



COMPARISON OF DENTAL IMPLANTS FAILURES IN DIABETICS AND HEALTHY SUBJECTS

Dental Science

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ABSTRACT

Introduction: Diabetes mellitus is known to compromise the various aspects of homeostasis, including the immune response and the composition of oral microflora. One of the oral manifestations of diabetes mellitus is tooth loss and the survival rate of dental implants chosen as a treatment modality for its rehabilitation is controversial. The present study was conducted to assess failure rate of dental implant in Diabetics and healthy subjects.

Materials & methods: 54 Diabetics (group I) and equal number of healthy subjects (group II) who received dental implant in last 5 years of both genders were recruited. Amount of bone loss around the implant over 1 mm of bone loss in the first year and over 0.3 mm bone loss every subsequent year were considered as failures.

Results: Group I consisted of 54 patients (Diabetics) with 76 dental implants. Group II consisted of 54 patients (healthy subjects) with 78 implants. In group I, there were 16 and in group II, there were 3 dental implant failures. At first year, in group I, mean bone loss around implant was 1.21 mm and 0.5 mm in group II. Unto 5 years, in group I, mean bone loss around implant was 2.7 mm and 1.4 mm in group II. The difference was significant ($p < 0.05$). **Conclusion:** Diabetics had higher dental implant failure rates as compared to healthy subjects.

KEYWORDS

Dental implant, Failure, Diabetic

INTRODUCTION

Dental implant (DI) is generally considered to be the ideal treatment of the tooth loss. The reason of tooth loss can be dental caries, periodontal diseases etc. This loss of teeth is mostly commonly in the aged population.¹ The best treatment modality for replacement of teeth is dental implant therapy. The prevalent age-range for implant therapy has been reported above 40 years or between 51 and 60 years, thus the patients who required dental implant therapy are usually associated with systemic comorbidities.²

A success rate of 90%-95% has been reported over the 10 years. Pain, infection and hemorrhage and occasionally neuropathy are early complications of implant. The success of dental implant therapy depends on several factors. Implants have got failure rates also. The reasons for implants failure are lack of osseointegration during early healing, infection of the peri-implant tissues and breakage. Among all, general condition of oral cavity is most common.³

Diabetes mellitus (DM) is a pandemic disease with an alarming growth rate⁴. In recently published (2017) statistics on the planetary burden of DM by the International Diabetes Federation (IDF), there are about 425 million adults living with diabetes, and this is estimated to go up to 629 million by 2045⁵.

The present study was conducted to assess failure rate of dental implant in Diabetics and healthy subjects.

MATERIALS & METHODS

This study was conducted among 54 Diabetics and equal number of healthy subjects who received dental implant in last 5 years of both genders. All were informed regarding the study and their consent was obtained.

Inclusion criteria comprised of patients age ranged 30-60 years and patients who received dental implant 5 years ago. Exclusion criteria consisted of patients with history of chemotherapy or radiation therapy and incomplete patient record.

Data such as name, age, gender etc. were retrieved from the patients record file. Amount of bone loss around the implant over 1 mm of bone loss in the first year and over 0.3 mm bone loss every subsequent year were considered as failures. Any signs of infection close to the implant structure leading to instability and displacement of the implant were also recorded using intra-oral periapical radiographs as well as panoramic radiographs. The radiological finding was retrieved from

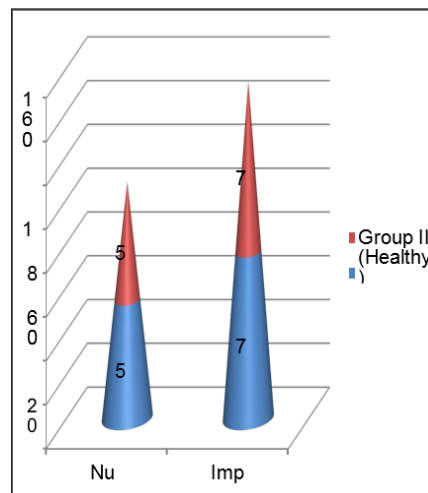
patient case record. Results thus obtained were entered in MS excel sheet and data was presented as mean and median. P value less than 0.05 was considered significant.

