

## Original Research

### Evaluation of peri-implant conditions in patients with periodontally weak teeth- A clinical study

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#### ABSTRACT:

**Background:** The study was conducted to evaluate the peri-implant conditions in periodontally weak teeth. **Materials & Methods:** The present study was conducted on 82 patients who received dental implants in last 5 years of both genders. Implant classification after collection of clinical and radiographic data, each implant was classified as follows Health – BL. Clinical stability – BL  $\geq 2$  thread without BoP Inflammation c. Peri-implant mucositis – BL. Parameters such as gingival bleeding index (GBI) was evaluated. **Results:** Twenty of the 104 implants were stable, 22 were in good condition, 34 had mucositis, and 28 had peri-implantitis. In 14 out of 24 single units and 48 out of 80 multiple units, peri-implant disorders were found. Out of the 56 implants implanted in the maxilla, 38 implants had peri-implant disorders; 34 implants had these conditions, of which 74 used the implants' own bone and 28 implants used bone grafting. The greatest number of diseases (24) were found in about thirty implants with a diameter of less than 3.75 mm and fifteen implants out of twenty-four with a length of less than 10 mm. Peri-implant diseases were found in fifty of the fifty implants where GBI was present. There was a substantial difference ( $P < 0.05$ ).

**Conclusion:** Authors found that subjects with a history of periodontal disease are more susceptible to peri-implant diseases.

**Key words:** Dental implants, Gingival bleeding index, Peri-implant diseases.

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#### INTRODUCTION

Oral endosseous implant systems that offer two distinct healing modalities—submerged and nonsubmerged—have been created and effectively employed for the treatment of patients who are either entirely or partially edentulous. The biological understanding of peri-implant soft tissue repair and osseointegration has increased rapidly.<sup>1</sup> Clinical peri-implant examination is required for the individual in order to design treatment actions and identify early indicators of illness. Only when the phases of peri-implant illness are established and suitable clinical measures and indices are available can an objective comparison of various implant systems be conducted.<sup>2</sup> Gum, periodontal ligament, cementum, and alveolar bone comprise the dental anchor apparatus, which can be harmed by multifactorial periodontal disorders that present with inflammatory symptoms in receptive hosts. Such inflammatory disorders might produce lesions that lead to tooth loss, in which case dental implants will become the preferred therapeutic option. Certain risk factors, including inadequate plaque control, diabetes, tobacco use, and a history of periodontitis, have been connected to peri-implant disease.<sup>4</sup> The presence

of established periodontal disease bacteria is one of the many parallels between peri-implant mucositis and peri-implantitis that have already been identified, even though the pathogenic process is still unclear. Patients treated with dental implants are not equally susceptible to peri-implant illnesses; rather, these conditions primarily impact patient profiles who are more likely to be at high risk for their onset and progression.<sup>5</sup> The study was conducted to evaluate the peri-implant conditions in periodontally weak teeth.

**MATERIALS & METHODS**

The prosthodontics department was the site of the current investigation. It included 82 individuals of both genders who had dental implants within the previous five years. They were made aware of the study, and their signed consent was acquired. Prior to the study, the ethical committee granted its approval.

**RESULTS**

**Table I Distribution of patients**

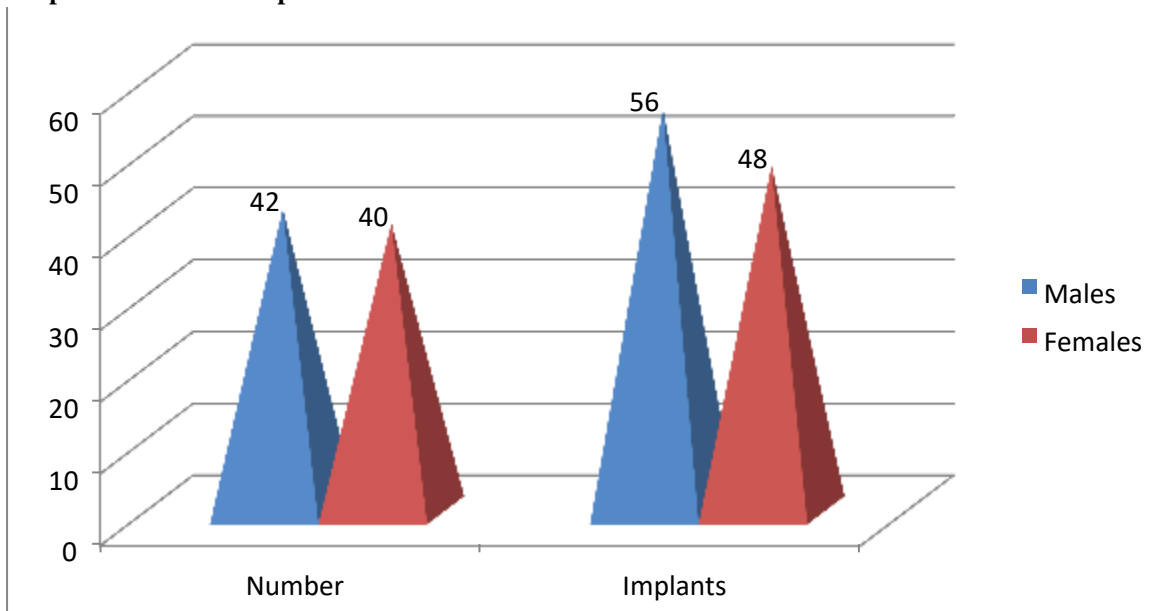
Information was taken from departmental case history files, including name, age, gender, and other details. A clinical examination was performed on each subject. Using a periodontal probe, parameters such as the gingival bleeding index (GBI) were assessed for each implant, with scores of 1 and 0 indicating its presence or absence. Digital radiography was used to gauge the level of the bone. Following the gathering of clinical and radiological data, each implant was categorized using the criteria outlined by Mir-Mari et al.<sup>6</sup> a. Health – BL. Clinical stability – BL

