

Effect of Ultrasonic Scalers on Dental Plaque and Microbial Count .

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Abstract

Aim:

The goal of this study was to determine whether the effects of ultrasonic scalers has any microbial activity and finding the microbial count in the suspension .

Background:

The aim of periodontal therapy is to arrest periodontal infection and maintain a healthy periodontium .The hand instrument and ultrasonic scalers are valuable tool in the prevention of periodontal disease. Vibration produces medium disrupting of cells including bacterial cell so that ultrasonic scalers reduces the deposits &debris do really have any effects on disrupting the Bacteria In Mouth And In Vivo Study.

Material And Method:

The sample is collected after the periodontal treatment and it's transferred into the test tube ,then saline is added to sample and it's is then subcultured. The microbial count of the sample is proceed and it's is then subjected to vibration.

Reason:

Vibration produces disrupting of cells .The ultrasonic scaler cleans the deposits and debris on the teeth and it reduces the microbial effects.

Objective:

The aim of the study is to determine the anti bacterial effect of ultrasonic scaler by the way of mechanical disintegration and the quantum of reduction in the bacterial count.

INTRODUCTION:

Periodontal therapy is to arrest periodontal infection and maintain a healthy periodontium by periodic, mechanical removal of sub gingival microbial biofilm is essential for controlling inflammatory periodontal diseases. The vibration of scaler tip is the main effect to remove the deposit from the dental surface and then even have the effect on disrupting the bacteria in the mouth. Bacterial plaque products have been shown to be the main etiologic factors that are involved in the initiation and persistence of inflammatory periodontal disease. Mechanical reduction of supra and sub gingival plaque and calculus is therefore an essential component of periodontal therapy. This can be achieved by using hand instruments or machine driven instruments, e.g., ultrasonic scalers . For this types of instruments similar clinical treatment outcomes have been reported. In addition to their ability to remove dental plaque from tooth surfaces, ultrasonic scalers have been proposed to also have a bactericidal effect on plaque bacteria by cavitations . The mechanism of antibacterial effect of ultrasonic scalers is by the mechanism of disintegration and quantum of reduction in the bacterial count. If ultrasonic instruments are used with the water coolant, the temperature of pulp chamber will not increase more than 8°C. Otherwise, it can rise as much as 35°C resulting in irreversible pulpitis.

METHODOLOGY:

Scaler tip and cuvettes' are sterilized using a autoclave for 30min. enterococcus are subculture for 24 hrs at 37°C .The bacterial suspension was done with 0.5% mec farland preparation and it's was taken in an test tube. The enterococcus was grown on BHI agar overnight incubation

was made. The colonies were suspended in the saline to the turgidity matching 0.5% mec farland. To estimate the antibacterial effect of ultrasonic scalers , three groups of cuvettes were created. Each group contains 5cuvette all are filled with sterling saline. To all the cuvettes 10ml of enterococcus suspension were added from the prepared suspension.

In group I ,all the 5 cuvettes containing the bacteria suspension were subjected to ultrasonic vibration using a scaler for 10 seconds and in the II group 5 cuvette it was done for 20 seconds and in the III group ,the 5cuvette were exposed for 30 seconds. For each cuvettes 10ml of the suspension was transferred to brain -heart infusion agar and spread uniformly .The plate was incubated for 12 hours at 37degree Celsius aerobically.

RESULT:

The total number of count in the normal was found to be 960.

Sample	Colony count obtained during Intervals		
	10 Sec	20 Sec	30 Sec
1	650	554	468
2	669	530	520
3	588	620	524
4	542	611	690
5	569	520	489
Mean Value	603	567	498

Table Shows the Enterococcus Colonies After Subjected To Ultrasonic Vibration For 10s , 20 s,30 s.

In this study ,the group I cuvette were expose to 10 seconds and in group II the cuvette were exposed to 20 seconds ,and then group III the cuvettes were exposed to 30 seconds respectively .The enterococcus was taken as an indicator. The mean value of the colony count for 10 seconds was 603 and for 20 seconds 567, for 30 seconds 498.Hence there is a gradual reduction in the percentage count when compared to the normal count of the colonies when it was exposed to ultrasonic vibration.

DISCUSSION:

Periodontist is specializes in the prevention, diagnosis, and treatment of periodontal disease, and in the placement of dental implants. Periodontists often treat more problematic periodontal cases, such as those with severe gum disease or a complex medical history. Periodontists offer a wide range of treatments, such as scaling and root planning (in which the infected surface of the root is cleaned) or root surface debridement (in which damaged tissue is removed). They can also treat patients with severe gum problems using a range of surgical procedures. It will progress to demineralization of tooth and gingivitis. Sub gingival plaques normally develop because it is not physically removed by brushing. It has multiple etiology and it is poly microbial in origin. So one method of treatment is not

suitable in this situation using gel, physical removal direct of delivery and suitable anti micro agents are given. Physical removal is the most important step in treating periodontics damage. scaling is done to remove the hard plaque and necrotized tissue around the tooth. Scaling is done with ultrasonic scalers by means of ultrasonic vibration generated by the scalers .The ultrasonic vibration is usefully in removing the death and damage to the tissue. Apart from physical removal by scaling method the ultrasonic vibration will also produce mechanical disintegration of cells. This has been already documented in many studies. In this In vitro study it's demonstrated the ultrasonic vibration from the scalers is definitely reducing the bacterial load. The effective or the benefit is increased by duration of exposure from the baseline value. The percentage reduction in 10 seconds is 63% And for 20,30 seconds is 59%,52% respectively. The ultrasonic vibration generated during scaling is also contributing the reduction in the bacterial count during scaling procedures

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