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RESEARCH ARTICLE

EFFECT OF ANTI TARTAR (X TAR) TOOTHPASTE IN CALCULUS PREVENTION - A CLINICAL TRIAL

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ABSTRACT

Aim and objective: Assess the effect of anti tar toothpaste (X TAR) and its impact on calculus prevention. X tar toothpaste provides better action in calculus prevention when compared to mechanical removal alone.

Background: Dental calculus is composed of inorganic components and an organic matrix. Different calcium phosphates which include hydroxyapatite make up the mineral components of dental calculus. Mineralization of dental plaque can be delayed by the presence of crystallization inhibitors, such as pyrophosphate .The X TAR toothpaste consists of pyrophosphates which prevents the calculus formation. Our current study includes usage of anti tartar toothpaste in gingivitis patients after scaling and evaluated after 1 month

Result: This study showed that the use of x TAR toothpaste has its own action in calculus prevention with the help of pyrophosphates present in it.

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INTRODUCTION

Gingivitis means inflammation of the gingiva. It commonly occurs because of films of bacteria that accumulate on the teeth - plaque; this type is called plaque induced gingivitis. Periodontitis is defined as an inflammatory disease of supporting tissues of teeth caused by specific microorganisms or groups of specific microorganisms, resulting in progressive destruction of the periodontal ligament and alveolar bone with periodontal pocket formation, gingival recession or both (Adams *et al.,* 1995). Periodontitis is strongly associated with the presence of dental calculus on root surfaces. Dental calculus serves as an ideal substrate for sub gingival microbial colonization. Dental calculus is calcified mineralised plaque composed primarily of calcium phosphate mineral salts covered by an unmineralised bacterial layer [Adriaens P et al]. The calculus is formed due to the presence of microorganisms which lead to the inflammation of the tissues causing gingivitis. The formation of calculus is always preceded by the development of a bacterial biofilm, which constitutes the organic matrix for subsequent plaque calcification. Dental calculus is a bacterial plaque that has undergone mineralization due to the precipitation of mineral salts, although not all the plaque becomes calcified (Bakdash *et al.,* 2000). Saliva is the mineral source for calcification of supragingival calculus, while the gingival crevicular fluid provides minerals for the mineralization of sub gingival deposits.

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Dental plaque is a structurally organised biofilm that builds upon the teeth, which contains communities of disease causing germs and their uncontrolled accumulation has been associated with dental caries and gingival disease. Removal and reduction of biofilms can be mechanical and chemical means (Reshma rahman *et al.,* 2014). Plaque may be found below the gingival margin in the gingival sulcus or in the periodontal pocket and is termed subgingivalplaque. After tooth cleaning, the supragingival plaque along the gingival border of the teeth reaccumulates slowly during the following two days. The thickness of the plaque increases dramatically after the third day, to a maximum after seven days (Lakshmi menon *et al.,* 2014). The mineralization can be delayed by the use of inhibitors like pyrophosphates. The calculus which is formed can be removed by mechanical therapy and its recurrence can be prevented by agents like anti tartar toothpaste (Chikte *et al.,* 1992). Hence the study was planned to assess the effectiveness of anti tartar (x tar) paste in calculus prevention.

MATERIALS AND METHODS

This study was carried out in gingivitis patients with plaque and calculus. Totally 15 patients were selected for the study. The age criteria fall from 18-60 years. The calculus were removed by mechanical therapy and then anti tartar (x tar) toothpaste was prescribed to the patient and asked to brush for a period of one month. The proper brushing technique was taught to the patient prior giving the toothpaste. They were asked to brush and maintain their normal oral hygiene habits. The levels of calculus before scaling were measured and then

after a period of one month the calculus levels were again measured and the results were analysed. The OHI(S) index and volpe manhold index were used as parameters.

Proforma
Name: Age: SEX: M/F
OHI(S) Index

Debris Index

16	11	26
36	31	46

Calculus Index

16	11	26
36	31	46

OHI(S) Score

Volpe manhold index

43	42	41	31	32	33

RESULT

The obtained datas were analysed and the p value for each were noted and discussed below.

