Original Research

Assessment of Correlation of Periodontitis and Implant Failure- A Clinical Study

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ABSTRACT:
Background-Survival of the dental implant depends upon the oral health status and it has been observed that in patients with periodontitis, have more chances of peri-implantitisly decades of age in systemically healthy patients. Transition in the field of dentistry replaced the removable partial dentures to fixed partial dentures to dental implants. Dental implants have brought boom in the field of dentistry, with replacing few teeth to several which gained importance in past few years. **Aim and objectives**- The aim and objective of the present study is to determine correlation between implant failure and periodontitis. **Material and method-** The study was conducted on 50 patients which involves both the genders with 80 dental implants in department of implantology. It was a retrospective study from January 2016- January 2019. Informed consent was obtained from the participants and ethical clearance was obtained from the ethical committee. **Results-** Out of 50 patients, males were 29 and females were 21. In 29 males, 50 dental implant and in 28 females, 30 dental implants were present. The difference was significant (P = 0.01) [Table 1]. Table 2 shows periodontal depth (mean ± S.D) around implant (4.22 ± 1.14), adjacent teeth (3.21 ± 1.06), and contralateral teeth (3.02 ± 0.24), it was statistically significant (p=0.01). **Conclusion-** Periodontal health strongly affects the outcome of dental implant therapy and the teeth adjacent to dental implant also plays an important role in deciding the success or failure of implant while the contralateral teeth have no strong relationship between peri-implantitis and periodontitis.
Key words: Perimplantitis, periodontitis, implant failure.

INTRODUCTION-
Classification of Periodontitis includes chronic and aggressive subtypes.[1] Rapid progression and destruction of periodontal tissue is known as aggressive periodontitis .[1,2] which often occurs in the early decades of age in systemically healthy patients. Survival of the dental implant depends upon the oral health status and it has been observed that in patients with periodontitis, have more chances of peri-implantitis.

Transition in the field of dentistry replaced the removable partial dentures to fixed partial dentures to dental implants. Dental implants have brought boom in the field of dentistry, with replacing few teeth to several which gained importance in past few years.[1] and become the choice of treatment for the patients as well as for the dentist. Literature has documented the

long-term survival rate of dental implants. [2,3] which shows that survival rate of 95% in 5 years can be considered as a successful treatment however failure rates of dental implants are still there[4]. Outcome of the therapy depends upon the general health of the patients. Diabetes, hypertension, smoking are considered as risk factors which affects the outcome of the treatment. The aim and objective of the present study is to determine correlation between implant failure and periodontitis.

MATERIALS AND METHOD-
A retrospective study was conducted on 50 patients which involves both the genders with insertion 80 dental implants. Informed consent was obtained from the participants and ethical clearance was obtained from the ethical committee.

INCLUSION CRITERIA-
- Patients with dental implants, evidence of periodontitis with bleeding probing, >4.5 mm pocket depth, clinical and radiographic presence of bone loss.
- Presence of atleast one teeth adjacent to implant (either mesial or distal), and in opposing and contralateral arch.
- Patients who received dental implants on posterior ridge in either of the arch in the last 6 years were enrolled in the study.

EXCLUSION CRITERIA-
Patients with prior periodontal surgery, history of systemic conditions like diabetes, patients under medications, edentulous opposing, and contralateral arch were excluded from the study.

Patients were divided into two groups depending upon presence or absence of peri-implantitis.
- Group I (n=48) was with peri-implantitis
- group II (n=32) was without peri- implantitis.

In all patients, periodontal probe was used to calculate the probing depth around the implant as well as around the teeth adjacent to the implant.
Teeth adjacent to implant site were evaluated for bone and periodontal condition.
Gingival recession (GR) was calculated by measuring the distance from gingival margin to the Cemento-enamel (CE) junction.
Clinical attachment loss (CAL) was calculated by adding GR and PD.
Statistical analysis was carried out by using statistical software SPSS Version 21.0 and P value less than 0.05 was considered significant.

RESULTS-
Out of 50 patients, males were 29 and females were 21. In 29 males, 50 dental implant and in 28 females, 30 dental implants were present. The difference was significant (P = 0.01) [Table 1]. Table 2 shows periodontal depth (mean ± S.D) around implant (4.22 ± 1.14), adjacent teeth (3.21 ± 1.06), and contralateral teeth (3.02 ± 0.24), it was statistically significant (p=0.01).Gingival recession (GR) shows significant difference (P = 0.02) around implants (0.51 ± 0.81), adjacent teeth (0.81 ± 1.00), and contralateral teeth (0.81 ± 0.92). Clinical attachment loss(CAL) was found to be 4.76 ± 1.44, 4.01 ± 1.31 and 3.82 ± 1.14 around implant, adjacent teeth, and contralateral teeth, which showed nonsignificant difference (P = 0.08). CAL was highly significant (P = 0.001) among group I (5.81 ± 0.51) and group II (3.51 ± 0.61) around implants. PD was 5.24 ± 1.26 in group I and 3.10 ± 0.73 in group II around adjacent teeth which showed significant difference (P = 0.002). CAL around adjacent teeth to implant also showed significant difference (P- =0.001). PD around contralateral teeth was 3.16 ± 1.02 in group I and 2.72 ± 0.71 in group II. The difference was significant (P = 0.05) [Tables 3-5].

