Research Article

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Evaluation of Patients Visited with Complain of Implant Failure: A Retrospective Study

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ABSTRACT

Background: Dental implants are commonly used in clinical conditions for replacement of natural teeth. Regardless there are so many advances in materials, techniques, and implant design, implant failure is a major fear for the dentist and patient. The present retrospective study was conducted to evaluate the patients visited with implant failure.

Material and methods: This retrospective study was conducted over the period of 6 months among the patients of age 30 to over 60 years. The patients who had a missing tooth and received dental implant treatment were included in the study. The patients who were having a systemic disease affecting the bone healing, history of bone grafting, jaw fracture, or radiotherapy, previous implant failure, and smoking were excluded from the study. Regarding the age range, the patients were evaluated in age groups of 30-40, 41-50, 51-60 and over 60 years. Data regarding name, age, gender, diameter of implant and bone quality were retrieved from the patient's record file. The statistical analyses were performed by using SPSS software, version 19 (SPSS Inc.; IL, USA). P value < 0.05 was considered significant.

Results: A total 110 patients were included in the present study which underwent prosthetic rehabilitation for missing tooth by dental implants. Out of these 110 patients, 57 were males and the 53 were females. Majority of these patients were of age group 40-50 years of age. Out of 110 dental implants, failure of dental implants occurred in 30 cases in which 18 were calcium phosphate coated implant failure and 12 were osseo speed.

Conclusion: Dental implant failure is one of the biggest concerns for dentist. Implant diameter, quality of bone play important role in survival rate of dental implants. Our study concluded that calcium phosphate coated implant failure was more than osseo speed.

Keywords: Dental implant, endosseous, edentulous arches.

INTRODUCTION

An implant is "a graft or insert set firmly or deeply into or onto alveolar process that may be prepared for its insertion." Implants are used for single tooth replacements, partially edentulous arches and for completely edentulous arches. They are inert, alloplastic materials most commonly made of titanium or titanium alloy or vitalinium.[1] Depending on their placement within the bone, they are classified into epiosteal, endosteal, and transosteal.[2,3] The most common one is endosteal (screw shaped or cylindrical). An implant consists of an implant body which is placed within the bone, implant screw placed on the superior surface of the

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body to which is attached the healing cap. Abutments are placed over the implant body which provides retention to the prosthesis.[1,2] Endosseous dental implants are successfully used to replace the missing teeth. Despite the predictability of success of dental implants, a small group of patients may experience implant failure. Success of dental implants depends on the site of implant placement, the patient's conditions, surgeon's experience, the precision of surgical technique, and type of implants.[4] Failure of endosseous dental implants may occur prior to occlusal loading with a prosthetic superstructure or later after loading.[5] Based on chronological criteria, the biological failures can be classified into "early failures" (due to unsuccessful osseointegration, indicating impaired bone healing) and "late failures" (due to loss of osseointegration).[6,7] Several factors may be associated with early implant failure such as smoking, implant characteristics, infection, and insufficient bone quality/quantity.[8] The present retrospective study was conducted to evaluate the patients visited with implant failure.

MATERIAL AND METHODS

This retrospective study was conducted over the period of 6 months among the patients of age 30 to over 60 years. The research protocol was approved by the Ethical Committee. The patients who had a missing tooth and received dental implant treatment were included in the study. The patients who were having a systemic disease affecting the bone healing, history of bone grafting, jaw fracture, or radiotherapy, previous implant failure, and smoking were excluded from the study. Regarding the age range, the patients were evaluated in age groups of 30-40, 41-50, 51-60 and over 60 years. Data regarding name, age, gender, diameter of implant and bone quality were retrieved from the patient's record file. The statistical analyses were performed by using SPSS software, version 19 (SPSS Inc.; IL, USA). P value < 0.05 was considered significant.

RESULTS

A total 110 patients were included in the present study which underwent prosthetic rehabilitation for missing tooth by dental implants. Out of these 110 patients, 57 were males and the 53 were females. Majority of these patients were of age group 40-50 years of age. Out of 110 dental implants, failure of dental implants occurred in 30 cases in which 18 were calcium phosphate coated implant failure and 12 were osseo speed.

Table 1: distribution of implants on the basis of age and gender.

Age group	Male	Female	P-value
30-40	14	15	<0.05
41-50	20	17	
51-60	13	13	
>60	10	8	
Total	57	53	

Table 2: Distribution of patient according to success and failure of dental implants.

Parameter	Dental implants	P- value
Success	80	<0.05
Failure	30	

Table 3: Risk factor for failure of dental implants.

Parameter	Calcium phosphate-coated	Osseo speed	p-value
Success dental implants cases	48	32	<0.05
Failure dental implants cases	18	12	

DISCUSSION

The reasons for implants failure are lack of osseointegration during early healing, infection of the peri-implant tissues and breakage. The contraindications of implant placement are children & adolescents, epileptic patients, endocarditis, osteoradionecrosis, smoking and diabetes. Absolute contraindications consists of myocardial infarction and cerebrovascular accident, bleeding disorder, cardiac transplant, immunosuppression, active treatment of malignancy, drug abuse, and

psychiatric illness, and intravenous bisphosphonate (BPs) use. There are many difficulties to figure out the cause of implant success and failure because it is affected by many various factors.[9] In our study a total 110 patients were included in the present study which underwent prosthetic rehabilitation for missing tooth by dental implants. Out of these 110 patients, 57 were males and the 53 were females. Majority of these patients were of age group 40-50 years of age. Out of 110 dental implants, failure of dental implants occurred in 30 cases in which 18 were calcium phosphate coated implant failure and 12 were osseo speed.

Hong et al. compared four different implant surfaces in the tibia of dog and reported the average bone-implant contact ratio to be 95.4% in hydroxyapatite-coated (HA) group ($p< 0.01$), 87.1% in resorbable blast media (RBM) group ($p< 0.05$), and 86.0% in sandblasted and acid-etched (SLA) group. They concluded that osseointegration was superior in HA-coated implants compared with other groups.[10]

Ahmed et al. stated that implants with resorbable blast media (RBM) or sandblasted and acid-etched surface (SLA) surface had comparable survival rates in short-term and the sandblasted and acid-etched surface seemed to be superior in the posterior maxilla with poor bone quality.[11] Kim et al. studied the survival rate of RBM and calcium phosphate coated implants and found no significant difference between them.[12]

Mohajerani H et al. evaluated the risk factors for early implant failure. This retrospective cohort study was conducted on two groups of patients, the patients with a failed implant before loading and those without a failed implant. Age, gender, implant type, implant surface, implant length, bone type, type of surgery (one- or two-stage) and immediate (fresh socket) or delayed placement of implant were the variables to be assessed in this study. Out of the 1,093 evaluated implants, 73 cases (6.68%) failed in early stages. The two groups were significantly different in terms of implant surface, fresh socket placement, prophylactic use of antibiotics, and bone density ($p< 0.05$). Age, gender, implant height, implant type (cylindrical or tapered) and one-stage or two-stage placement were not significantly different between the two groups ($p> 0.05$). It seems that prophylactic antibiotic therapy, implant surface, bone density and placement in fresh extraction socket may contribute to dental implant failure.[13]

CONCLUSION

Dental implant failure is one of the biggest concerns for dentist. Implant diameter, quality of bone play important role in survival rate of dental implants. Our study concluded that calcium phosphate coated implant failure were more than osseo speed.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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