

Original Article

Evaluation of Frequency of Occurrence of Complications Associated With Dental Implant Supported Prosthesis: A Retrospective Study

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Abstract

Background: Dental implants are one of the commonly used treatment protocol for prosthetic rehabilitation of edentulous areas. Various studies in the past literature have exhibited that dental caries and periodontal illnesses are most frequently visit purpose behind tooth extraction. Numerous authors have highlighted the complications associated with dental implants treatment. Hence; we planned the present study to evaluate the incidence of complications occurring in subjects rehabilitated with dental implant related prosthesis. **Materials & methods:** The present study included retrospective assessment of data records of subjects who underwent prosthetic rehabilitation by dental implants from June 2014 to July 2016. Data records of a total of 30 subjects were reviewed. Complete demographic and clinical details of all the subjects were recorded from the data records of all the subjects. All the results were compiled and analysed by SPSS software. **Results:** A total of 30 cases were included in the present study. In 10 and 6 subjects, four and five implants per patients were placed respectively. Only one case was there in the present study in which eight dental implants were placed. 33.3 percent of the cases showed presence of associated mucositis. In eight subjects, dental implant associated peri-implantitis was present. **Conclusion:** Proper care should be taken while planning the prosthetic part of the dental implants for facilitating easy cleansing for maintenance of oral hygiene

Key words: Complications, Implants, Prosthetic

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INTRODUCTION

Quality of dental treatment to be provided is determined by understanding the pattern of tooth loss in a populace, which fluctuates geologically and socially between nations.¹ Studies have exhibited that dental caries and periodontal illnesses are most frequently visit purpose behind tooth extraction. Once a tooth is lost, an individual may look for its substitution with the goal that his/her capacity and style could be re-established.^{2, 3} Clinical prosthodontics, amid the previous decade, has essentially enhanced and created by the headways in the science and patient's requests and needs. Ordinary choices in prosthodontics for substituting a missing single tooth incorporate the removable half way denture, incomplete and full scope bridgework, and tar reinforced bridgework.^{4, 5} Aglietta et al reviewed the five year survival rate of fixed prostheses on implants with cantilever and

the incidence of biological complications or those concerning the surgical technique.⁶ Hence; we planned the present study to evaluate the incidence of complications occurring in subjects rehabilitated with dental implant related prosthesis.

MATERIALS & METHODS

The present study was conducted in the department of prosthetic dentistry of the dental institute and included retrospective assessment of data records of subjects who underwent prosthetic rehabilitation by dental implants from June 2014 to July 2016. Ethical approval was taken from institutional ethical committee and written consent was obtained after explaining in detail the entire research protocol. Data records of a total of 30 subjects were reviewed. Out of these 30 subjects, 20 were females and 10 were males. All the patients aged between 30 to 55 years with mean

age of 48.5 years. All the dental implants procedures were carried out by experienced and trained Prosthodontist. Number of dental implants placed ranged from four to eight. Complete demographic and clinical details of all the subjects were recorded from the data records of all the subjects. All the results were compiled and analysed by SPSS software. Uni-variate regression curves were used for assessment of level of significance.

RESULTS

A total of 30 cases were included in the present study. In 10 and 6 subjects, four and five implants per patients were placed respectively (**Table 1, Graph 1**). In twelve subjects, six dental implants were placed per patient. In 3.3 percent of the subjects, seven dental implants were placed per patient. Only one case was there in the present study in which eight dental implants were placed. 33.3 percent of the cases showed presence of associated mucositis (**Table 2, Graph 2**). In eight subjects, dental implant associated peri-implantitis was present. Two patients each showed presence of ulcers and fracture of prosthetic base. In seven and eight patients, prosthetic component fracture and prosthetic screw problem were seen respectively.

