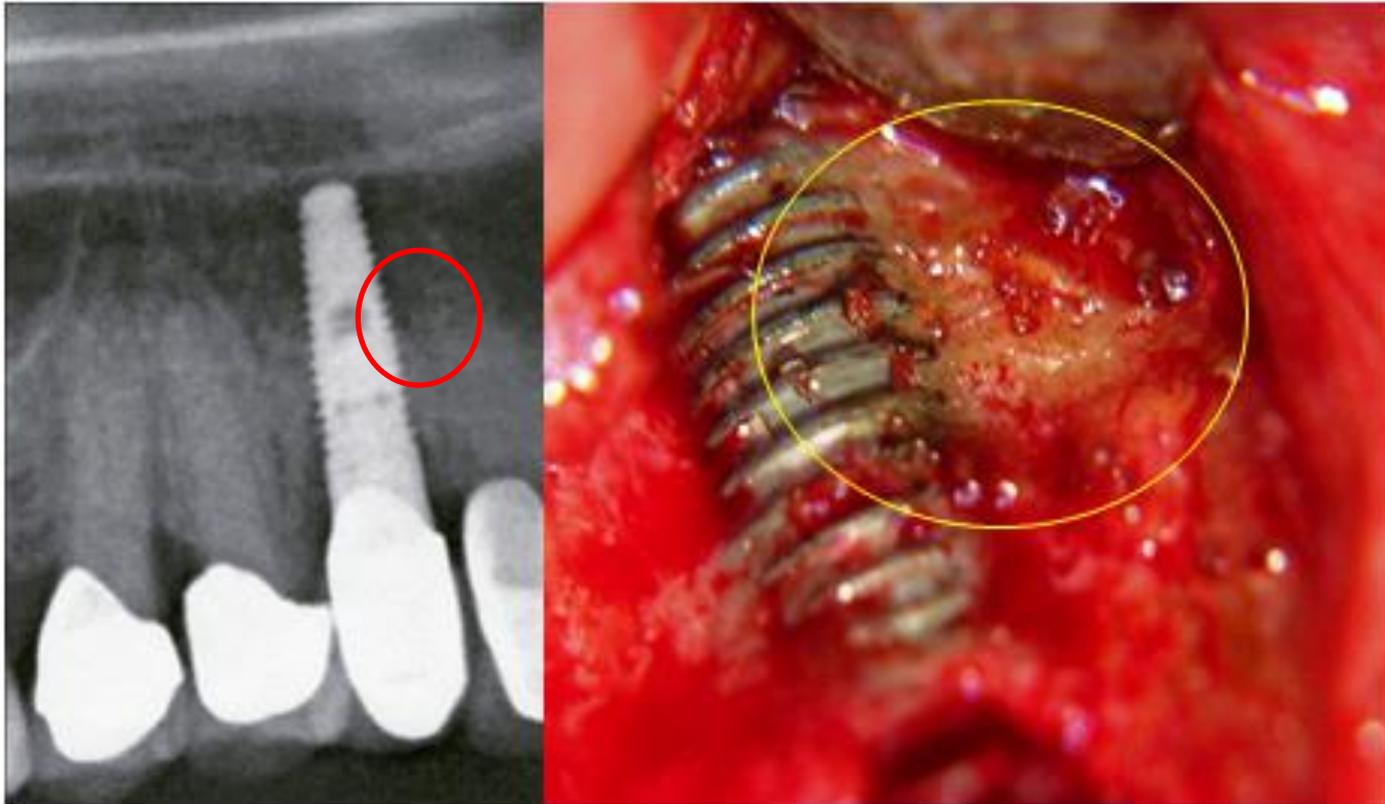
After inserting more than 4.000 ceramic implants
in the last 20 years



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

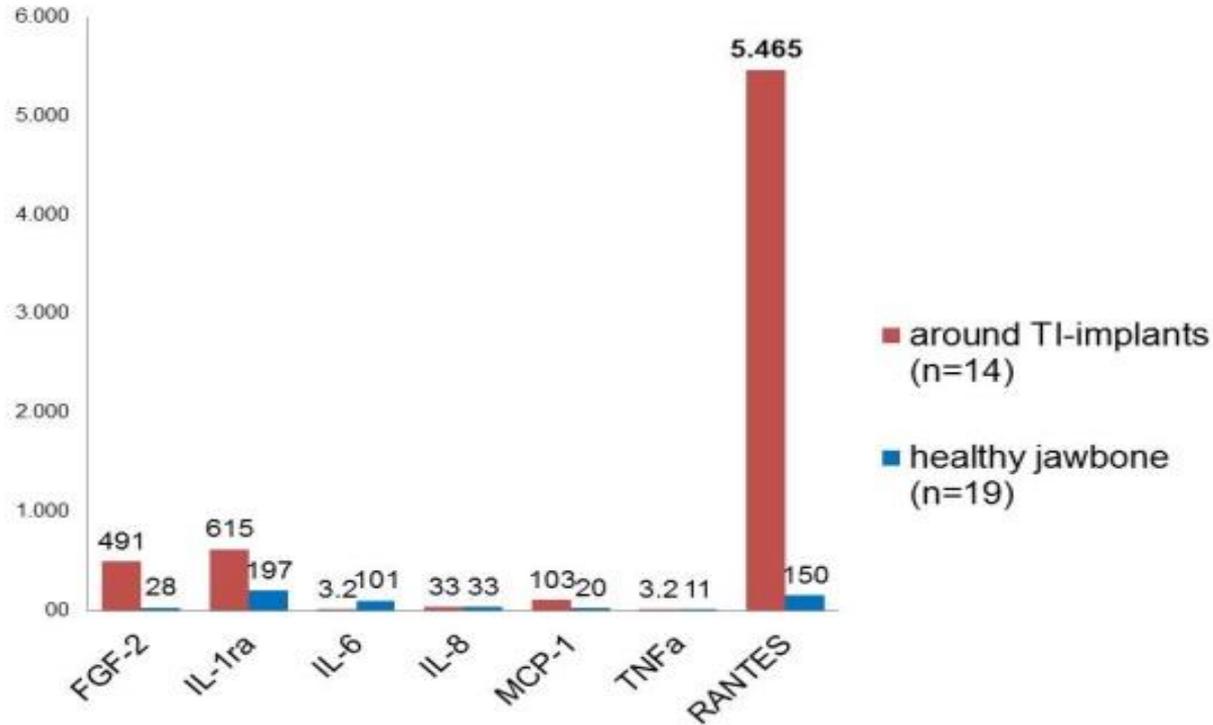


I noticed a strange entity around the implants:
Softened jawbone directly adjacent to the implant =
= ***Fatty Degenerative Osteonecrosis (FDOJ)***



So repeatedly the question came up:

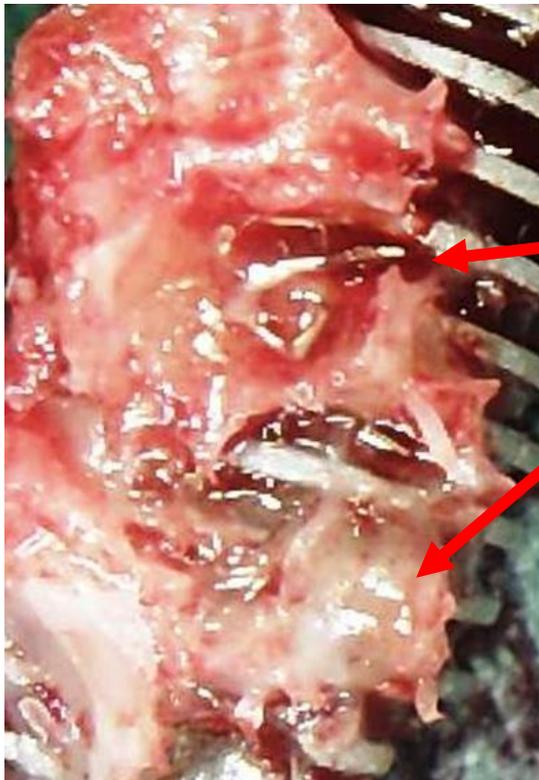
- Is my idea of bone marrow really appropriate?
- Is there any **inflammation** not visible on X-ray and CBCT?



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

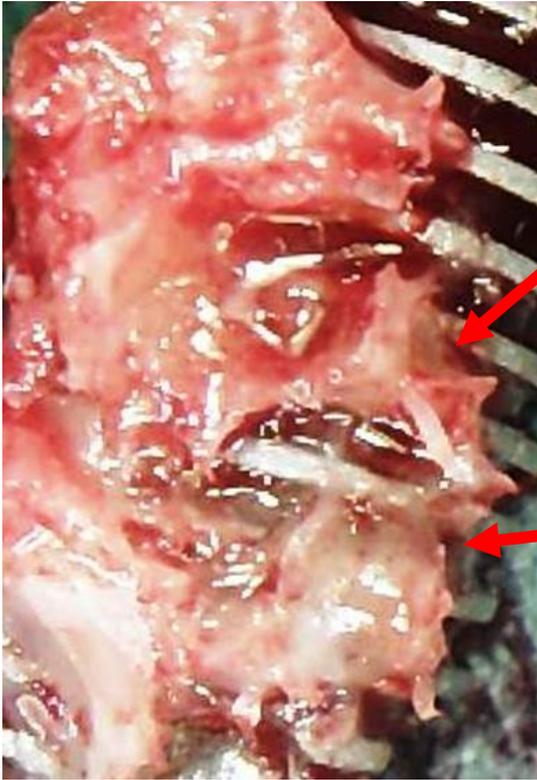
(FDOJ)

at implant



source of RANTES/CCL5

signaling kaskades



Fatty degenerative Osteonecrosis

(FDOJ)

