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 ICV 2018=82.06 UGC approved journal no.63854

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

Original Research

Assessment of peri-implant soft tissues conditions around short implant-supported single crowns in patients with periodontitis

[1]Jigar Kalaria, [2]Vinali Patel, [3]Hardik Makadia, [4]Hardik Lalakiya

[1]Assistant Professor, Department of Dentistry, Major S.D. Singh Medical College & Hospital, Baikunthpuri, Bewar Road Fatehgarh Farrukhabad, U.P., India;
[2]Senior Lecturer, Department of Orthodontics and Dentofacial Orthopaedic, College of Dental Science and Hospital, Bhavnagar, Gujarat, India;
[3]Senior Lecturer, Department of Prosthodontics and Crown & Bridge, College of Dental Science and Hospital, Bhavnagar, Gujarat, India;
[4]Senior Lecturer, Department of Orthodontics and Dentofacial Orthopaedic, Ahmedabad Dental College and Hospital, Ahmedabad, Gujarat, India

ABSTRACT:
Background: Short dental implants have slowly gained popularity among clinicians. Peri-implantitis is a plaque-associated pathological condition occurring in tissues around dental implants, characterized by inflammation in the peri-implant mucosa and subsequent progressive loss of supporting bone. The present study was conducted to assess peri-implant soft tissues conditions around short implant-supported single crowns in patients with periodontitis. **Materials & Methods:** 78 patients requiring short implant of periodontitis of both genderswere put in group I and healthy control were taken in group II. The modified bleeding index (mBI), the modified plaque index (mPLI), peri-implant probing depths (PPD) and the amount of keratinized tissue (KT) were recorded on the mesial, distal, buccal and lingual/palatal sides of each implant. **Results:** Group I had 48 males and 30 females and group II had 45 males and 33 females. The mean mPLI was 0.54 and 0.32, mBI was 1.2 and 0.74, PPD was 3.25 and 2.14 and KTwas 2.43 and 3.17 in group I and group II respectively. The difference was significant (P< 0.05). **Conclusion:** There were poor peri-implant soft tissues conditions around short implant-supported single crowns in patients with periodontitis as compared to healthy patients. Hence, the treatment of periodontitis is essential before inserting dental implants.
Key words: Short dental implants, peri-implant probing depths, modified plaque index

Received: 12 March, 2019 **Accepted:** 15 April 2019

Corresponding author: Jigar Kalaria, Assistant Professor, Department of Dentistry, Major S.D. Singh Medical College & Hospital, Baikunthpuri, Bewar Road Fatehgarh Farrukhabad, U.P., India

This article may be cited as: Kalaria J, Patel V, Makadia H, Lalakiya H. Assessment of peri-implant soft tissues conditions around short implant-supported single crowns in patients with periodontitis**.** J Adv Med Dent Scie Res 2019;7(5):188-191.

INTRODUCTION

Short dental implants have slowly gained popularity among clinicians because of their ability to provide a successful restoration while avoiding vital structures and the morbidity of advanced bone grafting techniques.[1] Short dental implants were less predictable if they were of machined surfaces or if they were placed in areas of poorer bone quality, for example the maxilla. Despite these limitations, short dental implants, regardless of their diameters, have been shown to enjoy similar long-term survival rates as standard (≥10 mm) implants.[2]

Peri-implantitis is a plaque-associated pathological condition occurring in tissues around dental implants, characterized by inflammation in the peri-implant mucosa and subsequent progressive loss of supporting bone.[3] Peri-implantitis sites exhibit clinical signs of inflammation, bleeding on probing, and/or suppuration, increased probing depths and/or recession of the mucosal margin, in addition to radiographic bone loss (greater than 2 mm).[4] Peri-mucositis associated with poor plaque control can be reversed with efficient measures aimed at eliminating the deposits and preventing the development of a subsequent peri-implantitis.In addition to implant-related and prosthesis-related variables considered for the assessment of implants survival and success, there is an emerging matter about the importance of patient-

related factors, such as systemic diseases, smoking and history of periodontal disease.[5]The present study was conducted to assess peri-implant soft tissues conditions around short implant-supported single crowns in patients with periodontitis.

MATERIALS & METHODS

The present study comprised of 78 patients requiring short implant of periodontitisof both genders. All were enrolled in the study once they gave their written consent.

