

Evaluation Of Effect Of Diabetes And Smoking On Prognosis Of Dental Implants- A Clinical Study

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ABSTRACT

Background: *The risk factors for implant are due to surgical procedure and patient characteristics. The present study was conducted to assess effect of diabetes and smoking on prognosis of dental implants.*

Materials & Methods: *120 patients who received dental implants in last 2 years were divided into 4 groups of 30 each. Group I were smokers and non- diabetic, group II were diabetic and non- smokers, group III were smokers and diabetics and group IV were controls. Success rate of dental implants were assessed.*

Results: *There were 18 males and 12 females in group I, 14 males and 16 females in group II, 13 males and 17 females in group III and 15 males and 15 females in group IV. There were 24 successful implants in group I, 23 in group II, 23 in group III and 28 in group IV. The difference was significant ($P < 0.05$).*

Conclusion: *Success rate was highest among healthy as compared to diabetics and smokers.*

Key words: *Dental implants, Diabetes, Smokers*

1. INTRODUCTION

An osseo-integrated implant used to replace missing teeth is gaining widespread public demand. These implants are made up of biocompatible materials.¹ Several authors have reported the long-term success of implant treatment; however, still implants are prone for failure which creates problem to dentist as well as patients. In general, implant failure is defined as the mobility of the implant during osseointegration or postoperative loading.² The risk factors for implant are due to surgical procedure (type of implant, location, time lapse between tooth removal and implant placement, and loading) and patient characteristics (smoking, oral hygiene, uncontrolled diabetes, and alcohol consumption).³

Diabetes is a risk factor for periodontitis, which appears to develop at least twice as often in diabetics as in populations without diabetes. In addition, periodontal infection can affect glycaemic control in diabetic patients.⁴ These coexisting conditions can lead to the gradual loss of tooth attachment to alveolar bone, resulting in tooth loss. Various studies report a failure rate of implants in smokers compared to nonsmokers, ranging from 6.5% to 20%. The negative impact of tobacco smoking in implant outcome may be related to multiple factors and their mechanism may be mediated through both local and systemic biologic routes.⁵ Bain and Moy⁶ concluded that both systemic and local injury to the tissues occurs with smoking and which is a common cause for decrease in tissue oxygenation, which in turn affects wound healing. Heitz-Mayfield and Huynh-Ba⁷ from systematic review found an increased risk of peri-implantitis in smokers over nonsmokers. It has been observed that 1.69 times greater implant failures in smokers than in non smokers. The present study was conducted to assess effect of diabetes and smoking on prognosis of dental implants.

2. MATERIALS & METHODS

The present retrospective study comprised of 120 patients who received dental implants in last 2 years of both genders. All were informed regarding the study and their written consent was obtained.

Particulars of the patients such as name, age, gender etc. was recorded. Patients were divided into 4 groups of 30 each. Group I were smokers and non- diabetic, group II were diabetic and non- smokers, group III were smokers and diabetics and group IV were controls. Patients were recalled regularly as assessed clinically and radiographically using digital intraoral radiographs. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

3. RESULTS

Table I Distribution of patients

Groups	Group I	Group II	Group III	Group IV
Status	Smokers and non- diabetic	Diabetic and non- smokers	Smokers and diabetics	Healthy
M:F	18:12	14:16	13:17	15:15

Table I shows that there were 18 males and 12 females in group I, 14 males and 16 females in group II, 13 males and 17 females in group III and 15 males and 15 females in group IV.

