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Evaluation Of Effect Of Diabetes AndSmoking On Prognosis Of Dental Implants- AClinicalStudy

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ABSTRACT
Background:Theriskfactorsforimplantareduetosurgicalprocedureandpatientcharacteristics. The present study was conducted to assess effect of diabetes and smokingonprognosis of dentalimplants.
Materials & Methods: 120 patients who received dental implants in last 2 years weredivided into 4 groups of 30 each. Group I were smokers and non- diabetic, group II werediabetic and non- smokers, group III were smokers and diabetics and group IV werecontrols.Success rate of dental implants wereassessed.
Results: There were 18 males and 12 females in group I, 14 males and 16 females in groupII, 13 males and 17 females in group III and 15 males and 15 females in group IV. Therewere 24 successful implants in group I, 23 in group II, 23 in group III and 28 in group IV.Thedifferencewas significant (P< 0.05).
Conclusion:Successratewashighestamonghealthyascomparedtodiabeticsandsmokers.

Keywords:Dentalimplants, Diabetes,Smokers

1. INTRODUCTION

Anosseo-integratedimplantusedtoreplacemissingteethisgainingwidespreadpublicdemand. These implantsare made upof biocompatible materials.[1]Severalauthorshavereported the long-term success of implant treatment; however, still implants are prone forfailure which creates problem to dentist as well as patients. In general, implant failure isdefined as the mobility of the implant during osseointegration or postoperative loading.[2] Therisk factors for implant are due to surgical procedure (type of implant, location, time lapsebetweentoothremovalandimplantplacement,andloading)andpatientcharacteristics(smoking,oral hygiene,uncontrolled diabetes,andalcohol consumption).[3]

Diabetes is a risk factor for periodontitis, which appears to develop at least twice as often indiabetics as in populations without diabetes. In addition, periodontal infection can affectglycaemic control in diabetic patients.[4]These coexisting conditions can lead to the gradualloss of tooth attachment to alveolar bone, resulting in tooth loss. Various studies report afailure rate of implants in smokers compared to nonsmokers, ranging from 6.5% to 20%. Thenegative impact of tobacco smoking in implant outcome may be related to multiple factorsandtheirmechanism maybemediated throughboth local and systemicbiologic routes.[5]
Bain and Moy[6] concluded that both systemic and local injury to the tissues occurs withsmoking and which is a common cause for decrease in tissue oxygenation, which internaffectswoundhealing. Heitz-MayfieldandHuynh-Ba[7]fromsystematicreviewfoundanincreased risk of peri-implantitis in smokers over nonsmokers. It has been observed that 1.69timesgreaterimplantfailuresinsmokersthaninnonsmokers.
Thepresentstudywasconductedto assesseffectof diabetes andsmokingon prognosisof dental implants.

2. MATERIALS&METHODS

The present retrospective study comprised of 120 patients who received dental implantsinlast 2 years of both genders. All were informed regarding the study and their written consentwasobtained.
Particulars of the patients such as name, age, gender etc. was recorded. Patients were dividedinto 4 groups of 30 each. Group I were smokers and non- diabetic, group II were diabetic andnon- smokers, group III were smokers and diabetics and group IV were controls.Patientswere recalledregularly as assessedclinically and radiographically using digitalintraoralradiographs.Resultsthusobtainedweresubjectedtostatisticalanalysis.Pvaluelesst han
0.05wasconsideredsignificant.

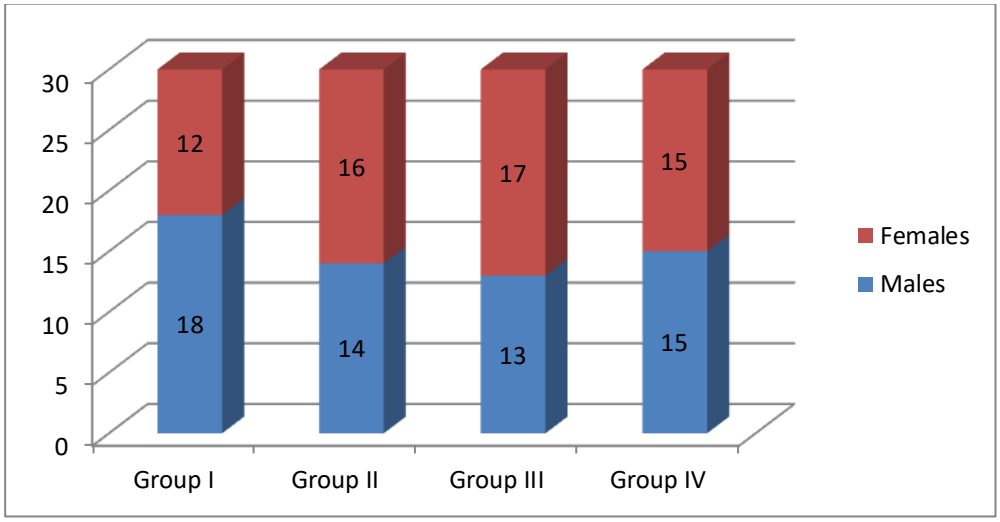
3. RESULTS

Table IDistributionofpatients

Groups	**GroupI**	**GroupII**	**GroupIII**	**GroupIV**
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 ingroupII,13malesand17femalesingroup IIIand 15malesand15femalesingroupIV.

