Masticatory Performance and Impact on Oral Health–Related Quality of Life in Patients Treated with Immediately Loaded Implant-Supported Prostheses

Maria de Fátima Trindade Pinto Campos, DDS, MSc, PhD
Ana Clara Soares Paiva Tôrres, DDS, MSc, PhD
Euler Maciel Dantas, DDS, MSc, PhD
Adriana da Fonte Porto Carreiro, DDS, MSc, PhD
Gustavo Augusto Seabra Barbosa, DDS, MSc, PhD

Department of Dentistry, Federal University of Rio Grande do Norte, Natal, Brazil.

Purpose: To compare oral health–related quality of life (OHRQoL) and masticatory performance (MP) in patients treated with a mandibular complete denture (CD) and immediately loaded implant-supported prostheses (ISP).

Materials and Methods: Forty patients were divided into CD and ISP groups. Initially, all patients were treated with a mandibular CD. Then, 23 patients remained with a CD while 17 were treated with an ISP after wearing the CD for 3 months. OHRQoL was measured using the OHIP-EDENT questionnaire, and MP was evaluated by sieving. Data were recorded before treatment (T0) and after 3 months wearing the CD and ISP (T1). Results: CD treatment did not affect OHRQoL and MP; however, patients treated with an ISP presented improvement in OHRQoL ($P < .001$) and MP ($P < .001$) with a high effect size (ES) (Cohen's $d = 2.49$ and $2.47$, respectively). For intergroup analysis, ISP treatment presented improvement in OHRQoL and MP compared to CD treatment ($P < .001$) at $T_1$ with a high ES (Cohen's $d = 1.80$ and $3.29$, respectively). The correlation between MP and OHRQoL was positive only for psychologic discomfort in the CD group at $T_0$ ($P = .035$), suggesting that poor MP increased psychologic discomfort. Conclusion: Converting a CD into an ISP had a positive impact on OHRQoL and MP with high ES. Int J Prosthodont 2021;34:300–308. doi: 10.11607/ijp.7017

Oral rehabilitation with complete dentures (CD) should restore masticatory function and quality of life in edentulous patients. However, bone resorption causes chronic, progressive, irreversible, and cumulative changes in the residual bone ridge. Such remodeling is associated with unfavorable mechanical conditions of removable dentures, resulting in poor stability, retention, and masticatory performance (MP), especially in patients with fragile mucosa.

The implant-supported prosthesis (ISP) is an alternative for rehabilitation of edentulous patients, reducing the masticatory force on underlying tissues and preserving the alveolar ridge anatomy and volume. As an advantage, immediate loading of implants provides satisfactory esthetic results and immediate comfort. In addition, denture retention and stability provide better MP and represent a positive psychosocial effect on patient satisfaction.

The evaluation of oral health–related quality of life (OHRQoL) using validated psychometric tools is essential for patients and professionals choosing restorative techniques. According to patients’ perceptions, the impact of oral rehabilitation can be measured using several questionnaires, such as the Geriatric Oral Health Assessment Index (GOHAI), Dental Impact on Daily Living (DIDL), and Oral Health Impact Profile—Edentulous (OHIP-Edent) (based on the OHIP-49), which is available in several languages and is specific for edentulous patients.

Among the OHRQoL factors, chewing is important for systemic health and prevention of chronic diseases. For edentulous patients, this scenario is also critical when associated with poor salivary flow and reduced masticatory force. As a consequence, edentulous individuals usually choose soft food without essential nutrients, which influences swallowing and intestinal absorption.
In the literature, there is a lack of controlled clinical trials evaluating the quality of life (QoL) of CD wearers, since most of the studies present different methodology.\textsuperscript{16} Although several studies have evaluated the influence of chewing on the QoL of CD and ISP wearers,\textsuperscript{6,8,15,17} no meta-analysis can be performed,\textsuperscript{9} and poor evidence has been found since the methods are not homogenous.\textsuperscript{13,18} A recent systematic review evaluated the influence of oral health on the QoL of CD and ISP wearers and concluded that only moderate evidence suggests the superiority of implant-supported prostheses.\textsuperscript{9}

Thus, the aim of this nonrandomized controlled clinical trial was to compare MP and OHRQoL between patients treated with bimaxillary CDs and patients treated with a maxillary CD and a mandibular ISP. The effect size (ES) was also measured in order to correlate those variables. The experimental hypothesis assumed that patients treated with a maxillary CD and mandibular ISP would show better MP and OHRQoL than patients treated with a bimaxillary CD.

