

## Original Research

### Determination of peri- implant condition in periodontally weak patients- A clinical study

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#### ABSTRACT:

**Background:** The present study determined peri- implant condition in periodontal weak patients. **Materials & Methods:** 140 dental implants were taken in study. The clinical parameters such as visible plaque index (VPI), gingival bleeding index (GBI), probing pocket depth (PPD) and bleeding on probing (BoP) were recorded. Digital intraoral radiographs were taken for the detection of marginal bone loss. Each implant was classified as health, clinical stability, peri-implant mucositis and peri-implantitis. **Results:** Implants were classified as healthy in 28, stability in 27, mucositis in 40 and Peri- implantitis in 45. The difference was significant ( $P < 0.05$ ). The mean PPD in healthy implant was 4.2 mm, in stable implant was 5.6 mm, implant with mucositis was 5.7 mm and with peri- implantitis was 5.9 mm. BL  $>2$  threads was observed in 4 patients with stability and 40 patients with peri- implantitis. BOP was seen in 84 sites in patients with mucositis and at 102 sites in patients with peri- implantitis. **Conclusion:** Dental implants placed in periodontal week patients may have high long-term survival rates.

**Key words:** Dental implants, Gingival bleeding index, Probing pocket depth.

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#### INTRODUCTION

The process of peri-implantitis consists of peri-implant bone loss after inflammation of the peri-implant tissues, essentially associated with bacterial infection.<sup>1</sup> In addition, factors such as systemic diseases, smoking, poor oral hygiene, occlusal overload, characteristics of the prosthetic crown, position, shape, surface and type of implant system may be involved with peri-implant bone loss.<sup>2</sup>

In this context, peri-implant bone loss is characterized as a consequence of the association of innumerable characteristic conditions. Therefore, clinical periodontal parameters such as bleeding on probing, suppuration, isolated regions of bone loss are not sufficient to characterize peri-implantitis.<sup>3</sup>

Peri-implant mucositis may progress to peri-implantitis and even if the pathogenic mechanism was

not yet clear, many similarities with periodontitis had already been recognized, such as the presence of known pathogens of periodontal disease. The term peri-implantitis was first described in the study of Mombelli et al<sup>4</sup> as an infectious disease. After that, a growing interest to define peri-implant inflammatory diseases has been observed. However, two decades after the first definition of peri-implantitis, most of these studies continued to present a diversity of criteria in the diagnosis of these diseases.

Knowledge of the factors that lead to peri-implant disease is crucial for maintaining the dental implants to function properly.<sup>5</sup> Several patient- and implant-related risk indicators including poor oral hygiene, smoking, history of periodontal disease, and compliance of maintenance have been reported. On the other hand, the necessity of keratinized tissue

around implant is controversial. Some researchers reported that insufficient or an absence of keratinized mucosa (KM) is related to increased plaque accumulation and inflammatory parameters around implants.<sup>6</sup>

The present study was conducted to assess peri-implant condition in patients with periodontal weak teeth.

**MATERIALS & METHODS**

The present study was conducted on 140 dental implants who were inserted in the last 10 years in both genders. Subjects who had lost at least one tooth due to periodontal disease were diagnosed as periodontally compromised patients. The approval of the study was obtained from institutional ethical committee. ALL enrolled subjects were informed regarding the study and their consent was obtained. Ethical clearance was taken before starting the study.

Data such as name, age, gender etc. was recorded. All patients underwent clinical examination. For all implants evaluated, the clinical parameters such as visible plaque index (VPI), gingival bleeding index (GBI), probing pocket depth (PPD) and bleeding on probing (BoP) were recorded. Digital intraoral radiographs were taken for the detection of marginal bone loss.

Each implant was classified as follows, as defined by Mir-Mari et al<sup>7</sup> as health – BL <2 thread without BoP, clinical stability – BL ≥2 thread without BoP. Inflammation as peri-implant mucositis– BL <2 thread with BoP and peri-implantitis– BL ≥2 thread with BoP or suppuration. Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

