

Original Research

Assessment of effect of smoking on dental implant therapy: An observational study

Harmeet Singh¹, Sania Gupta², JPS Malhotra³

¹Associate Professor, Department of Orthodontics, Dasmesh institute of research and dental sciences, Faridkot, India

²BDS, Private consultant, India

³Senior Lecturer, Department of Oral Pathology, Mithila Minority Dental College and Hospital, Bihar, India

ABSTRACT:

Background: Despite the fact that implant survival and success rates are high, there is a growing impression that there are risk factors exposing patients to complications and ultimately to failure of implants. The present study was conducted for assessing the Effect of smoking on dental implant therapy. **Materials & methods:** A total of 35 smokers and 35 non-smokers were enrolled. Only those patients were included which underwent dental therapy for missing maxillary first molars. Complete demographic details of all the patients were obtained. All the procedures were carried out in local anaesthesia. Follow-up was done in all the patients was done. Prognosis was assessed by analysing the success and failure. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. **Results:** Prognosis of dental among smokers and non-smokers was found to be 82.86 percent and 97.14 percent respectively. While analysing statistically, it was seen that smoking is a significant risk factor affecting prognosis of dental implants. **Conclusion:** Smoking is a significant risk factor for failure of dental implant therapy.

Key words: Dental implant, Smoking

Received: 12 December, 2019

Accepted: 29 December, 2019

Corresponding author: Dr. JPS Malhotra. Senior Lecturer, Department of Oral Pathology, Mithila Minority Dental College and Hospital, Bihar, India

This article may be cited as: Singh H, Gupta S, Malhotra JPS. Assessment of effect of smoking on dental implant therapy: An observational study. J Adv Med Dent Scie Res 2020; 8(1): 270-272.

INTRODUCTION

The success and predictability of implants are well established. For a great number of dental implant systems survival rates are within the 90 percentile. The success rates of implants tend to be lower than implant survival rates and change in relation to the measured criteria (implant mobility, bone loss, the presence of signs and symptoms, the resulting level of aesthetics, etc.). Despite the fact that implant survival and success rates are high, there is a growing impression that there are risk factors exposing patients to complications and ultimately to failure of implants.¹⁻³ Among the perceived risks are occlusal overload, lower bone quality, and systemic diseases. Tobacco smoking reduces leukocyte activity and is responsible for a low chemotactic migration rate, low mobility and low phagocytic activity. These impairments

cause low infection resistance and interrupted wound healing. Smoking is also related to low calcium absorption. Reports in the literature show lower survivability of dental implants in smokers. One possible mechanism by which smoking might affect osseointegration is lowering blood flow rate due to increased peripheral resistance and platelet aggregation.⁴⁻⁷ Hence; the present was conducted for assessing the Effect of smoking on dental implant therapy.

MATERIALS & METHODS

The present study was undertaken for assessing effect of smoking on dental implant therapy. A total of 35 smokers and 35 non-smokers were enrolled. Only those patients were included which underwent dental therapy for missing maxillary first molars. Complete demographic details of all the patients were obtained. All the procedures were carried

out in local anaesthesia. Follow-up was done in all the patients was done. Prognosis was assessed by analysing the success and failure. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. Chi-square test was used for evaluation of level of significance.

RESULTS

In the present study, 35 smokers and 35 non-smokers were analysed. Mean age of the patients of the smokers group and non-smokers group was 41.8 years and 39.5 years respectively. There were 21 females and 14 males in the smokers group while there were 16 males and 19 females in the non-smokers group. Prognosis of dental among smokers and non-smokers was found to be 82.86 percent and 97.14 percent respectively. While analysing statistically, it was seen that smoking is a significant risk factor affecting prognosis of dental implants.

Table 1: Age and gender-wise distribution

Parameter		Smokers group	Non-smokers group
Age group (years)	Less than 40	15	18
	More than 40	20	17
Males	Females	21	19
	Males	14	16

Table 2: Comparison of prognosis

Prognosis	Smokers group		Non-smokers group	
	N	%	n	%
Success	29	82.86	34	97.14
Failure	6	17.14	1	2.86
p-value	0.00 (Significant)			

DISCUSSION

Implant-supported restorations offer extremely effective and predictable treatment of complete and partial edentulism. However, while implants enjoy high success and survival rates, the incidence of peri-implant disease has been gradually increasing. An important factor in implant failure, peri-implant disease occurs as a result of a disruption in the balance between bacteria and host-response following osseo-integration. Any efforts at prevention and treatment of peri-implant disease must clearly address the contributing factors, which include poor oral hygiene, smoking, a history of periodontitis, diabetes mellitus, genetic factors, alcohol consumption, and implant surface characteristics, all of which have been mentioned as possible risk factors in the development of peri-implant disease.⁷⁻⁹ The present study was conducted for assessing the Effect of smoking on dental implant therapy.

