ASSESSMENT OF RISK FACTORS OF PERI-IMPLANTITIS

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ABSTRACT

Background: Peri-implant diseases are initiated by microbial dental biofilm similarly to periodontal diseases including gingivitis and periodontitis. The present study was conducted to assess risk factors of peri-implantitis.

Materials & Methods: 180 patients with 320 dental implants of both genders was included. History of diabetes, alcoholism and smoking habits were retrieved. A radiographical examination was done. Reason of Peri-implantitis was recorded.

Results: 110 males had 200 and 70 females had 120 dental implants. Out of 320 implants, 119 (37.1%) showed signs of peri-implantitis. Peri-implantitis was present in 24 smokers and 10 non-smokers, 23 diabetics and 12 non-diabetics, 35 alcoholics and 15 no-alcoholics. The difference found to be significant (P< 0.05).

Conclusion: Most common risk factors in patients with signs of peri-implantitis was alcoholism, smoking and diabetes.

Key words: Diabetes, Peri-implantitis, Smokers

I. INTRODUCTION

Peri-implant diseases are initiated by microbial dental biofilm similarly to periodontal diseases including gingivitis and periodontitis. Current literature supports that successful treatment of periodontal diseases can be achieved more handily; however, once the peri-implant supporting tissues are lost, then regeneration of soft and hard tissues could not be possible.1

Dental implant applications have become more frequent in order to treat both aesthetic and functional disorders caused by tooth loss. However, even if the implants can retain their presence in the mouth for a long time, the majority of the implants experience implant-related diseases.2 Peri-implant diseases are divided into two groups: Peri-implant mucositis and peri-implantitis. Peri-implant mucositis is identified as an inflammatory state which only affects soft tissue around implants. On the other hand, peri-implantitis affects both soft and hard tissue and is characterized with progressive loss of alveolar bone. There is growing interest for researchers to investigate the peri-implant diseases including both peri-implant mucositis and peri-implantitis because of increasing high prevalence.3

A number of risk factors for peri-implantitis have been identified in the literature, ranging from microbial biofilm retentive elements associated with the design of the implant-supported prosthesis, to systemic predispositions and environmental exposures such as pre-existing periodontitis, cigarette smoking.4 Strict disease definitions, accurate stratification of the study groups and control of the confounders are crucial points to design appropriate trials, in order to evaluate the impact of each single risk factor in promoting the development of this multifactorial pathology.5 The present study was conducted to assess risk factors of peri-implantitis.
II. MATERIALS & METHODS

The present study was conducted among 180 patients with 320 dental implants of both genders. Inclusion criteria were patients with history of dental implant insertion in last 5 years and those giving consent. Exclusion criteria were patients with >5 years of implant and those not willing to participate.

Demographic profile such as name, age, gender etc. was recorded in case history proforma. A routine clinical evaluation was performed. History of diabetes, alcoholism and smoking habits were retrieved. A radiographical examination was done. Reason of peri-implantitis was recorded. A bone loss of up to the 4th implant thread was considered to be a sign of peri-implantitis. A pocket depth beyond 4 mm and presence of bleeding on gingival probing was used as a clinical indication of peri-implantitis. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

III. RESULTS

Table I Distribution of patients

<table>
<thead>
<tr>
<th>Total</th>
<th>Number</th>
<th>Dental implants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>110</td>
<td>200</td>
</tr>
<tr>
<td>Female</td>
<td>70</td>
<td>120</td>
</tr>
</tbody>
</table>

Table I shows that 110 males had 200 and 70 females had 120 dental implants.

![Graph of Patient Distribution](chart.png)

Table II Prevalence of peri-implantitis

<table>
<thead>
<tr>
<th>Total</th>
<th>Peri-implantitis</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>320</td>
<td>119</td>
<td>37.1%</td>
</tr>
</tbody>
</table>

Table II shows that out of 320 implants, 119 (37.1%) showed signs of peri-implantitis.

Table III Presence of peri-implantitis and habits

<table>
<thead>
<tr>
<th>Habits</th>
<th>Variables</th>
<th>Peri-implantitis</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking</td>
<td>Present</td>
<td>24</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>Absent</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>Present</td>
<td>23</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>Absent</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Alcoholism</td>
<td>Present</td>
<td>35</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>Absent</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>
Table III, graph II shows that peri-implantitis was present in 24 smokers and 10 non-smokers, 23 diabetics and 12 non-diabetics, 35 alcoholics and 15 non-alcoholics. The difference found to be significant (P< 0.05).

