

# CHANGES IN QUALITY OF LIFE IN PARTIALLY EDENTULOUS PATIENTS DUE TO EFFECT ON ORAL HEALTH DURING IMPLANT TREATMENT – A PROSPECTIVE STUDY

## Dentistry

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### Abstract:

**Introduction:** The goals of the prosthodontic treatment for tooth loss or recovery of functional and esthetic problems and improvement of Quality of Life (QoL). There are many implant treatment methods. Oral Health Related Quality of Life (OHRQoL) in implant treatment has not been fully understood.

**Aims and Objectives:** The aim of this prospective study was to evaluate the changes in oral health related QoL during implant treatment partially edentulous patients and to evaluate the influence of the type of partially edentulous arch.

**Materials and Methods:** 16 patients with a small number of lost teeth (fewer than 3 teeth) who underwent implant treatment were selected. Chronological QoL changes during implant treatment was measured. The subjects completed the shortened Japanese version of the Oral Health Impact Profile (OHIP-J14) before the surgery (T0), 1 week after the surgery (T1), 1 week after interim prosthesis placement (T2), and 1 week after definitive prosthesis placement (T3). Complete data of the 16 subjects were analyzed with the Wilcoxon signed-rank test.

**Results:** The total OHIP-J14 score was significantly reduced only at T3. 'Physical pain' and 'Physical disability' scores significantly decreased at T3 and 'Psychological discomfort' score also significantly dropped at T2. However, 'Functional limitation' score significantly increased at T1 and 'Handicap' score remained the same. On the other hand, in the comparison depending on the type of partially edentulous arch, the total OHIP-J14 score significantly decreased at T3 in the unilateral free-end edentulous space, whereas no significant difference was observed in the bounded edentulous.

**Conclusion:** OHRQoL improvement was observed after the definitive prosthesis replacement. Moreover, implant treatment was more effective in the unilateral free-end edentulous.

**Keywords:** Prosthesis, partially edentulous, implant, OHRQoL, OHIP.

### Introduction:

The goals of prosthetic treatment for the tooth loss are recovery from functional and esthetic problems and improvement of patient's Quality of Life (QoL). Implant-supported fixed dental prosthesis have been widely used as one of the prosthetic

treatments for missing teeth, and a high success rate has been reported.<sup>1,2</sup> However, since there are many implant treatment methods, Oral Health Related Quality of Life (OHRQoL) in the implant treatment has not been fully understood. In addition most of precious reports based on clinical assessment,<sup>3-6</sup> evaluation of health workers

(objective clinical evaluation) and evaluation of patients (subjective evaluation) do not correspond to each other.<sup>7-9</sup> Therefore an outcome index from the point of view of patients is important. Patients Reported Outcome Measures (PROM) have been reported to be indispensable to evaluate the benefit of dental implant therapy in different clinical situations as part of dental implant research.<sup>10,11</sup> The methods of PROM include the General Oral Health Assessment Index (GOHAI),<sup>12</sup> Dental Implant Profile (DIP),<sup>13</sup> Oral Health Impact Profile (OHIP),<sup>14</sup> and Subjective Oral Health Status Indicator (SOHSI).<sup>15</sup> Among these, OHIP is a self reported questionnaire on OHRQoL consisting of 49 questions under 7 subscales.<sup>14</sup> It has been translated into different languages and used worldwide including China, Germany, Spain, Brazil and Japan. Shortened version have also been introduced,<sup>16-18</sup> to reduce the response time such as OHIP14.<sup>19,20</sup> A number of studies have been conducted regarding implant supported overdenture and implant supported fixed prosthesis for a single or small number of missing teeth.<sup>21,22</sup> Furthermore, when performing conventional removable denture therapy for a partially edentulous arch lacking 2 or 3 teeth. The therapeutic effects and patient satisfaction level vary between Kennedy classification type 2 or 3. The aim of this prospective study was thus to evaluate the influence of the type of partially edentulous arch, such as bounded and unilateral free-end edentulous space.