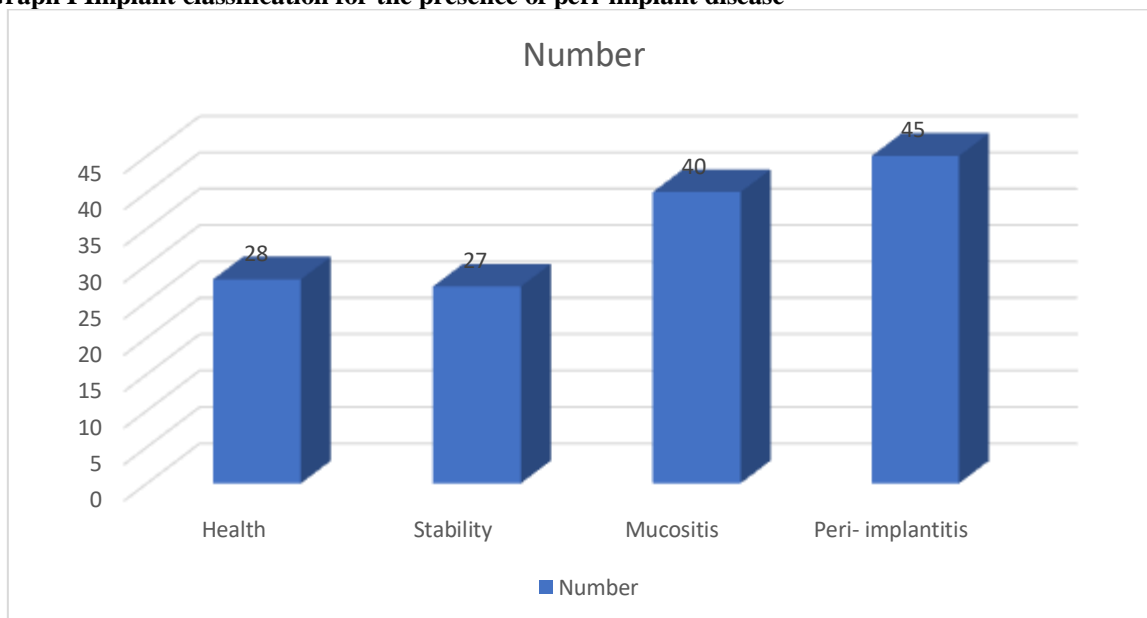
**RESULTS**

**Table I Implant classification for the presence of peri-implant disease**

Implant classification	Number	P value
Health	28	0.21
Stability	27	
Mucositis	40	
Peri- implantitis	45	

Table I, graph I shows that implants were classified as healthy in 28, stability in 27, mucositis in 40 and Peri-implantitis in 45. The difference was significant (P< 0.05).

**Graph I Implant classification for the presence of peri-implant disease**



**Table II Assessment of parameters**

Implant classification	PPD (mean), mm	BL >2 threads (mesial or distal)	BOP sites
Health	4.2	-	-
Stability	5.6	4	-
Mucositis	5.7	-	84
Peri- implantitis	5.9	40	102

Table II shows that mean PPD in healthy implant was 4.2 mm, in stable implant was 5.6 mm, implant with mucositis was 5.7 mm and with peri- implantitis was 5.9 mm. BL >2 threads was observed in 4 patients with stability and 40 patients with peri- implantitis. BOP was seen in 84 sites in patients with mucositis and at 102 sites in patients with peri- implantitis.

## DISCUSSION

The susceptibility of individuals to the periodontal disease process is probably a determinant factor. Approached in a systematic review, studies have emphasized a greater degree of peri-implant bone loss in periodontally compromised patients in comparison with those who were periodontally healthy and suggested increased susceptibility of these patients, seeing that the majority of individuals diagnosed with advanced or aggressive periodontitis continued to have this condition when they were submitted to implant placement therapy.<sup>8</sup> However, this hypothesis did not necessarily apply to the milder forms of periodontitis. Nevertheless, the lack of control of the factors common to periodontitis and peri-implantitis and the diversity of studies with varied methodologies limited the ability to extract conclusive information.<sup>9</sup> Dental implants are seen as a good option for replacing missing teeth, because they present high success and survival rates. Reports on the prevalence of peri-implantitis are very variable, but the presence of periodontal disease has been perceived to be a possible risk factor. Treatment with implants in patients with periodontal disease must not be performed without a complete evaluation and stabilization of this problem.<sup>10</sup> The present study was conducted to assess peri- implant condition in patients with periodontal weak teeth.

In present study, implants were classified as healthy in 28, stability in 27, mucositis in 40 and Peri-implantitis in 45. Lopes et al<sup>11</sup> included a total of 58 implants which were classified as 11 (18.9%) as healthy and 12 (20.7%) as clinically stable. The other 35 implants (60.4%) had some type of peri-implant inflammation, 20 of them (34.5%) were diagnosed with peri-implant mucositis and 15 (25.9%) with peri-implantitis. Among the variables studied, the results showed statistically significant differences for implant location ( $P = 0.001$ ) and GBI ( $P = 0.03$ ). Most of the maxillary implants (85.7%) were classified for some type of peri-implant disease. For the implants which resulted in Score 1 for GBI, most of them (75.0%) were also classified for some type of peri-implant disease.

We found that mean PPD in healthy implant was 4.2 mm, in stable implant was 5.6 mm, implant with mucositis was 5.7 mm and with peri- implantitis was 5.9 mm. BL >2 threads was observed in 4 patients with stability and 40 patients with peri- implantitis. BOP was seen in 84 sites in patients with mucositis and at 102 sites in patients with peri- implantitis.

Gunpinar et al<sup>12</sup> determined the prevalence of peri-implant mucositis and peri-implantitis and to reveal the risk indicators associated with peri-implant diseases. Peri-implant examination included probing pocket depth (PPD), bleeding on probing (BoP), plaque index (PI), gingival index (GI), and keratinized tissue width. Implants were classified into three groups: healthy, peri-implant mucositis, and peri-implantitis. 41.1% (n = 157) and 36.9% (n = 84) of patients had mucositis and peri-implantitis, respectively. 53.6% (n = 758) of implants (95%CI 80.2–90.4) had mucositis, and 21.7% (n = 307) had peri-implantitis. Patients with a maintenance < 2/year (OR = 2.576), having periodontitis (OR = 3.342) and higher PI (OR = 3.046) had significant associations with the development of peri-implant mucositis. Significant ORs were determined for peri-implantitis with patients having maintenance < 2/year (OR = 2.048), having number of implants  $\geq 4$  (OR = 2.103), diagnosed with periodontitis (OR = 3.295), and higher PI (OR = 7.055). Keratinized tissue width < 2 mm (ORs = 5389/8.013), PPD (ORs = 1.570/8.338), PI (ORs = 6.726/5.205), and BoP (ORs = 3.645/4.353) independent variables were significantly associated with both peri-implant mucositis and peri-implantitis at implant level, respectively.

The shortcoming of the study is small sample size.

## CONCLUSION

Authors found that dental implants placed in periodontal weak patients may have high long-term survival rates.

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