

## **Biofilms in endodontics**

After a brief overview of tissue response to shallow, medium and deep caries, the histological events that can be observed when pulp is penetrated by bacteria will be described. Necrosis and bacteria are initially confined to the pulp chamber, but soon pulp degeneration process extends beyond root canal orifices and moves slowly in apical direction, with or without clinical symptoms. In histologic sections, bacteria are often observed to form complex structures adhering to the root canal walls. These structures are known as “biofilms”. Bacterial biofilms can be observed in lateral canals and apical ramifications, and only their complete elimination will lead to endodontic success. Tissue biopsies from failed cases demonstrate how infection from the apical root canal walls or from complex anatomic intricacies can hardly be controlled through conventional treatment procedures. The presence of extraradicular bacteria and their possible role in determining root canal treatment failures will be discussed.

## **Wound healing of apical and periapical tissues following endodontic treatment**

Root canal instrumentation procedures produce a wound in the foraminal area. In teeth with the diagnosis of vital pulp this wound is placed in vital uninflamed connective tissue, while in teeth with the diagnosis of necrotic pulp the is placed in a severely inflamed or necrotic tissue. The purpose of this presentation is to evaluate the pulp healing process and the dentin-cementum complex in endodontically treated human teeth after long observation periods and to correlate histologic observations with conventional periapical radiographic findings. Contrary to a widely held opinion, apical tissue of properly treated teeth with no signs of periapical changes is only rarely significantly inflamed. When the tissue is inflamed, microbial causes can always be demonstrated. Narrowing of the apical root canal by cementum is a common finding in most cases, but a total closure is never observed.

### **CV:**

Domenico Ricucci, MD, DDS

Private Practitioner, Cetraro, Italy

Dr. Domenico Ricucci received his degree in General Medicine from “La Sapienza” University of Rome in 1982, and his DDS from the same University in 1985. Since then he has maintained private dental practices limited to endodontics. In addition to his private practice, Dr. Ricucci was Professor of Cariology at “Magna Graecia” University of Catanzaro, Italy in 2002 -2003. He served in the Research Committee of the European Society of Endodontology from 1999 to 2005.

Dr. Ricucci’s primary research interest relates to pulpal and periapical tissue reactions to caries and treatment procedures, biofilms in endodontic infections, pulp regeneration/revascularization. Since 1998 he has run his own histology laboratory and has developed considerable skills in hard tissue preparations for light microscopy.



Dr Ricucci has published 82 papers and has lectured both nationally and internationally. He has authored the Textbook and Atlas “Patologia e Clinica Endodontica”, the textbook and atlas “Endodontology. An integrated biological and clinical view”. He has also authored or co-authored eight book chapters.