Graph I Distribution of patients

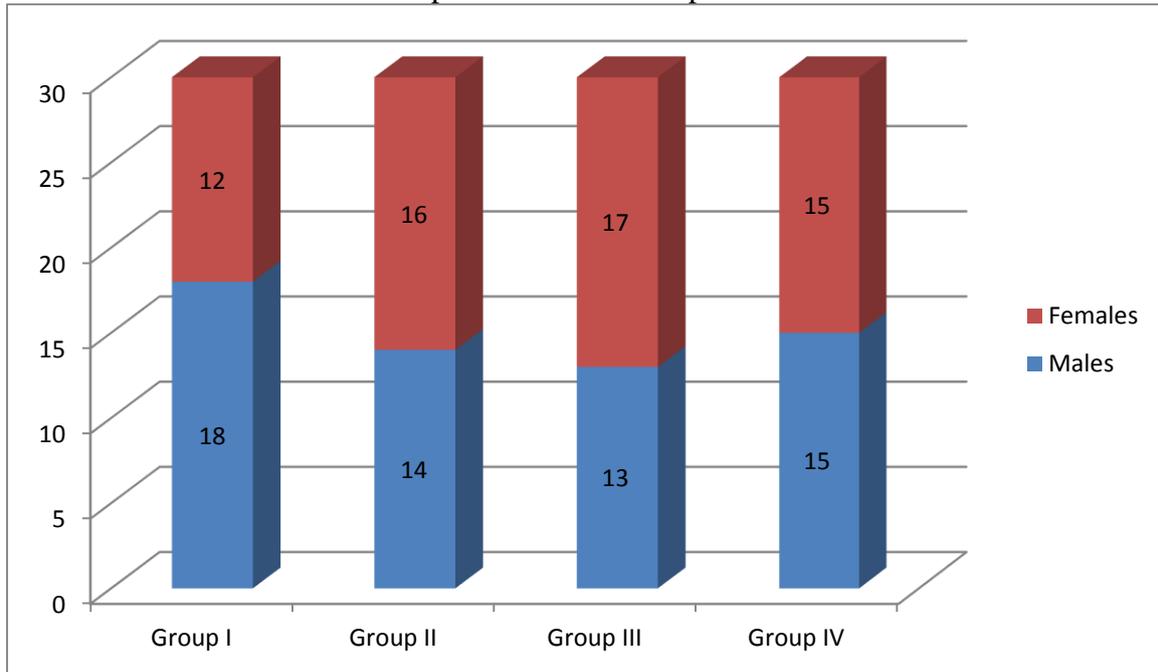
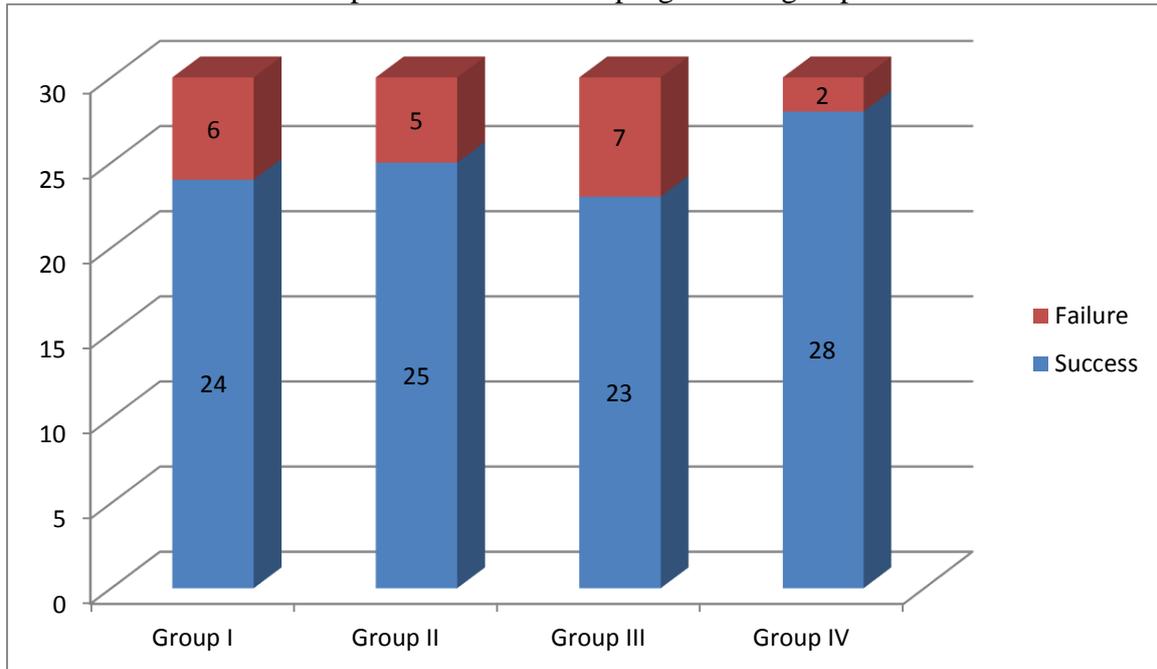