Graph II: Presence of peri-implantitis and habits

Dental implants have become one of the main treatment options to replace missing teeth. However, in the last decades increasing cases of patients with clinical evidence of inflammation around peri-implant tissues has become widespread. Peri-implant inflammation is one of the most common complications of soft and hard tissues surrounding implants. Peri-implant mucositis is a reversible process of gingival inflammation induced by bacterial plaque. These peri-implant soft tissues have typical characteristics of redness, swelling and bleeding on probing without the loss of supporting bone. Dental implants perforate the mucosa and are continually exposed to oral microflora. Oral bacteria colonize dental implant surfaces and may form pathogenic bio-films. Peri-implantitis is a disease progressing around the implant that affects both soft and hard tissues and is accompanied by bone resorption. It is important to distinguish between the dynamic bone resorption that occurs from the bone remodeling following osseointegration and loading compared to the resorption that causes bone loss following a biological complication. A number of risk factors for peri-implantitis have been identified in the literature, ranging from microbial biofilm retentive elements associated with the design of the implant-supported prosthesis, to systemic predispositions and environmental exposures such as pre-existing periodontitis, cigarette smoking. The present study was conducted to assess risk factors of peri-implantitis.

In this study, 110 males had 200 and 70 females had 120 dental implants. Pal et al included 160 patients who had received a missing tooth replacement in the form of a dental implant at least 3 years prior to the commencement of this study. Based on the age the patients were divided into 2 groups: Group 1: 25-45 years of age and Group 2: 46-65 years of age. Their pre-treatment and immediate post treatment clinical and radiographic records were collected. Prevalence of peri-implantitis was based on radiographic and clinical evaluation. Out of 160 patients who were included in this study, 18 developed peri-implantitis. The percentage of patients who developed periodontitis was 11.25%. The data collected showed that old age was a significant risk factor for the development of peri-implantitis. Diabetes and smoking both proved to be a predominant risk factor. 72.22% and 66.67% of the patients who developed peri-implantitis had diabetes and a history of smoking respectively. Out of 18 patients who developed peri-implantitis, 13 had a previous history of periodontitis as well.

We found that out of 320 implants, 119 (37.1%) showed signs of peri-implantitis. Kochar et al included 125 patients who received 240 dental implants in last 1 year of both genders. Diabetic status, alcoholism and smoking
habits were retrieved from case history proforma. Out of 125 patients, males were 75 and females were 50. Males had 135 and females had 105 dental implants. Among smokers, 15 had Peri-implantitis, non smokers had 4, alcoholics had 8, non alcoholics had 2, diabetic had 5 and non-diabetic had 1. The difference was significant (p< 0.05).

We observed that peri-implantitis was present in 24 smokers and 10 non-smokers, 23 diabetics and 12 non-diabetics, 35 alcoholics and 15 no-alcoholics. Gunpinar et al\textsuperscript{12} in their study 41.1\% (n = 157) and 36.9\% (n = 84) of patients had mucositis and peri-implantitis, respectively. 53.6\% (n = 758) of implants (95\%CI 80.2–90.4) had mucositis, and 21.7\% (n = 307) had peri-implantitis. Patients with a maintenance < 2/year (OR = 2.576), having periodontitis (OR = 3.342) and higher PI (OR = 3.046) had significant associations with the development of peri-implant mucositis. Significant ORs were determined for peri-implantitis with patients having maintenance < 2/year (OR = 2.048), having number of implants ≥ 4 (OR = 2.103), diagnosed with periodontitis (OR = 3.295), and higher PI (OR = 7.055). Keratinized tissue width < 2 mm (ORs = 5389/8.013), PPD (ORs = 1.570/8.338), PI (ORs = 6.726/5.205), and BoP (ORs = 3.645/4.353) independent variables were significantly associated with both peri-implant mucositis and peri-implantitis at implant level, respectively.

The shortcoming of the study is small sample size.

V. CONCLUSION

Authors found that most common risk factors in patients with signs of peri-implantitis was alcoholism, smoking and diabetes.

REFERENCES