

Root 2 Disease –
the root of evil

SWISS 
BIOHEALTH®

Every dead tooth can be the reason of disease: Information about severe health risks caused by root-treated teeth

- Since decades chronic inflammatory diseases, as well as so-called auto immune diseases increase in all developed countries considerably – in many cases the cause is unclear.
- Doctors and dentists who think/act holistically experience clear improvements of these diseases if root-treated teeth and other interference zones in the oral cavity are strictly removed and if the immune system is strengthened.
- Each year about 8 million root-treatments are performed in Germany.
- Is the mouth really reflecting general health?
- Where does this relation come from?
- The answer is easy: pathogenic bacteria and highly toxic bacterial metabolites.

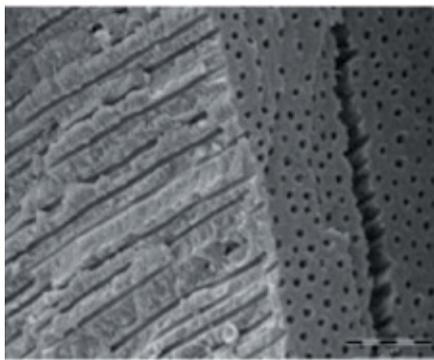
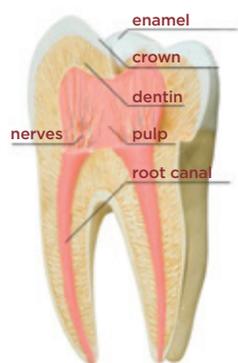


Scientific Background

How are teeth involved in the origin of chronic diseases?

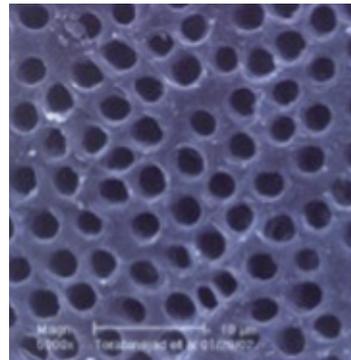
Root-treated teeth are dead teeth. Even the most perfect micro-endodontic treatment will not be able to realize a perfectly bacteria-proof sealing of the treated root. Accessory side canals and the endo-paro connection through dentinal tubules will always remain.

The dead tooth, originally an organ with its own nerve- and blood supply remains as a dead tooth stump in the oral cavity. It will be populated by various, partly unknown species of anaerobic, pathogenic bacteria which degrade remaining organic tissue and secrete harmful metabolic products (toxins).



Toxins

These pathogenic bacteria produce as secondary products of their anaerobic metabolism highly toxic and potentially cancer-causing hydrogen sulfides (Thioether/Mercaptan) from the amino acids cysteine and methionine. By irreversible inhibition of the active center of many endogenous vital enzymes these toxins can become the cause of varied systemic- and organic diseases. The inhibition of important enzymes of the respiratory chain of mitochondria has been proved in vitro. Every chewing process releases these bacteria and above all their toxins into the lymphatic system of the surrounding tissue. From here they reach the bloodstream (focal infection) and the entire organism.



Which bacteria lurk in the dead tooth?

In a study of Siqueira et al. micro-organisms were detected in all endodontically treated teeth with apical inflammation, suggesting a chronic infection. If an inflammation of the root apex can be recognized in the X-ray, the failure rate of a root-treatment is increasing clearly based on the chronic infection.

Richardson et al. identified 75 different bacterial strains in root-treated teeth with apical osteitis. These bacteria can be found particularly often in and around dead teeth: enterococcus faecalis, capnocytophaga ochracea, fusobacterium nucleatum, leptotrichia buccalis, gemella morbillorum and porphyromonas gingivalis. Four of these abovementioned species affect the heart, three the nervous system, two kidneys and brain, one the maxillary sinus.