In the present study, 35 smokers and 35 non-smokers were analysed. Mean age of the patients of the smokers group and non-smokers group was 41.8 years and 39.5 years respectively. There were 21 females and 14 males in the smokers group while there were 16 males and 19 females in

the non-smokers group. Prognosis of dental among smokers and non-smokers was found to be 82.86 percent and 97.14 percent respectively. Bruno Ramos Chrcanovic et al tested the null hypothesis of no difference in the implant failure rates, risk of postoperative infection, and marginal bone loss for smokers versus non-smokers, against the alternative hypothesis of a difference. Main search terms used in combination: dental implant, oral implant, smoking, tobacco, nicotine, smoker, and non-smoker. Eligibility criteria included clinical human studies, either randomized or not. The search strategy resulted in 1432 publications, of which 107 were eligible, with 19,836 implants placed in smokers, with 1259 failures (6.35%), and 60,464 implants placed in non-smokers, with 1923 failures (3.18%). The insertion of implants in smokers significantly affected the failure rates, the risk of postoperative infections as well as the marginal bone loss. The results should be interpreted with caution due to the presence of uncontrolled confounding factors in the included studies. Smoking is a factor that has the potential to negatively affect healing and the outcome of implant treatment.⁹

While analysing statistically, it was seen that smoking is a significant risk factor affecting prognosis of dental implants. James R Keenan et al assessed the impact of smoking on failure rates, postoperative infection and marginal bone loss of dental implants. Electronic searches were undertaken in PubMed/Medline, Web of Science, Cochrane Oral Health Group Trials Register as well as hand searching. Quality assessment of the studies was performed using a scale to appraise observational studies. The meta-analysis of four studies evaluating the risk of postoperative infections in smokers presented a statistically significant result with an RR: 2.01, 95% CI 1.09-3.72, heterogeneity I(2): 0%, and the marginal bone loss had an overall statistically significant difference of MD 0.32, 95% CI 0.21-0.43; heterogeneity in this case was I(2): 95%. The insertion of implants in smokers affected the failure rates, the risk of postoperative infections, as well as the marginal bone loss.¹⁰ Sara A Alfadda conducted a study to answer the following PICO (Participants, Intervention, Comparison, and Outcome) question: "Does smoking increase the rates of implant failure and peri-implant marginal bone loss in patients with dental implants?" An extensive electronic search of the Cochrane Central Register of Controlled Trials, PubMed, Medline, Embase, and Web of Science databases and a subsequent hand search were performed. First-year marginal bone loss in smokers ranged from 0.02 to 0.45 mm. In the nonsmokers, bone loss ranged from -0.08 to 0.42 mm. Nonsmokers lost significantly less bone during the first year and subsequent years. The available scientific evidence suggests that smoking is associated with significantly increased rates of implant failure and marginal bone loss.¹¹

CONCLUSION

From the above results, the authors concluded that smoking is a significant risk factor for failure of dental implant therapy.

REFERENCES

1. Albrektsson T, Zarb G, Worthington P, Eriksson AR. The long term efficacy of currently used dental implants: A review and proposed criteria of success. *Int J Oral Maxillofac Implants.* 1986;1:11–25.
2. Misch CE, Perel ML, Wang HL, et al. Implant success, survival, and failure: The International Congress of Oral Implantologists (ICOI) Pisa Consensus Conference. *Implant Dent.* 2008;17:5–15.
3. Daubert DM, Weinstein BF, Bordin S, et al. Prevalence and predictive factors for peri-implant disease and implant failure: Across-sectional analysis. *J Periodontol.* 2015;86:337–47.
4. Barao VA, Ricomini-Filho AP, Faverani LP, et al. The role of nicotine, cotinine and caffeine on the electrochemical behavior and bacterial colonization to cp-Ti. *Mater Sci Eng C Mater Biol Appl.* 2015;56:114–24.
5. Al-Aali KA, Alrabiah M, Al-Hamdan RS, et al. Impact of jaw location on clinical and radiological status of dental implants placed in cigarette-smokers and never-smokers: 5-year follow-up results. *Clin Implant Dent Relat Res.* 2018;20:983–87.
6. Al Amri MD, Kellesarian SV, Abduljabbar TS, et al. Comparison of peri-implant soft tissue parameters and crestal bone loss around immediately-loaded and delayed loaded implants among smokers and nonsmokers: 5-year follow-up results. *J Periodontol.* 2017;88:3–9.
7. Koldslund OC, Scheie AA, Aass AM. Prevalence of peri-implantitis related to severity of the disease with different degrees of bone loss. *J Periodontol.* 2010;8:231–38.
8. Mombelli A, Müller N, Cionca N. The epidemiology of peri-implantitis. *Clin Oral Implants Res.* 2012;23:67–76.
9. Bruno Ramos Chrcanovic 1, Tomas Albrektsson 2, Ann Wennerberg . Smoking and dental implants: A systematic review and meta-analysis. *J Dent.* 2015 May;43(5):487-98.
10. James R Keenan 1, Analia Veitz-Keenan. The impact of smoking on failure rates, postoperative infection and marginal bone loss of dental implants. *Evid Based Dent.* 2016 Mar;17(1):4-5. doi: 10.1038/sj.ebd.6401144.
11. Sara A Alfadda. Current Evidence on Dental Implants Outcomes in Smokers and Nonsmokers: A Systematic Review and Meta-Analysis. *J Oral Implantol.* 2018 Oct;44(5):390-399. doi: 10.1563/aaid-joi-D-17-00313. Epub 2018 Jun 4.