at implant

source of RANTES/CCL5

signaling kaskades

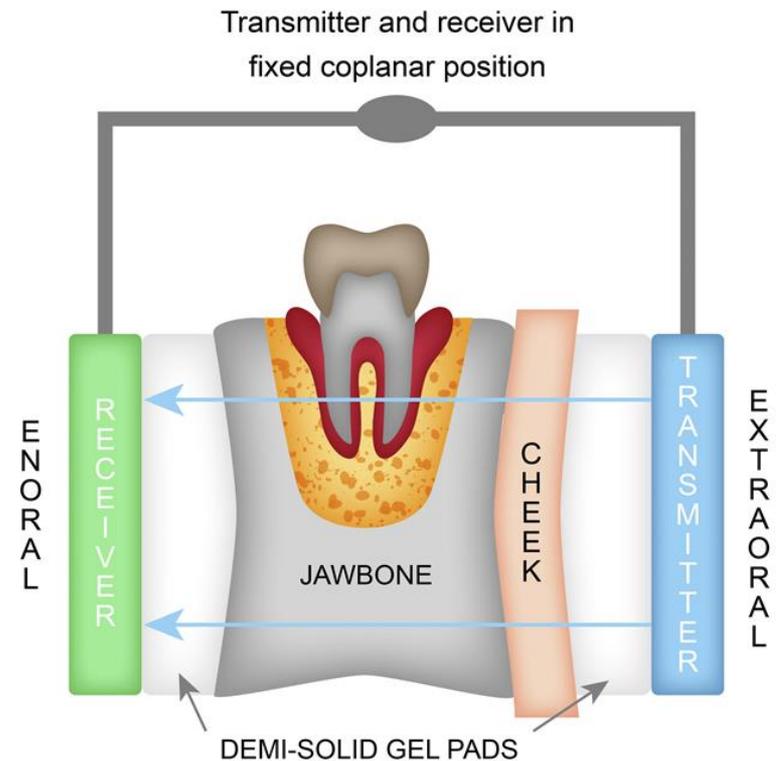
RANTES is the link to

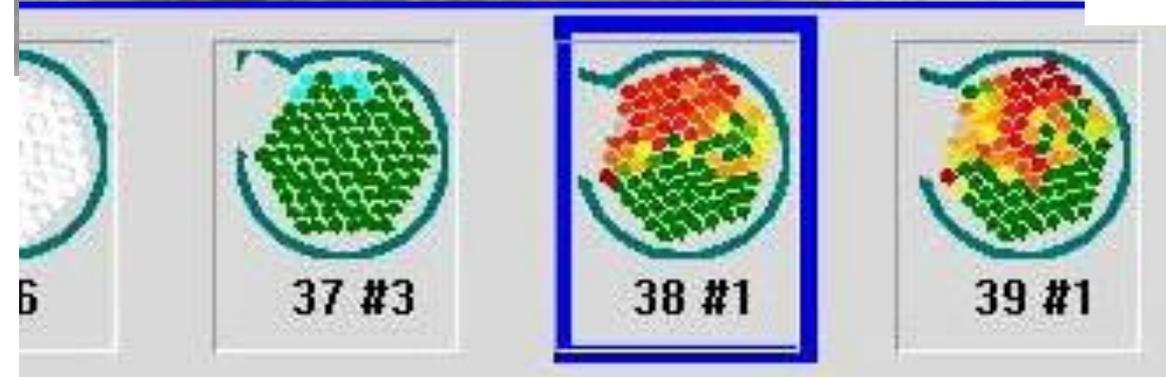
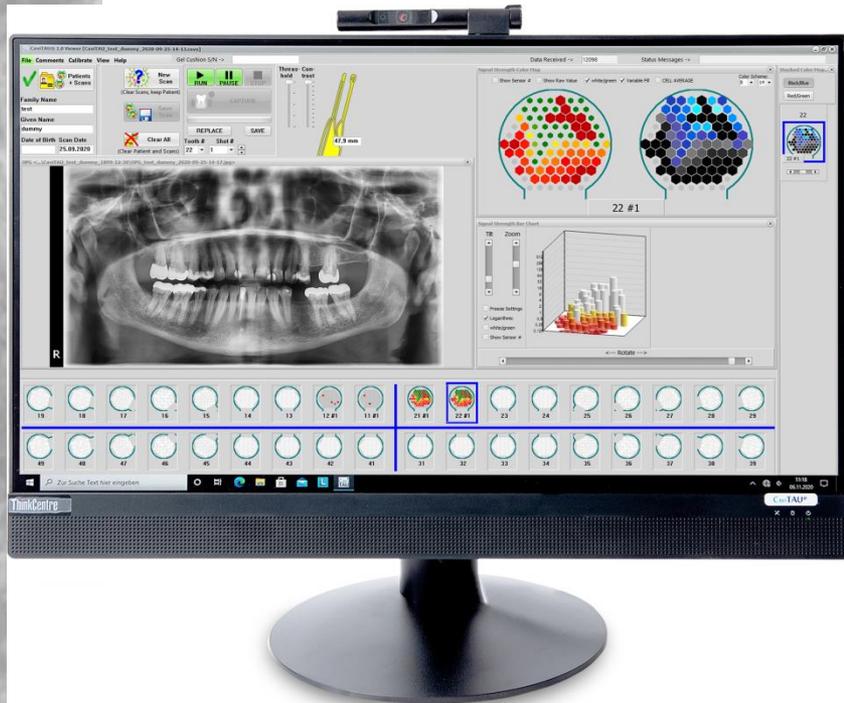
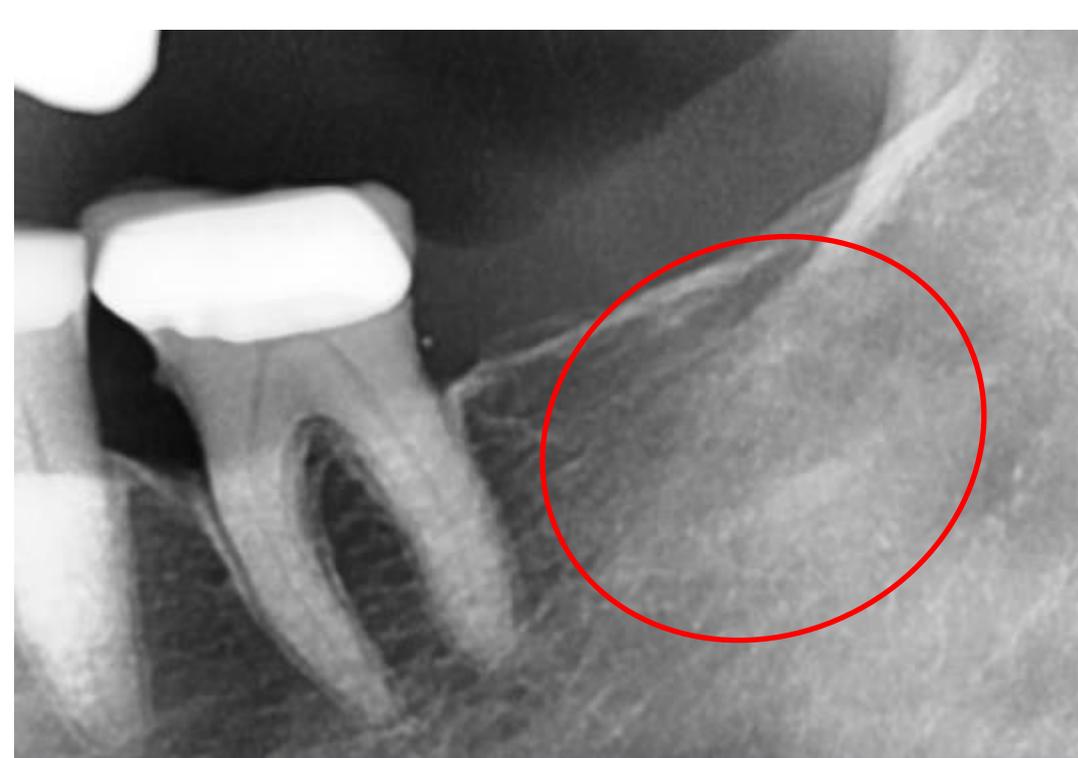
„silent inflammation“

*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



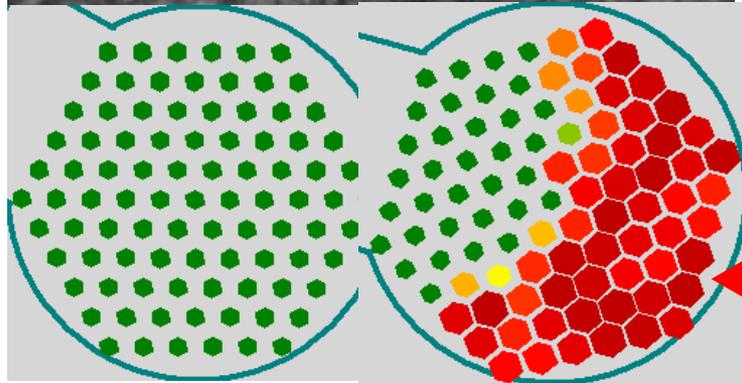
Clinical example

US versus Radio:

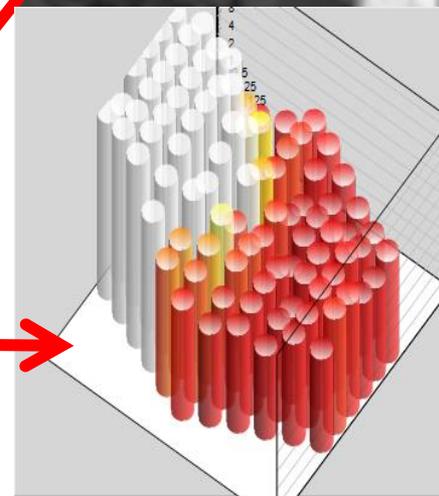
Patient 28 years old

Chronic Fatigue Syndrome

CBCT



Red indicates
inflammation

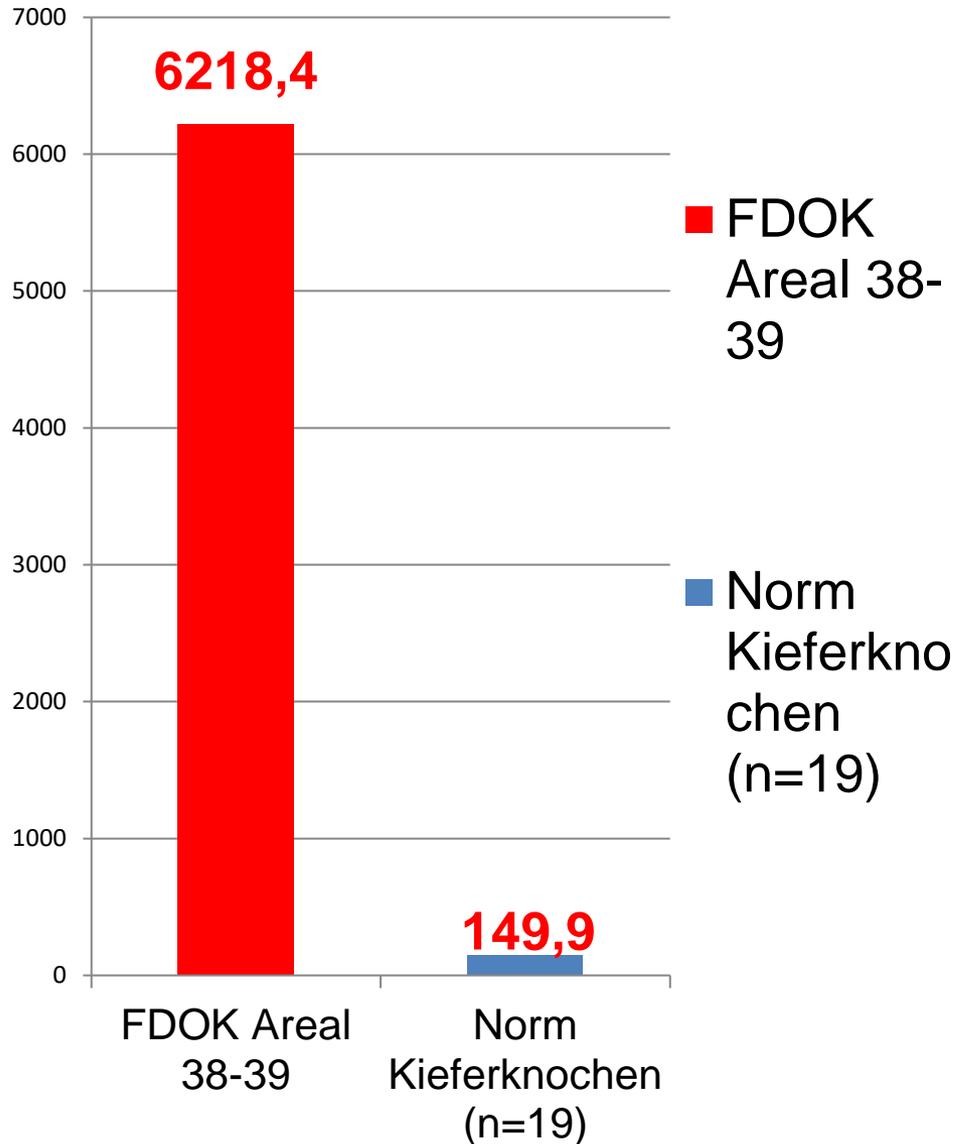




regio 38 /39: „***Candida..... Aspergillus niger***

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

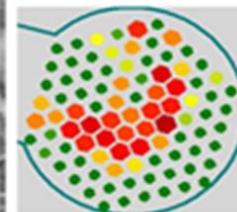
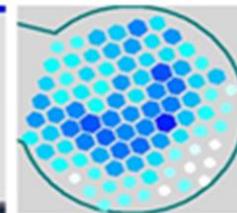
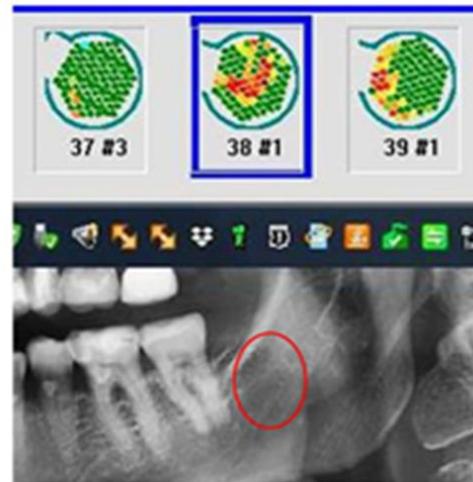
central nervous system“

(Appay, V., S. L.