Immune response

The vital, healthy pulp (as part of the immune system) plays a crucial role in the defense of these bacteria. Often a chronic infection originating from bacterial colonization of the pulp leads to a chronic inflammation of the surrounding bone, the immune system is activated permanently. Macrophages activated by non-specific immune reaction release so called inflammatory mediators (TNF-alpha, IL-1, growth factors, prostaglandin (PGE2) and leukotriene) which circulate in the bloodstream. These inflammatory mediators favor the development or deterioration of chronic inflammations and autoimmune diseases. In addition, TNF-beta producing T-lymphocytes are stimulated. TNF-beta is suspected of promoting chronic diseases, as well as cancer. It is proven that TNF-beta increases the risk of postmenopausal breast cancer.

T. Rau at the Swiss Paracelsus clinic was able to demonstrate a clear correlation between breast cancer and teeth. He found that more than 95 % of his breast cancer patients had root-treated teeth in one or several teeth of the stomach meridian, in contrast to 35 % with healthy patients.

Diagnostics

What are interference fields?

The „interference field“ concept in the human organism assumes that an inflammatory process in a particular region of the body can cause a reaction in another area of the body or can lead to therapy resistance (chronification). The **classical interference field diagnostics** performed by dentists is the assessment of X-ray pictures/clinical findings and their allocation to medical findings of the respective treating field.

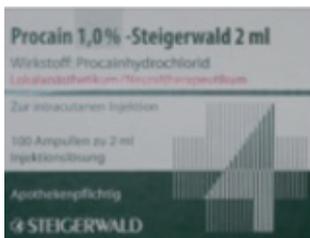
Interference field diagnostics

Teeth belong to the most important subsystems within a network of self-regulative parts of the organism. Teeth and their related periodontium (= odonton) are linked to other physical structures and organs. Odonton was coined a term by Reinhard Voll: he identified the direct and close interactions between odontons and various areas of the body.

X-ray diagnostics/clinical diagnostics

Neural therapy: test injection with 1 % procaine:

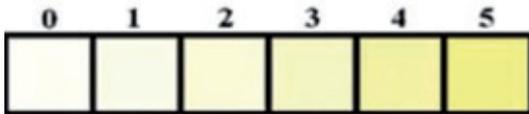
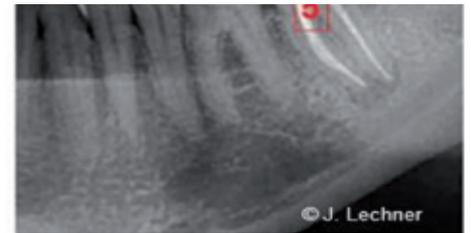
in principle, the injection creates a sort of temporary restart for the respective region. By using the viscerocutaneous reflex the brain is stimulated to pay more attention to this body area, the potential interference field is disconnected from its corresponding organ for a certain amount of time. In addition, procaine is broken down by enzymes into two components (PABA and diethyl amino-ethanol), causing a reinforced blood circulation and vascular formation in the related area, as well as the stabilization of nerve cell membranes by a normalization of their action potential.



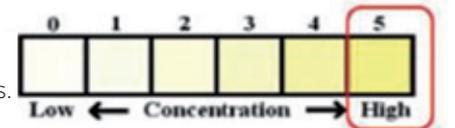
Patients are asked to observe all subtle changes in their physical conditions after the injection for about 24 hours. Often a so called “second phenomenon” (Huneke) is triggered. Particularly the shoulder arm syndrome shows spontaneous improvement. The effect should continue for about eight hours to identify the suspected tooth as a clear interference field. The anesthesia itself is of short duration and mostly ends after about 30 minutes.

OroTox®-test:
simple proof of toxin contamination

The OroTox® sulcus fluid sample is mixed with reagents which produce a **yellow color** change when contacting **sulphur-compounds**.



The more intensely the color changes, the higher the concentration is.



What can be determined by the OroTox®-test?

Instead of a microbiological analysis the OroTox®-test detects **thioether** and **mercaptan**, both bacterial metabolism products.

The probability to suffer a sensitization by mercaptan/thioether with high, positive, local OroTox®-test is **25 times higher** than without high OroTox® values.

OroTox®-test provides **clear information** about intensity and probability of systemic immunological sensitization by Mercaptan/Thioether.