**MATERIALS AND METHODS**

This nonrandomized controlled clinical trial was conducted at the Department of Dentistry, Federal University of Rio Grande do Norte, between October 2015 and July 2018. The study was approved by the Research Ethics Committee (No. 1.007.959) according to the Declaration of Helsinki and the Brazilian Registry of Clinical Trials RBR-5f8 xwb. The patients were allocated by convenience after being informed about the restorative techniques and chose treatment with CD (control group) or ISP (experimental group). All patients signed an informed consent form.

Completely edentulous patients were included in the sample. Although for some patients the new mandibular dentures were delivered immediately after tooth extraction, all patients were using conventional CDs before the study. All patients needed a minimum bone height of 12 mm in the mandibular anterior region.\textsuperscript{19} The exclusion criteria were: patients with previous experience with dental implants, systemic contraindications,\textsuperscript{20} insufficient bone height for placement of implants (11 × 3.75 mm), and implants without primary stability under torque of 45 Ncm or higher.\textsuperscript{21}

The sample size was based on the initial experimental design comparing the groups. The MP values were collected from the literature\textsuperscript{22} assuming an SD of 1.58 mm for one group and 1.20 mm for another group and a difference of 2 mm between the groups, resulting in a moderate clinical effect (Cohen’s $d = 0.50$).

A confidence level of 99% and power of 80% were assumed in order to minimize type I and type II errors, respectively. The sample size was 16 patients per group. Figure 1 shows the participant flowchart.
Rehabilitation Prosthetics

Bimaxillary CDs were fabricated for all patients using the artificial acrylic resin teeth Trilux (VIPI) with a standardized cusp inclination of 33 degrees mounted in a balanced bilateral occlusion scheme until the first molars. The dentures were fabricated with colorless and gingiva-colored conventional heat-polymerized acrylic resin (VIPI). All laboratory steps were performed by the same operator. Follow-ups were conducted after 24 hours, 7 days, 15 days, and 1 month, or whenever necessary.

In the ISP group, the mandibular CD was converted into an immediately loaded ISP after 3 months of wearing the new dentures. Multifunctional guides were fabricated after duplication of the mandibular CD for a tomographic exam using the software Dental Slice (Bioparts).

A previous maxillomandibular registration was done in the mandibular CD using acrylic resin (GC) and Nealon’s technique. Then, 3 to 4 external hexagon implants (3.75 x 11 mm; Titamax, Neodent) were inserted in the mandibular interforaminal region, respecting a distance of 2 to 3 mm from the mental foramen, according to the reverse planning of each patient for 3- or 4-implant placement, using a multifunctional guide. Immediate loading was confirmed when the implants presented primary stability under a torque of 45 Ncm or higher. All surgeries were conducted by the same expert surgeon (E.M.D.).

Mini abutments (Neodent) were attached to the implants with a torque of 32 Ncm, and the mandibular denture was worn with the Maxicut PM (Edenta). Occlusion was confirmed with the maxillomandibular record done previous to the surgery for correct denture adaptation and by transferring the provisional cylinders attached to the mini abutments with acrylic resin (GC) and Nealon’s technique. After transferring all provisional cylinders, impressions were taken. The analogs (Neodent) were attached to the provisional cylinders, and the mini abutment protectors were placed. Then, distal bars (Neodent) were fabricated in the laboratory, and the CD was converted into an ISP. All patients had a cantilever distal bar.

One day after surgery, the ISP was inserted with appropriate occlusal adjustment. All patients were informed about soft feeding and postoperative care. Oral hygiene was maintained by mouthwash with 10 mL of PerioGard (Colgate) for 1 minute twice a day for 10 days. All clinical prosthetic steps were conducted by the same expert professional (M.F.T.P.C.).

Data Record

Data were collected for each group at T0 and T1. In the CD group, the T0 record was done with the old dentures, while the T1 record was done after 3 months wearing the new dentures. Patients who had teeth extracted awaited the prosthesis adaptation for data collection. In the ISP group, the T0 record was performed after 3 months wearing the new conventional dentures, and the T1 record was done after 3 months wearing the implant-supported dentures. Osseointegration was confirmed with clinical and radiographic exams of peri-implant conditions according to the survival criteria of implants.