≥2 thread without BoP Inflammation c. Peri-implant mucositis – BL. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

Total- 82		
Gender	Males	Females
Number	42	40
Implants	56	48

Table I, graph I shows that out of 82 patients, males were 42 with 56 implants and females were 40 with 48 implants.

**Graph I Distribution of patients**



**Table II Implant classification for the presence of peri-implant diseases**

Number	Total Implants	Healthy	Stability	Mucositis	Peri- implantitis
	104	20	22	34	28

Table II shows that out of 104 implants, 20 were healthy, 22 were stable, 34 showed mucositis and 28 had peri-implantitis.

**Table III Different variables regarding the presence of peri-implant diseases**

Variable	Number	Peri- implant diseases	P value
<b>No. of implants</b>	<b>104</b>	<b>62</b>	
Prosthesis type			
Unit	24	14	0.02
Multiple	80	48	
<b>Implant location</b>			
Maxilla	56	38	0.01
Mandible	48	24	
<b>Bone type</b>			
Own	74	34	0.05
Bone grafting	30	28	
<b>Diameter (mm)</b>			
<3.75	30	24	0.17
3.75- 4	35	20	
>4	39	18	
<b>Length (mm)</b>			
<10	24	15	0.02
10-12	35	25	
>12	45	22	
<b>Gingival bleeding index</b>			
Present	56	50	0.001
Absent	48	12	

Table II demonstrates that 48 out of 80 multiple units and 14 out of 24 single units had peri-implant disorders. Out of the 56 implants implanted in the maxilla, 38 implants had peri-implant disorders; 34 implants had these conditions, of which 74 used the implants' own bone and 28 implants used bone grafting. The greatest number of diseases (24) were found in about were found in about thirty implants with a diameter of less than 3.75 mm and fifteen implants out of twenty-four with a length of less than 10 mm. Peri-implant diseases were found in fifty of the fifty implants where GBI was present. There was a substantial difference ( $P<0.05$ ).<sup>7</sup>

Furthermore, there was a positive correlation found between the concentrations of these cytokines and bone loss surrounding teeth and implants in a comparative analysis of the clinical and immunological parameters (TNF- $\alpha$  and IL-1b) for the periodontal and peri-implant tissues of two categories of implant systems.<sup>8</sup> Because of its extremely high success rate (between 90% and 95%), implant therapy is still a dependable operation for patients without a history of periodontitis. Implant success may be impacted by the host's exposure to periodontitis and the biological issues that result from it surrounding implants. Compared to chronic forms of the same illness, aggressive or progressive types of periodontitis are actually more likely to result in implant failure.<sup>9</sup> The study was conducted to evaluate the peri-implant conditions in periodontally week teeth.

In present study, out of 82 patients, males were 42 with 56 implants and females were 40 with 48 implants. Lopes et al<sup>10</sup> evaluated 58 implants in 7 individuals. Twelve (20.7%) of the 58 implants were deemed clinically stable, while eleven (18.9%) were deemed healthy. Thirteen implants (25.9%) had peri-implantitis, and twenty (34.5%) had peri-implant mucositis. Of the other 35 implants, sixty-four (60.4%) exhibited some kind of peri-implant inflammation. The findings revealed statistically significant differences for GBI and implant placement among the variables examined. A variety of peri-implant diseases were identified in the majority of maxillary implants (85.7%). The majority of the implants (75.0%) that had a GBI score of 1 also had some form of peri-implant disease. We found that out of 104 implants, 20 were healthy, 22 were stable, 34 showed mucositis and 28 had peri- implantitis. Marrone et al<sup>11</sup> evaluated individuals with a history of periodontal disease, and the result found was 28% of implants diagnosed for peri-implantitis. Out of the 58 implants, 11 were categorized with a GBI score of 1, and the majority (75.0%) also had a peri-implant disease classification.

We found that 14 out of 24 single units and 48 out of 80 multiple units had peri-implant disorders. Out of the 56 implants implanted in the maxilla, 38 implants had peri-implant disorders; 34 implants had these conditions, of which 74 used the implants' own bone and 28 implants used bone grafting. The greatest number of diseases (24) were found in about thirty implants with a diameter of less than 3.75 mm and fifteen implants out of twenty-four

with a length of less than 10 mm. Peri-implant diseases were found in fifty of the fifty implant where GBI was present Shibli et al<sup>12</sup> examined both healthy and peri-implantitis-diagnosed implants. When compared to healthy implants, implants identified with peri-implantitis exhibited higher GBI and more marginal bone loss; this difference was statistically significant. The study's short follow-up period and limited sample size are its weaknesses.

## CONCLUSION

Authors found that subjects with a history of periodontal disease are more susceptible to peri-implant diseases.

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