



Research Article

EVALUATION OF BACTERIAL LOAD IN DENTAL LAMPS-PILOT LAMP

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ABSTRACT

Aim: To study the bacterial load in pilot lamp.

Objective: This study focuses on finding out the bacterial load in pilot lamp in dentistry.

Background: Bacterial load is the measurable quantity of bacteria in an object, surface or medium. Apart from the habitation of bacteria in different areas of oral cavity, bacteria can also be present in dental armamentarium like dental chair, pilot lamp, dental hand piece, other storage cupboards in clinic, etc.. These bacteria don't habit these places naturally, but are mainly due to contamination. This contamination largely results from the operation of these armamentarium using gloved hands used previously for a patient. This study will thus focus on the bacterial load contamination in these armamentarium.

Method: Swabs were collected from dental clinics and were inoculated into Brain Heart infusion (BHI) Agar using spread culture plate technique.

The culture plate was incubated for 24h at 37C and observed for microbial growth

The Colony forming Unit (CFU's) were manually counted and tabulated as CFU/microlitre.

Results: In this study the most predominant organisms found was micrococcus and enterococcus.

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INTRODUCTION

Bacterial load is measurable quantity of bacteria in an object, surface or medium. Apart from the habitation of bacteria in different areas of oral cavity, bacteria can also be present in dental armamentarium like dental chair, pilot lamp, dental handpiece, other storage cupboards in clinic, etc.. These bacteria don't habit these places naturally, but are mainly due to contamination. The infection control currently plays a very important role in the practice of dentistry (1). The cross-contamination is the passage of microorganisms from one person or object to another (2). At the dental clinic, infections may be transmitted by direct contact (saliva, blood and other secretions) or indirect contact (saliva drips and contaminated aerosols, gloves). This contamination largely results from the operation of these armamentarium using gloved hands used previously for a patient. All dental personnel including dentists, nurses, and hygienists are at risk of cross-infection due to frequent exposure to microorganisms living in patients blood, droplets of saliva and instruments contaminated with blood, saliva and tissue debris. These micro-organisms include pathogenic bacteria, viruses and fungi (3) and, in some instances, may be responsible for direct transmission of highly infectious diseases including Mycobacterium Tuberculosis, Hepatitis B and C, Staphylococci, Herpes

simplex virus 1 and 2 and the Human Immunodeficiency Virus [3,4]. In addition, exposure to viruses that cause upper respiratory infections such as mumps, influenza and rubella also poses a considerable health risk to dental personnel (3-5). Transmission of infection during dental treatment or surgery can occur through several routes: direct contact with blood, saliva or tissue debris; indirect contact with contaminated instruments or surfaces that have been improperly sterilized; or contact with infective agents present in either the droplets or aerosol particles from saliva and respiratory fluids (4). This study will thus focus on bacterial load contamination. In these armamentarium. Thus the study involves the finding of predominant bacteria present in the pilot lamps in post operative state and bacterial load.

MATERIALS AND METHODS

The study sample size was 20 in number. Swabs were collected from dental lamps from Dental clinics. They were inoculated into Brain Heart infusion (BHI) Agar using spread plate technique. The culture plate was incubated for 24h at 37C and observed for microbial growth. The Colony forming Unit (CFU's) were manually counted and tabulated as CFU/microlitre

RESULTS AND DISCUSSION

The swabs were taken from 20 different pilot lamps and given to microbiology department for culturing. From the result it is

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seen that micrococcus and streptococcus mutants are large in number. This study shows that the dental lamps used in dental clinic are contaminated with various microorganisms.

Sample	No. of CFU	Predominant organism	Sample	No of CFU	Predominant organism
1	3	Micrococcus	11	150	Micrococcus
2	14	Enterococcus	12	60	Enterococcus
3	4	Enterococcus	13	32	Aerobic spore bearer[ASB]
4	9	Aerobic spore bearer[ASB]	14	45	Micrococcus
5	30	Micrococcus	15	120	Strep. mutans
6	21	Staph albus	16	46	Micrococcus
7	27	Micrococcus	17	59	Enterococcus
8	9	Enterococcus, Micrococcus	18	75	Gram negative bacilli
9	4	Strep. mutans	19	7	Aerobic spore bearer[ASB]
10	11	Enterococcus	20	15	Enterococcus

These microorganisms can act as a possible source for transmission of infection to clinicians and patients. Micrococcus is the most predominant organism found in the dental lamp. Micrococcus occurs in a wide range of environments, including water, dust, and soil. In rare cases, death of immunocompromised patients has occurred from pulmonary infections caused by Micrococcus. Micrococci may be involved in other infections, including recurrent bacteremia, septic shock, septic arthritis, endocarditis, meningitis, and cavitating pneumonia (immunosuppressed patient). Micrococcus rarely causes infections and other complications in the body, but patients with compromised immune systems, like HIV patients, are prone to skin infections caused by Micrococcus luteus. These skin infections leads to pruritic eruptions on the skin in certain areas and scattered papule lesions with or without central ulceration (6).

The second predominantly found organism was enterococcus. Enterococci are facultative anaerobic organisms, i.e., they are capable of cellular respiration in both oxygen-rich and oxygen-poor environments.(7) Important clinical infections caused by *Enterococcus* include urinary tract infections, bacteremia, bacterial endocarditis, diverticulitis, and meningitis.(8,9) Sensitive strains of these bacteria can be treated with ampicillin, penicillin and vancomycin.(10) Urinary tract infections can be treated specifically with nitrofurantoin, even in cases of vancomycin resistance.(11)

Microorganisms can be present due to cross contamination. It can also be present due to aerosols from handpiece. Bacterial load can be reduced by proper maintenance by disposing the surface covers of the dental lamps and proper method for disinfecting.

CONCLUSION

Hence, bacterial load can be controlled by proper maintenance of the dental lamps and it can also be controlled by regular disposal of surface covers of dental lamps. And cross infections can also be prevented.

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