The MP was evaluated after chewing and sieving the artificial food Optocal. MP was evaluated using a test food based on silicone cubes and the multiple sieve method. This test calculates the comminuted median particle size (X50) by grouping weight percentages of particles that can pass through sieves with decreased apertures using nonlinear regression. A small X50 indicates that the food has been well comminuted and thus that the MP is high. The artificial food was produced with 57% condensation silicone (Optosil Comfort Putty, Kulzer), 27% toothpaste (Colgate-Palmolive), 3% petroleum jelly (Rioquimica), 9% type III stone type (Asfer), 4% irreversible hydrocolloid type II Avagel (Dentsply Sirona), and 27 mg/g of Activator Universal (Kulzer).

The mixture was inserted into a metallic matrix of cubic molds with 5.6 mm of edge and stored in a stove at 65°C for 16 hours for complete polymerization. The food was divided into packs of 3 g (17 cubes). During masticatory tests, the patients performed a total of 20 masticatory cycles. The chewed food was then manipulated onto a set of 8 decreasing granulometric sieves (Bertel, Indústria Metalúrgica) with openings of 0.5, 0.71, 1, 1.4, 2, 2.8, 4, and 5.6 mm. One liter of running water was verted on the first sieve under vibration. The food removed from each sieve was stored in identified containers and maintained at room temperature for 7 days for natural evaporation of water. Then, the food was weighed on a precision analytical scale (Shimadzu). The values were inserted into an Excel spreadsheet for calculation of the percentage accumulated in each sieve. Calculation of the mean size of the chewed particles (X50) was done using nonlinear regression test based on the Rosin-Rammler equation: QW – (X) = 1 – 2 – (X / X50) b, where QW represents the percentage of accumulated weight of particles with a size of less than X that can pass through a certain sieve; and X50 represents the sieve opening where 50% of food weight can pass through. So, a lower X50 value represents that the material was well ground, and the masticatory performance was high.

OHRQoL was evaluated using the Brazilian version of the OHIP-Edent questionnaire, including 19 questions about functional limitation, pain, psychologic discomfort, physical disability, psychologic disability, social disability, and inability. The questionnaire was used to correlate the oral condition with the dentures and to measure its impact on OHRQoL based on the answers “never” (value = 0), “sometimes” (value = 1), and “almost always” (value = 2). The values were summed (total of 0 to 38 points), and a higher value represented a higher impact on OHRQoL.
**Table 1** Description and Comparison of Variables in the Complete Denture (CD) and Implant-Supported Prosthesis (ISP) Groups

<table>
<thead>
<tr>
<th>Variables</th>
<th>CD Participants, n</th>
<th>Mean</th>
<th>SD</th>
<th>ISP Participants, n</th>
<th>Mean</th>
<th>SD</th>
<th>ΔCD–ISP</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, y</td>
<td>23</td>
<td>60.57</td>
<td>7.20</td>
<td>17</td>
<td>57.06</td>
<td>6.48</td>
<td>3.51</td>
<td>.12</td>
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<tr>
<td>Period of mandibular edentulism, y</td>
<td>21</td>
<td>19.81</td>
<td>13.92</td>
<td>17</td>
<td>15.16</td>
<td>11.99</td>
<td>4.65</td>
<td>.28</td>
</tr>
<tr>
<td>Mandibular bone height, mm</td>
<td>21</td>
<td>20.10</td>
<td>4.50</td>
<td>13</td>
<td>24.07</td>
<td>2.85</td>
<td>-3.98</td>
<td>.08</td>
</tr>
</tbody>
</table>

*p*Student *t* test. ΔCD—ISP = difference between the means of the CD and ISP groups.

**Data Analysis**

Data were processed by SPSS Statistics version 20.0 (IBM). A descriptive analysis was done using Student *t* test for independent groups evaluating sample homogeneity for age, period of maxillary edentulism, period of mandibular edentulism, and bone height of the mandibular ridge at the medium line, as well as the confounding variable gender. For evaluating the same group before and after clinical intervention, *t* test for paired samples was used. The difference of means of the CD and ISP groups at *T*1 was evaluated using Student *t* test for independent groups. Cohen’s *d* statistics analyzed the estimative and comparison of ES of the intervention, assuming large ES for values > 0.8, medium for values between 0.5 and 0.8, and small for values < 0.5.

