Oral bacterial microflora associated with total acrylic dentures: Implant supported vs mucus supported

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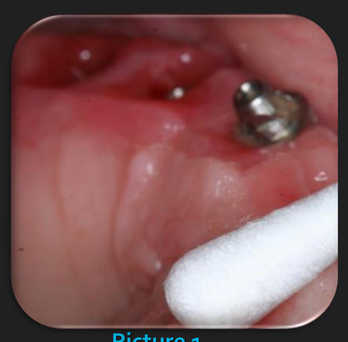
The oral cavity, as an dynamic and hostile environment with a 37 degrees of temperature, allows the development of a complex mixture of known microorganisms. Over 100 species can be found in the same location and there are more than 700 bacteria's in the oral cavity [1].

The virulence depends on several factors [2]: infectious agent such as adhesion (adhesins), proliferation, degree of destruction (by exotoxins or endotoxin or inflammatory procedures), invasion (penetration and growth) and spread. It also depend on host factors such as the existence of physical barrier, cleaning mechanisms (saliva and crevicular fluid [3]) and antimicrobials (lysozyme , IgA , beta- lysine) .

Materials and methods



Picture 1
Collection of the sample from: José Reis

The study was carried out on 90 patients; 60 of them with removal denture [5] and 30 with fixed denture. All the participants were informed about the study and sign the agreement; we made some clinical observations and instruct to carry out a light rinse with water without any disinfectant in order to not compromise the existing microflora. The supragingival excess of plaque was removed with aid of dry sterile packs,. The samples were collected with sterile swabs [3,4, 5, 6, 7,8] from the mucosa were the denture is supported (Picture 1).

In order to identify the anaerobic bacteria's we inoculate the samples in *COS, CNA e SCS* and incubate at 37ºC for 5 to 7 days in anaerobiose atmosphere. For the aerobic bacteria's we inoculate in DRIG and MSA2 and incubate at 37ºC for 24h at aerobic atmosphere.

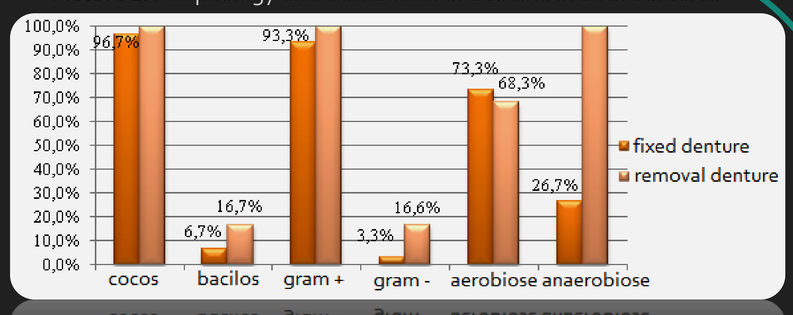
The results were analyzed in Excell and SPSS.

Results and discussion

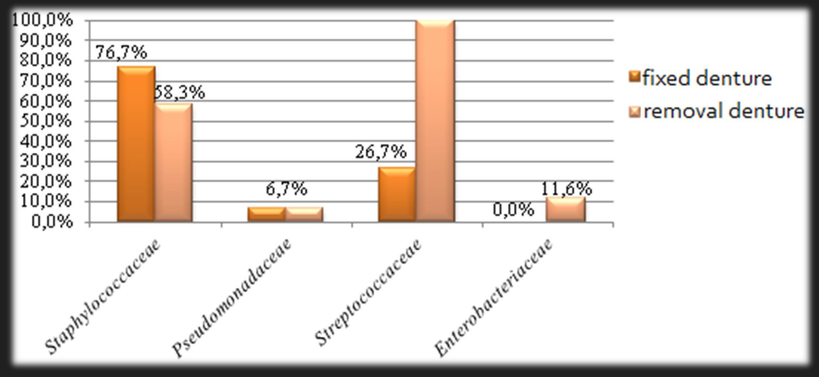
This study aims to understand whether exists association between the microflora of patients with total acrylic removal and fixed implant dentures. Although this study a relatively small sample, we could identify several bacterial species, some common to many patients and further get some statistically significant relations.

In the removal dentures the distribution of male/ female gender was 35 % and 65 % respectively , with a mean age of i65.6 years; In the fixed dentures the sample was 23 % of males and 77 % females with an average age of 63.8 years old.

Picture 2: Morphology and distribution of bacteria in both dentures



Concerning the bacteria morphology (Picture 2), the Gram+ cocci were in similar percentages and very high in the two prostheses and the Gram- bacilli at low percentages. According the breathing mode, the aerobic batteries were 73% in fixed dentures and 68.3 % in removal dentures; the anaerobic batteries in low amounts in fixed prostheses (26.7 %) and in all the removal. A value of $P < 0.001$ relating to the presence of anaerobic bacteria can be bound by the theory that depends on the type of prosthesis. Such difference and high values may be due to the fact that this bacteria can be strict (*Pseudomonadaceae*) optional (*Staphylococcaceae* and *Enterobacteriaceae*) and tolerant (*Streptococcaceae*) and they are all anaerobic.



Picture 3: Identification of the families of different bacteria in both dentures

Among the families (Picture 3) the most common were *Staphylococcaceae* in both types of prostheses. This family is Gram+ cocci , which are the first settlers [9]and we may maintain this microenvironment, so it is natural to be isolated in greater frequency, even for *Staphylococcus aureus*. Less frequently in both prostheses were Pseudomonadaceae; *Streptococcaceae* in all the removal dentures and in 26.7% in fixed dentures and *Enterobacteriaceae* (considered potentially pathogenic [5,10, 11]) only present in the removal ones, witch is signal of low potential of infections on the full fixed dentures; this fact seems very positive because these species are associated with the development of perimplantitis [12, 13]. Although there are no common species in *Pseudomonadaceae* family, the presence of these species are considered [14] pathogenic and maybe be an indicator to the development of oral pathology.

In *Streptococcaceae* family, the presence of *S. mutans* and *S. salivarius* (in high levels in the removal dentures and low in the fixed) depends on the type of prosthesis ($P = 0.02$).

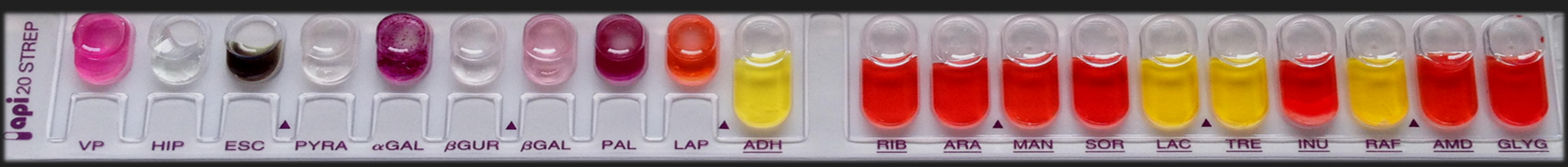
Conclusion

It is possible to identify, although in small quantities, bacterial pathogens typically associated with oral diseases such as periimplantitis in clinical radiographically healthy implants.

The presence of *Streptococcus mutans* and *Streptococcus salivarius* is influenced by type of implant as well as anaerobic bacteria.

The full fixed denture demonstrate a lower infectious potential.

There are differences between the two types of prosthesis.



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