Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies ***NLM ID:*** *101716117*

Journal home page: www.jamdsr.com doi: 10.21276/jamdsr Indian Citation Index (ICI) Index Copernicus value = 91.86

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805

Original Research

Assessment of failure of dental implant

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ABSTRACT:

Background: Dental implants have become a common choice among the treatment options for missing teeth rehabilitation. The present study was conducted to assess dental implant failures. **Materials & Methods:** 80 patients who received 130 dental implants of both genders were enrolled. Particulars such as name, age, gender etc. was recorded. Parameters such as peri- implantitis, mucositis, screw fracture, crown fracture and prosthetic base fracture was recorded. **Results:** 50 males had 90 dental implants and 30 females had 40 dental implants. The difference was significant (P< 0.05). Common reason for dental implant failures was crown fracture in 8, mucositis in 4, peri- implantitis in 5, screw fracture in 6, and prosthetic base fracture in 2 cases. The difference was significant (P< 0.05). **Conclusion:** Dental implant failure was quite high among patients. A careful assessment of bone factors and patients related factors should be done before planning dental implants.

Key words: Dental implant, peri- implantitis, Failure

Received: 17 April, 2022 Accepted: 20 May, 2022

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This article may be cited as: Shah U, Singh A, Desai A, Patel N, Chhatbar R, Makwana KK. Assessment of failure of dental implant. J Adv Med Dent Scie Res 2022;10(6):29-32.

INTRODUCTION

Dental implants have become a common choice among the treatment options for missing teeth rehabilitation since they were first introduced by Branemark in the 1970s.[1]Implant failure is the first instance at which the performance of the implant, measured in some quantitative way falls below a specified and acceptable level.[2] Implant failure is defined as the total failure of the implant to fulfill its purpose (functional, esthetic or phonetic) because of mechanical or biological reasons. Implant failure is the inadequacy of the host tissue to establish or to maintain osseo-integration.[3]

Early failure represents a failure to establish osseointegration of dental implants, while late failure is the failure of either the established osseointegration or function of dental implants.[4]While early failure is solely biologic complications, late failure could have either biologic or mechanical complications. Biologic complications could be due to peri-implantitis, it usually involves the resorption of soft and hard tissue. Mechanical complications could be due to improper implant loading design, it could lead to the fracture of implant body, screw body or implant supra-structure.[5] The present study was conducted to assess dental implant failures.

MATERIALS & METHODS

The present study was conducted among 80 patients who received 130 dental implants of both genders. All patients were informed regarding the study and their written consent was obtained.

Particulars such as name, age, gender etc. was recorded. Parameters such as peri- implantitis, mucositis, screw fracture, crown fracture and prosthetic base fracture was recorded. Results thus obtained were analysed statistically. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Gender	Number (Implant)	P value
Male	50 (90)	0.02
Female	30 (40)	

Table I, graph I shows that 50 males had 90 dental implants and 30 females had 40 dental implants. The difference was significant (P< 0.05).

Graph I Distribution of patients

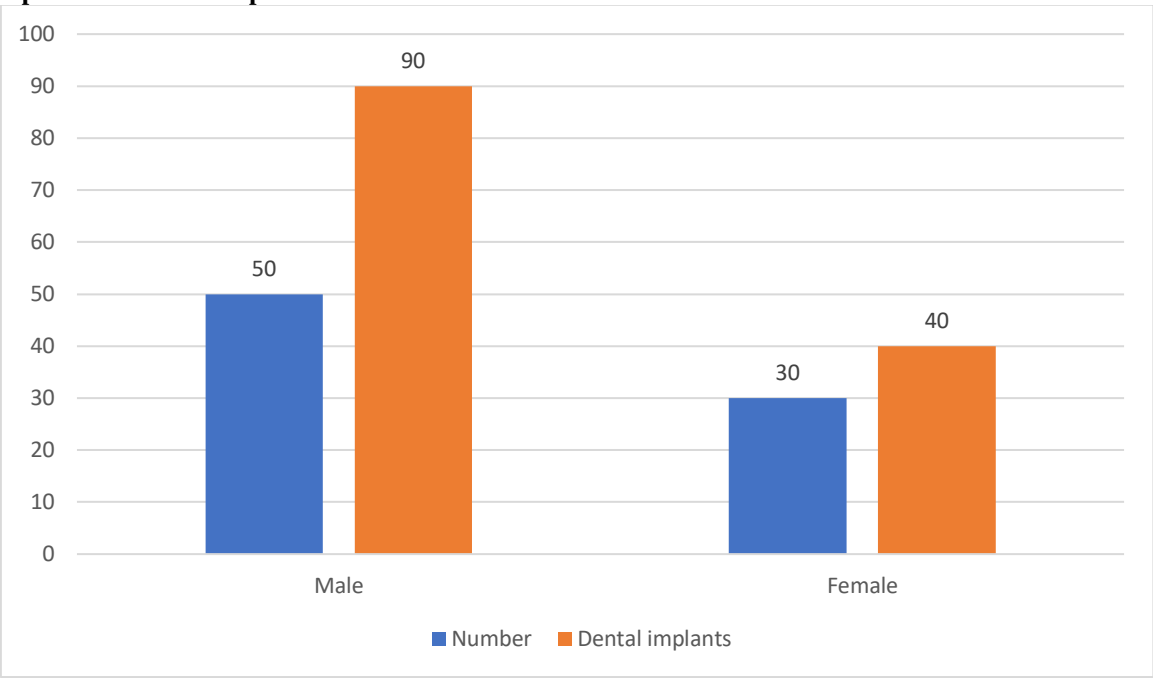
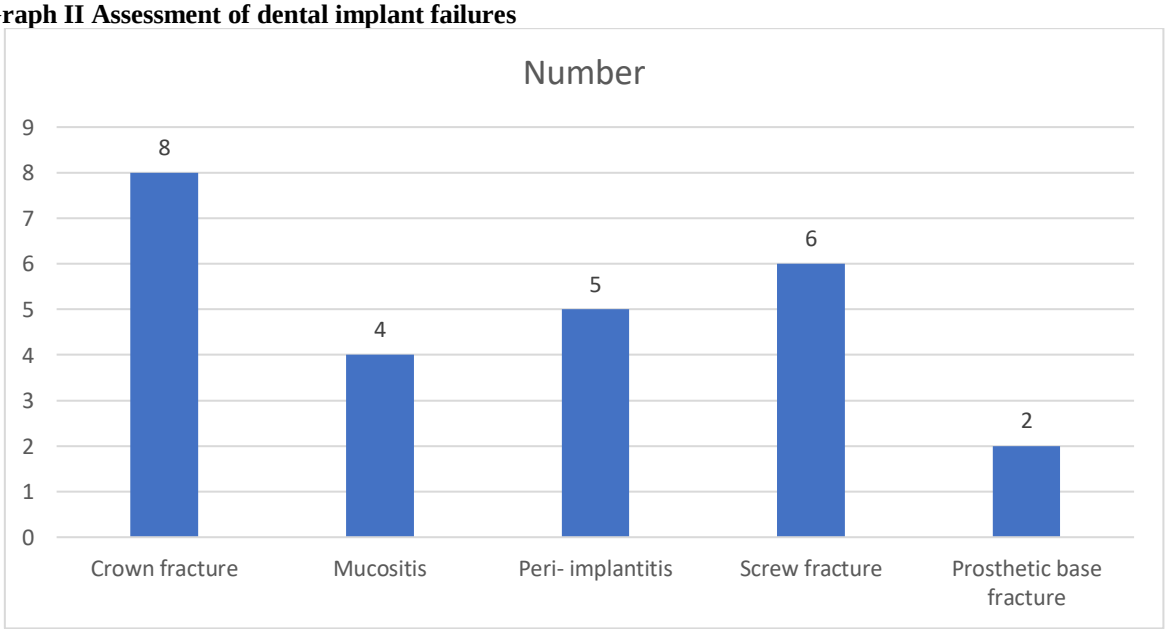