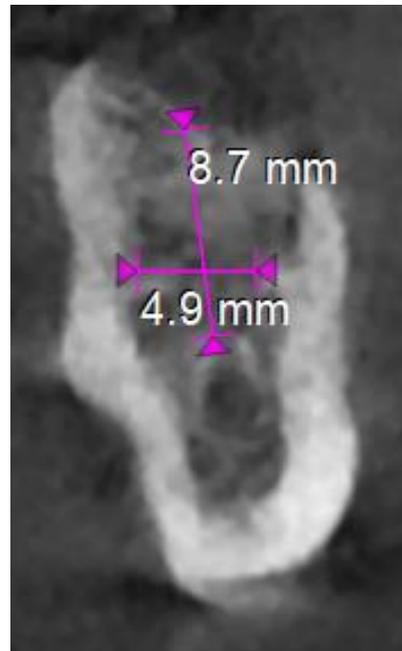
Rowland-Jones. 2001. RANTES: a versatile and controversial chemokine. Trends Immunol. 22: 83-87)

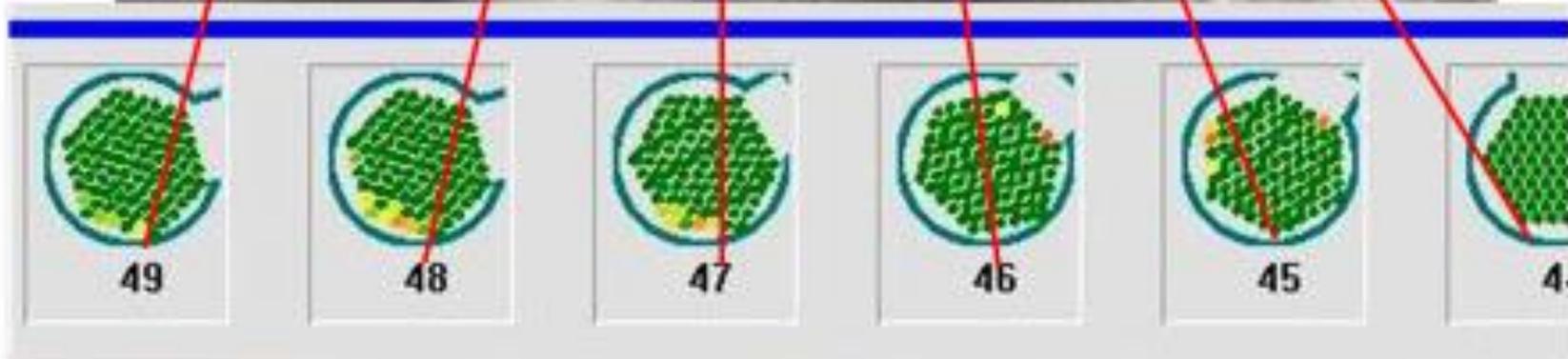
Ultrasonography versus radiography in the assessment of jawbone density

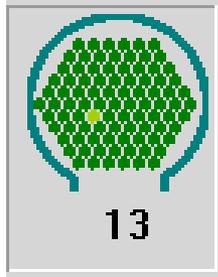
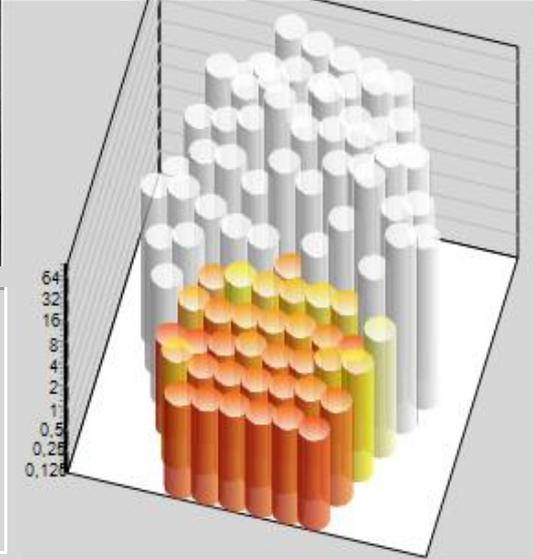
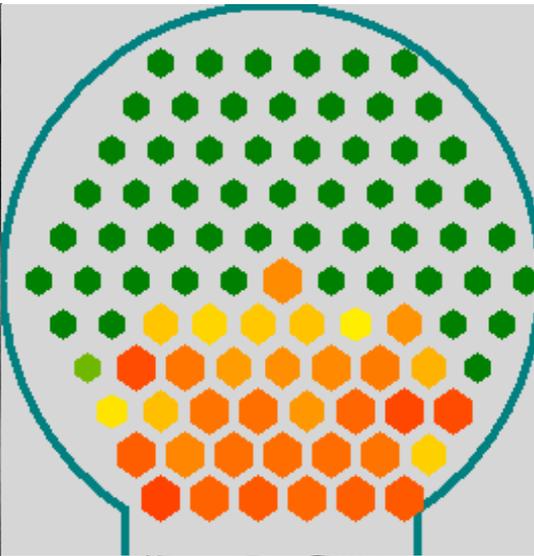
Is the jawbone ready for implant insertion?



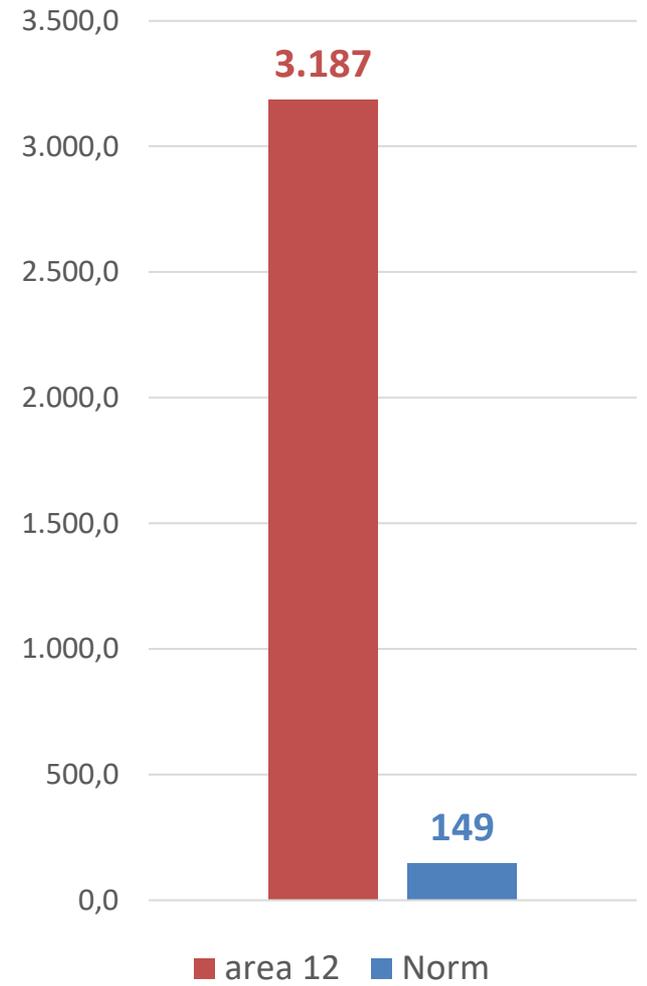
Why evaluate dentists so much the **QUANTITY** of
the implant site – length, width, depth –
and so little the **QUALITY** of the jawbone
at the implant site?







RANTES pg/ml

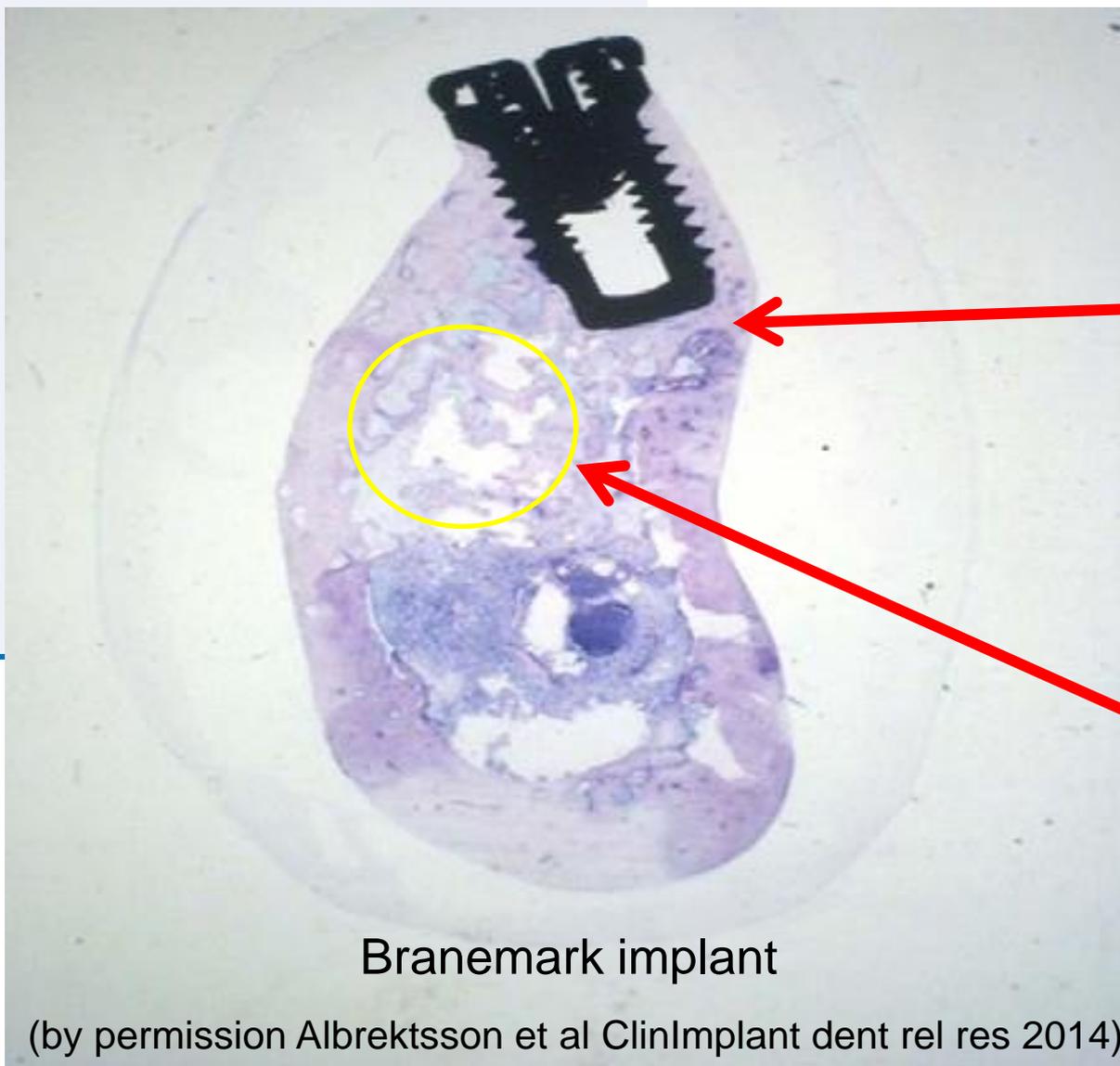


Ultrasonography versus radiography in the assessment of jawbone density on **existing implants**



Does the bone marrow
always look like this?

