

Evaluation of Bacterial Loads in Removable Dentures: A Review

J.A.Shagana

Saveetha Dental College, Chennai

Abstract

Aim And Objective : To evaluate the microorganisms in the removable dentures of patients from various dental clinics .The objective is to eradicate the cross contamination which is most commonly seen in the dental setup.

Background: The oral cavity may act as a reservoir for several pathogens related to systemic infections.Dentures offer a reservoir for microorganisms associated with some infections like bacterial endocarditis, aspiration pneumonia , gastrointestinal infection and also causes denture stomatitis.The microbiology of denture has received little attention in comparison with dental microbiology, yet it differs in location and composition. Thus the aim of this study was to evaluate microbial flora found in previously worn dentures.

Materials and Methods: The sample here used are removable dentures of patients. Swabs has to collected on the dentures and cultured to detect the microbial load present on the removable dentures. This research activity tells us about the bacteria from dentures and protective measures in prevention of cross contamination.

INTRODUCTION

Oral health is a reflection of one's general health which is declines with age and as a result the need for removable prostheses increases(1) .Wearing removable dentures causes an alteration in the oral microflora(2). For certain individuals, this new environment is responsible for the development of a particular conditions such as dental prosthetic stomatitis or denture associated stomatitis. Denture induced stomatitis is also a recognized clinical challenge which is characterized by mucosal inflammation and redness underneath a denture(3). It is caused by the microbial biofilm on the fitting surface of the denture rather than on the mucosal surface and associated with variety of *Candida* spp as well as bacteria from several genera. Maintaining the good denture hygiene plays an important role in the prevention of denture stomatitis(4). Thus attention should be paid to the bacterial population in denture as a potential source of oral and systemic diseases.

MATERIALS AND METHODS

Twenty complete denture wearers had no systemic disease and were wearing their present dentures for around 2 years were included in the study. Swabs were collected from palatal surface of the upper denture to detect the microbial load. Then the collected samples were cultured with blood agar and Macconkey agar and incubated for 24 hrs at 37degree C.The growth on the plates were differentiated and identified by morphology, gram staining.

RESULT

The present study was conducted to check the bacterial load on the removable dentures from various dental clinics . 20 samples were collected from the palatal surface of the upper denture and the type of bacteria grown and the colony count was made and tabulated in Table 1. All the 20 samples showed the presence of bacterial growth. Out of 20 samples collected from the palatal surface of the upper

denture, the predominant bacteria found in most of the samples were *Enterococcus faecalis* and *Streptococcus mutans*. The other organisms grown in samples were Gram positive cocci, Gram negative bacilli. Sample 17 showed that the growth of Micro cocci.

Table 1

SAMPLES	BACTERIAL COUNT (numbers)	BACTERIAL SPECIES
Sample 1	227	Gram positive cocci
Sample 2	1280	Gram positive cocci
Sample 3	169	Enterococcus
Sample 4	960	Streptococcus
Sample 5	180	Streptococcus
Sample 6	232	Enterococcus
Sample 7	172	Gram negative bacilli
Sample 8	560	Streptococcus
Sample 9	504	Streptococcus
Sample 10	1252	Enterococcus
Sample 11	956	Enterococcus
Sample 12	278	Streptococcus
Sample 13	1081	Enterococcus
Sample 14	331	Gram positive cocci
Sample 15	516	Enterococcus
Sample 16	204	Gram negative bacilli
Sample 17	436	Micro cocci
Sample 18	352	Streptococcus
Sample 19	1292	Enterococcus
Sample 20	347	Gram positive cocci

DISCUSSION

The presence of a denture on the oral mucosa alters the local environmental conditions due to the inaccessibility of saliva and lack of mechanical cleaning by the tongue. Hence, dentures act as reservoirs that harbor a mixed species of bacterial biofilm(5). Denture related stomatitis (inflammation of palatal mucosa) induced by wearing the denture or by plaque on the denture. The cultivable flora of the denture showed a complex bacterial community. Denture especially denture base acrylic resin is easily colonized by oral endogenous bacteria and eventually by extra oral species such as *Staphylococcus* spp. or members of *Enterobacteriaceae*(6). This microbial reservoir can be responsible for denture related stomatitis and aspiration pneumonia, a life threatening infection. It can be prevented by cleaning all the surfaces of denture with soft bristled tooth brush daily . Also cleaned the dentures by soaking it with a non abrasive denture cleanser to remove the food ,plaque and other deposits(7). To conclude, there is predominant presence of *Enterococcus faecalis* ,*Streptococcus mutans* and Gram positive cocci.

CONCLUSION

A wide range of microorganisms must be considered when treating either oral or systemic diseases in denture wearers. The dentures of even healthy individuals must be considered as possible sources of pathogenic microorganisms. Hence , an effective denture hygiene and decontamination to control is recommended denture microbial biofilm to overcome associated oral and systemic diseases. There are several oral hygiene products available for use by denture wearers.

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