Table II Assessment of prognosis in groups

Groups	Success	Failure	P value
Group I	24	6	0.021
Group II	25	5	
Group III	23	7	
Group IV	28	2	

Table II, graph II shows that there were 24 successful implants in group I, 23 in group II, 23 in group III and 28 in group IV. The difference was significant ($P < 0.05$).

Graph II Assessment of prognosis in groups



4. DISCUSSION

Success rate of implant depends on many factors including oral hygiene, operator skill, implant material (type and length) used, bone quality and quantity, occlusal load, absence of medical conditions, and personal oral habit such as smoking.⁸ For implant success, immunological and genetic factors such as tumor necrosis factor- α and interleukin-1 β have been recognized as markers.⁹ Previously, success of implant was assessed by the absence of mobility and apical radiolucency. However, presently, the width of the attached gingiva, associated medical problems, smoking, and width of the implant can be considered as key factors in assessing the success of implant. Goutam et al¹⁰ from the systematic review observed that smokers have greater chances of implant failure and complications compared to non-smokers. The present study was conducted to assess effect of diabetes and smoking on prognosis of dental implants.

In present study, there were 18 males and 12 females in group I, 14 males and 16 females in group II, 13 males and 17 females in group III and 15 males and 15 females in group IV. Saini et al¹¹ in their study a total of 60 patients were enrolled. The patients were categorized into four groups: Group 1: 15 patients who were non-diabetics but were chronic smokers, Group 2: 15 patients who were diabetics but were non smokers, Group 3: 15 patients who were diabetics and were also chronic smokers, Group 4: 15 patients who were non-diabetics and non smokers. All the demographic details of the patients were recorded. The patients were evaluated every month for a duration of 6 months after implant loading to check for signs of bone loss and implant failure. Preoperative and follow up radiographs were collected and compared. In the current study 29 patients were below 35 years of age whereas 31 patients were above 35 years of age. Out of 60 patients 34 were males and the rest 26 were females. Out of 15 cases of implants in group 1, there was failure in 4 cases. Number of cases of implant failures in group 2, 3 and 4 were 3, 6 and 1 respectively. In the current study the statistical analysis showed that difference in the success rate of implants was statistically significant between groups 1 and 3, group 1 and 4, group 2 and 3, group 3 and 4. However the results were not significant between the groups 1 and 2, groups 2 and 4 with P-values of 0.86, and 0.58 respectively.

We found that there were 24 successful implants in group I, 23 in group II, 23 in group III and 28 in group IV. Kumar et al¹² in their study a total of 200 subjects were enrolled and were divided into four study groups with 50 patients in each group as follows: Group 1: Smokers and non-diabetic Group 2: Diabetic and non-smoker, Group 3: Smokers and diabetic, and Group 4: Controls. Only those patients were enrolled who had missing mandibular first permanent molar and were scheduled to undergo prosthetic rehabilitation by dental implants. All the dental implant procedures were commenced under the hand of skilled and experienced surgeons. Follow-up was done upto a time period of 2 years and prognosis of dental implants was recorded. Success rate of dental implants among patients of group 1, group 2, group 3 and group 4 was found to be 82%, 94%, 80% and 96% respectively. Significant results were obtained while comparing the prognosis of dental implants among group 1 and group 2, group 1 and group 4, group 2 and group 4, and group 3 and group 4 respectively.

5. CONCLUSION

Authors found that success rate was highest among healthy followed by diabetics, smokers and combination of diabetic and smokers together.

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