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

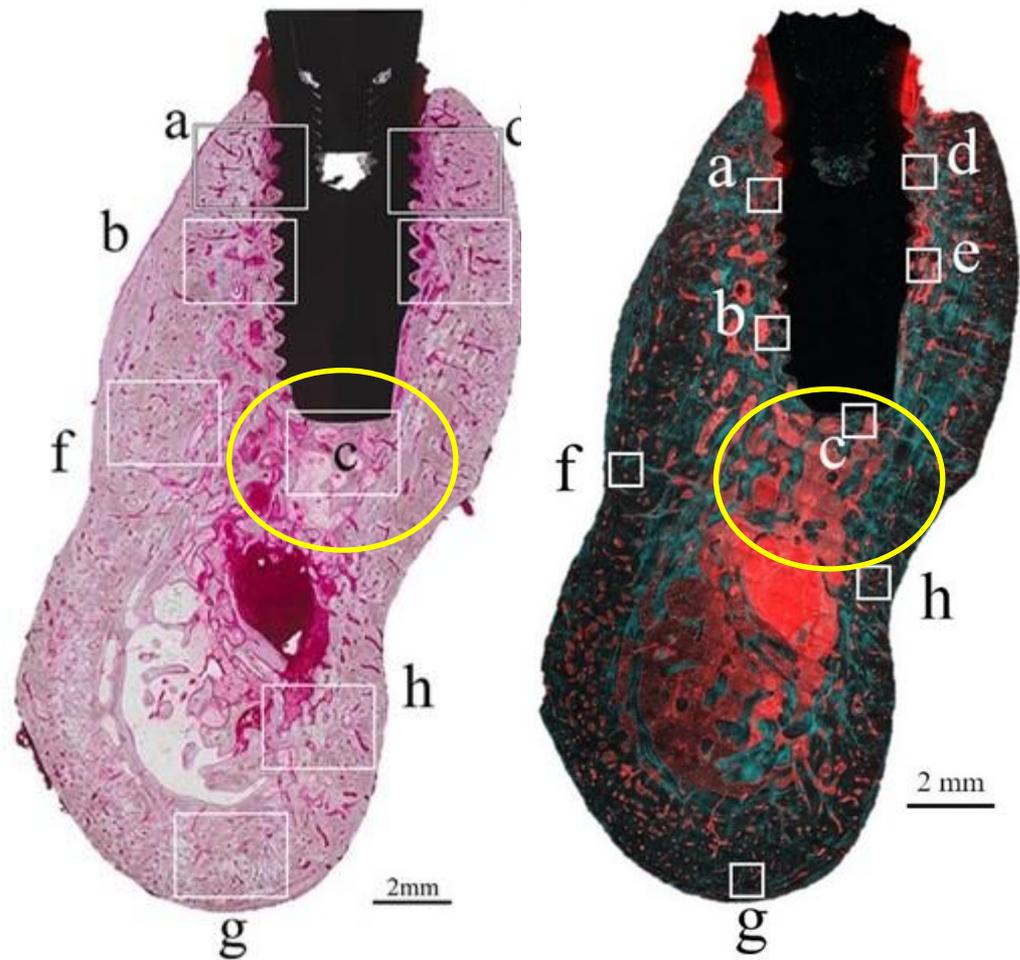
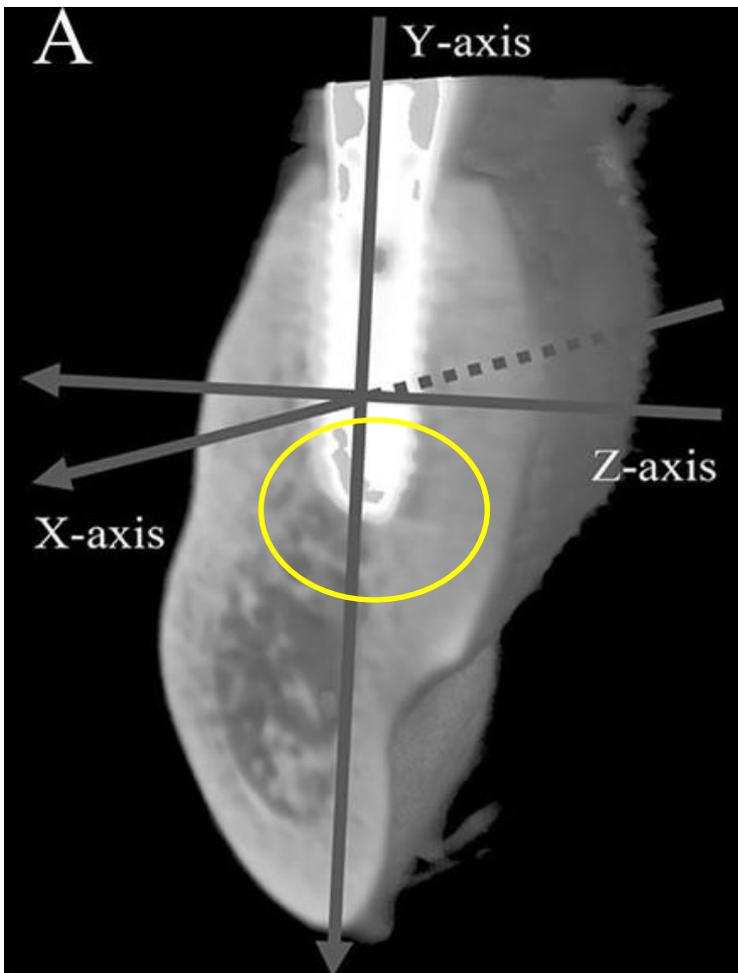


Bony cortical
sheath
on implant

Medullary
Osteonecrosis?
RANTES
Expression?

Branemark implant

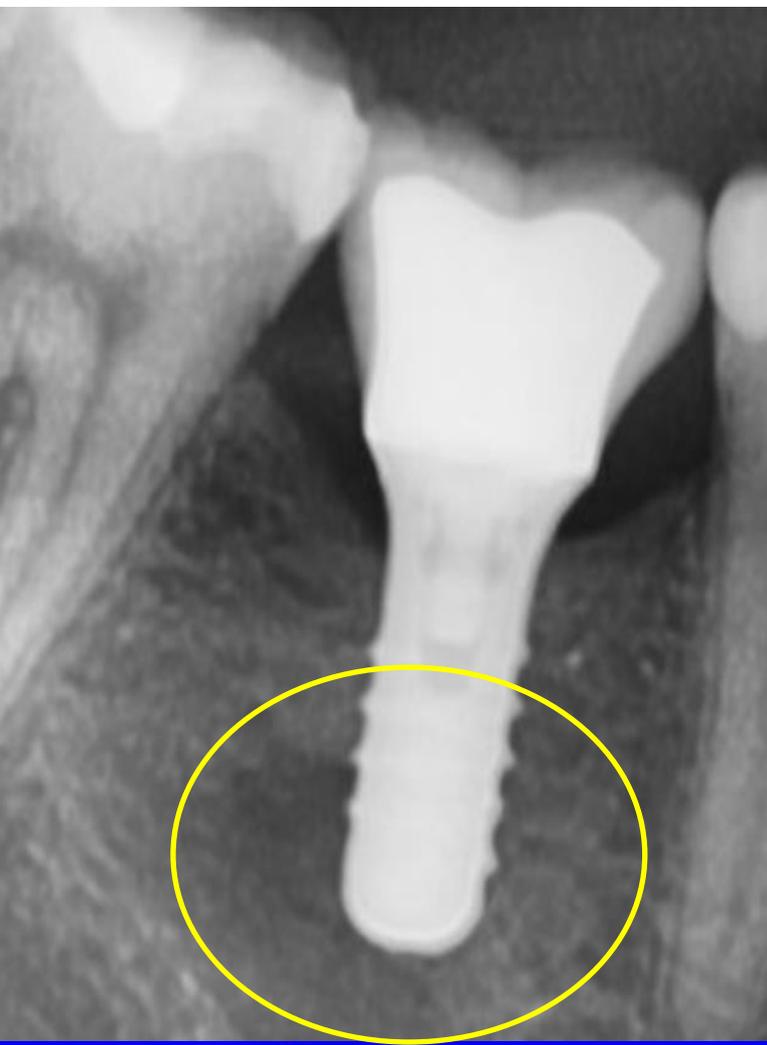
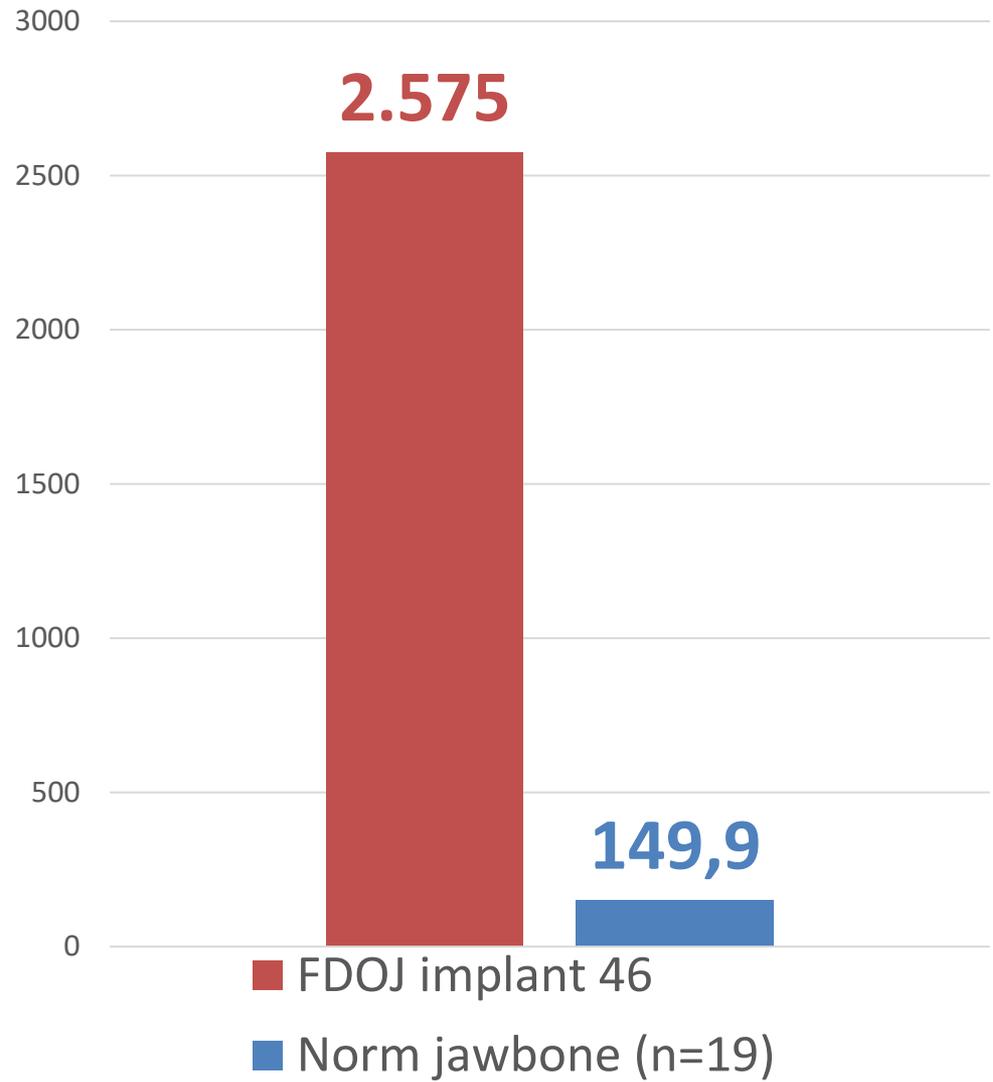
(by permission Albrektsson et al ClinImplant dent rel res 2014)