Table 1: Total implant cases in the present study

Number of dental implants	Number of cases	Percentage
Four	10	33.4
Five	6	20
Six	12	40
Seven	1	3.3
Eight	1	3.3
Total	30	100

DISCUSSION

Various precise reviews have been directed on the survival and difficulty rates of fixed partial dentures (FPDs) upheld by dental implants. Great survival rates of up to 10 years have been accounted for both single-unit and different unit implant upheld FPDs.⁷⁻⁹ With significant proof accessible, fixed implant-supported prostheses are completely recognized as a solid treatment

alternative for the substitution of single or multiple missing teeth these days. In any case, the survival rates for the most part allude to the prosthesis that proceeded with its clinical administration amid

Graph 1: Descriptive value of number of subjects in the present study

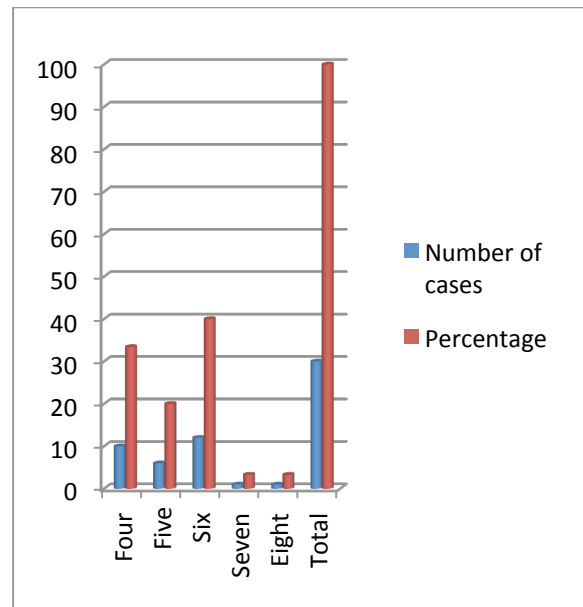
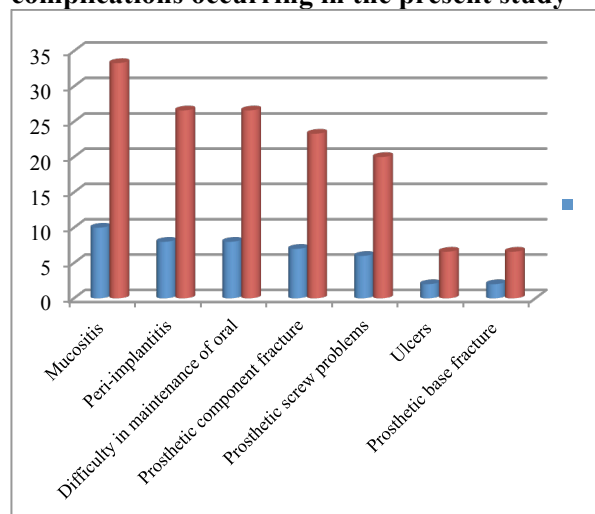


Table 2: Incidence of occurrence of complications in the present study

Complications	Number of cases	Prevalence (Percentage)
Mucositis	10	33.3
Peri-implantitis	8	26.6
Difficulty in maintenance of oral hygiene	8	26.6
Prosthetic component fracture	7	23.3
Prosthetic screw problems	6	20
Ulcers	2	6.6
Prosthetic base fracture	2	6.6

Graph 2: Descriptive value of frequency of complications occurring in the present study



unequivocal follow-up period and this does not really render them free of adverse complications.^{11, 12} While dental implants are progressively turning into the decision of trade for missing teeth, the obstacles related with them are continuously rising as well.¹² Hence; we planned the present study to evaluate the incidence of complications occurring in subjects rehabilitated with dental implant related prosthesis. In the present study, we observed that mucositis and peri-implantitis were the most commonly encountered prosthetic complications (**Table 2**). Gallucci GO et al evaluated the survival rate, success rate and primary complications associated with mandibular fixed implant-supported rehabilitations with distal cantilevers over 5 years of function. In this prospective multi-center trial, 45 fully edentulous patients were treated with implant-supported mandibular hybrid prostheses with distal extension cantilevers. Data were collected at numerous time points, including but not limited to: implant placement, abutment placement, final prosthesis delivery, 3 months and 5 years post-loading. Biological, implant and prosthetic parameters defining survival and success were evaluated for each implant including: sulcus bleeding index (SBI) at four sites per implant, width of facial and lingual keratinized gingiva (mm), peri-implant mucosal level (mid-facial from the top of the implant collar, measured in mm), modified plaque index (MPI) at four sites per implant, mobility and peri-implant radiolucency. Survival was defined as implants or prostheses that did not need to be replaced. Success rate was defined as meeting well-established criteria that were chosen to indicate healthy peri-implant mucosa osseointegration, prostheses success and

