

Other journals in brief

A selection of abstracts of clinically relevant papers from other journals.

The abstracts on this page have been chosen and edited by Paul Hellyer

Caries and perio – natural, random processes?

Caries and periodontitis: contesting the conventional wisdom of their aetiology

Manji M, Dahlen G and Fejerskov O. *Caries Res* 2018; **52**: 548–564

The search for individual microorganisms that predict oral diseases may be fruitless.

Studies have identified the presence of around 700 microbial species in the oral microbiome, which, although variable between individuals, usually remains in a steady-state condition once teeth have erupted, unless disturbed by a challenge to the immune system. Many of these 700 species have not been isolated with common culture methods but are increasingly identifiable with new technologies.

The microbiome present within dental biofilm is metabolically active with constant small changes in pH, a higher pH favouring mineralisation and a more acidic pH favouring demineralisation. The presence of fermentable carbohydrate amplifies these fluctuations in favour of a lower pH at the tooth/biofilm interface. Cavitation may follow, but lesion development can be arrested at any stage by the regular removal of the microbial deposits.

If left undisturbed, the dental biofilm will also cause gingivitis, gradual buccal and lingual gingival recession over time and the formation of proximal periodontal pockets. However, only 10-15% of most populations worldwide suffer from severe attachment loss. This statistic has led to an unfruitful search for microbiological markers to identify those at risk but no study has been able to predict future development of either caries or periodontitis by the identification of single species of microbe.

Traditionally caries and periodontal disease have been considered separate diseases and their own specialties and research bases have developed. However, both diseases are associated with the same oral microbiome, consisting largely of commensal microbes.

The authors argue that these diseases can be understood better by considering the random metabolic processes which occur within the whole oral microbiome. These random processes result in alternating periods of de- and re-mineralisation at the tooth surface and are a result of the normal metabolic activity within the microbiome. Similarly with periodontal disease, the soft tissue response to these processes will be periods of inflammation and periods of recovery. Prolonged exposure to plaque reduces the ability to recover from the inflammatory phase. The progression of disease can be affected by other determinants, such as increased fermentable carbohydrate intake, diabetes and smoking, but cavitation and loss of attachment can still occur in the absence of these factors. The importance of regular plaque removal cannot be overemphasised.

Since the dental biofilm cannot be eliminated completely, the normal random processes within the microbiome will always continue, and the only difference between periodontal disease and dental caries is the function of how the host tissues respond to the normal metabolic activity of the commensal organisms in the biofilm.

DOI: 10.1038/sj.bdj.2018.576

Is chlorhexidene always beneficial?

Effects of chlorhexidene gluconate oral care on hospital mortality: a hospital wide, observational cohort study

Deschepper M, Waegerman W, Eeckloo K et al. *Intensive Care Med* 2018;

DOI: 10.1007/s00134-018-5171-3

Increased risk of death in low risk hospitalised patients.

Chlorhexidene has been shown to reduce risk of ventilation-induced pneumonia. However, recent studies have indicated a relationship between the use of chlorhexidene oral care and increased mortality in patients undergoing non-cardiac surgery.

This retrospective study, found an association between an increased risk of death and the use of chlorhexidene, particularly in the groups who were considered to be at low risk. Chlorhexidene is known to reduce oral respiratory pathogens and disturb the normal microbiome but it is unlikely that such a short-term effect would cause such lethal complications.

The authors express concerns that the widespread use of the apparently non-toxic mouthwash in non-hospital settings has not been monitored for serious adverse events. There should be a 'reconsideration of the practice of chlorhexidene oral care in patient populations for which an evidence base is lacking'.

DOI: 10.1038/sj.bdj.2018.577

Healthy pulp tissue may not be sterile

Culture independent characterisation of the microbiome of the healthy pulp

Widmer C, Skutas J, Easson C et al. *J Endod* 2018; DOI: 10.1016/j.joen.2018.03.009

Detectable bacterial DNA found in all pulp samples in this study.

It is becoming increasingly apparent, with new isolation and identification systems, that in healthy states, bacteria exist in symbiotic relationship with human hosts. Sites previously thought of as sterile, such as blood, urine and the dental pulp, are in fact populated by microorganisms.

Using verified decontamination techniques, this study removed the pulp tissue from ten disease-free, single-rooted teeth, with no history of trauma, prior to extraction for orthodontic reasons. DNA extraction techniques revealed an average of 343 (range 191–479) unique taxa per sample which were predominantly *Ralstonia*, *Acinetobacter* and *Staphylococcus*. Taxa dominant in plaque samples tended to be present in low abundance in the pulp and those dominant in the pulp present in low abundance in the plaque.

Other studies have shown the presence of these bacteria in blood but in different ratios and numbers to that found in pulpal tissue in this study. The authors conclude that there is evidence that the healthy pulp may not be sterile and that further research is needed.

DOI: 10.1038/sj.bdj.2018.578