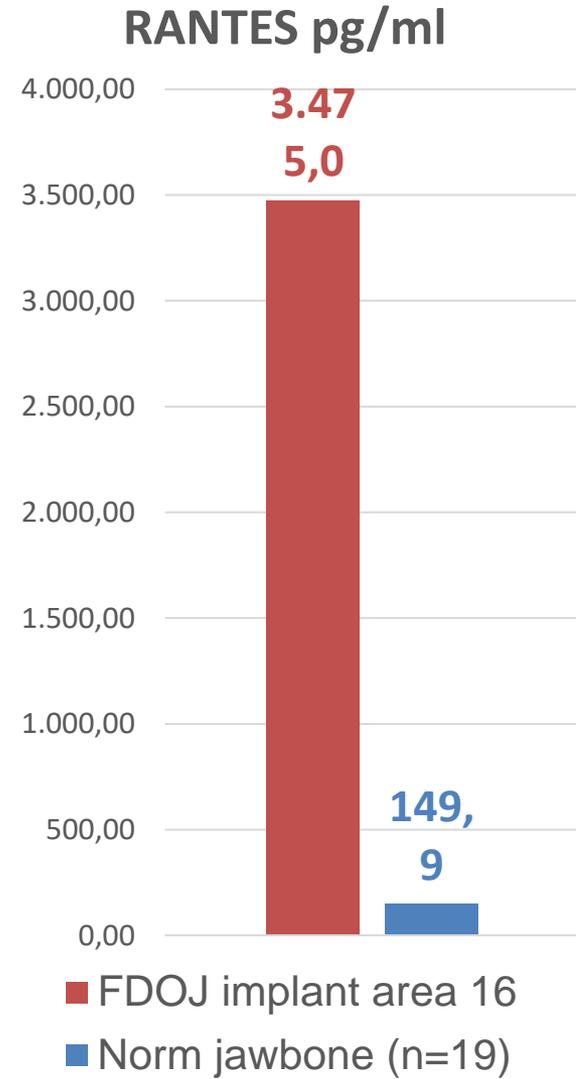
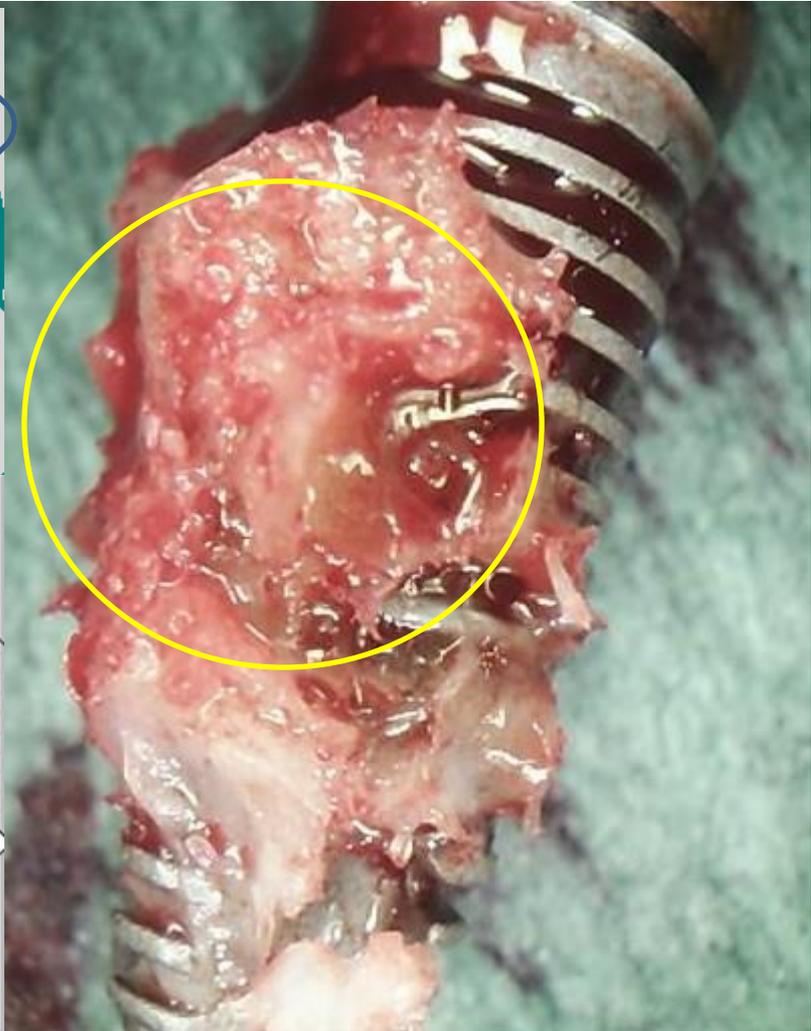
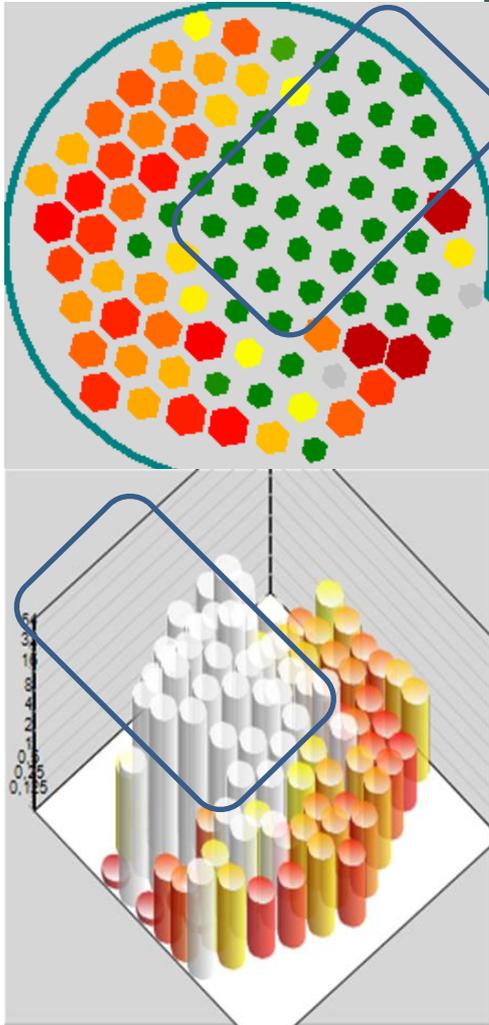


Koresawa *et al.* *Micro/nanostructural properties of peri-implant jaw bones: a human cadaver study* *International Journal of Implant Dentistry* (2022) 8:17

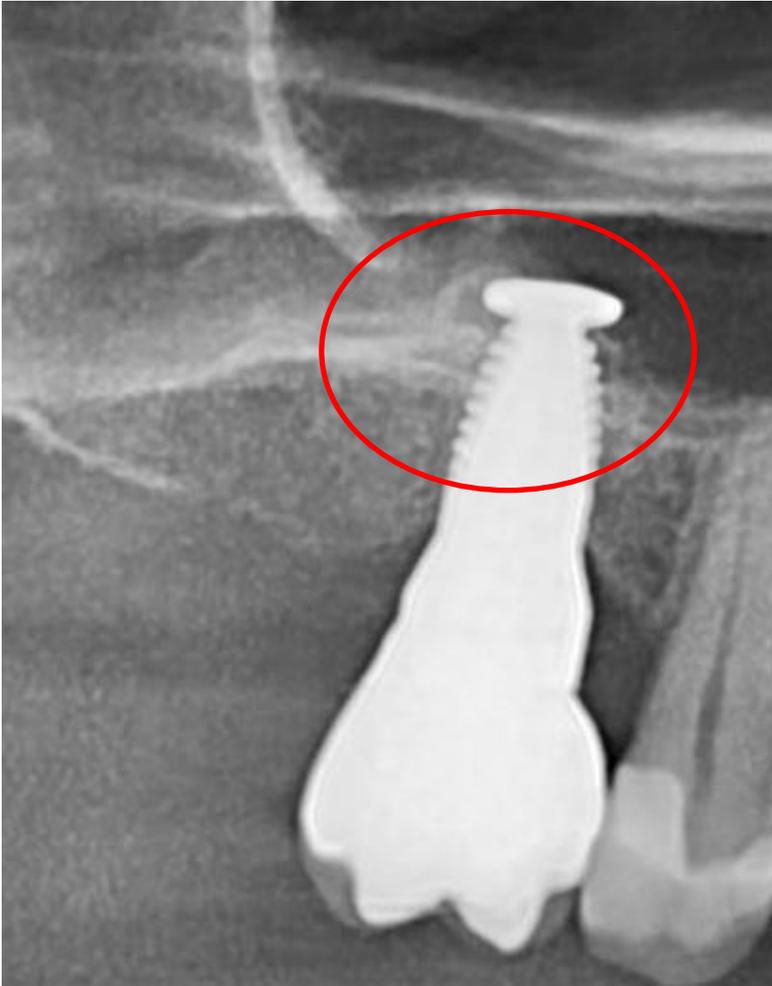
<https://doi.org/10.1186/s40729-022-00417-3>

RANTES pg/ml





Case #1: Chronic facial pain after implant

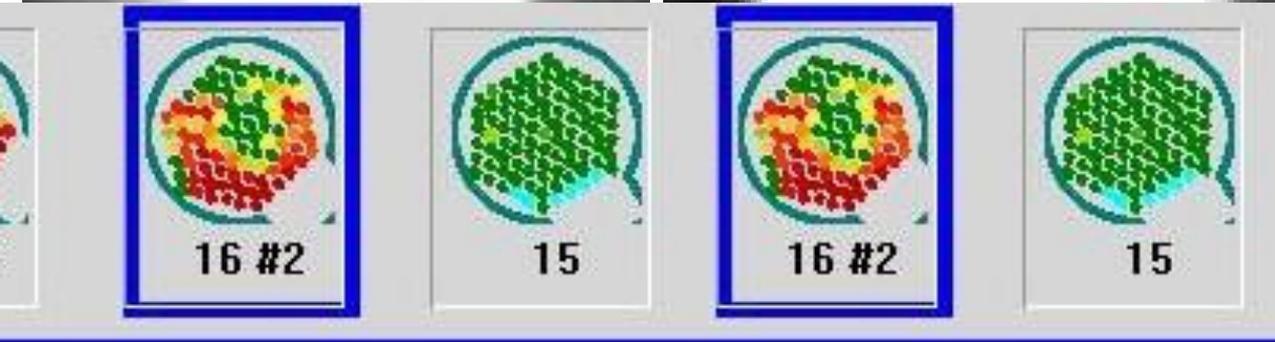
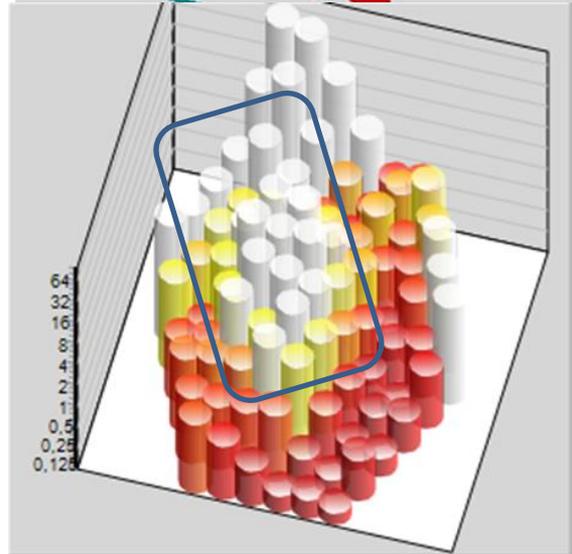
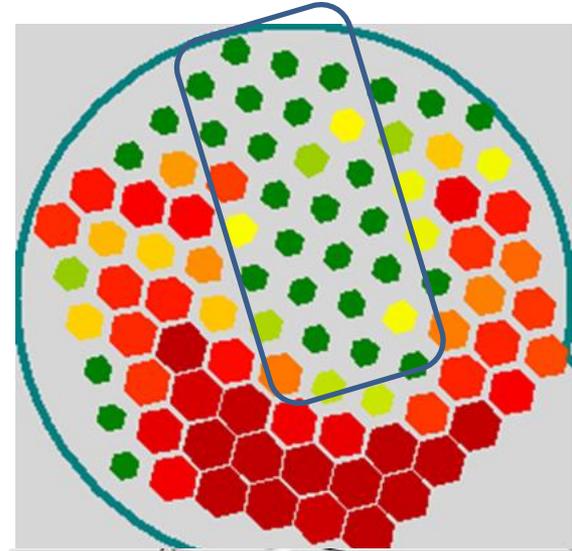


History: Immediate implant at root filling right upper first molar 9 months ago; external sinus lift; implant is well osseointegrated; since 6 months **chronic pain in upper jawbone right side.**

Up to our US diagnosis clueless dentists.