Table II Assessment of dental implant failures

Failure	Number	P value
Crown fracture	8	0.05
Mucositis	4	
Peri- implantitis	5	
Screw fracture	6	
Prosthetic base fracture	2	

Table II, graph II shows that common reason for dental implant failures was crown fracture in 8, mucositis in 4, peri- implantitis in 5, screw fracture in 6, and prosthetic base fracture in 2 cases. The difference was significant (P< 0.05).

Graph II Assessment of dental implant failures



DISCUSSION

Dental implants are one of the most successful treatment choices for edentulous areas.[6]The surgical and rehabilitation phases of dental implant surgery are greatly affected by the history and clinical examination of the patient.[7] Surgical procedure for dental implant requires minimal trauma and circumvent excessive bleeding and stress. Moreover, a patient requiring dental implant has a number of fears such as fear of pain during the procedure.[8]

However, this treatment modality has limitations, with previous reports of failure rates of dental implant ranging from 1% to 19%.[9] These failures could be classified into early failure and late failure based on the time when the abutment was connected: early failures occurred before the application of functional loading, and late failures occurred after applying occlusal loading or the first removal of the provisional restoration in cases of immediate implant loading.[10] Reported predictors for implant success and failure are generally divided into patient-related factors (e.g., general patient health status, smoking habits, quantity and quality of bone, oral hygiene maintenance, etc), implant characteristics (e.g., dimensions, coating, loading, etc), implant location, and clinician experience.[11] The present study was conducted to assess dental implant failures.

We found that 50 males had 90 dental implants and 30 females had 40 dental implants. Mohajerani et al[12]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.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 ($p> 0.05$).

We found that common reason for dental implant failures was crown fracture in 8, mucositis in 4, peri-implantitis in 5, screw fracture in 6, and prosthetic base fracture in 2 cases. Bhagat et al[13] the study included a total of 40 subjects. The data was obtained from the records of the institute. The dental implants were placed by single experienced surgeon so that the surgeon's effect on the rate of complications is minimised. The mean age of the study was 28.34+/-4.33 years. The study involved 27 males and 13 females. There were 32.5% (n=13) patients in whom 4 implants were placed. In 20% subjects 5 implants were placed. Mucositis was seen in 20% (n=12) subjects. Peri implantitis was seen in 22.5% (n=9) subjects. There were 20% subjects with poor oral hygiene. Crown fracture was seen in 20% (n=8) subjects.

Krisam et al[14]evaluated early failure and possible risk factors for failure of dental implants placed under practice-based conditions.The presence of successful healing (yes/no) at the time of incorporation of the final prosthesis was assessed. Mixed models were compiled for each target variable to enable estimation of the effects of patient-related and implant-related conditions on the risk of early implant failure.Nine out of 186 implants (4.8%) placed in 106 participants failed before incorporation of the final prosthesis. The use of shorter implants (< 10 mm) and the need for augmentation procedures were associated with a greater risk of early implant failure. For shorter implants, the risk was 5.8 times greater than that for longer implants ($p = 0.0230$). Use of augmentation procedures increased the risk by a factor of 5.5 ($p = 0.0174$).

CONCLUSION

Authors found that dental implant failure was quite high among patients. A careful assessment of bone factors and patients related factors should be done before planning dental implants.

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