Gingival fluid status in improperly restored and non restorated teeth

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ABSTRACT

Background: Gingival crevicular fluid is a characteristic feature of inflammatory periodontal diseases. The aim of the present study is to assess the gingival fluid flow level in restored and non restored teeth.

Methods: A total of 434 sites in 30 dental students were evaluated in this study. The participants ranged in age from (20-23y.) teeth selected for measurement were from the maxillary right second premolar to the maxillary left second premolar. The tested sites were divided into two groups of the first group (206 sites) is the experimental group with restoration and the second group (228 sites) is the control with no restoration. Student T-test was used where indicated, the level of significance was 0.001.

Results: The results demonstrated very high significant difference between the two groups.

Conclusion: The results indicate that gingival crevicular fluid in addition to other clinical Parameters were greater in restored teeth with overhang fillings than non restored teeth with a highly significant difference.

Keywords: Gingival fluid, restored teeth. (J Coll Dentistry 2005; 17(2) :77-79)

INTRODUCTION

Overhanging margins contribute to periodontal disease by providing ideal location for the accumulation of plaque & changing the ecologic balance of the gingival sulcus area to one that favor the growth of disease associated organisms(Gram –ve anaerobic species) at the expense of health associated organisms (Gram +ve facultative species) (1) a key objective in restorative dentistry is the reproduction of missing natural tooth contours. The procedures and properties of the materials used in this undertaking make preservation of the dento-epithelial junction a difficult task (2). Excessive crown contour is unfavorable to periodontium health. The more the teeth are excessively contoured, the more they impair periodontium. (3)

Clinical assessment of gingival inflammation depends on evaluation of changes in color, surface characteristics, texture, contour, consistency & bleeding tendency, these determinations are subjective & therefore susceptible to examiner variability. The flow of gingival fluid begins few days before other clinical signs of inflammation are evident since, clinical features are always preceded by histological changes within the gingival tissue (4).

The amount of gingival crevicular fluid is greater When inflammation is present, it means there is a positive relation between the flow of gingival fluid & the severity of inflammation which in turn may increase with overhang placement of restoration (5).

The aim of the present investigation is to compare the amount of gingival fluid flow from sulci nearby restored teeth with those nearby non restored teeth.

MATERIAL AND METHODS

A total of 434 sites in 30 dental students were evaluated in this study, their age ranged from (20-23 years) and they were in a good general health and had no history of periodontal surgery in the evaluated areas, teeth selected for measurement were from the maxillary right second premolar to the maxillary left second premolar, the tested sites were divided into two groups of (206) and (228) the first group is the experimental group and the second group is the control according to the presence or absence of a subgingival restoration, each participant was examined for the number of teeth with overhang restorations to be recorded as the experimental group, other sites with no restorations were recorded as the control group.

In each group the clinical parameters measured were:-

1- Gingival crevicular Fluid (GCF):-

This measurement was performed before taking the plaque index and gingival index readings to avoid any stimulation of sulcular fluid flow, the estimation was done by intracrevicular method of Brill (1962) (6) this technique was usually preceded by isolation of the area with cotton rolls and drying with air syringe then a standardized paper point size (30) was placed gently in each sulcus until resistance was met, each paper point was left in place for 3 minutes, then removed by a

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tweezers and stained with 0.2%- 2% alcoholic solution of ninhydrin, this staining was used for recording the wet area of the paper point since the staining makes the column more visible to be measured by a vernia to the nearest millimeter. The reaction of ninhydrin is specific for alfa-amino groups and gives a blue or purple color.

2- Plaque index (PLI)

This parameter was estimated on a scale of 0-3 according to Silness and Loe (1964)

3- Gingival Index (GI)

This parameter was estimated on a scale of 0-3 according to Loe and Silness (1963)

Results of the present study were analyzed by the following statistical methods:-

1- Descriptive statistic which include
   a- Arithmetic mean(X)
   b- Standard deviation (S.D.)
2- Inferential statistics

   This had been carried out by using student's "t" test to detect the comparative significance among the two groups.

RESULTS

The mean values of gingival crevicular fluid and gingival index in the first group which represent teeth containing subgingival overhanged restoration in comparison with the other group which represent normal teeth without any restorations are presented in table (1).

It indicates that the highest values of gingival fluid flow were obtained in areas with the most sever gingivitis, and the least amount of similar flow was obtained from the healthy areas that express the lowest scores of gingivitis. The difference was statistically significant (P<0.001).

Mean values for (PLI) scores were as well significantly more in the first group than in the second group that's indicate more plaque accumulation adjacent to badly made subgingival restorations than teeth have no restorations, table (1).

Table 1: The mean value of GCF, PLI, GI, of teeth with overhang restorations and non restored teeth

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Group (1)</th>
<th>Group (2)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>GCF</td>
<td>3.42</td>
<td>0.50</td>
<td>2.32</td>
</tr>
<tr>
<td>PLI</td>
<td>1.64</td>
<td>0.64</td>
<td>0.85</td>
</tr>
<tr>
<td>GI</td>
<td>1.55</td>
<td>0.59</td>
<td>0.80</td>
</tr>
</tbody>
</table>

P< 0.001 very high significant difference

DISCUSSION

The increase difference in gingival scores between teeth with subgingival restorations and non restored teeth in the present study was expected since that overhanging restorations of any material produce more inflammation and periodontal destruction than similar restorations exhibiting a close-fitting marginal adaptation, several studies concerning the correlation between the degree of gingival inflammation and the intensity of gingival fluid flow have noted a greater amount of crevicular fluid from patients with extensive restorations compared to clinically healthy non restored teeth these studies agree with the results of the present study, Measurement of gingival fluid flow from the gingival pocket was suggested by Brill he also discussed the influence of capillary circulation on the flow of this fluid which appear to be dilated as it represents the first indication of inflammatory changes within the gingival tissues these studies agree with the results of the present study, Measurement of gingival fluid flow from the gingival pocket was suggested by Brill he also discussed the influence of capillary circulation on the flow of this fluid which appear to be dilated as it represents the first indication of inflammatory changes within the gingival tissues.

The correlation between gingival fluid measurement with macroscopic and microscopic characteristics of gingival tissue was further studied in 1976 there is an increase in gingival fluid flow with increasing gingival index scores, the present study shows an agreement with these previous results, also it substantiates earlier reports demonstrating significant increase in inflammation associated with the presence of subgingival placement of restorations.

Stetler and Bissada in 1987 observed that teeth with subgingival restorations and narrow zones of attached gingiva showed statistically significant higher gingival scores than teeth having sub marginal restorations with wide zones of attached gingival with subsequent increase and decrease in gingival fluid flow related to gingival index scores further studies are needed which correlate the zone of attached gingiva with the rate of gingival crevicular fluid from gingiva adjacent to subgingivally placed restorations.

REFERENCE