GraphIDistribution ofpatients

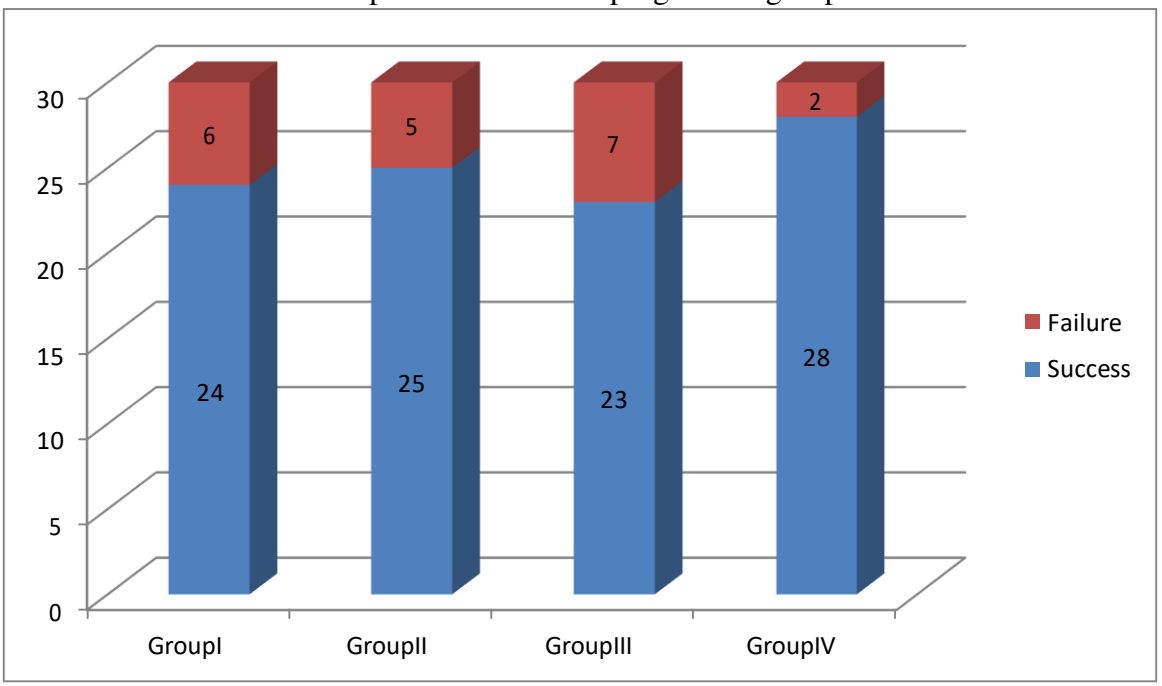


TableIIAssessmentofprognosisingroups

Groups	Success	Failure	Pvalue
GroupI	24	6	0.021
GroupII	25	5	
Group III	23	7	
GroupIV	28	2	

TableII,graphIIshowsthattherewere24successfulimplantsingroupI,23ingroupII,23ingroupIIIand 28 ingroupIV. Thedifference was significant (P<0.05).

Graph IIAssessmentofprognosisin groups



4. DISCUSSION

Success rate ofimplant depends on many factors including oral hygiene, operator skill,implant

material (type and length) used, bone quality and quantity, occlusal load, absence ofmedicalconditions,andpersonaloralhabitsuchassmoking.[8] Forimplantsuccess,immunological and genetic factors such as tumor necrosis factor-α and interleukin-1β havebeen recognized as markers.[9] Previously, success of implant was assessed by the absence ofmobility and apical radiolucency. However, presently, the width of the attached gingiva,associated medical problems, smoking, and width of the implant can be considered as keyfactorsinassessingthesuccessofimplant.Goutametal[10] fromthesystematicreviewobserved that smokers have greater chances of implant failure and complications compared tonon-smokers. The present study was conducted to assess effect of diabetes and smoking onprognosisof dental implants.

In present study, there were 18 males and 12 females in group I, 14 males and 16 females ingroupII,13malesand17femalesingroupIIIand15malesand15femalesingroupIV.Sainiet al[11] in their study a total of 60 patients were enrolled. The patients were categorizedinto 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 whowere diabetics and were also chronic smokers, Group 4: 15 patients who were non-diabeticsand non smokers.Allthe demographic detailsof the patientswere recorded. Thepatientswere evaluated every month for a duration of 6 months after implant loading to check forsigns of bone loss and implant failure. Preoperative and follow up radiographs were collectedand compared. In the current study 29 patients were below 35years of age whereas 31patients were above 35 years of age. Out of 60 patients 34 were males and the rest 26 werefemales. Out of 15 cases of implants in group 1, there was failure in 4 cases. Number of casesof implant failures in group 2, 3 and 4 were 3, 6 and 1 respectively. In the current study thestatistical analysis showed that difference in the success rate of implants was statisticallysignificant betweengroups 1 and 3, group 1 and 4, group 2 and 3,group3 and 4. Howeverthe results were not significant between the groups 1 and 2, groups 2 and 4 with P-values of0.86,and 0.58 respectively.

We found that there were 24 successful implants in group I, 23 in group II, 23 ingroup IIIand 28 in group IV.Kumar et al[12] in their study a total of 200 subjects were enrolled andwere divided into four study groups with 50 patients in each group as follows: Group 1:Smokersandnon-diabeticGroup2:Diabeticandnon-smoker,Group3:Smokersanddiabetic,andGroup4:Controls.Onlythosepatientswereenrolledwho hadmissingmandibular first permanent molar and were scheduled to undergo prosthetic rehabilitation bydental implants. All the dental implant procedures were commenced under the hand of skilledand experienced surgeons. Follow-up was done upto a time period of 2years and prognosisof 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 amonggroup 1 and group 2, group 1 and group 4, group 2 and group 4, and group 3 and group 4respectively.

5. CONCLUSION

Authors found that success rate was highest among healthy followed by diabetics, smokersandcombination ofdiabeticand smokers together.

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