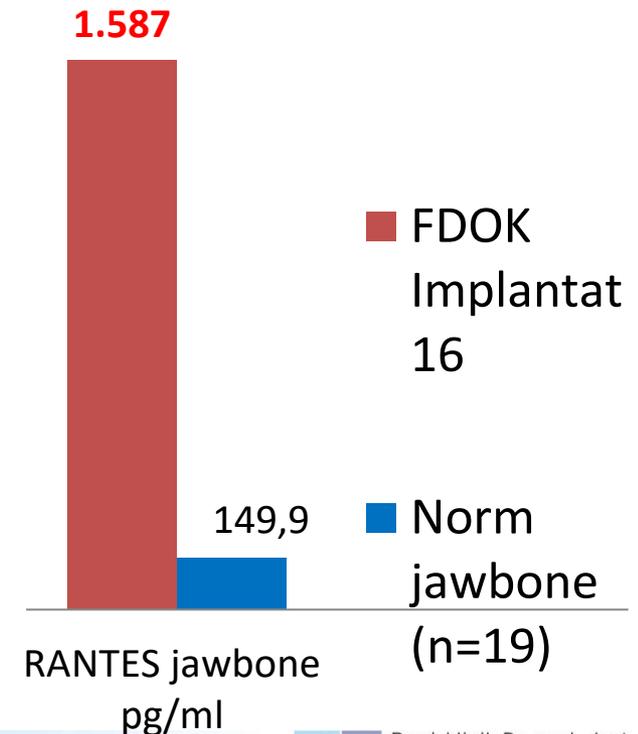
frontal

sagittal

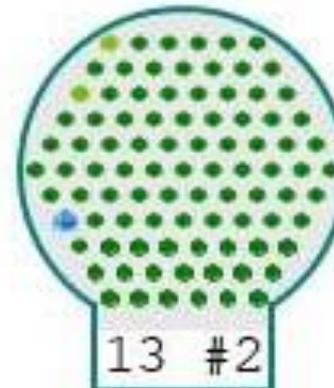
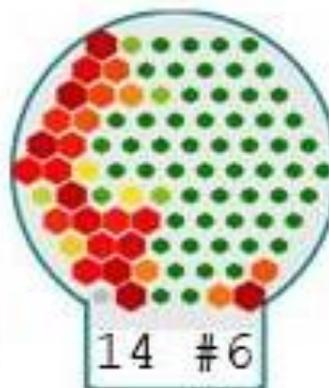
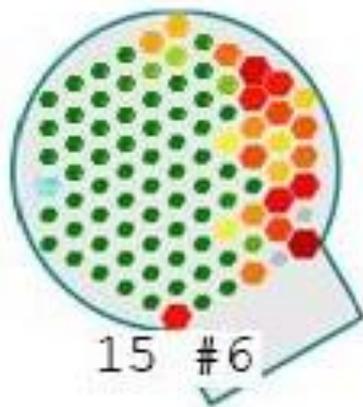
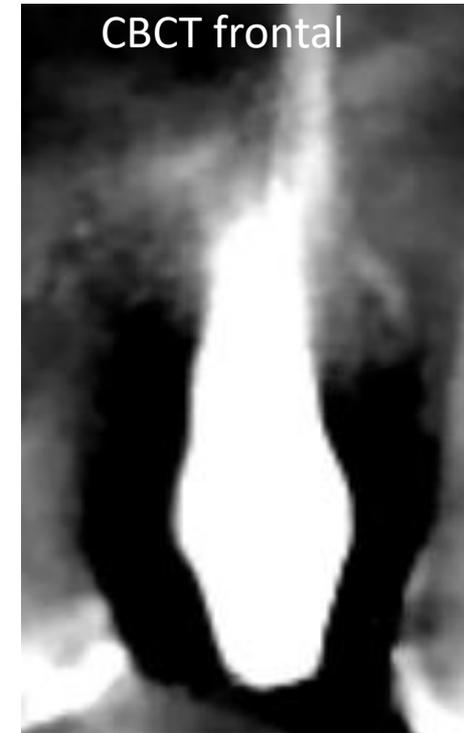
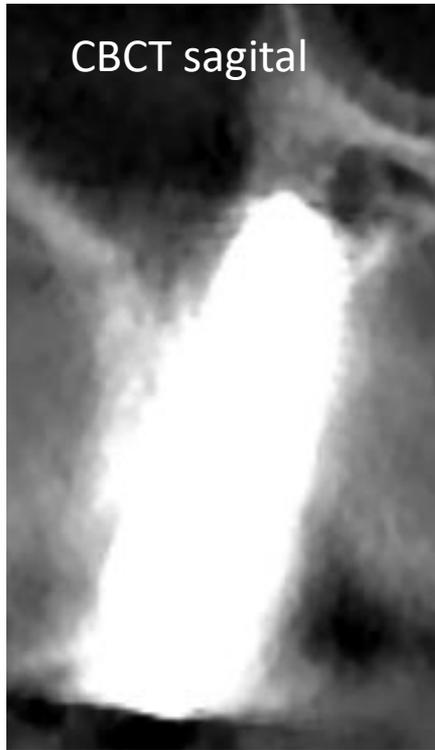


Histology and RANTES multiplex analysis of the apical peri-implant tissue confirmed the result of the ultrasonographic measurement. It thus became obvious that neither OPG not CBCT detected the inflammatory area. .

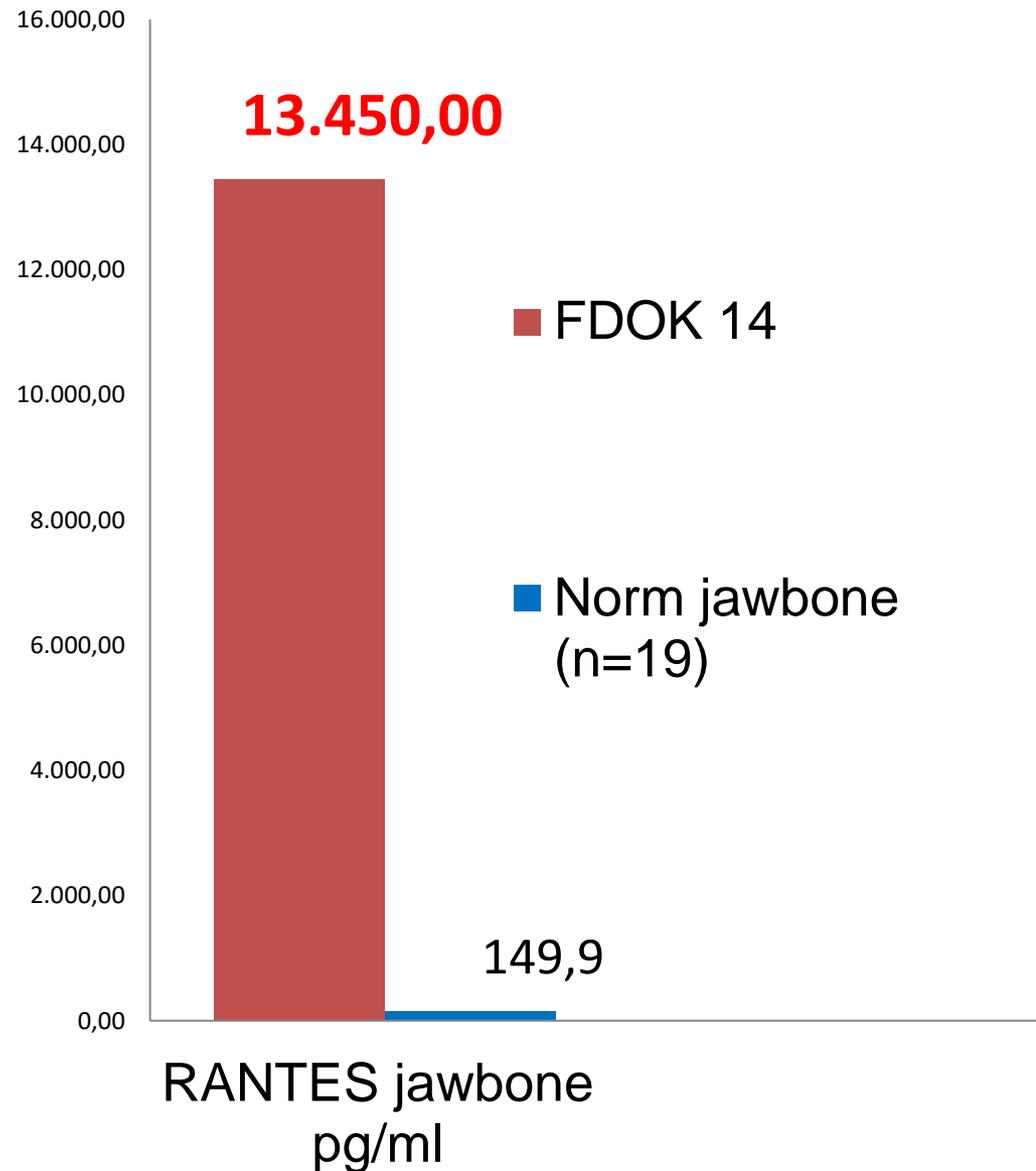
*Histo: „.....apikal regio 16 with an already older scarring **apical granuloma** with foreign body granulomas around partially birefringent **foreign material**. Sample material consisting predominantly of **fibrous connective tissue** with foreign body giant cells. Minimal chronic inflammatory cellular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



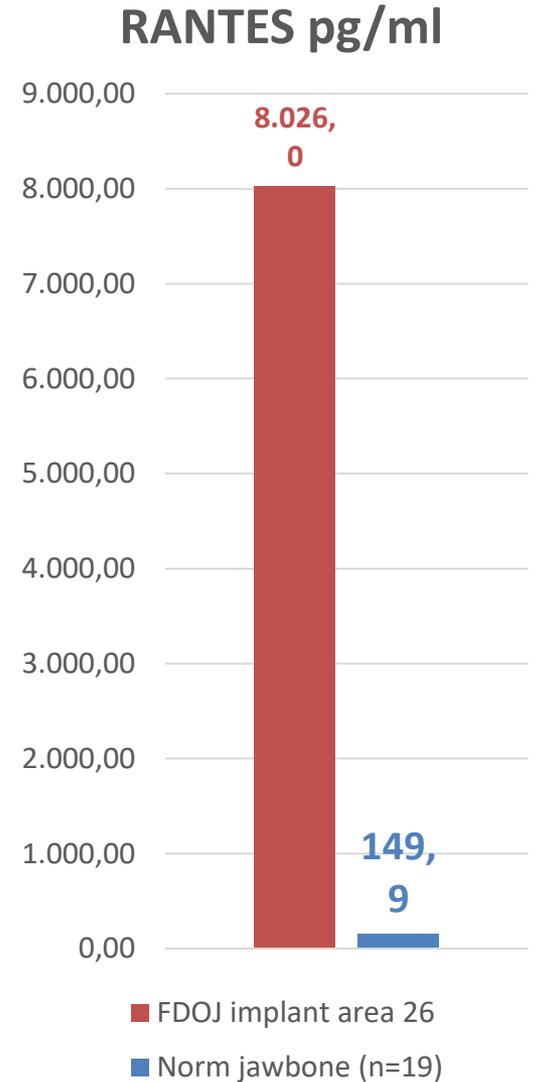
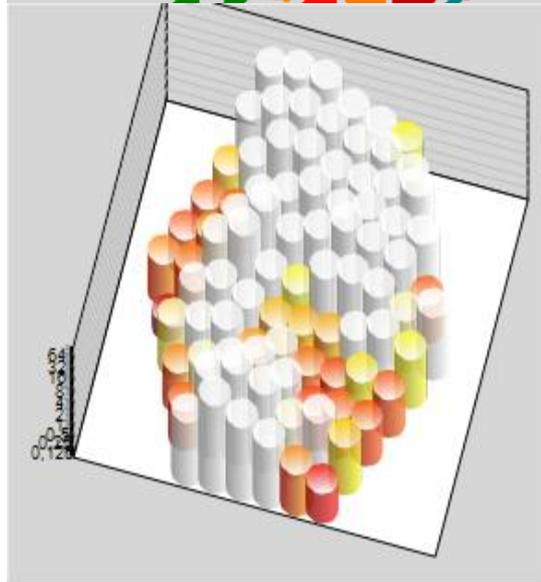
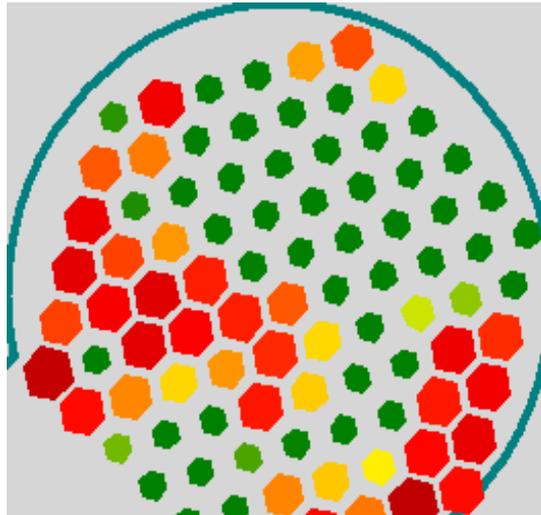
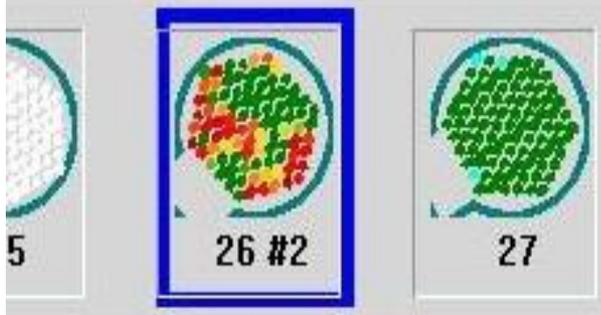
Case #2: Chronic facial pain after implant