Therapy

Extraction

Many root-treated teeth present some kind of inflammation of surrounding tissue, effectively diagnosable by a DVT scan (three-dimensional X-ray picture). The cyst at the root apex is nothing but a kind of capsule formed by the immune system around the infected area to protect the body from this area. Highly toxic teeth ankylose frequently with the surrounding bone. Local metabolism comes to a stop - similar to a prison, the body immures the tooth. The only possibility to escape this chronic intoxication is the surgical removal of these dead teeth, as well as of inflamed or cystic tissue. Residue-free curettage of soft bone is mandatory. Next step is the ozone disinfection of remaining tissues.

According to Brisman et al., the placement of implants next to still existing root-treated teeth has to be evaluated thoroughly to avoid a possible failure by focal infection.

Perfect aesthetic and immunological solution: ceramic implants made from zirconia (zirconium dioxide)

Zirconia is an electrically neutral ceramic, highly biocompatible and without any interference field characteristics. In contrast to greyish titanium it is metal-free and highly aesthetic by its white color.

Zirconia implants combine best biocompatibility with perfect aesthetics.

Recently zirconia implants are also available as two-piece screw retained implants for all indications.

Experience has shown that immediate implantation with one-piece zirconia implants is the best treatment solution for single-root teeth.



Meridian System for Self-Assessment

SENSORY ORGANS	inner ear	tongue/taste		nose/olfactory sense		eye	nose/olfactory sense/frontal sinus		nose/olfactory sense/frontal sinus		eye	nose/olfactory sense		tongue/taste		inner ear
JOINTS	shoulder elbow	jaw		shoulder elbow		rear knee		rear knee		shoulder elbow		jaw		shoulder elbow		
	hand ulnar foot plantar toes	anterior knee		hand radial foot big toe		hip	sacrum-coccyx		sacrum-coccyx		hip	hand radial foot big toe		anterior knee		hand ulnar foot plantar toes
SPINAL CORD SEGMENTS	Th 1 C8 Th 7 Th 6 Th 5 S 3 S 2 S 1	Th 12 Th 11 L 1		C 7 C 6 C 5 Th 4 Th 3 Th 2 L 5 L 4		Th 8 Th 9 Th 10	L 3 L 2 S 4 S 5 Co		L 3 L 2 S 4 S 5 Co		Th 8 Th 9 Th 10	C 7 C 6 C 5 Th 4 Th 3 Th 2 L 5 L 4		Th 12 Th 11 L 1		Th 1 C 8 Th 7 Th 6 Th 5 S 3 S 2 S 1
VERTEBRAE	B 1 C 7 B 6 B 5 S 2 S 1	B 12 B 11 L 1		C 7 C 6 C 5 B 4 B 3 L 5 L 4		B 9 B 10	L 3 L 2 Co S 5 S 4 S 3		L 3 L 2 Co S 5 S 4 S 3		B 9 B 10	C 7 C 6 C 5 B 4 B 3 L 5 L 4		B 12 B 11 L 1		B 1 C 7 B 6 B 5 S 2 S 1
