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A Study to Verify the Efficacy of Fragaria Vesca in Removing the Tartar in Teeth

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Abstract

Dental calculus or tartar is a form of hardened dental plate. Dental calculus develops when non mineralized biofilms, extremely rich in oral bacteria, become mineralized with calcium phosphate mineral salts. These mineralized biofilms form both supragingivally and subgingivally. Fragaria vesca, commonly called wild strawberry, has the property of removing tartar from teeth. When compared using size scales, dental calculus before and after treatment was considerably reduced between two treatments. Similarly stain has also showed significant reduction. Comparative study with control group increased the transparency of effect of Fragaria vesca. Homoeopathic therapeutics is a concealed goldmine in field of Dentistry which should be fetched out.

Keywords: Dental calculus; Fragaria vesca

Introduction

In dentistry, calculus or tartar is a form of hardened dental plaque. It is caused by precipitation of minerals from saliva and gingival reticular fluid (GCF) in plaque on the teeth. This process of precipitation kills the bacterial cells within dental plaque, but the rough and hardened surface that is formed provides an ideal surface for further plaque formation. This leads to calculus build up, which compromises the health of the gingiva (gums). Calculus can form both along the gum line, where it is referred to as supra gingival ("above the gum"), and within the narrow sulcus that exists between the teeth and the gingiva, where it is referred to as sub gingival ("below the gum"). Calculus formation is associated with a number of clinical manifestations, including bad breath, receding gums and chronically inflamed gingiva. Brushing and flossing can remove plaque from which calculus forms; however, once formed, calculus is too hard (firmly attached) to be removed with a toothbrush. Calculus build-up can be removed with ultrasonic tools or dental hand instruments (such as a periodontal scalar). Dental calculus develops when non mineralized biofilms, extremely rich in oral bacteria, become mineralized with calcium phosphate mineral salts (23). These mineralized biofilms form both supragingivally and subgingivally (20). No mineralized dental biofilm entraps particles from the oral cavity, including large amounts of oral bacteria, human proteins, viruses and food remnants, and preserves their DNA. Fragariavesca, commonly called wild strawberry, is a perennial herbaceous plant in the Rose family that grows naturally throughout much of the Northern Hemisphere and that produces edible fruits. F. vesca contains the ellagitannin agrimoniin which is an isomer of sanguiin H-6. Acts on digestion and mesenteric glands. Prevents formation of calculi. Removes tartar from teeth and prevents attacks of gout. The fruit has refrigerant properties, strawberries produce symptoms of poisoning in certain susceptible individuals such as urticarial rashes here give Fragaria high potency. Part used: Ripped fruits and roots.

Materials and Methods

Source of data

Cases visiting our collegiate OPDs. POPULATION: 30 cases of dental calculus treated in OPDs of our collegiate hospital has been taken for detailed study.

Sampling

Judgemental sampling

Method of data collection

Data concerning the variation of dental calculus is assessed through a tool, visual analogue scale (VAS) for staining and calculating the calculus grading scale. Calculus grading scale is 5 points (0-4) numerical rating scales performs best to analyse the calculus intensity than descriptive method therefore VAS was preferred and staining scale is 14 point (1-14) numerical rating scale. The cases were recorded on our collegiate case record format. Patients were examined to qualify the calculus intensity in visual analogue scale and it was noted down and compared on second visit. Improvement criterions were mainly done on the basis of comparison of photographs. Follow-ups were done for a month. The inferences were drawn by analysing outcome. The method used in the study was clinical method and results obtained were scientifically analysed and evaluated.

Preparation of mouth wash

Mouth wash was prepared thoroughly mixing 2 parts of Fragaria Vesca Q with 8 parts of water (Figure 1).

Figure 1: *7 Medicated mouth wash.*

Preparation of tooth powder

Tooth powder was prepared by thoroughly mixing 2 parts of FragariaVesca Q with 8 parts of charcoal powder (Figure 2).

Figure 2: *8 Medicated tooth powder.*

Steps of Administration

Group 1

Step 1: Mouth is rinsed with water.
Step 2: Then rinsing is done with FragariaVesca mouth wash for 2minutes.
Step 3: Usual cleaning is done. The above steps will be repeated twice a day.

Group 2

Step 1: Mouth is rinsed with water.
Step 2: Then cleaning is done with FragariaVesca tooth powder for 2minutes.
Step 3: Usual cleaning is done. The above steps will be repeated twice a day. Patients are advised to visit the collegiate dental OP for cleaning purpose once in a week where cleaning will be done by the Dental Surgeon with FragariaVesca Q.

Assessment of Effectiveness

It was based on following criterion:

- Clinical assessment: disappearance or improvement of tartar
- Scoring chart based on the improvement criterion was formulated to access the efficacy of treatment. The pre and post treatment intensity scores were then statistically evaluated.

Selection of tools

- SKHMC case record format

Inclusion criteria

- Age between 19-59
- Both sexes.

Exclusion criteria

- Patients with other dental problems like dental carries

I selected 28 participants by judgemental sampling and respectively divided them into 2 groups. In first group, medicine was administered with mouth wash where water is used as vehicle while the second group was administered with tooth powder with charcoal powder as vehicle, with 14 participants in each group. Here 7 participants from each group is control group with single blinding.

