Original Article

Assessment of Various Risk Factors Associated with Dental Implants

Vidhi Srivastava[1], Pooran Chand[2], Pranjali Dutt[3] , Himangi Dubey[4]

[1]Senior Resident, Department of Prosthodontics, Faculty of Dental Sciences, [2]HOD Department of Prosthodontics FODS, [3]Senior Resident Department of Prosthodontics Faculty of Dental Science, [4]Senior Resident, Department of Periodontics, KGMU Lucknow, Uttar Pradesh, India

ABSTRACT:
Background: Dental implants have been accepted as a viable treatment option for completely and partially edentulous patients. The present study was conducted to assess risk factors of associated with dental implants. **Materials & Methods:** The present study was conducted in the department of Prosthodontics. It comprised of 880 dental implants. General information such as name, age, gender etc. was recorded. Signs of peri- implantitis and fractured implant segments were considered for implant failure. **Results:** Out of 880 dental implants, 520 were in males and 360 were in females. The difference was significant (P- 0.01). Males had 45 dental implant failures and females had 40 dental implants failures. The difference was non- significant (P> 0.05). Out of 85 implant failures, 10 were seen in bruxism, 15 in autoimmune disease, 12 in diabetics, 20 in smokers and 8 in periodontal diseases. The difference was significant (P- 0.01). Implant failures were seen in type I bone (15), type II (25), type III (30) and type IV (15). The difference was non- significant (P> 0.05). **Conclusion:** Dental implant failures are not uncommon. Systemic disease also associated with high implant failures. Bone quality is also risk factor for implant failures.
Key words: Bone quality, Failure, Implant.

Corresponding Author: Dr. Vidhi Srivastava, Senior Resident, Department of Prosthodontics, Faculty of Dental Sciences, KGMU Lucknow, Uttar Pradesh, India

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INTRODUCTION

Dental implants have been accepted as a viable treatment option for completely and partially edentulous patients. Further improvements toward the successful osseointegration of dental implants have involved modifications to both surface topography and surface chemistry. Implant design (*i.e.*, types and dimensions), surgical procedure, implant placement time, and time prior to loading have been shown to influence implant survival rates.[1]
Further improvements toward the successful osseointegration of dental implants have involved modifications to both surface topography and surface chemistry Implant design (i.e., type and dimensions), surgical procedure, timing of implant placement, and time prior to loading have also been shown to influence implant survival rates.[2] Among patient factors, male gender, smoking, autoimmune disease, and penicillin allergy have been found to trend toward higher failure rates. In contrast, short implants in mandibular posterior sites have been found to have a survival rate of 100%, while the same was not true for implants in the maxillary posterior position, wherein 6-mm implants had a survival rate of only 87%.
Long-term survival data, however, is required to better assess the safe and predictable use of dental implants. A few studies have reported long-term results showing more favorable survival statistics for solid screw over hollow cylinder implants, for mandibular sites over maxillary, and lower survival statistics for patients presenting with a history of periodontitis. Long-term results of implants placed with guided bone regeneration (GBR) and outcomes for the treatment of atrophic posterior maxilla have also been reported.[3] The present study was conducted to assess risk factors of associated with dental implants.

MATERIALS & METHODS

The present study was conducted in the department of Prosthodontics. It comprised of 880 dental implants inserted in patients of both genders. All patients were reviewed for 5 years and signs of implant failure were assessed. All were informed regarding the study and written consent was obtained. Ethical clearance was obtained before study.