*„Excidate 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.“*



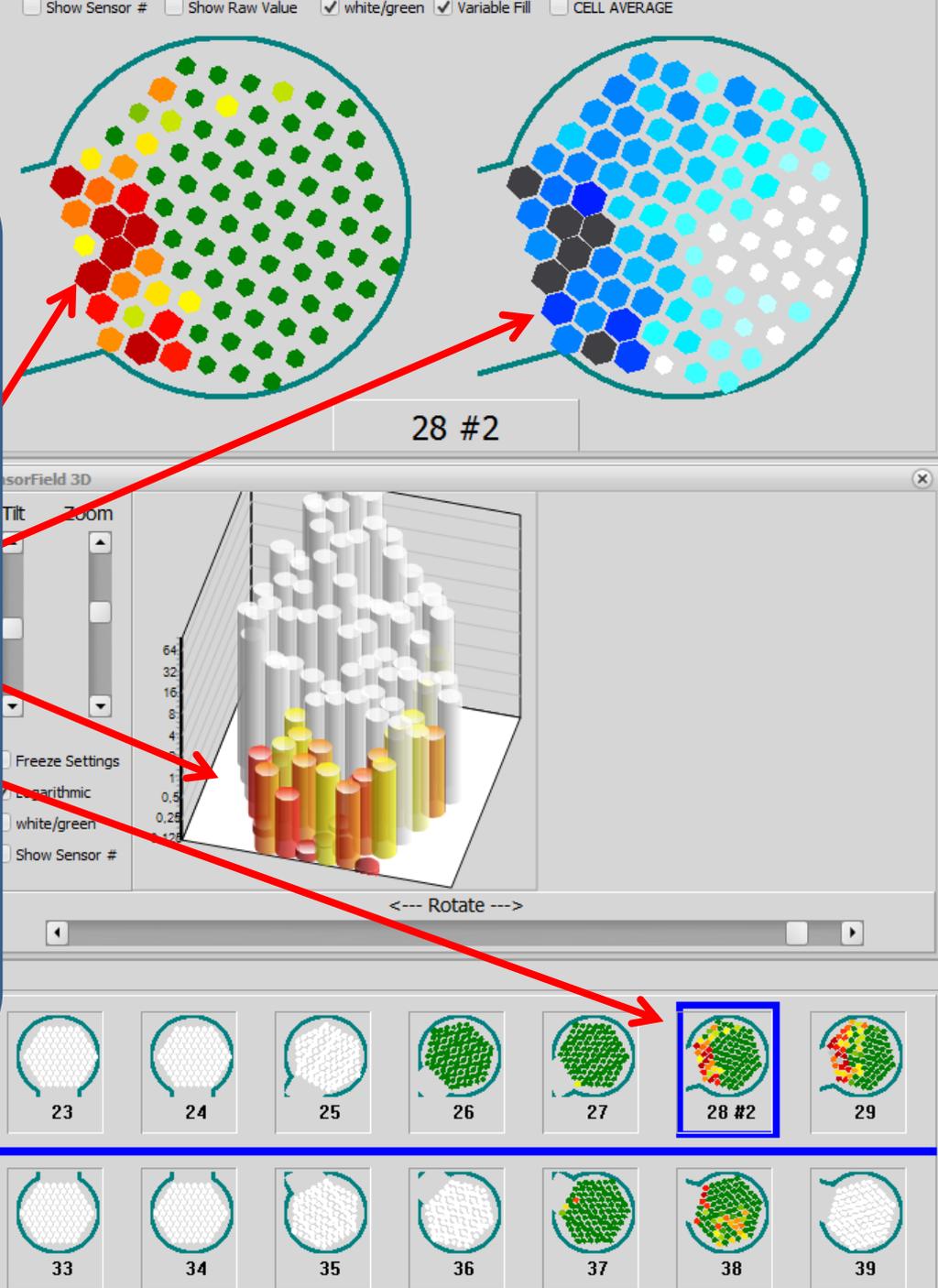
Case #3: Chronic headache/migraine after implant

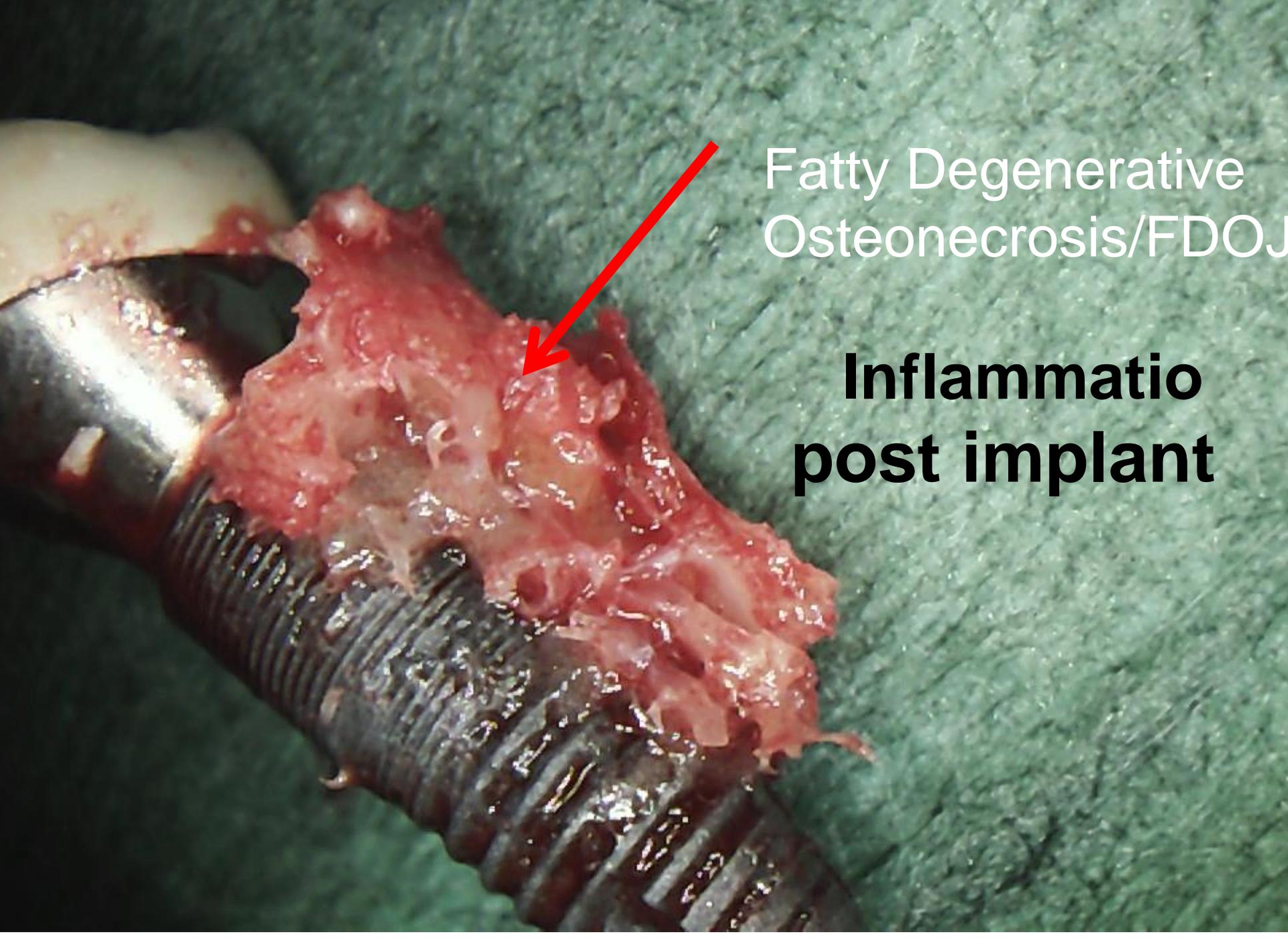


Breast Cancer left



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



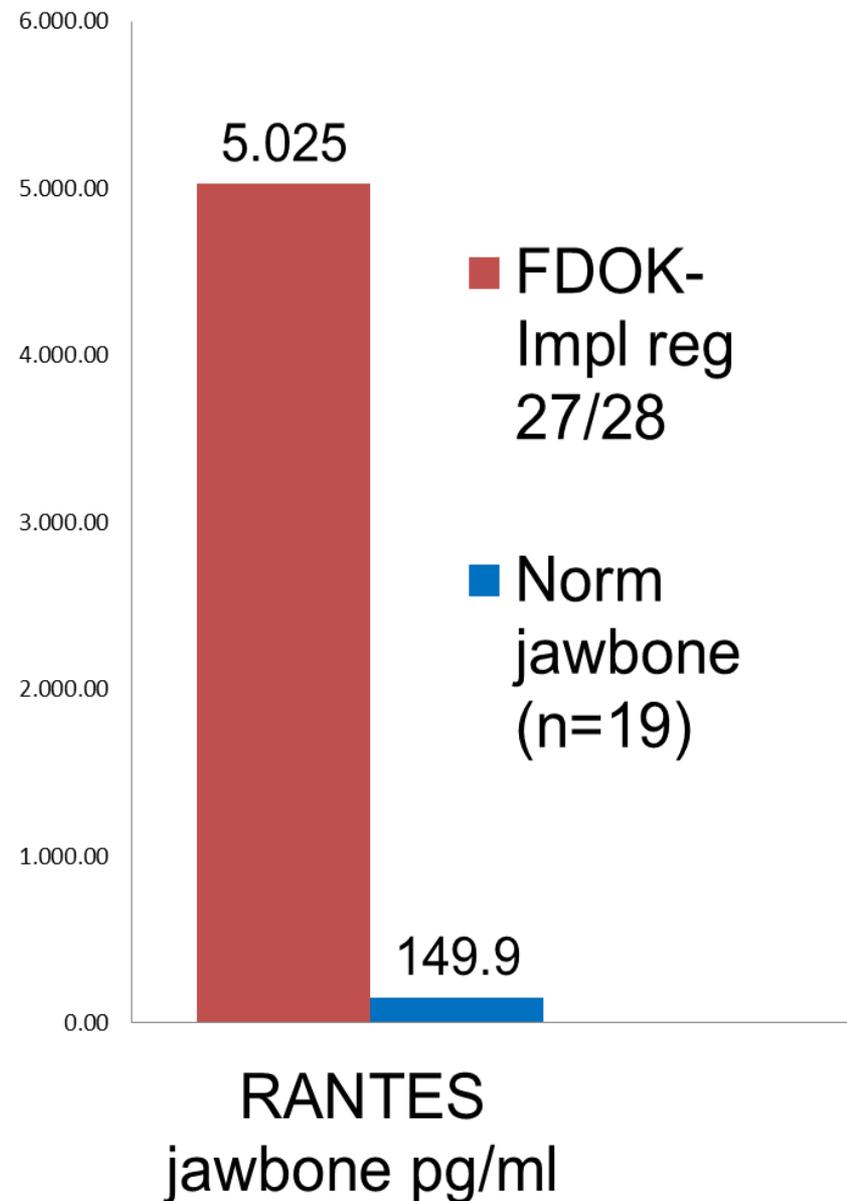


Fatty Degenerative
Osteonecrosis/FDOJ

**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:



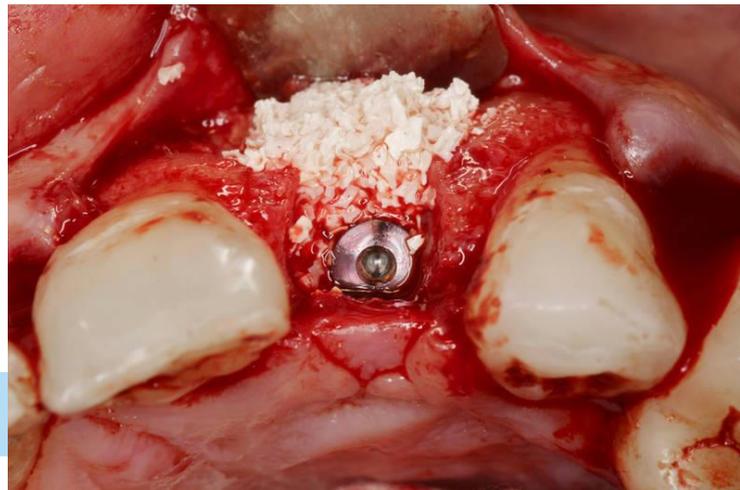
Cancer review AND RANTES CCL5 seit 2013	4.450
Breast cancer AND RANTES CCL5 seit 2000	5.770
Prostate cancer AND RANTES CCL5 seit 2000	3.660
Colon cancer AND RANTES CCL5 seit 2000	7.290

