

Prof. Magda Feres

DDS, MSc, PhD, Post-doc

– Periodontics Division Keynote Speaker



Currently Professor Feres is Chair of the Dental Research Division at Guarulhos University, Sao Paulo, Brazil and the coordinator of the Graduate Program in Dentistry.

- ◆ She is also a full-time researcher and Professor in the Department of Periodontology and a Research Affiliate in Periodontology at the Forsyth Institute, Boston, U.S.A.
- ◆ She graduated DDS in Dentistry from Gama Filho University, Brazil in 1987, then MSc in Periodontology from Federal University of Rio de Janeiro, Brazil in 1993 and PhD in Oral Biology from Harvard School of Dental Medicine, USA in 1999.
- ◆ Professor Feres is a Member of the International Association for Dental Research, International Academy of Periodontology, Brazilian Society of Periodontology (SOBRAPE) and a researcher for the National Council of Science and Technology Development (CNPq-Brazil) as well as acting as a reviewer for the following Scientific Journals: Journal of Clinical Periodontology, Journal of Periodontology, Archives of Oral Biology, Brazilian Oral Research.

Lecture Topic 1.

The infectious nature of periodontal diseases: one century of controversies

The search for the etiologic agents of periodontal diseases started in the Golden Era of medical bacteriology (1890-1920), when the etiologic agents of many bacterial infections were isolated and characterized. After the initial enthusiasm in establishing the infectious nature and the true agents of periodontal diseases, this concept was virtually ignored for the next four decades and re-emerged only in the 1960s. However, until the early 1970s treatment regimens were based on the non-specific plaque hypothesis and were directed towards a non-specific reduction in the amount of plaque. Afterwards, the specific plaque hypothesis established the role of some microorganisms such as *A. actinomycetemcomitans*, *P. gingivalis*, *P. intermedia* and *F. nucleatum* in different forms of periodontal diseases. Difficulties in cultivating some of the main periodontal pathogens have greatly delayed the better understanding of the composition of the periodontal microbiota, as well as the microbiological effects of different therapies. The development of new techniques using polyclonal or monoclonal antibodies and DNA probes was very important in more precisely discriminating subgingival species, especially those that were difficult to cultivate by traditional cultural methods, such as *Tannerella forsythia* and spirochetes. Using these diagnostic techniques, recent microbiological studies have shown that certain microorganisms or groups of microorganisms are related to the onset and progression of loss of periodontal insertion, while other species, considered compatible with the host, are more associated with periodontal health. It was recently suggested that these suspected periodontal pathogens do not seem to act alone and interactions between species, especially the balance between pathogenic and beneficial species affect both progression of disease and response of tissues to periodontal therapy.

SCIENTIFIC PROGRAMME - KEYNOTE SPEAKERS

Lecture Topic 2.

Systemic antibiotics in the treatment of periodontal infections: to use or not to use?

Since periodontal diseases are specific infections, systemically administered antibiotics have been continuously considered in their treatment. On the other hand, the emergence of antibiotic-resistant species and the knowledge that the biofilm structure can confer remarkable resistance on the microorganisms living in this ecosystem have to be considered before using an antibiotic in medicine or in dentistry. Different systemic antibiotics have been studied and used with different degrees of success in the treatment of periodontal diseases. However, the interpretation of these data is not a simple task, in part due to the great heterogeneity in the design of the studies, including different drug regimens, the nature of associated therapy, the outcome variables evaluated and the microbiological assessment.

This presentation will focus on clinical and microbiological results from studies of our research group that have used doxycycline, metronidazole, amoxicillin and the combination of these drugs to treat periodontal diseases. Systemically administered metronidazole, and especially the combination of metronidazole, amoxicillin and SRP leads to a beneficial change in the composition of the subgingival microbiota by reducing pathogens and allowing the growth of host-compatible species. These benefits seem to be more profound in intermediate and deep pockets. Despite the favorable effects observed with the use of systemic antibiotics in the treatment of periodontal diseases, some important questions still remained unanswered, such as: “at which moment of the mechanical therapy should the agent be administered”?, “who are the patients that most benefit from antibiotic therapy?” and “which drug or drugs should be used in each case?”. This presentation will attempt to clarify these issues.