**RESULTS**

A total of 55 patients were eligible for the present study, but the final sample included 40 individuals with a mean age of 59.08 years (± 7.04), most of them women (n = 36), with periods of maxillary and mandibular edentulism of 22.37 (± 13.16) years and 17.73 (± 13.13) years, respectively. All patients (n = 40) exhibited maxillary and mandibular complete edentulism. The variables age, period of maxillary and mandibular edentulism, and mandibular bone height were homogenous, as shown in Table 1, as well as the categorical variable gender. Initially, all patients were treated with CDs. After 3 months, implants were placed in the interferaminal mandibular region, then the mandibular denture of the patients in the ISP group was converted into a mandibular ISP, maintaining the occlusion established in the CD until the first molars. However, 3 patients were excluded from this group because the implants did not present osseointegration. So, a total of 17 patients remained in the ISP group, including 7 patients with 3 implants and 10 patients with 4 implants.

**Impact on OHRQoL**

The analysis revealed that the CD group reduced the OHIP-Edent mean from T0 to T1 after wearing the new dentures, but the significance was 7% (Cohen’s *d* = 0.57). Evaluating the domains, the results were similar in both periods, except for psychologic discomfort, which exhibited significant improvement (*P* < .001; Cohen’s *d* = 1.33), with a large ES (Table 2). In the ISP group, the OHIP-Edent value was significantly lower after converting a CD into an immediately loaded ISP, representing a positive impact on OHRQoL (*P* < .001) with a large ES (Cohen’s *d* = 2.47). The domains function, pain, physical disability, and psychologic disability presented statistically significant values (*P* < .001) and large ES (Table 2); while psychologic discomfort showed a statistically significant value (*P* = .05) but medium ES (Cohen’s *d* = 0.68; Table 2), which highlights the importance of showing statistical values associated with ES.

Comparing the new dentures in the CD and ISP groups at *T*1, it was found that the mandibular ISP provided better OHRQoL with a large ES. The OHIP-Edent value of the ISP group was 1.29, while the CD group presented an OHIP-Edent value of 10.52 (*P* < .001; Cohen’s *d* = 1.80). The ISP group showed better results in all OHIP-Edent domains, especially for function, physical pain, and physical disability (*P* < .001; high ES) and large ES, as well as for psychologic disability (*P* = .03; large ES; Table 3).

**Masticatory Performance**

Table 4 shows the results of MP. The mean of the CD group increased by 0.37 mm from *T*0 to *T*1, representing a decrease in MP (*P* = .049). On the other hand, MP value decreased by 1.80 mm (*P* < .001) in the ISP group, showing that MP increased after converting CD into ISP, with a large ES. Comparing both groups at *T*1, the mean difference was 3.29 mm (*P* < .001) with large ES (Cohen’s *d* = 2.49). The patients treated with an ISP presented significantly better MP (X50 = 4.76 mm) than those with a CD (X50 = 6.76 mm).

**Correlation Between MP and OHRQoL**

Table 5 reveals no correlation between MP (X50) and the total OHIP-Edent score in either group at *T*1. However, there was a positive correlation between psychologic
### Table 2  
**Oral Health–Related Quality of Life in the Complete Denture (CD) and Implant-Supported Prosthesis (ISP) Groups at T0 and T1**

<table>
<thead>
<tr>
<th>Variables</th>
<th>CD</th>
<th>ISP</th>
<th>T0</th>
<th>T1</th>
<th>T0–T1</th>
<th>P</th>
<th>Cohen’s d</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Participants, n</td>
<td>n</td>
<td>Mean</td>
<td>SD</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Function</td>
<td>23</td>
<td>23</td>
<td>3.74</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical pain</td>
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<td>23</td>
<td>3.87</td>
<td>1.84</td>
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<td></td>
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<td>Psychologic discomfort</td>
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<td>2.35</td>
<td>1.64</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Physical disability</td>
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<td>2.13</td>
<td>1.96</td>
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<td></td>
<td></td>
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<tr>
<td>Psychologic disability</td>
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<td>8.9</td>
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<td></td>
<td></td>
<td></td>
<td>T0</td>
<td>T1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>17</td>
<td>17</td>
<td>2.53</td>
<td>1.01</td>
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<td></td>
<td></td>
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<tr>
<td>Physical pain</td>
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<td>17</td>
<td>3.18</td>
<td>1.13</td>
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<td></td>
<td></td>
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<tr>
<td>Psychologic discomfort</td>
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<td>17</td>
<td>0.53</td>
<td>0.8</td>
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<td></td>
<td></td>
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<tr>
<td>Physical disability</td>
<td>17</td>
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<tr>
<td>Psychologic disability</td>
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<td>Social disability</td>
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<tr>
<td>Inability</td>
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<td>17</td>
<td>0.24</td>
<td>0.66</td>
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<tr>
<td>Total OHIP-Edent</td>
<td>17</td>
<td>17</td>
<td>8.88</td>
<td>4.03</td>
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</table>