RESULTS:

TABLE – 1

Distribution of patients

Groups	Group I (Diabetics)	Group II (Healthy)
Number	54	54
Implants	76	78



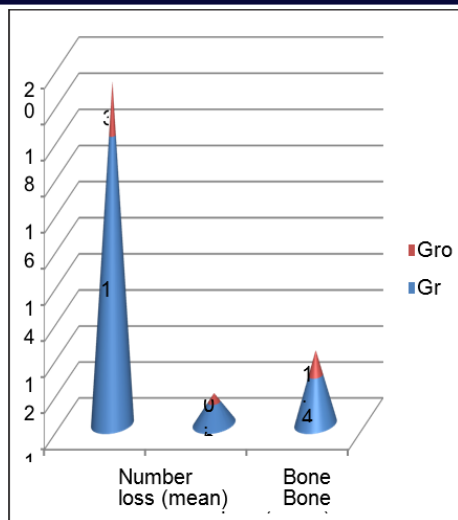
Graph 1: distribution of patients

Table I, graph I shows that group I consisted of 54 patients (Diabetics) with 76 dental implants. Group II consisted of 54 patients (healthy subjects) with 78 implants

TABLE – 2

Failure rate in both groups

Failure	Group I	Group II	P value
Number	16	3	0.001
Bone loss (mean) (mm) 1st year	1.21	0.5	0.02
Bone loss (mean) (mm) up to 5 years	2.7	1.4	0.001



Graph 1: Failure rate in both groups

Table II, graph II shows that in group I, there were 16 and in group II, there were 3 dental implant failures. At first year, in group I, mean bone loss around implant was 1.21 mm and 0.5 mm in group II. Up to 5 years, in group I, mean bone loss around implant was 2.7 mm and 1.4 mm in group II. The difference was significant ($p < 0.05$).

DISCUSSION

The literature supports the fact that type 2 DM is more prevalent in the advancing age group with the co-existence of other predisposing factors. As periodontitis is the sixth most common complication of DM, it has become one of the primary reasons for tooth loss in these patients^{6,7}. Therefore, the legitimacy of dental implant treatment for these patients must be substantiated.

In this study, group I consisted of 54 patients (Diabetics) with 76 dental implants. Group II consisted of 54 patients (healthy subjects) with 78 implants.

Subhas et al⁸ found that the mean age in group I was 47 ± 3 years, in group II was 45 ± 4 years and in group III was 43 ± 4 years. The mean duration of T2DM among Diabetics and non Diabetics was 9.4 ± 2.4 and 7.9 ± 1.3 years in group I and 8.3 ± 5 and 9.4 ± 3 years in group II respectively. Mean peri implant PI ($p = 0.001$), BOP ($p = 0.02$) and PD ($p = 0.003$) were found to be significantly higher in the patients suffering from uncontrolled type 2 diabetes mellitus than the well controlled diabetics or the healthy controls.

Javed F et al⁹ who have reported the levels of pro inflammatory cytokines to be comparatively more in Diabetics as compared to non Diabetics in healthy subjects however in patients having poorly controlled type 2 diabetes mellitus, smoking did not have much effect.

Daubert DM et al¹⁰ have reported chronic uncontrolled hyperglycemia and tobacco smoking to be independent risk factors for not only periodontal diseases but also peri implant pathologies.

We found that in group I, there were 16 and in group II, there were 3 dental implant failures. At first year, in group I, mean bone loss around implant was 1.21 mm and 0.5 mm in group II is significant (P value < 0.02). Up to 5 years, in group I, mean bone loss around implant was 2.7 mm and 1.4 mm in group II, is very high significant (P value < 0.001).

CONCLUSION

Authors found that Diabetics had higher dental implant failure rates as compared to healthy subjects.

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