

To Evaluate the Awareness and Knowledge of Peri-Implantitis and Peri-Mucositis among Dental Practitioners across Rajkot City: A Questionnaire-Survey

Dr Gunjan Jadav¹, Dr Bela Dave², Dr Ashish Kaur³, Dr Viral Thakker⁴, Dr Jubin Thacker⁵, Dr Kinjal Savjani⁶

¹PG Student, Department of Periodontology, AMC Dental College Ahmedabad, Gujarat, India

²Professor and Head, Department of Periodontology, AMC Dental College Ahmedabad, Gujarat, India

³Reader and PG Guide, Department of Periodontology, AMC Dental College Ahmedabad, Gujarat, India

⁴Former Reader and PG Guide, Department of Periodontology, AMC Dental College Ahmedabad, Gujarat, India

⁵PG Student, Department of Periodontology, AMC Dental College Ahmedabad, Gujarat, India

⁶PG Student, Department of Periodontology, AMC Dental College Ahmedabad, Gujarat, India

Abstract: *Background:* Dental implants have revolutionized the treatment of edentulous patients for the last two decades demonstrating high success and survival rates. However, clinicians are challenged with biological complications of peri-implant tissues; namely, peri-implant mucositis and peri-implantitis. Peri-implant mucositis and peri-implantitis are the inflammatory conditions that are associated with osseointegrated implants. *Aim:* To evaluate the awareness and knowledge of peri-implantitis and peri-mucositis among dental practitioners in Rajkot city. *Materials and Methods:* Total sample size included was 80. The proposed study was conducted at Rajkot city. The participants were informed about the purpose of the study, and they participated in the self-administered questionnaire-based survey of 13 questions. The collected data was entered at the end of the study in the master chart prepared in Microsoft Excel 2010 on the computer. Statistical analysis was conducted. *Results:* Out of 80 participants, only 6% of the participants was unaware regarding the radiographic signs in case of perimucositis. *Conclusion:* The present study concluded that there was not any significant differences between the awareness and knowledge regarding periimplantitis and perimucositis among the practitioners practicing more than five year or less than five years.

Keywords: Periimplantitis, periodontal health, perimucositis, Oral hygiene practices.

1. Introduction

Dental Implant is a successful treatment modality for replacing single tooth or multiple teeth. It also prevents the natural teeth contrary to fixed partial denture therapy. Comfort level is high in implant and also gives better aesthetic results. Although it is not very common treatment plan as compared to fixed partial denture or removable dentures because of lack of awareness and its relatively high cost. [6]

Dental implants have revolutionized the treatment of edentulous patients for the last two decades demonstrating high success and survival rates. However, clinicians are challenged with biological complications of peri-implant tissues; namely, peri-implant mucositis and peri-implantitis. [2]

Peri-implant mucositis is a reversible inflammatory process causing redness and swelling localized to the soft tissue around implants without signs of loss of supporting bone following initial bone remodelling during healing. [1]

Peri-implantitis is an inflammatory process which includes both soft tissue inflammation and progressive loss of supporting bone beyond biological bone remodelling of the

functioning implant, possibly leading to implant loss. [1]

Peri-implant mucositis and peri-implantitis are the inflammatory conditions that are associated with osseointegrated implants, but there is limited information available for the prevalence and treatment of peri-implant diseases. [1]

Peri-implantitis is a pathological condition occurring in tissues around dental implants, characterized by inflammation in the peri-implant mucosa and progressive loss of supporting bone. [2]

The important criteria for the definition of peri-implant mucositis are inflammation in the peri-implant mucosa and the absence of continuing marginal peri-implant bone loss. The clinical sign of inflammation is bleeding on probing, while additional signs may include erythema, swelling, and suppuration. [3]

Peri-implant mucositis develops from healthy peri-implant mucosa following accumulation of bacterial biofilms around osseointegrated dental implants. [3]

Periimplantitis is also related to inadequate distribution of the chewing pressure on the tissues surrounding the implant,

Volume 11 Issue 7, July 2022

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thus leading to loosening of the support.^[5]

Aim

The aim of this study was to evaluate the awareness and knowledge of peri-implantitis and peri-mucositis among dental practitioners in Rajkot city.

Inclusion and Exclusion Criteria

All the registered general dental practitioners residing or practicing in Rajkot, willing to participate in the study were included and the drop outs were excluded from the study.