ORGANS	right heart	pancreas		lung		right liver	right kidney		left kidney		left liver	lung		spleen		left heart
YIN	11-13 h	9-11 h		3-5 h		1-3 h	17-19 h		17-19 h		1-3 h	3-5 h		9-11 h		11-13 h
	duodenum allergies	right stomach		colon		gall-bladder	right bladder urogenital region		left bladder urogenital region		left bile ducts	colon		left stomach		jejunum ileum allergies
YANG	13-15 h	7-9 h		5-7 h		23-1 h	15-17 h		15-17 h		23-1 h	5-7 h		7-9 h		13-15 h
ENDOCRINE GLANDS	anterior pituitary	parathyroid	thyroid	thymus	posterior pituitary	epiphysis	epiphysis		posterior pituitary		thymus	thyroid	parathyroid	posterior pituitary		
OTHER	CNS psyche	right mammary gland				back pain headache		back pain headache				left mammary gland		CNS psyche		
OTHER	energy balance			right mammary gland						left mammary gland						energy balance
ENDOCRINE GLANDS VASCULAR SYSTEM	peripheral nerves	arteries	veins	lymphatic vessels	gonads	adrenal gland		adrenal gland		gonads	lymphatic vessels	veins	arteries	peripheral nerves		
YANG	11-13 h	3-5 h		9-11 h		1-3 h	17-19 h		17-19 h		1-3 h	9-11 h		3-5 h		11-13 h
YIN	13-15 h	5-7 h		7-9 h		23-1 h	15-17 h		15-17 h		23-1 h	7-9 h		5-7 h		13-15 h
ORGANS	right heart cardiovascular system	right lung		pancreas		right liver	right kidney		left kidney		left liver	spleen		left lung		left heart cardiovascular system
ORGANS	right ileum allergies	right colon ileosacral area		right stomach pylorus		gall-bladder	right bladder urogenital area		left bladder urogenital area		left bile ducts	left stomach		left colon		jejunum ileum allergies
VERTEBRAE	C 7 B 1 B 5 B 6 S 1 S 2 hip	C 7 C 6 C 5 B 4 B 3 L 5 L 4		B 12 B 11 L 1		B 9 B 10	L 3 L 2 Co S 5 S 4 S 3		L 3 L 2 Co S 5 S 4 S 3		B 9 B 10	B 12 B 11 L 1		C 7 C 6 C 5 B 4 B 3 L 5 L 4		C 7 B 1 B 5 B 6 S 1 S 2 hip
SPINAL CORD SEGMENTS	Th 1 C 8 Th 7 Th 6 Th 5 S 3 S 2 S 1	C 7 C 6 C 5 Th 4 Th 3 Th 2 L 5 L 4		Th 12 Th 11 L 1		Th 8 Th 9 Th 10	L 3 L 2 Co S 5 S 4		L 3 L 2 Co S 5 S 4		Th 8 Th 9 Th 10	Th 12 Th 11 L 1		C 7 C 6 C 5 Th 4 Th 3 Th 2 L 5 L 4		Th 1 C 8 Th 7 Th 6 Th 5 S 3 S 2 S 1
JOINTS	shoulder - elbow		anterior knee		posterior knee		posterior knee		anterior knee		shoulder - elbow					
	hand ulnar foot plantar toes	hand radial foot big toe		jaw		hip	sacrum-coccyx foot		sacrum-coccyx foot		hip	jaw		hand radial foot big toe		hand ulnar foot plantar toes
SENSORY ORGANS	ear/retina	ethmoidal cells/nose/olfactory sense		sinus maxillaris/tongue/sense of taste		eye/visual sense	frontal sinus/nose/olfactory sense		frontal sinus/nose/olfactory sense		eye/visual sense	sinus maxillaris/tongue/sense of taste		ethmoidal cells/nose/olfactory sense		ear/retina