Data Collection

Case

Name: Mr. X; Age: 26 yrs; Sex: Male; Address: Trivandrum (Figure 3,4).

Figure 3: *Evaluation using calculus grading scale.*

Result

The outcome of the study conducted in 28 cases of dental calculus is recorded here. These cases were followed for a minimum period of 1 month and results are mentioned below. Statistical analyses were done in order to test the significance of the pre-test and post-test scores (Table 1).

Table 1: *Data showing difference in the grade of calculus and stain, before and after in participants administered with medicine.*

GROUP IN MEDICINE IS ADMINISTERED				
Sl.No	**Calculus before**	**Calculus after**	**Stain before**	**Stain after**
1.	4	3	9	5
2.	3	2	6	4
3.	3	2	7	3
4.	4	3	8	4
5.	3	2	10	6
6.	2	2	8	4
7.	3	2	7	5
8.	4	2	10	4
9.	4	2	11	5
10.	3	2	9	4
11.	4	3	10	5
12.	3	2	8	4
13.	3	2	9	4
14.	2	2	7	3

Table 2: *Aetiology and comparison of calculus before and after and the results.*

SL NUMBER	T Test Of Unusual Variable	T TEST	PVALUE
1	Case Calculus	4.570037845	8.32E-05
2	Case Stain	9.428981782	2.68E-09
3	Control Calculus	0	0.5*
4	Control Stain	0	0.5*

Medicine was administered, and there was marked improvement in the patients administered with medicine as compared to the control group. The data were interrupted according to vehicle used, from aetiology and comparison of calculus before and after and the results are presented in tables and figures. The values of the test are given below (Table 2).

The p value of the t-test for dental calculus before and after treatment was 0.00000832which is extremely smaller than 0.001; which shows that there is considerable difference between two treatments at more than 99% level. Similarly p value of stain in tooth is 0.000000000268 which is smaller than 0.001which shows the values are more significant.

Testing of Hypothesis

For testing of hypothesis t-test for unequal variables is done. Here the P value for the group administered with medicine is <0.0001 for both calculus and stain, which implies the test is highly significant. While the P value of control group is 0.5, thus the null hypothesis is rejected and alternative hypothesis is accepted here.

Discussion

Among the 28 cases taken most of the participants were from the age group 18- 30. Generally it is found that the use of tobacco has been a major factor in the incident of dental calculus. The rate of calculus formation and the amount of calculus formed depends on multiple factors, including diet, especially alkaline foods and sugars, genetic variations in the salivary content and other factors, such as age, race, gender, and presence of disease and the bacterial load of the subject. 18 participants were confirmed

smokers and the remaining 10 had an affinity towards caffeinated beverages, however the incidents of dental calculus was even worse in smokers than in tea coffee drinkers. It's a known fact that people who smoke are more prone to dental problems as compared to others, but how severe and long lasting is it? Which is exactly the point of the research.

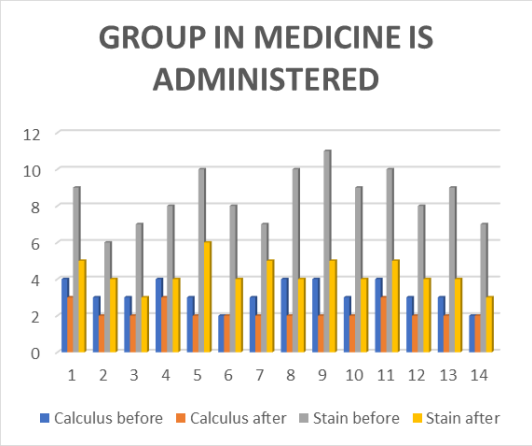

Figure 4: *Showing difference in the grade of calculus and stain, before and after in participants administered with medicine.*

Mineralised biofilms penetrated by crystals of various calcium phosphates, develop above or below the free gingival margin as moderately hard deposits that are white or yellow in colour. Most of the patients who took treatment never opted for homoeopathy in initial stage of disease as revealed by the deposition of calculus, so there is need to spread awareness about the potential of homoeopathy in treating such cases. Fragariavesca, commonly called wild strawberry, woodland strawberry, Alpine strawberry, etc. is a perennial herbaceous plant in the Rose family that grows naturally throughout much of the Northern Hemisphere and that produces edible fruits. F vesca contains the ellagitannin agrimoniin which is an isomer of sanguiin H-6. Acts on digestion and mesenteric glands. Prevents formation of calculi. Removes tartar from teeth and prevents attacks of gout. The fruit has refrigerant properties, strawberries produce symptoms of poisoning in certain susceptible individuals such as urticarial rashes here give Fragaria high potency. While our research point out the efficacy of FragariaVesca in removing dental calculus. Studies have also made the superiority of charcoal powder over the other vehicle used in the study. Participants who used tooth powder showed faster improvement based on calculus grading scale and scale of staining.

Conclusion

Among the 28 participants with dental calculus, sub gingival calculus deposits were found to be common. Out of which 18 were tobacco users and rest 10 were affected by over use of caffeinated beverages. Most of the cases were challenging due to the old dated deposition. Comparative study with control group increased the transparency of effect of FragariaVesca. Homoeopathic therapeutics is a concealed goldmine in field of Dentistry which should be fetched out.

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