The present study was conducted among private dental practitioners in Rajkot city. Prior permission was obtained from the Dean of AMC Dental College, Head of Department of Periodontology, PG guide in Department of Periodontology, IRB Committee of AMC dental college. 80 participants willing to provide informed consent were included. Questionnaire with 13 questions was sent to the participants via online mode (emails, whatsapp or web). Data was collected & compiled into excel sheet and analysis was done using appropriate statistical software. Descriptive and inferential statistical analysis was carried out in the present study.

2. Materials and Method

Questions

- 1) Peri-implantitis is:
 - a) Bone loss around an osseointegrated implant,
 - b) Soft tissue inflammation around an implant,
 - c) Both a and b,
 - d) None of the above
- 2) Peri-mucositis is:
 - a) Bone loss around an osseointegrated implant,
 - b) Soft tissue inflammation around an osseointegrated implant,
 - c) Both a and b,
 - d) None of the above
- 3) Causes of periimplantitis:
 - a) Microbial activity,
 - b) Failure of osseointegration,
 - c) Excessive mechanical overload,
 - d) All of the above
- 4) What are the clinical signs of peri-implantitis?
 - a) Periodontal pocket at implant site,
 - b) Bleeding and suppuration at implant site,
 - c) Pain at implant site,
 - d) Both a and b
- 5) Clinical signs of peri-mucositis:
 - a) Bleeding and erythema around implant,
 - b) Localized pain around implant,
 - c) Bone loss around implant,
 - d) Both a and b
- 6) Characteristic radiographic sign of periimplantitis:
 - a) Wedge-shaped defect around implant,
 - b) Saucer-shaped defect around implant,,
 - c) Periapical radiolucency around implant,,
 - d) Crestal bone loss around implant.
- 7) Is there any radiographic changes in case of peri-mucositis?
 - a) Yes
 - b) No
- 8) Most commonly used Instruments for local debridement at the site of peri-implantitis:
 - a) Stainless steel currettes
 - b) Conventional ultrasonic scaler
 - c) Rotating titanium brush,
 - d) Teflon ultrasonic scalers

- 9) Which according to you is a reversible condition?
- a) Perimucositis
 - b) Periimplantitis
 - c) both a and b
 - d) none
- 10) The non-invasive method of reducing bacteria plaque at the implant site is:
- a) Photosensitization,
 - b) Photodynamic therapy.
 - c) Laser therapy,
 - d) All the above
- 11) The best method of surgical resection at the site of peri-implantitis:
- a) Autogenous bone graft,
 - b) GTR Membranes only,
 - c) Autogenous graft covered by membrane placement
 - d) Control access flap
- 12) The main complication after surgical resection in case of periimplantitis:
- a) Failure of bone regeneration,
 - b) Failure of reosseointegration,
 - c) Exposure of membrane,
 - d) All the above
- 13) Implant surface decontamination can be achieved by:
- a) Gauze soaked in saline,
 - b) Air-powder abrasive and citric acid application,
 - c) Gauze soaked in saline and 0.1% chlorhexidine,
 - d) All the above

Statistical Analysis

Data was collected & compiled into excel sheet and analysis was done using appropriate statistical software. Descriptive and inferential statistical analysis was done.

3. Results

Out of 80 participants, 50% (40) were male, and 50% (40) were female. The mean age of the participants was 33.5 years with a minimum age of 21 years and maximum age of 46 years.

Table 1: Dental Practitioners Response about the Awareness and Knowledge of Peri-implantitis & Peri-mucositis

Questions	Experience of Dental Practitioners				P value
	<5 Years(n=43)		>5 Years(n=40)		
	Correct	Incorrect	Correct	Incorrect	
Peri-implantitis is	27	16	36	4	0.004
Peri-mucositis is	34	9	39	1	0.010
Causes of peri-implantitis	41	2	40	0	0.167
What are the clinical signs of peri-implantitis?	37	6	39	1	0.061
Clinical signs of peri-mucositis	17	26	24	16	0.062
Characteristic radiographic sign of peri-implantitis	16	27	11	29	0.345
Is there any radiographic changes in case ofperi-mucositis	38	5	40	0	0.026
Most commonly used Instruments for localdebridement at the site of peri-implantitis	9	34	5	35	0.305
Which according to you is a reversiblecondition?	27	16	29	11	0.345
The non-invasive method of reducing bacteriaplaque at the implant site is	24	19	21	19	0.762
The best method of surgical resection at thesite of peri-implantitis	31	12	27	13	0.513
The main complication after surgical resectionin case of peri-implantitis	20	23	12	28	0.123
Implant surface decontamination can beachieved by	23	20	19	21	0.586

