

# Zahnarztpraxis Roland Röcker

Tätigkeitsschwerpunkte • Implantologie • Kieferorthopädie • Prophylaxe

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## Field report with Perma Evolution

### Field study Niedersachsen from Juli 2009 till Dezember 2010

In the field studies from Wolfsburg and Niedersachsen the results were combined with the field study from Tübingen. Basically there was nothing changed concerning the endodontic treatment

By the documentation of the study however, further resulting factors of the therapy were integrated. Before every root canal treatment a (radiograph (x-ray) was taken. After trepanation, measurements are taken according to ISO size specifications and an x-ray after the root canal has been completed. Further sets of (x-ray ,radiographic) images are taken to keep a digital archive of the different stages of the treatment. (Kodak)

Also in the Niedersachsen study the endodontically handled teeth were primarily used, which were as abutment teeth in a fixed denture.

Was a treatment to the apex not possible, an apicoectomy would be performed surgically with a retrograde root canal. Which would fall within the medical insurance guidelines?

In this study the endodontic history and also the condition two months after the root canal are documented. The last endodontic treatment took place in the 4<sup>th</sup> quarter of 2010, the final clinical control was on the 28.02.2011.

The following parameters were used in the clinical trials.

- 1.) Percussion positive or negative.
- 2.) Cold test with -50 C ,confirm if residual vitality exists or not
- 3.) Mobility grade 0 , I , II and III
- 4.) Control the Gingiva
- 5.) Pocket depth measurement ( Note the PSI value, 0 to 4 )



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By the PSI value 0 are the Gums (Gingiva) and the Periodontal (Parodont) healthy. Values 1 and 2 indicate Gingivitis, A value of 3 or 4 indicates a moderate to serious type of Periodontitis. Studies took in to account 1088 endodontically treated root canals, for which 551 teeth were required.

All these parameters define the prosthetic valence, if the endodontically treated tooth can be fixed to the Prosthetic or not. By too low a value is an extraction recommended and carried out with the approval of the patient.

## **Introduction:**

When a Caries bacteria has reached the Pulpa it very often leads to an acute Pulpitis purulent which can develop into Gangrene, where by a root canal would be necessary. In the past these types of treatments were long and tedious, and unfortunately a short time later often leads to inflammation of the jawbone. The reason often lies with the narrow complicated branched channel system of the roots. Through insufficient root filling, bacteria can cause new inflammation often involving the jaw bone and cyst formation.

## **The root canal treatment**

The goal of the root canal is to remove all tissue and bacteria from the tooth and the root canal. To expand the canal and to smooth out the canal wall so that later a dense root filling will be possible.

The treatment was carried out using rubber dam.

For this purpose the canal would be prepared with a series of thin files of different widths. In all the recorded treatments in the study it was attempted to prepare the canal to the root tip. After every step it is required to rinse and disinfect.

To determine the root length radio graphic measurements are used

The preparation of curved root canals require the use of special techniques .eg the pre-bending of the unilateral blunting of the file for hand treatment to ISO 25.

Then the rest of the root canal treatment would be carried out with electrically powered instruments. Used was the Endolift from Kerr.

The operation is characterized by quarter circular stroking motions. For this a conventional Reamer and Hedstrom files are used. The instruments are made from highly flexible Nickel-titanium alloy.

During the preparation of the root canal it must be sprayed several times with a disinfectant solution to remove bacteria. Hyper sodium chloride and hydrogen should be used. These are available in various concentrations and are effective in creating a bacteria free environment. E.g. to reach a sufficient reduction of bacteria and dissolve abnormal structures.

For the first drug insert Ledermix was used, and from the second insert on a ready mixed Calcium hydroxide gel is used. This is characterized by its antimicrobial effect which is radiopaque and easily removed (water)

As a provisional filling Cavit (consists of zinc oxide, zinc, calcium sulfate, glycol, polyvinyl acetate and Triethanolamine).

After the initial drug treatment the root canal will be dried with absorbent paper points from Becht and prepared for the root canal filling.

Perma Evolution will be used for the root filling.

Perma Evolution is based on proven epoxide technology. The sealer is free from Iodoform and paraformaldehyde, it is radiopaque and because of its hydrophilic formulation has a high adhesion to dentin.

Completely new are the integrated microcapsules in Perma Evolution, which contain liquid reactive adhesive that provides increased hold and strength. Micro fractures which can be caused by high pressure on the teeth are quickly sealed because of the embedded microcapsules. The micobicidal effect of the sealer in the liquid phase reliably prevents re- contamination of the root canal

Maximal processing time is 15 minutes.

After a final radiograph (x-ray) to insure that the root canal filling conforms , every tooth is supplied with a Plastic – Ceramic filling ( enamel – etched )  
This will guarantee a bacteria free closure.

Definition of a root canal (statutory medical insurance)

In all endodontic operations under dental care, the process ability and possibility of the filling of a root canal to e.g. must be as close to the nerve ending as possible

(RL 9.1).

## Evaluation Results

Teeth	Number	Root Canal	Preserved	Apicoectomy	Extraction
<b>Front Teeth</b> <b>1 RC</b> OK und UK 13,12,11,21,22,23 33,32,31,41,42,43	88	88	87	5	1
<b>Premolars</b> <b>1 RC</b> OK und UK 15,25,34,35,44,45	143	143	139	21	4
<b>Premolars</b> <b>2 RC</b> 14,24	103	206	102	9	1
<b>Molars</b> <b>3 RC</b> OK und UK 16,17,26,27 36,37,46,47	217	651	215	16	2
<b>Total</b>	<b>551</b>	<b>1088</b>	<b>543</b>	<b>56</b>	<b>8</b>
<b>Percent</b>	<b>100 %</b>		<b>98,5 %</b>		<b>1,5 %</b>

### **Distribution and use of the teeth:**

376 teeth as prosthetics which corresponds to 68%  
167 teeth were preserved which corresponds to 30.5%  
8 teeth could not be kept which corresponds to 1.5%

### **Loss due to extraction:**

5 extractions were necessary, even though the root canal of the tooth had a mobility grade of II . Thus was the prosthetic value for further treatment not met?

2 extractions were carried out since a recurrence of an apical osteitis was found to be connected to complaints.

1 extraction was necessary due to a root fracture. The front tooth 11 was apices resected through endodontic treatment.

### **Conclusion of our study with Perma Evolution**

With the use of the root filling material a very high rate of tooth preservation can be attained. The achieved freedom from symptoms allows a safe integration as a pillar in prosthetic devices. About 30% of the endodontically treated teeth were effectively preserved.

Care was taken that with the teeth to be treated ,the reconstruction of the occlusal relief were handled with a high quality filling material containing ceramic so that a normal physiological function of the jaw would be possible

This also shows that endodontically treated teeth with substance friendly trepanation keep their functionality and that no impairment of the physiological function results due to an endodontic treatment.

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