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Analysis for predicting the prevalence and risk factors of peri-implantitis

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Abstract

Background: Peri-implant disease at functional osseointegrated implants comprises of pathologies of infectious nature: peri-implant mucositis, and peri-implantitis. Hence; the present study was undertaken for predicting the prevalence and risk factors of peri-implantitis.

Materials & methods: A total of 239 patients who underwent dental implants procedure for missing maxillary first permanent molars were included in the presents study. Complete demographic and clinical details of all the patients were obtained. All the dental implant procedures were carried out under local anaesthesia under proper septic conditions. Follow-up was done in all the patients and both clinical and radiographic examination was carried out. Prevalence of peri-implantitis and its various risk factors were evaluated.

Results: Prevalence of peri-implantitis was found to be 8.36 percent (20 patients out of 239 patients). Smoking habit was found to be present in 75 percent of the patients with peri-implantitis. 70 percent of the patients with peri-implantitis were diabetic. Fully acid etched dental implant surface was present in 55 percent of the patients with peri-implantitis.

Conclusion: Peri-implantitis is not a prevalent complication of dental implant therapy. Also, apart from diabetes and smoking, no other true risk factor of peri-implantitis could be established from above results.

Keywords: Peri-implantitis, Risk factors

Introduction

The introduction of dental implants to replace missing teeth initiated a revolution in modern dentistry in the 1980s. Nowadays, osseointegrated dental implants have found wide acceptance in prosthetic rehabilitation. As the global number of dental implants increases, complications and failures of dental implants are considered a major and growing problem. Various systemic or local circumstances may negatively affect the predictability of dental implants, leading to peri-implant inflammation, bone resorption and, ultimately, implant loss^[1-3].

Peri-implant disease at functional osseointegrated implants comprises of pathologies of infectious nature: peri-implant mucositis, affecting the peri-implant soft tissues, and peri-implantitis, which is accompanied by an additional loss of peri-implant bone. Clinical diagnostic parameters for peri-implant mucositis are signs of mucosal inflammation such as bleeding on probing (BOP), redness and edema, whereas peri-implantitis is accompanied by an additional loss of peri-implant bone. Considering that treatment of peri-implantitis is restrained, challenging and costly, preventive maintenance seems to be one of the key factors to reduce its incidence and thus increase implant success rates^[4-6]. Hence; the present study was undertaken for predicting the prevalence and risk factors of peri-implantitis.

Materials and Methodology

The present study was conducted with the aim of assessing the prevalence and risk factors of peri-implantitis. A total of 239 patients who underwent dental implants procedure for missing maxillary first permanent molars were included in the presents study. Complete demographic and clinical details of all the patients were obtained. All the dental implant procedures were carried out under local anaesthesia under proper septic conditions. Follow-up was done in all the patients and both clinical and radiographic examination was carried out. Criteria described previously in the literature were used for diagnosing peri-implantitis. Prevalence of peri-implantitis and its various risk factors were evaluated. All the results were recorded in

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Microsoft excel sheet and were analysed by SPSS software.

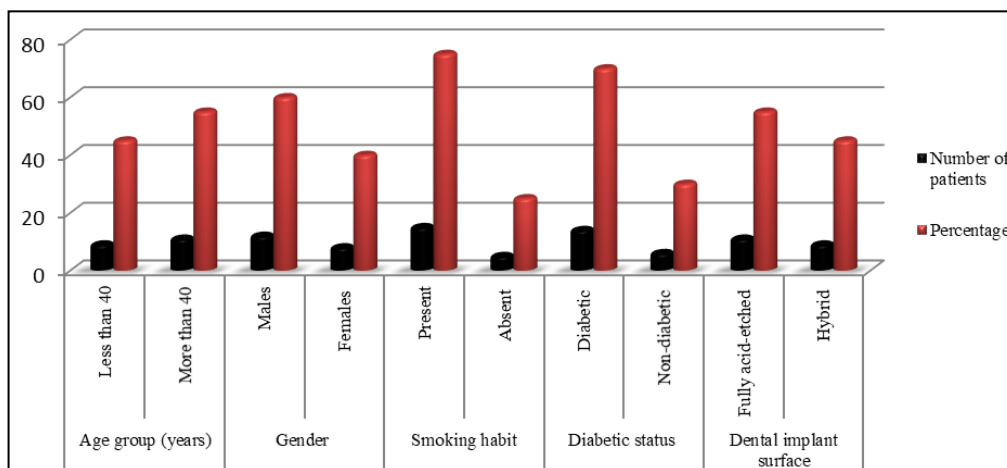
Results

In the present study, prevalence of peri-implantitis was found to be 8.36 percent (20 patients out of 239 patients). 45 percent of the patients with peri-implantitis belonged to the age group of less than 40 years. 60 percent of the patients with peri-implantitis were males while the remaining were females. Smoking habit was found to be present in 75 percent of the

patients with peri-implantitis. 70 percent of the patients with peri-implantitis were diabetic. Fully acid etched dental implant surface was present in 55 percent of the patients with peri-implantitis.