complications. A total of 237 implants in 45 completely edentulous patients were included in the study. In each patient, four to six implants were placed to support hybrid prostheses with distal cantilevers. Cantilevers ranged in length from 6 to 21 mm, with an average length of 15.6 mm. The ages of the patients ranged from 34 to 78 with a mean age of 59.5 years. The survival rate of implants was 100% (237/237) and for prostheses 95.5% (43/45). The overall treatment success rate was calculated as 86.7% (39/45). Of the six patients that have not met the criteria for success, two patients required replacement of the entire prosthesis and four patients presented >four complications events. Fixed implant-supported rehabilitation with distal cantilever resulted in a reliable treatment modality over the 5-year observation period. Although biological parameters of MPI, SBI, keratinized tissue and peri-implant mucosal levels showed statistically significant differences over time, the mean values for each patient remained within the normal limits of oral health. Complications were categorized as biological or technical. The majority of complications were technical complications (54/79) and of these most involved fracture of the acrylic teeth and base (20/54). While the survival rate was 100% for implants and 95.5% for prostheses, the application of strict criteria for treatment success resulted in an overall treatment success rate of 86.7%.¹³

Cordaro L et al reported on the implant success rate, prosthetic complications, and the occurrence of tooth intrusion, when complete-arch fixed prostheses, supported by a combination of implants and teeth, were fabricated for patients with normal and reduced periodontal support. Nineteen patients with residual teeth that served as abutments were consecutively treated with combined tooth- and implant-supported complete-arch fixed prostheses and were retrospectively evaluated after a period varying from 24 to 94 months. Nine patients showed reduced periodontal support as a result of periodontal disease and treatment (RPS group), and 10 patients had normal periodontal support of the abutment teeth (more than 2/3 of periodontal support [NPS group]). Ninety implants and 72 tooth abutments were used to support 19 fixed partial dentures. Screw- and cement-retained metal-ceramic and metal-resin prostheses were fabricated with rigid and nonrigid connectors. Implant survival and success rates, occurrence of caries and tooth intrusion, and prosthetic complications were recorded. The number of teeth, implants, prosthetic units, fixed partial dentures,

and nonrigid connectors were compared with a t test to assess differences between the 2 groups, while data for the occurrence of intrusions and prosthetic complications were compared with the Fisher exact test ($\alpha=.05$). One of the 90 implants was lost (99% survival rate) over 24 to 94 months, while 3 implants showed more than 2 mm of crestal bone loss (96% success rate) over the same period. No caries were detected, but 5.6% (4/72) of the abutment teeth exhibited intrusion. Intrusion of abutment teeth was noted in 3 patients who had normal periodontal support (13% of teeth in NPS group) of the abutment teeth and was associated with nonrigid connectors. No intrusion of teeth was noted in the patients exhibiting reduced periodontal support regardless of the type of connector or when a rigid connector was used for either group. The number of intruded teeth was significantly greater in patients with intact periodontal support ($P=.03$). Complete-arch fixed prosthesis supported by implant and tooth abutments may be associated with intrusion of teeth with intact periodontal support when nonrigid connectors are used to join the implant- and tooth-supported sections of the prostheses. However, fixed partial dentures supported by implants and teeth with reduced periodontal support were not associated with tooth intrusion, regardless of the type of connectors used.¹⁴

CONCLUSION

From the above results, the authors conclude that mucositis is the most commonly encountered complications in subjects undergoing prosthetic rehabilitation by dental implants. Therefore, proper care should be taken while planning the prosthetic part of the dental implants for facilitating easy cleansing for maintenance of oral hygiene.

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