### Materials and Methods:

16 partially edentulous patients with 2 or 3 missing teeth underwent implant surgery at Pacific Institute of Medical Sciences, Udaipur and other centers from April 2018 to March 2019. In all the subjects, surgery was performed under local anesthesia. The acrylic interim prosthesis was fixed at least 2 months after the surgery when the periosteal value was less than zero.<sup>23</sup> The definitive prosthesis with titanium framework was placed after another month or more when the marginal bone and soft tissue had stabilized.

**Evaluation of OHRQoL:** The shortened Japanese version of OHIP (OHIP-J14) was used,<sup>24</sup> to assess OHRQoL. The subjects answered 14 questions under 7 subscales (2 items each) using 5 choices, before surgery (T0), 1 week after the surgery (T1), 1 week after interim prosthesis placement (T2), and 1 week after definitive prosthesis (T3). Scoring was as follows –

Very often = 4, Fairly often = 3, Occasionally = 2, Hardly ever = 1 and Never = 0.

The total OHIP-J14 score (ranged 0-56) and subscale score (0-8) were then calculated. With a higher score suggesting lower OHRQoL. Different parameters which taken into consideration for evaluation were – functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability and handicap.

### Results:

The total OHIP-J14 score was significantly reduced only at T3. ‘Physical pain’ and ‘Physical disability’ scores significantly decreased at T3 and ‘Psychological discomfort’ score also significantly dropped at T2. However, ‘Functional limitation’ score significantly increased at T1 and ‘Handicap’ score remained the same. On the other hand, in the comparison depending on the type of partially edentulous arch, the total OHIP-J14 score significantly decreased at T3 in the unilateral free-end edentulous space, whereas no significant difference was observed in the bounded edentulous.

### Discussion:

It has been reported that the implant overdenture treatment in mandibular edentulous patients improves patient satisfaction level, denture stability and retention.<sup>25</sup> We have reported that only a small improvement of OHRQoL was observed after acrylic interim prosthesis placement when immediate loading of fixed dental prosthesis was applied in edentulous patients, whereas a definitive prosthesis with a metal framework was more effective at restoring OHRQoL.<sup>26</sup> We investigated the influence of implant treatment in patients with a small number of lost teeth on OHRQoL. The results showed that there was no improvement in OHRQoL after the placement of implant and interim prosthesis, and the OHIP-J14, total score decreased only after definitive prosthesis placement suggesting the improvement of OHRQoL. ‘Physical pain’, ‘Physical disability’, and ‘Psychological discomfort’ scores significantly decreased at T3, suggesting that these 3 scores may contribute to the improvement of QoL in implant treatment. It has been reported that the most important factor affecting QoL was ‘Psychological discomfort’.<sup>27</sup> Psychological discomfort decrease was observed in T2, suggesting that temporary

prosthesis increases certain level of QoL in implant treatment of patients with a small number of lost teeth. On the other hand, 'Functional limitations' score significantly increased at T1, suggesting that implant placement transiently affected post-operative pronunciation and sense of taste. Similarly Eitner et al suggested decreased OHRQoL in the healing period of conventional implant procedures. In unilateral mandibular distal extension edentulous patients, oral condition-related QoL levels of dentals implant patients were higher than those of patients with removable partial denture or no restoration.<sup>28</sup> Although patient satisfaction was evaluated using patient-reported assessment items, such as pain, comfort and the attributes of physical, social and psychological impact of the oral health status in the present study, there are other important factors related to the QoL, represented by the socio-economic status and personality.<sup>29,30</sup> As these 2 factors were not evaluated in the study, it may be necessary to perform multivariate analysis to examine relationship with them in future studies. Although we performed the prospective study, the number of subjects was very small. Further studies with larger number of patients are required to validate the effect of implant treatment for improving OHRQoL.

### Conclusion:

Mitigation of 'Physical pain' and 'Psychological discomfort' and improvement of 'Physical disability' (e.g. difficulty in eating) contributed to the improvement of OHRQoL. Although it is inappropriate to simply compare the 2 groups as there were significant differences between the free-end situation and bounded edentulous space, the results showed that implant treatment is effective to improve the free-end edentulous patients QoL.

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