Student t test for paired samples. *Significant at 5% level.

### Table 3  
**Oral Health–Related Quality of Life in the Complete Denture (CD) and Implant-Supported Prosthesis (ISP) Groups at T1**

<table>
<thead>
<tr>
<th>Variables</th>
<th>CD</th>
<th>ISP</th>
<th>Participants, n</th>
<th>Mean</th>
<th>SD</th>
<th>Participants, n</th>
<th>Mean</th>
<th>SD</th>
<th>T1</th>
<th>P</th>
<th>Cohen’s d</th>
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<tr>
<td></td>
<td></td>
<td></td>
<td>n</td>
<td>Mean</td>
<td>SD</td>
<td>n</td>
<td>Mean</td>
<td>SD</td>
<td>P</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>23</td>
<td>20</td>
<td>2.87</td>
<td>1.71</td>
<td></td>
<td>17</td>
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<td>2.93</td>
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<td>0.95</td>
<td></td>
<td>17</td>
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<td>0.33</td>
<td>0.41</td>
<td>.05*</td>
<td>0.67</td>
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<tr>
<td>Physical disability</td>
<td>23</td>
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<td>1.78</td>
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<td>17</td>
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<td>0.00</td>
<td>1.78</td>
<td>&lt; .001*</td>
<td>2.03</td>
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<td>0.65</td>
<td>1.03</td>
<td></td>
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<td>0.24</td>
<td>0.59</td>
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<tr>
<td>Social disability</td>
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<td>0.43</td>
<td>0.95</td>
<td></td>
<td>17</td>
<td>0.00</td>
<td>0.00</td>
<td>0.43</td>
<td>.07</td>
<td>0.65</td>
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<tr>
<td>Inability</td>
<td>23</td>
<td>23</td>
<td>0.57</td>
<td>1.2</td>
<td></td>
<td>17</td>
<td>0.00</td>
<td>0.00</td>
<td>0.57</td>
<td>&lt; .001*</td>
<td>0.67</td>
</tr>
<tr>
<td>Total OHIP-Edent</td>
<td>23</td>
<td>23</td>
<td>10.52</td>
<td>7.06</td>
<td></td>
<td>17</td>
<td>1.29</td>
<td>1.61</td>
<td>9.23</td>
<td>&lt; .001*</td>
<td>1.80</td>
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</table>

Student t test for independent samples. *Significant at 5% level.
discomfort and MP in the CD group at T₀, showing that psychologic discomfort increased with higher X50, indicating a worse MP.

**DISCUSSION**

This study showed that patients treated with a maxillary CD and mandibular ISP showed better MP and OHRQoL than patients treated with bimaxillary CDs, validating the main hypothesis of this study. The results of the CD group (control) showed no significant improvement in OHRQoL after 3 months wearing the new dentures, as shown in Table 2. Such findings are probably related to the poor retention and stability of CDs, which resulted in limited chewing and a higher X50 value after 3 months of wearing the new dentures.
(Table 4). Although previous studies have suggested that 3 months is enough for adaptation to a new CD, assuming a new standard for masticatory muscles and normalization of salivary flow, it was not adequate in the present study. However, these results are in accordance with a recent systematic review showing that CDs with teeth mounted in bilateral balanced occlusion does not provide better MP than other occlusal schemes. The psychologic discomfort domain improved with a high ES between T\(_0\) and T\(_1\), which can be related to patient’s acceptance and expectations about the new dentures and/or satisfaction with esthetics, since they influence mental welfare, self-esteem, and self-assurance.