Table 1: Prevalence of peri-implantitis

Peri-implantitis	Number of patients	Percentage
Present	20	8.36
Absent	219	91.64



Graph 1: Risk factors of peri-implantitis

Discussion

Over the last decades, the use of implant-supported dental rehabilitations has known a significant increase. Despite a high overall success rate, various risk factors can negatively affect the predictability of dental implants, leading to peri-implant tissue inflammation, bone resorption and, ultimately, to implant loss. Among them, history of periodontal disease and smoking habits have often been identified as conditions favouring the onset of peri-implant pathologies. Studying the prevalence of peri-implant disease and investigating the roles played by the vast array of associated risk factors in the onset and progress of peri-implantitis is of crucial importance for the development of dental-implant management programs and the establishment of periimplantitis prevention and treatment protocols. These protocols should have a major and positive impact on the over-all implant success rate and the predictability of dental implant therapies [7-9]. Hence; the present study was undertaken for predicting the prevalence and risk factors of peri-implantitis.

In the present study, prevalence of peri-implantitis was found to be 8.36 percent (20 patients out of 239 patients). Stacchi C *et al.*, evaluated whether history of periodontitis and smoking habits could represent a risk factor for peri-implantitis and implant loss. Their systematic review followed PRISMA guidelines and was registered at the PROSPERO database [registration numbers CRD42016034160 (effect of history of periodontitis) and CRD42016033676 (effect of smoking)]. Broad electronic (MEDLINE) and manual searches were conducted among articles published from January 1st 1990 up to December 31st 2015, resulting in 49332 records for history of periodontitis and 3199 for smoking habits. Selection criteria included prospective studies comparing two cohorts of patients, with and without the investigated risk factor, with a minimum follow-up period of three years, and reporting data on peri-implantitis and implant loss occurrence. Three studies evaluating history of periodontitis (on which quantitative analysis was performed) and one study on smoking effect were included. Both implant and patient-based meta-analyses

revealed a significantly higher risk of developing peri-implantitis in patients with a history of periodontitis compared with periodontally healthy subjects, but not a statistically significant increased risk for implant loss. The outcomes of this systematic review indicate history of periodontitis as a possible risk factor for peri-implantitis, while insufficient data are present in literature to evaluate the role of smoking [9].

In the present study, 45 percent of the patients with peri-implantitis belonged to the age group of less than 40 years. 60 percent of the patients with peri-implantitis were males while the remaining were females. Claudio Marcantonio *et al.*, estimated the prevalence of peri-implantitis, as well as to determine possible risk factors associated with its development in patients treated with oral implants. A great variation has been observed in the literature regarding the prevalence of peri-implantitis according to the diagnostic criteria used to define peri-implantitis. The prevalence ranges from 4.7 to 43% at implant level, and from 8.9 to > 56% at patient level. Many risk factors that may lead to the establishment and progression of peri-implantitis have been suggested. There is strong evidence that presence and history of periodontitis are potential risk factors for peri-implantitis. Cigarette smoking has not yet been conclusively established as a risk factor for peri-implantitis, although extra care should be taken with dental implant in smokers. Other risk factors, such as diabetes, genetic traits, implant surface roughness and presence of keratinized mucosa still require further investigation. Peri-implantitis is not an uncommon complication following implant therapy. A higher prevalence of peri-implantitis has been identified for patients with presence or history of periodontal disease and for smokers [10]. In the present study, smoking habit was found to be present in 75 percent of the patients with peri-implantitis. 70 percent of the patients with peri-implantitis were diabetic. Fully acid etched dental implant surface was present in 55 percent of the patients with peri-implantitis. Marcantonio C *et al.*, determined possible risk factors associated with its development in patients treated with oral implants. A great

variation has been observed in the literature regarding the prevalence of peri-implantitis according to the diagnostic criteria used to define peri-implantitis. The prevalence ranged from 4.7 to 43% at implant level, and from 8.9 to $\geq 56\%$ at patient level. Many risk factors that may lead to the establishment and progression of peri-implantitis have been suggested. There was strong evidence that presence and history of periodontitis are potential risk factors for peri-implantitis ^[11].

Conclusion

From the above results, the authors conclude that Peri-implantitis is not a prevalent complication of dental implant therapy. Also, apart from diabetes and smoking, no other true risk factor of peri-implantitis could be established from above results.

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