Dental correspondences after consideration of relations following Bahr-Schmid, Voll-Kramer and knowledge of TCM.

Literature References

1. J.F. Siqueira, et. al., **Polymerase chain reaction-based analysis of microorganisms associated with failed endodontic treatment.** Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontology 2004; Vol. 97: 85-94
2. J.F. Siqueira, et. al.; **A Scanning Electron Microscopic Evaluation of In Vitro Dentinal Tubules Penetration by selected Anaerobic Bacteria.** Journal of Endodontics, June 1996; Vol. 22 (6)
3. N.M. Chugal, et. al., **Endodontic infection: Some biologic and treatment factors associated with outcome.** Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontology July 2003; Vol. 96 (1)
4. Richardson N, Mordan NJ, Figueiredo JA, Ng YL, Gulabivala K., **Microflora in teeth associated with apical periodontitis: a methodological observational study comparing two protocols and three microscopy techniques.** International Endodontic Journal 2009 October; Vol. 42(10): 908-21
5. J.F. Siqueira, et. al., **Bacteria in the apical root canal of teeth with primary apical periodontitis.** Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontology May 2009; Vol. 107 (5): 721-726
6. Persson S., Edlund MB., Claesson, R., Carlsson J., **The Formation of hydrogen sulfide and methyl mercaptan by oral bacteria.** Oral Microbiology and Immunology 1990 August; Vol. 5 (4): 195-201
7. Lechner, J., **Mehrdimensionale Systemdiagnose des wurzelgefüllten Zahnes.** ZWR-Das Deutsche Zahnärzteblatt 2012; Vol. 121(12): 640-644
8. Nagaoka S., Miyazaki Y., Liu HJ., Iwamoto Y., Kitano M., **Bacterial invasion into dentinal tubules of human vital and non-vital teeth.** Journal of Endodontics 1995 February; Vol. 21 (2): 70-73
9. K.M. Lee et. al., **Genetic polymorphisms of TGF-beta1 & TNF-beta and breast cancer risk.** Breast Cancer Res Treat. 2005 March; Vol. 90 (2):149-55
10. Rau, T., **Der Magen-Meridian und der Funktionskreis Magen – Milz – Pankreas.** SANUM-Post 2011; Vol. 94: 19-24
11. R. S. Brown, et. al., **The anesthetic localization procedure is an aid in ruling out or confirming suspected primary sources of oral or dental pain.** JADA May 1995; Vol. 126
12. Brisman DL., Brisman AS., Moses MS., **Implant failure associated with asymptomatic endodontically treated teeth.** The Journal of American Dental Association 2001 February; Vol. 132 (2): 191-195
13. Coolidge E: A discussion of clinical results ... Dent Cosmos 69:1280 (1927).
14. Tansy, M.F.: **Acute and subchronic toxicity studies of rats exposed to vapors of methyl mercaptan and other reduced-sulfur compounds.** J Toxicol Environ Health 8: 71-88 (1981)
15. Piannotti, R. et al.: **Desulfuration of cysteine and methionine by fusobacterium nucleatum.** J Dent Res 65: 913-917 (1986)
16. Hannah, R.S. et al.: **Hydrogen sulfide exposure alters the amino acid content in developing rat CNS.** Neurosci Lett 99: 323-327 (1989)
17. Weiger R et al.: **Periapical status, quality of root canal fillings and and estimated endodontic treatment needs in an urban German population.** Endodont Dent Traumatol 13:69 (1997).
18. Murray CA, Saunders WP: **Root canal treatment and general health: a review of the literature.** Int Endod J. 2000 Jan; 33(1): 1 – 18.
19. Kirkevang L et al.: **Frequency and distribution of endodontically treated teeth and apical periodontitis ...** Int Endodont J 34:198 (2001).
20. Figdor, D. et al.: **Starvation survival, growth and recovery of Enterococcus faecalis in human serum.** Oral Microbiol Immunol 18, 234 (2003).
21. Nair, P. N. R. : **Pathogenesis of apical periodontitis and the causes of endodontic failures.** Critical Reviews in Oral Biology & Medicine; Nov2004, Vol. 15 Issue 6, p348
22. Ned Tijdschr Tandheelkd: **Local and potential systemic consequences of endodontic root infection.** 2005 Nov;112(11):416-9.
23. Eckerbom, M. Et al.: **A 20-year follow-up study of endodontic variables and apical status in a Swedish population.** Int Endod J 40, 940 (2007).
24. Graf, K.: **Immunologisch relevante Belastungen aus zahnärztlichen Werkstoffen und deren Wirkung.** UMG 24, 2/2011, 23 – 26
25. Pasqualini, D. et al.: **Association among oral health, apical periodontitis, CD14 polymorphisms, and coronary heart disease in middle-aged adults.** J Endod 2012 Dec; 38(12): 1570 – 7
26. Van der Sluis, L.: **Past and future of endodontics.** ENDO (Lond Engl) 6 (2012).
27. Koch, M.: **On implementation of an endodontic program.** Swed Dent J Suppl 230, 9 (2013).
28. Gomes, M. et al.: **Can Apical Periodontitis Modify Systemic Levels of Inflammatory Markers? A Systematic Review and Metaanalysis.** J Endod 39, 1205 (2013)
29. <http://www.swissdentalsolutions.com>

SWISS 
BIOHEALTH®

SWISS BIOHEALTH AG
Brückenstrasse 15 . 8280 Kreuzlingen/Schweiz

Tel. +41 71 678 2000
Fax +41 71 678 2019
reception@swiss-biohealth.com

www.swiss-biohealth.com