General information such as name, age, gender etc. was recorded. Signs of peri- implantitis and fractured implant segments were considered for implant failure. Results thus obtained were subjected to statistical analysis using chi-square test. P value less than 0.05 was considered significant.
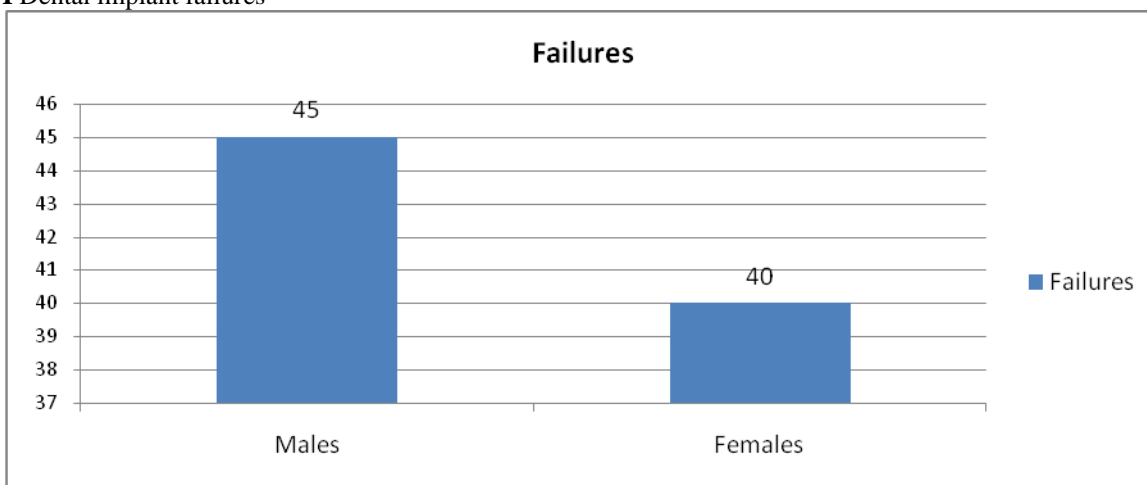
RESULTS

Table I Distribution of implants

| Males	Females	P value
520	360	0.01

Table I shows that out of 880 dental implants, 520 were in males and 360 were in females. The difference was significant (P- 0.01).
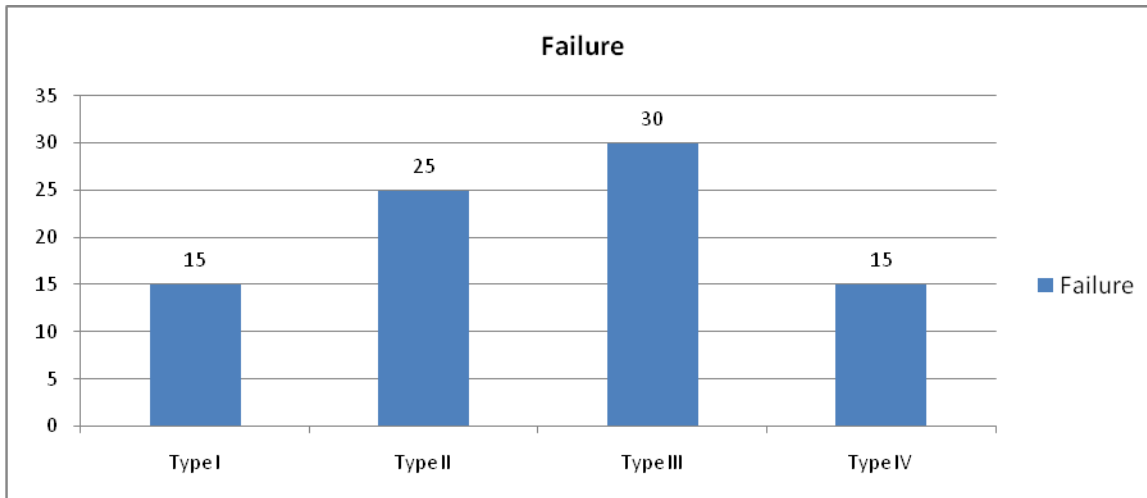
Graph I Dental implant failures

Graph I shows that males had 45 dental implant failures and females had 40 dental implants failures. The difference was non- significant (P> 0.05).