TABLE 1- DISTRIBUTION OF PATIENTS AND DENTAL IMPLANTS

GENDER	DENTAL IMPLANTS	P
Male	29	50
Female	21	30

TABLE 2- ASSESSMENT OF PERIODONTAL & PERI- IMPLANT STATUS IN 80 IMPLANTS

PARAMETERS (MEAN±S.D)	IMPLANTS	ADJACENT TEETH	CONTRALATERAL TEETH
PD	4.22±1.14	3.21±1.06	3.02±0.24
GR	0.51±0.81	0.81±1.00	0.81±0.92
CAL	4.76±1.44	4.01±1.31	3.82±1.14

TABLE 3-PERIODONTAL STATUS AROUND IMPLANTS IN BOTH GROUPS

PARAMETERS	GROUP I (48) (MEAN±S.D)	GROUP II (32) (MEAN±S.D)
PD	5.24±1.26	3.10±0.73
GR	0.52±0.80	0.40±0.56
CAL	5.81±0.51	3.51±0.61

TABLE 4- PERIODONTAL STATUS AROUND ADJACENT TEETH

PARAMETERS	GROUP I	GROUP II
PD	4.22±1.24	2.22±0.51
GR	0.90±0.81	0.84±0.72
CAL	5.14±1.41	2.04±1.25

TABLE 5- PERIODONTAL STATUS IN CONTRALATERAL TEETH IN BOTH GROUPS

PARAMETERS	GROUP I	GROUP II
PD	3.16±1.02	2.72±0.71
GR	0.80±0.82	0.84±0.93
CAL	4.01±0.82	3.54±0.74

DISCUSSION-

The success of dental implant is judged by its ability to free from complications. Peri-implantitis can be evaluated by taking radiographs in recalled visits and the amount of bone loss and mobility of implant determines the survival rate of implant.[5] The present study was conducted to evaluate the effect of periodontitis in dental implants in terms of peri-implantitis. Zitzmann and Berglundh[6] found 28-56% of prevalence of peri-implant diseases among patients and 12-43% around dental implants in their study and suggested that the chances of peri-implantitis are higher among those who have periodontal diseases as compared to healthy one. Peri-implant mucositis and peri-implantitis are two peri-implant diseases which affects the outcome of the treatment and characterized by bone loss.[7] Klokkevold et al.[8] revealed that periodontitis is among various risk factors for peri-implantitis and periodontitis has a negative influence on survival rate of dental implants. In our study we found that CAL was higher in patients with peri-implantitis than those without it. Thus, it may be suggested that risk of peri-implantitis is more in patient with periodontal diseases than those with healthy periodontium. Similarly, PD and CAL were significantly higher in adjacent teeth group I as compared to group II. Wang et al.[9] performed a study to evaluate the relation between peri-implant conditions and periodontal conditions and found that 58% of patients with 120 dental implants had more peri-implantitis with modified gingival index score >3 and concluded that periodontal health adversely affects the implant health in patient. We found that although GR(gingival recession) and CAL(clinical attachment loss) on contralateral side in group I was higher than group II but the difference was statistical nonsignificant (P > 0.08). Chrcanovic et al.[10] in their analysis of dental implants and periodontically compromised and periodontically healthy subjects found that 5.37% implant failures were seen out of 10, 927 dental implants inserted in periodontically compromised patients as compared to 3.84% failure rate in periodontically healthy subjects. They concluded that periodontitis exaggerate the bone loss around dental implant, ultimately leading to implant loss. Sung et al. evaluated the relationship between peri-implantitis and the periodontal health of the adjacent tooth to the implants with and without peri-implantitis and concluded that the presence of peri-implantitis was significantly associated with the periodontal measurements of the remaining teeth.[11] Dinzin et al. conclude that diagnosis or history of periodontitis was associated with the occurrence of peri-implantitis and determining the potential factors associated with peri-implantitis is fundamental for preventive strategies.[12] We observed that periodontal health strongly affects the outcome of dental implant . Teeth adjacent to dental implant also play an important role in deciding the success or failure of implant.

CONCLUSION-

Periodontal health strongly affects the outcome of dental implant therapy and the teeth adjacent to dental implant also plays an important role in deciding the success or failure of implant while the contralateral teeth have no strong relationship between peri-implantitis and periodontitis.

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