Data such as name, age, gender etc. was recorded. Patients were put in group I and healthy control were taken in group II. Dental implant insertion was carried by single surgeon following all standardized precautionary measures. Peri-implant soft tissues were assessed using a periodontal probe. The modified bleeding index (mBI) and the modified plaque index (mPLI) were recorded on the mesial, central, and distal on the buccal and lingual/palatal sides of each implant. Similarly, the peri-implant probing depths (PPD) were performed on the same six sites. The amount of keratinized tissue (KT) was assessed. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Groups	Group I	Group II
Status	Periodontal diseases	Control
M:F	48:30	45:33

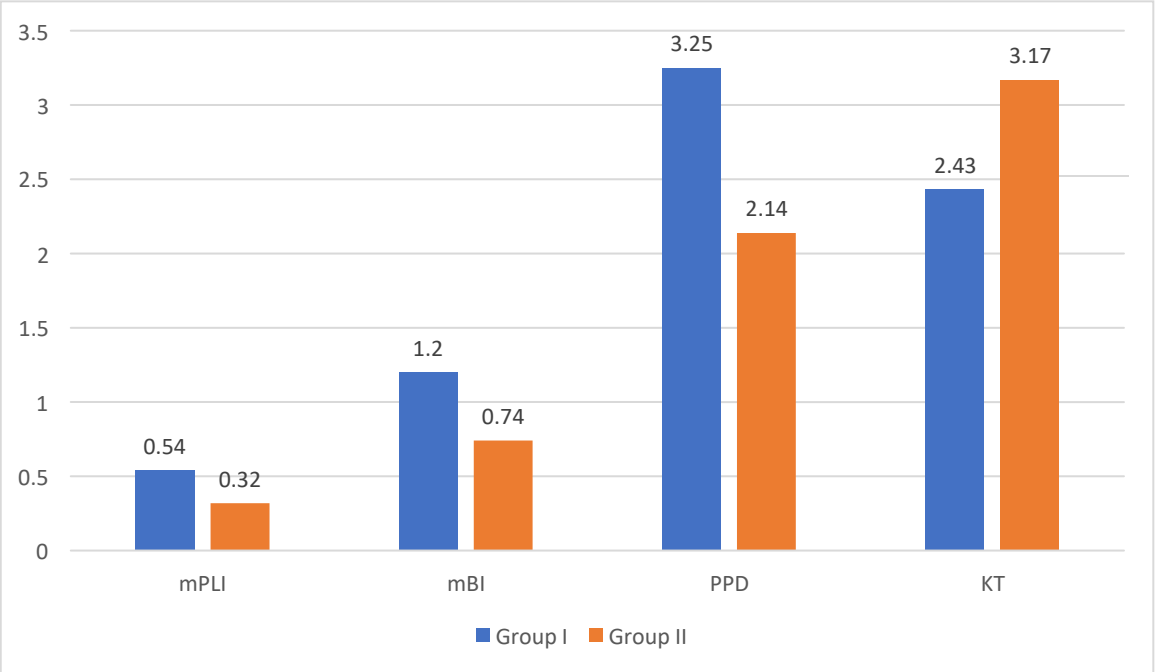
Table I shows that group I had 48 males and 30 females and group II had 45 males and 33 females.

Table II Comparison of parameters

Parameters (mean)	Group I	Group II	P value
mPLI	0.54	0.32	0.04
mBI	1.2	0.74	0.03
PPD	3.25	2.14	0.02
KT	2.43	3.17	0.05

Table II, graph I shows that mean mPLI was 0.54 and 0.32, mBI was 1.2 and 0.74, PPD was 3.25 and 2.14 and KT was 2.43 and 3.17 in group I and group II respectively. The difference was significant (P< 0.05).

Graph I Comparison of parameters



DISCUSSION

As compared to teeth, dental implants lack periodontal ligament and therefore are less able to withstand traumatic occlusal forces. Thus, they are more vulnerable to nonaxial forces, for example moment, torsional, and shear forces exerted to the surrounding bone around implants. As a result, dental implants should be placed in alignment to vectors of loading.[6] It is speculated that reduced implant length might complicate the biomechanical effects of loads transferred to the surrounding bone. To address this issue, wider implants are developed in an attempt to

reduce prosthetic and implant complications and also to improve the long-term implant survival rates.[7]The present study was conducted to assess peri-implant soft tissues conditions around short implant-supported single crowns in patients with periodontitis.

We found that group I had 48 males and 30 females and group II had 45 males and 33 females. Lombardo et al[8]evaluated implant survival, marginal bone loss and peri-implant complications in 326 short and ultra-short implants. Implants were placed in the maxillary and mandibular posterior regions of 140 patients with (PP) and without (NPP) a history of periodontal disease. Clinical and radiographic examinations were performed at 3-year recall appointments. The 8.0, 6.0 and 5.0 mm-length implants placed in PP and NPP were respectively 43.75% and 38.46%, 35.10% and 34.19%, 21.15% and 27.35%; 325 implants (one early failure) were rehabilitated with single crowns in 139 patients. Overall implant survival after 3 years of follow-up was 97.55%, 98.08% and 96.61% for PP and NPP (p = 0.46). Crestal bone level variations were not statistically different among PP and NPP; 15.41% of implants presented signs of mucositis, 14.71% and 16.67% in PP and NPP (p = 0.64). Setting the threshold for bone loss at 2 mm after 36 months, peri-implantitis prevalence was 2.2%, 1.96% and 2.63% in PP and NPP (p = 0.7). Overall implant success was 82.39%, 83.33% and 80.7% for PP and NPP (p = 0.55). Short-term outcomes suggest that short and ultra-short locking-taper implants can successfully be restored with single crowns in the posterior jaws both in PP and NPP.