Graph II Failure rate with systemic disease
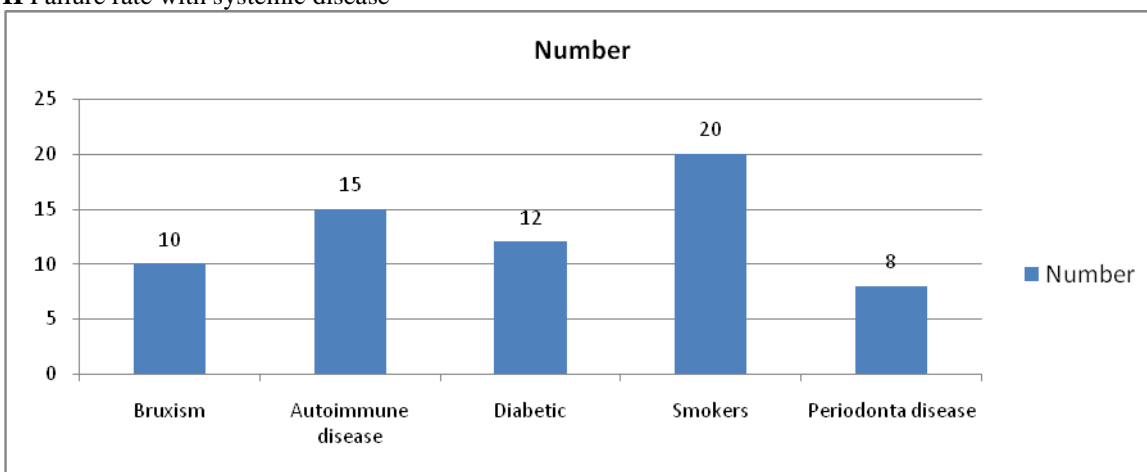
Graph II shows that out of 85 implant failures, 10 were seen in bruxism, 15 in autoimmune disease, 12 in diabetics, 20 in smokers and 8 in periodontal diseases. The difference was significant (P- 0.01).

Graph III Bone quality and failure

Graph III shows that implant failures were seen in type I bone (15), type II (25), type III (30) and type IV (15). The difference was non- significant (P> 0.05).

DISCUSSION

Due to recent advancements in the field of implants, there use is increasing day by day. This is now becoming the treatment of choice of missing teeth and it has got high patient compliance. However, apart from it, failures in implants are also common. It can be divided into early failure and late failure according to failure time. First, early failure is one that failed osseointegration within several weeks or several months. It was due to bone necrosis, surgical trauma, bacterial infection, inadequate initial stability and early occlusal loading. Late failure is failure that turns up after functional loading of several period of time. It takes place because of infection and excessive loading. There are many difficulties to figure out the cause of implant success and failure because it is affected by many various factors. It is hard to find a reasonable solution only with in vitro study model.[4]

In present study, out of 880 dental implants, 520 were in males and 360 were in females. We found that males had 45 dental implant failures and females had 40 dental implants failures. This is similar to Busner et al.[5]

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.[6] In our study, out of 85 implant failures, 10 were seen in bruxism, 15 in

autoimmune disease, 12 in diabetics, 20 in smokers and 8 in periodontal diseases.

David et al[7] found that at the implant level, the cumulative survival rates at 3, 5, and 7 years were 99.3%, 99.0% and 98.4%, respectively, and at the patient level, they were 98.6%, 97.7%, and 95.9%, respectively. After adjustment to possible confounders, the multivariate analysis identified a relationship between the following risk indicators for implant failure: implant location, length and design, timing of implantation, bone grafting procedures and gender. Tissue-Level implants (n = 3863) had a very high survival rate of 99% at 3 years, which was maintained over the entire study period.

Bone-Level implants (n = 600) were as predictable with a survival rate of 99% up to 3 years, while Tapered Effect implants (n = 128) demonstrated a lower survival rate of 95% at 5 years. Short 6- mm implants in the mandibular posterior sites had a high survival rate of 100%, while in maxillary posterior positions a survival rate of only 87% was achieved. Patient factors such as smoking, autoimmune disease, and penicillin allergy were tending to associate with higher failure rates.[8]

Mittal[9] in his study found that a total of 18 patients experienced 25 implant failures, resulting in an overall survival rate of 96.8% (2.84% and 0.38% early and late implant failures, respectively). The patient-based survival rate was 91.8%. GEE univariate and multivariate analyses revealed that a significant risk factor for implant failure was the maxillary implant. Bone grafting appeared to be a risk factor for implant failure.

CONCLUSION

Dental implant failures are not uncommon. Systemic disease also associated with high implant failures. Bone quality is also risk factor for implant failures.

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