results

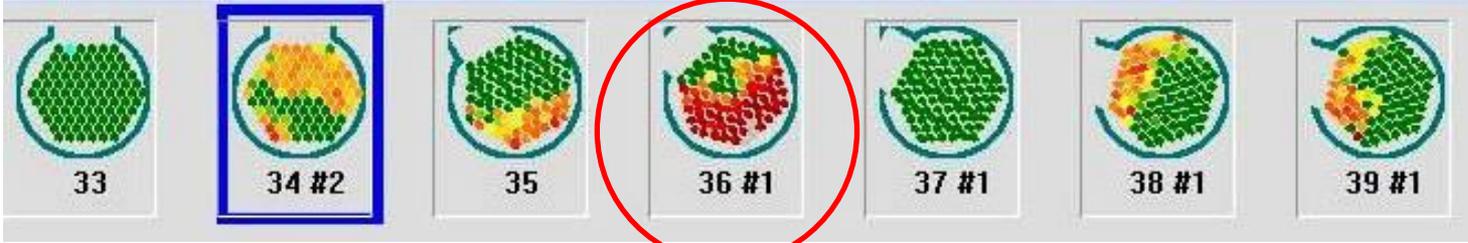
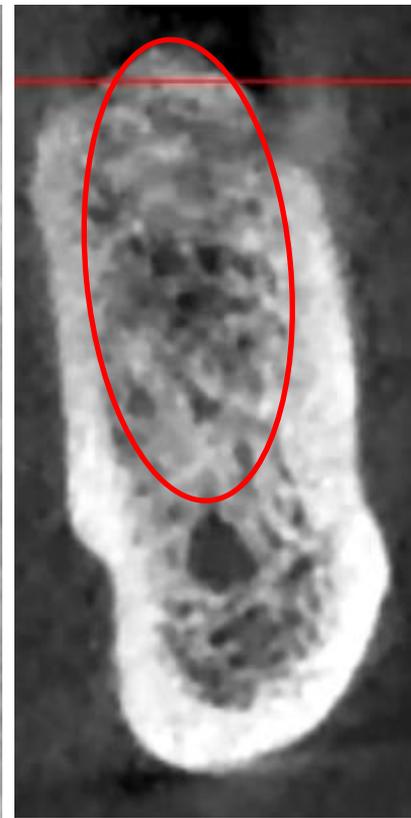
Ultrasonography versus radiography in the assessment of jawbone density

III

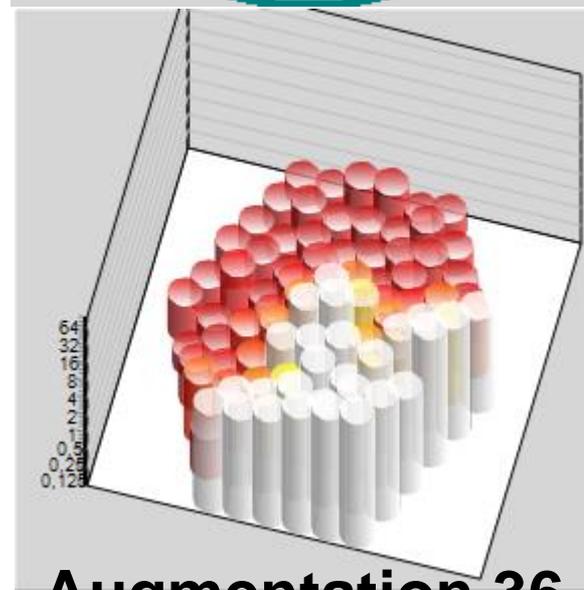
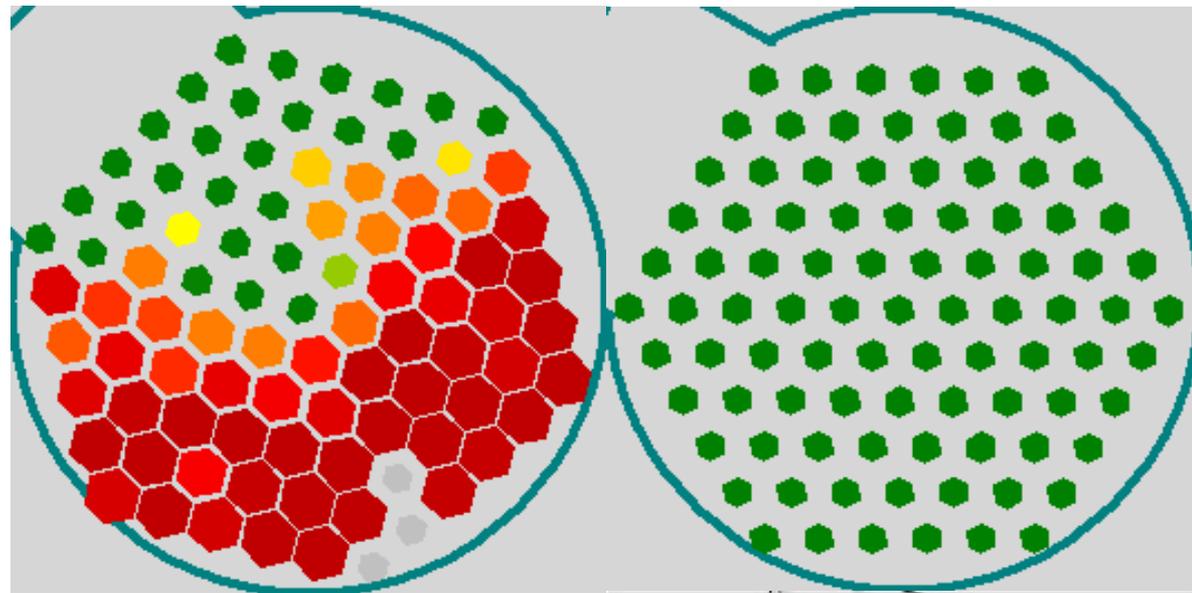
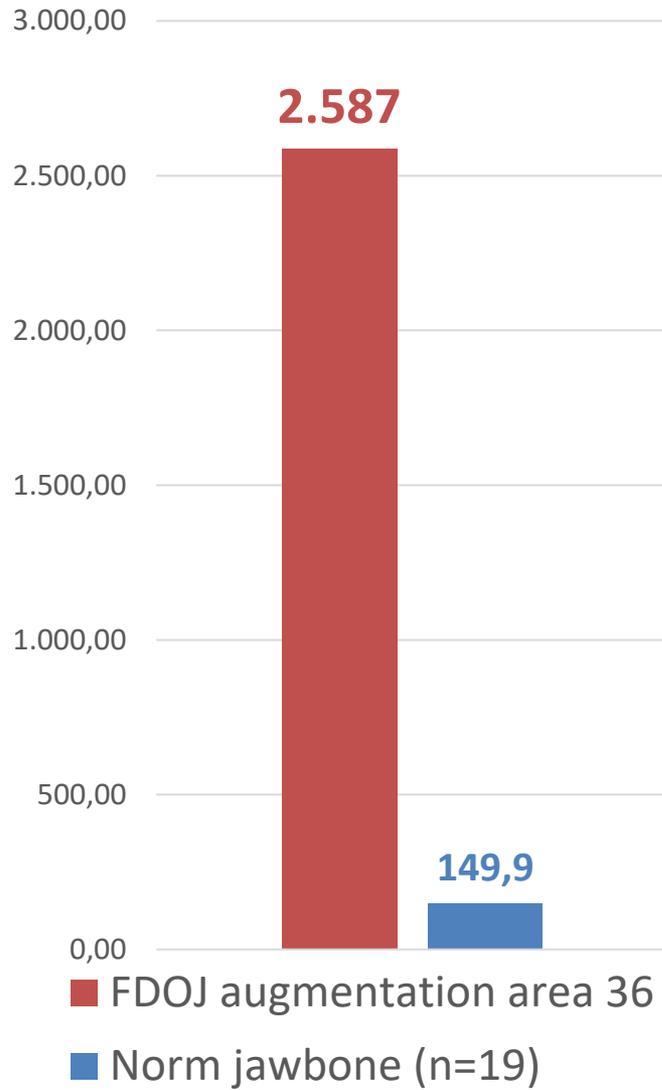
Insight on biointegration and bone healing protocols



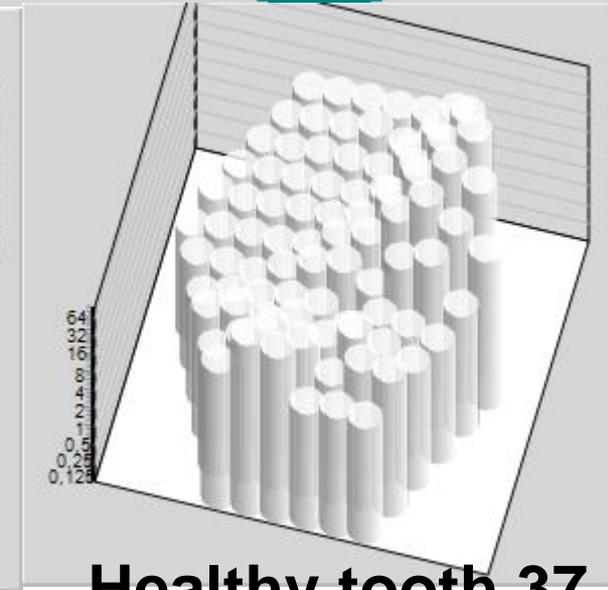
Socket Preservation



RANTES pg/ml



Augmentation 36



Healthy tooth 37

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

Detecting
pre- and post-implant
inflammation

www.cavitau.de

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



For your info at our table clinic

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®.



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Studied dentistry at the University of Munich.
Since 1980 Head of Clinic for Integrative Dentistry Munich. Austrian medical diploma for holistic dentistry.

PhD Naturepath. Member of several scientific dental societies. International lectures. Owner of three international medical patents. Publication of so far 11 books on Integrative Dentistry and systemic diagnosis and more than 90 scientific articles, 20 of them in PubMed indexed international journals with focus on RANTES/CCL5 triggered inflammatory phenomena and chronic oral toxicity. Worldwide about 150.000 readers. He was the first to introduce full ceramic and metalfree crowns and bridges in Germany 25 years ago. Since 2003 exclusive insertion of ceramic implants. Founder of „International College of Maxillo-Mandibular Osteoimmunology“ www.icosim.de.

drlechner@aol.com
www.dr-lechner.de
To order the book: www.icosim.de

CAVITATIONAL OSTEONECROSIS IN JAWBONE

From neglected local inflammation to endangering systemic diseases.

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