We observed that the mean mPLI was 0.54 and 0.32, mBI was 1.2 and 0.74, PPD was 3.25 and 2.14 and KT was 2.43 and 3.17 in group I and group II respectively.Monje et al[9]evaluated the effect of implant length on peri-implantmarginal bone loss (MBL) and its associated influencing factors.Selected studies were randomized clinical trials, human experimental clinical trials orprospective studies with a clear aim of investigating marginalbone loss of short dental implants (<10 mm) supporting fixed prostheses. The meta-regression of mean MBL on the moderator “implant length” was found to beinsignificant (P = 0.633). Therefore, it could not be concluded that implant length had an effect onperi-implant MBL. In addition, standardized differences in mean MBL on the subgroups short(<10 mm) and standard (≥10 mm) implants, as determined by the meta-analysis were found to be statistically insignificant (P = 0.222).

Changi et al[10]in a 3.5-year study on 6129 implants, demonstrated that radiographic evidence of periodontitis is one of the principal risk-factor statistically associated (odds ratio (OR) = 3.6) with peri-implantitis. Renvert et al[11]found a OR even equal to 4.5 assessing the likelihood of association between peri-implantitis and history of periodontitis.The literature supports a general agreement that implants can be successfully placed in periodontal patients if proper supportive protocols of maintenance are applied before and after loading in order to prevent peri-implant mucositis and peri-implantitis.[12]

The limitation the study is small sample size.

CONCLUSION

Authors found that there were poor peri-implant soft tissues conditions around short implant-supported single crowns in patients with periodontitis as compared to healthy patients. Hence, the treatment of periodontitis is essential before inserting dental implants.

REFERENCES

1. Karoussis, I.K.; Salvi, G.E.; Heitz-Mayfield, L.J.A.; Bragger, U.; Hammerle, C.H.F.; Lang, N.P. Long-term implant prognosis in patients with and without a history of chronic periodontitis: A 10-year prospective cohort study of the ITIR Dental Implant System. Clin. Oral Implants Res. 2003;14:329–339.
2. Hardt, C.R.E.; Gröndahl, K.; Lekholm, U.; Wennstrom, J.L. Outcome of implant therapy in relation to experienced loss of periodontal bone support. Clin. Oral Implants Res. 2002; 13:488–494.
3. Roccuzzo, M.; De Angelis, N.; Bonino, L.; Aglietta, M. Ten-year results of a three-arm prospective cohort study on implants in periodontally compromised patients. Part 1: Implant loss and radiographic bone loss. Clin. Oral Implants Res. 2010;21:490–496.
4. Roos-Jansaker, A.-M.; Lindahl, C.; Renvert, H.; Renvert, S. Nine- to fourteen-year follow-up of implant treatment. Part II: Presence of peri-implant lesions. J. Clin. Periodontol. 2006; 33: 290–295.
5. Koldsland, O.C.; Scheie, A.A.; Aass, A.M. The association between selected risk indicators and severity of peri-implantitis using mixed model analyses. J. Clin. Periodontol. 2011;38: 285–292.
6. Roccuzzo, M.; Bonino, F.; Aglietta, M.; Dalmasso, P. Ten-year results of a three arms prospective cohort study on implants in periodontally compromised patients. Part 2: Clinical results. Clin. Oral Implants Res. 2012;23: 389–395.
7. Demiralp, K.Ö.; Akbulut, N.; Kursun, S.; Argun, D.; Bagis, N.; Orhan, K. Survival Rate of Short, Locking Taper Implants with a Plateau Design: A 5-Year Retrospective Study. BioMed Res. Int. 2015;2015:1–8.
8. Lombardo G, Signoriello A, Marincola M, Nocini PF. Assessment of peri-implant soft tissues conditions around short and ultra-short implant-supported single crowns: a 3-year retrospective study on periodontally healthy patients and patients with a history of periodontal disease. International Journal of Environmental Research and Public Health. 2020 Dec;17(24):9354.
9. Monje, A.; Suarez, F.; Galindo-Moreno, P.; García-Nogales, A.; Fu, J.H.; Wang, H.L. A systematic review on marginal bone loss around short dental implants (<10 mm) for implant-supported fixed prostheses. Clin. Oral Implants Res. 2014;25: 1119–1124.
10. Changi, K.K.; Finkelstein, J.; Papapanou, P.N. Peri-implantitis prevalence, incidence rate, and risk factors: A study of electronic health records at a U.S. dental school. Clin. Oral Implants Res. 2019;30: 306–314.

11. Renvert, S.; Aghazadeh, A.; Hallström, H.; Persson, G.R. Factors related to peri-implantitis-A retrospective study. Clin. Oral Implants Res. 2014; 25: 522–529.
12. Arunyanak, S.P.; Sophon, N.; Tangsathian, T.; Supanimitkul, K.; Suwanwichit, T.; Kungsadalpipob, K. The effect of factors related to periodontal status toward peri-implantitis. Clin. Oral Implants Res. 2019;30:791–799.