There was a significant difference in OHIP-Edent score between T\(_0\) and T\(_1\) (3 months) in the ISP group, representing a positive impact on OHRQoL (Table 2). A lower score was found in all OHIP-Edent domains. A similar improvement was also observed for MP with reduction of 1.8 mm in X50 (Table 4), representing better chewing of artificial food into smaller particles. Scala et al found high satisfaction in both the CD (control) and ISP (experimental) groups in a randomized study, but ISP provided a higher satisfaction level in comparison to CD, which was partially similar to the present study.

When comparing the CD and ISP groups at T\(_1\), the superiority of ISP was evident in the variables studied. The total OHIP-Edent was 1.29 for ISP and 10.52 for CD, and a lower score was found in all domains of the ISP group (Table 3). Such differences were also found in the MP group, with a mean of 2.0 mm. It was clear that patients wearing immediately loaded ISPs showed better chewing (X50 = 4.76 mm; CD X50 = 6.76 mm). Such improvements reveal the importance of denture retention and stability, resulting in higher occlusal forces. Similar results were described by Vieira et al.

The paired analysis of the ISP group and the analysis between the CD and ISP groups revealed statistically significant reductions in the same domains (ie, function, physical disability, and physical pain), probably because the ISP base has no contact with muscular insertion and mucosa on resorbed bone. Assuming that bone resorption on the mental foramen causes higher sensitivity in the mandibular alveolar nerve and pain, such conditions in the CD group resulted in limited occlusal forces and reduced MP, which was reported as discomfort, poor retention, and instability.

Besides the previous results, a correlation between MP and OHRQoL was found only for the psychologic discomfort domain in the CD group at T\(_0\), showing worse psychologic condition with higher MP values. No correlation was found in the ISP group, and some values were equal to 0 (Table 5). However, clinical understanding must be taken into account, since a score of 0 on the OHIP-Edent questionnaire represents no impact, and the lack of variability in the OHIP-Edent scores precludes analysis with Spearman correlation test.

Four patients in the ISP group did not present enough torque for immediate loading, probably due to bone quality and/or standardized implant dimension for sample homogeneity. Considering that those patients presented mandibular height and width larger than the mean, primary stability was not achieved in the cortical bone. Another three patients (two patients with three implants and one patient with four implants) were excluded from the 3-month follow-up of the ISP group after losing one distal implant. In those cases, bone availability was in the threshold, and the implant was lingually positioned. In another patient, the interferaminal distribution of the implants was not in accordance with polygonal support, resulting in inappropriate distribution of masticatory force. All lost implants were adjacent to cantilevers and prone to distal forces. So, it was suggested that osseointegration did not occur as a consequence of bone fenestration, microcracks, micromovements, and fibrous encapsulation of implants.

In the present clinical trial, the confounding variables (ie, gender, age, period of edentulism, and bone height at medium line) were statistically analyzed about their influence on the outcome variables. Sample homogeneity was found. Furthermore, as converting a CD into an ISP was the only intervention, retention was investigated as an influence on MP and OHRQoL, since it is the main problem with CDs. It is also noteworthy that the statistical significance levels were associated with the Cohen’s d ES, showing the relevance of the mean difference between the groups.

This study was designed with methodologic criteria about sample homogeneity and the presence of a control group, respecting the criteria suggested by the CONSORT checklist for clinical trials. Validated and reproducible methods were used for data recording, including the sieving method with artificial food for measurement of MP and the Brazilian version of the OHIP-Edent questionnaire for evaluation of OHRQoL in edentulous patients.

MP was measured based on the number of chewing cycles assuming that Optocal is the gold standard for evaluating masticatory performance in complete denture wearers. In addition, the number of sieves used to calculate MP value (X50) was also observed.

Although some studies evaluating the influence of denture type on MP and OHRQoL have reported improvement in mandibular ISP wearers, different experimental designs and methodologies have been applied for measurement. Vieira et al evaluated satisfaction based on a visual analog scale, while Apolinário et al measured masticatory performance using colorimetric capsules in a retrospective study. Veyrune et al compared different types of food in a nonhomogenous...
sample, and Scala et al. evaluated satisfaction using the Satisfaction Profile (SAT-P) test in a prospective study. The limitations of the present study were the short follow-up, the subjective questionnaire and its influence on questions, cultural and socioeconomic conditions, and patients’ expectations about the treatment. The lack of randomization is another limitation, but several studies reported that some patients give up when not satisfied with the group or provide wrong answers to the questionnaire, which results in bias of treatment preference.