Lecture Topic 3.

Microbiological basis for periodontal and peri-implant treatment: what do we need to know before starting therapy?

The starting point for defining a therapy, whether in dentistry or the various areas of medicine, is to understand the etiology and progression of the different illnesses. In this context, it is worth pointing out that periodontal and peri-implant diseases are a group of infections, whose primary etiologic factor is certain bacterial species present in the oral cavity, especially those that colonize the supra and subgingival tooth and implant surfaces. Some unique properties of periodontal and peri-implant diseases, such as the presence of a diverse microbiota living in the highly organized environment of the biofilm make them difficult infections to deal with in terms of prevention, diagnosis and treatment. The development of easy microbiological chairside tests could be very useful in order to define the patient's microbiological profile before choosing the correct treatment. However, while this does not happen, it is necessary to endeavor to define certain clinical profiles of disease that suggest the microbiota present, and help to make the decision about which treatment protocol should be selected. For several years *Aggregatibacter actinomycetemcomitans* was pointed as the main and sole pathogen of aggressive periodontitis.

SCIENTIFIC PROGRAMME - KEYNOTE SPEAKERS

However, recent studies suggest that several other bacterial species, such as *P. gingivalis*, *T. forsythia* and *F. nucleatum polymorphum*, seem to be associated with the etiopathogenesis of this infection. Over the past few decades, it has been suggested that several organisms play a role in the etiology of chronic periodontitis, such as *Porphyromonas gingivalis*, *Tannerella forsythia*, *Prevotella intermedia*, *Fusobacterium nucleatum*, *Campylobacter rectus*, *Eikenella corrodens*, *Parvimonas micra*, *Streptococcus intermedius* and *Campylobacter* spp. Evidence from studies that used new diagnostic tests that do not depend on oral bacteria viability suggest that a group of three bacterial species (*T. forsythia*, *P. gingivalis* and *T. denticola*), termed the “red” complex, are strongly related to pocket depth and bleeding on probing. This complex is elevated in periodontitis and peri-implantitis in comparison with healthy sites, and is reduced after successful therapy.

Lecture Topic 4.

Combining therapies: the future of periodontal treatment

The most commonly used periodontal therapy, scaling and root planning (SRP), leads to a reduction in the levels and proportions of some periodontal pathogens, but does not seem to modify the composition of subgingival biofilm sufficiently for the new beneficial bacterial community to become established in a more definitive manner. One of the main reasons for the lack of efficacy of SRP are the technical difficulties of interfering in the biofilm in areas that are difficult to access, such as bifurcations, root concavities and deep periodontal pockets. Therefore, with the aim of potentiating the effects of SRP this procedure has been associated with other therapies, such as the systemic antibiotics, as previously discussed, or periodontal surgeries. Recently, other combined therapies for the treatment of periodontal infections have been successfully applied, including the mechanical control of supragingival plaque (MCSP) during and after SRP. This protocol had a profound clinical and microbiological effect on the treatment of chronic periodontitis. Based on these results, studies from our research group suggested that the chemical control of supragingival plaque (CCSP), using chlorhexidine, extended the benefits observed with the MCSP protocol. After that, other studies have shown the advantages of combining SRP, systemic antibiotics and the MCSP or CCSP protocols, especially for treating subjects with advanced disease profiles. This combination of therapies produces a deep change in the biofilm composition, which is necessary to achieve periodontal health. The main goals of periodontal therapy are reduction in the probing depth, bleeding on probing and suppuration, and increase in attachment level. These satisfactory clinical results are achieved when counts, proportions and percentage of sites colonized by different periodontal pathogens are effectively reduced and a new climax community containing higher proportions of beneficial microorganisms is established in the subgingival biofilm. Apparently, this microbial profile compatible with health is more easily established when a rapid and drastic reduction of the oral microbiota occurs in the beginning of the treatment. Our results indicate that the combination of SRP, systemic antibiotics and the systematic control of supragingival biofilm is the most appropriate therapeutic protocol to achieve this objective.