4. Discussion

Oral health is multifaceted and includes the ability to speak, smile, smell, taste, touch, chew, swallow and convey a range of emotions through facial expressions with confidence and without pain, discomfort and diseases of craniofacial complex. [7]

the most commonly encountered condition is edentulism.^[8] Despite advances in preventive dentistry, edentulism is still a major public health problem worldwide resulting in a series of deleterious consequences for oral and general health.^[9] Various treatment options are available for treating edentulism, most common choice being fixed partial denture.^[10,11]

Among the various diseases affecting the oral cavity one of A dental implant is a newer, near- natural tooth replacement

option available to replace missing teeth and their use has become progressively important as most of the patients treated with dental implants have reported improvement in their quality of life.^[12,13]

There are various advantages of dental implants which include permanent replacement, comfort, appearance, stability and functional efficiency over the other replacement options but high cost, fear of surgery, lack of knowledge and perception among population prevent affected population from getting benefits from the available sources.^[14]

When asked about the definition of peri-implantitis, 19% of the dentists chose bone loss around an osseointegrated implant as the right option, 13.9% chose soft tissue inflammation around an implant, and 76.2% chose both the options. Similarly, when asked about peri-mucositis, 88.1% of the dentists chose soft tissue inflammation around an osseointegrated implant, and 8.3% chose both the options.

The causes of periimplantitis were listed as microbial activity, failure of osseointegration, excessive mechanical load, and a majority (85%) of the dental practitioners chose all the options as the possible etiological factors.

However, about the clinical signs of peri-implantitis, 3.4% suggested periodontal pocket, 1.4% suggested bleeding and suppuration, and 3.8% suggested pain. A majority participants around 90.5% chose all the options as the clinical signs of periimplantitis whereas about characteristic radiographic signs of peri-implantitis, 47.6% of the practitioners chose wedge-shaped defect as the right answer and about 32.1% chose saucer-shaped defect, 14.3% chose crestal bone loss and 6% chose peri-apical radiolucency as the right option.

When participants were asked about the clinical signs of peri-mucositis, 46.4% suggested both i.e. bleeding and erythema around implant and localized pain around implant, and 4.8% bone loss around implant and majority of 48.8% stated bleeding and erythema around implant as correct answer however about radiographic changes in case of perimucositis 6% of participants were unaware.

The instruments used for local debridement were listed as stainless steel currettes, conventional ultrasonic scaler, rotating titanium brush, Teflon ultrasonic scalers. Majority (78.3%) of the participants choose Teflon ultrasonic scalers as the instruments of choice for local debridement around implants.

However, when asked which according to you is a reversible condition majority 66.7% choose perimucositis as the correct answer while 26.2% choose both as the correct answer i.e perimucositis and periimplantitis.

The best non-invasive method of surface decontamination was chosen as photodynamic therapy, followed by photosensitization and laser therapy. The majority 53.6% of them choose all of the above as the correct answer.

The best method of surgical resection at the site of peri-

implantitis was suggested as autogenous bone graft covered by membrane by a majority 69% of the dental practitioners.

The major complications after surgical resection were listed as failure of bone regeneration, failure of re osseointegration, and exposure of membrane and majority 38.1% of them chose all the options as the major complications.

Implant surface decontamination methods were listed as gauze soaked in saline, air-powder abrasive and citric acid application, as well as gauze soaked in saline and 0.1% chlorhexidine to be good methods of surface decontamination. Majority 78% choose gauze soaked in saline and 0.1% chlorhexidine as correct method.

5. Conclusion

The survey concluded that an acceptable number of participants had heard of dental implants complications and its treatment option for replacing missing teeth, and focus should be made on emphasizing the awareness of various treatment modality in case of perimucositis and periimplantitis.

Conflicts of Interest

The authors declare they have no potential conflict of interests regarding this article.

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