The findings of the present study resulted in a relevant clinical contribution for understanding scientific evidence and clinical practice of the restorative techniques based on statistics of the patient’s perception and clinical impact of ES (Cohen’s d). So, a high clinical impact in MP and OHRQoL was found when converting a CD into an ISP when comparing both groups, which reveals the relevance of mandibular fixed dentures for improvement of masticatory function.

Although previous studies have already identified such positive effects on chewing and QoL using different psychometric methods in longer follow-ups, the measurement of effect size and 3-month observation times are a differential in the present research. Furthermore, ISPs fabricated with acrylic resin and distal bar was suggested as an advantageous alternative to CDs using easy, fast, and low-cost steps when compared to an ISP with metallic framework. Assuming that immediate loading is not achieved in some cases as a result of lack of metallic framework passivity, the ISP fabricated in this study is an accessible denture for CD wearers, especially for those with low income.

Future studies should be conducted with longer follow-up of the converted dentures, showing possible mechanical and biologic complications regarding peri-implant health and integrity.

CONCLUSIONS

Converting a conventional CD into an ISP represented a positive influence on QoL and MP of patients with a large ES. Psychologic discomfort was related to poor MP in the initial condition of patients wearing conventional CDs.

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REFERENCES


Literature Abstract

Effectiveness of Bone Graft for an Alveolar Defect on Adjacent Second Molar After Impacted Mandibular Third Molar Extraction

This retrospective study examined distal bone healing on the adjacent second molar between demineralized bone matrix incorporated with recombinant adult bone morphogenetic protein-2 (DBM/rhBMP-2) and a collagen sponge in the mandibular third molar extraction socket. From 2018 to 2020, 26 extraction patients (men, average age of 21.5 years), who received a graft (DBM/rhBMP-2 or collagen plug, n = 13 each) on the extraction socket without primary closure were enrolled in this study. The bony defect was measured using computed tomography before and 6 months after the extraction. The difference in bone healing was analyzed between the DBM/rhBMP-2 and collagen plug groups using Mann-Whitney U test. No complications, such as infection or food packing, were encountered. The DBM/rhBMP-2 and collagen plug groups showed a similar distribution of preoperative bony defect (median = 5.8 and 5.0 mm, respectively). After 6 months, more bone healing was observed in the DBM/rhBMP-2 group than in the collagen plug group (median = 3.85 and 2.37 mm, respectively; P = .029). A DBM/rhBMP-2 graft after third molar extraction does significantly alter the bony defect on the distal aspect of the second molar compared to a collagen plug.


Literature Abstract

Silver Diamine Fluoride Treatment of Active Root Caries Lesions in Older Adults: A Case Series

The authors of this study conducted a case series to determine the arrest of root-surface carious lesions in older adults when teeth were treated topically with 38% silver diamine fluoride (SDF). This study was a prospective, single-center case series. The patients were 62 older adults (age ≥ 55 years) who sought treatment at a dental school clinic. To be included, a patient needed to have at least one active root carious lesion. Lesions were rinsed and then dried with air and isolated, then 38% SDF was applied for 2 minutes with a microbrush. Treated lesions were re-evaluated at 2 to 3 weeks. Treatment was repeated every 6 months. Survival analysis for clustered data were used to estimate the carious lesion arrest probability over time separately for soft surfaces and at crown margins. Fifty-five of the participants returned for follow-up (44% women, mean age [SD] 79.8 [7.4] years). The probability of a lesion arresting with treatment ranged from 82.9% to 91.6%. Arrest rates at 18 months were slightly higher on root surfaces than around crown margins, 91.6% (95% CI 69.1 to 97.1) vs 89.8% (95% CI 71.6 to 96.3). All fucral lesions (n = 7) were arrested by 6 months (100% [95% CI 59 to 100]). Repeated application of 38% SDF at 6-month intervals was effective in arresting the decay of root surface lesions and lesions around crowns in older adults. Study outcomes support SDF treatment for older adult patients who are frail and residing in nursing homes or dependent living facilities.