Table 1. The values obtained from the OHI(S) index

S.no	Before	After
1	1.3	0.5
2	3.3	0.7
3	2	0.5
4	2.5	0.6
5	1.5	0
6	1.6	0.6
7	1.8	0
8	2	0.3
9	1.1	0.2
10	1.7	0.7
11	1.9	0.5
MEAN	1.88	0.41

Table 2. The values obtained from volpe manhold index

S.no	Before	After
1	0.8	0.2
2	1.8	0.3
3	1.6	0.2
4	1	0
5	1	0
6	1.5	0
7	1.7	0
8	1	0
9	1.5	0
10	1.8	0.2
11	0.8	0
MEAN	1.31	0.08

Table 3. The p value and mean for the presence of calculus by the OHI(S) index

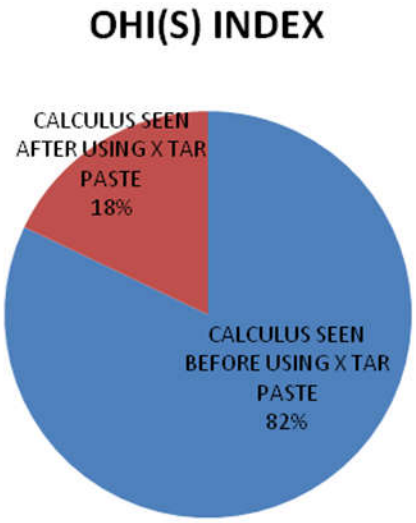
Presence of calculus	OHI(S) Index	P value
Before applying X tar toothpaste	1.88	0.009
After applying X tar toothpaste	0.41	

This result is significant that the p value is <0.1

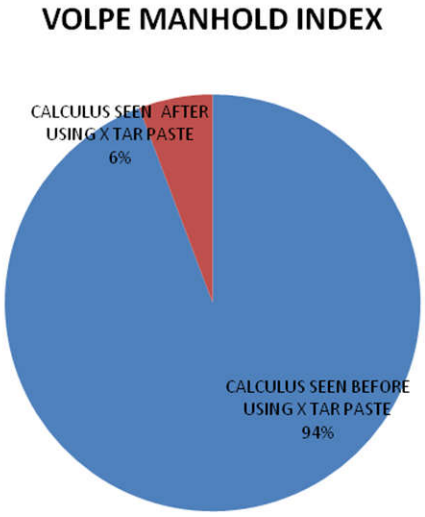
Table 4. The p value and mean for the presence of calculus by the volpe manhold index

Presence of calculus	Vople manhold Index	P value
Before applying X tar toothpaste	1.31	0.3
After applying X tar toothpaste	0.08	

This result is significant that the p value is <0.5



This graph shows that 82% of calculus was seen before using X TAR toothpaste and it has reduced to 18% after using X TAR toothpaste by the OHI(S) index.



This graph shows that 94% of calculus was seen before using X TAR toothpaste and it has reduced to 6% after using X TAR toothpaste by the volpe manhold index.

DISCUSSION

Periodontitis is one of the most common diseases affecting the teeth. The ultimate goal of periodontal therapy is to cure inflamed tissue, eliminate the diseased pockets and reduce the number of pathogenic bacteria (Chikte *et al.,* 1992). This may also contain plaque and calculus surrounding the tooth structure. Conventional therapy includes scaling. Complete removal of calculus is done by scaling and its recurrence can be prevented by the use of anti tartar toothpaste like X TAR toothpaste (White *et al.,* 1997). Significant reduction in calculus formation after using X TAR toothpaste. Mean OHI(S) value is 1.88 per operatively and 0.41 post operatively

and the reduction in OHI(S) scores are highly significant with the p value of 0.09. When compared with the other studies the average reduction in the calculus was around 1.2%by using the OHI(S) index (SCHIFF, 1987). This study shows some reduction in the calculus reduction and prevents further calculus formation. Mean Volpe manhold index value is 1.31 pre operatively and 0.08 post operatively and the reduction in volpe manhold scores are highly significant with the p value of 0.3. When compared with the other studies the average reduction in the calculus was around 0.8% by using the volpe manhold index (White *et al.,* 2000). The calculus seen before using the anti tartar toothpaste (X TAR)by using the OHI(S) index is 82% and the calculus levels after using the (X TAR) toothpaste was around 18%. This shows that there reduction in the calculus levels by the X TAR toothpaste, the pyrophosphates which is present helps in inhibiting the calculus formation. Pyrophosphates inhibit the formation of calcium phosphate crystals from saturated solutions and are in wide use as anticalculus agents. Formulations containing 3.3%-5% soluble pyrophosphate were effective in inhibiting calculus formation when used in dentifrices. The content of pyrophosphate in dentifrices is derived from pyrophosphate salts of sodium and/or potassium. The calculus seen before using the anti tartar toothpaste (X TAR) by using the volpe manhold index is 94%and the calculus levels after using the (X TAR) toothpaste was around 6%. This shows that there reduction in the calculus levels by the X TAR toothpaste.

Conclusion

The anti tartar effect of X TAR toothpaste helps in calculus prevention. This study shows that the calculus formation is inhibited by the X TAR toothpaste. The mineralization can be delayed by the use of inhibitors like pyrophosphates .Long term studies are required to assess the reliability of anti tartar toothpaste (X TAR).

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