

Original Article

A Longitudinal Study of Oral Health-Related Quality of Life Following Complete Denture Treatment Using a Suction-Effective Mandibular Impression Technique

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Abstract

This study aimed to investigate longitudinal changes in oral health-related quality of life (OHRQoL) over a two-year period and to identify factors associated with its maintenance in patients wearing complete dentures fabricated using the mandibular complete denture suction effective impression technique. The study included 68 patients who received complete dentures fabricated with this technique between 2021 and 2022 and attended maintenance visits. The OHIP-EDENT-J and occlusal score were assessed at baseline and at two years. Twenty-five patients who completed the two-year follow-up were included in the analysis. The OHIP-EDENT-J score changed from 8.32 ± 6.86 at baseline to 8.32 ± 8.46 at two years, and the occlusal score changed from 3.92 ± 4.32 to 3.56 ± 4.10 , with no statistically significant changes observed in either measure. However, stability/improvement in OHIP-EDENT-J was significantly associated with maxillary denture retention and stability and treatment by a certified dentist in clinical occlusion. No significant factors were identified for the stability of the occlusal score. These findings indicate that OHRQoL and occlusal status are well maintained over two years in complete denture patients treated with the mandibular suction effective impression technique. Furthermore, denture retention and stability, as well as treatment by a certified dentist in clinical occlusion, may be contributing factors to long-term OHRQoL maintenance.

Key words : OHIP-EDENT-J, Occlusion Score Complete denture, Oral-health related Quality of Life, Suction-Effective Mandibular Complete Denture

I. Introduction

Removable complete denture treatment for completely edentulous patients aims not only to restore masticatory and phonetic functions but also to improve oral health-related quality of life (OHRQoL). Tooth loss affects not only masticatory and aesthetic function but also has significant psychological and social consequences; therefore, patient-reported outcome measures (PROMs) have recently been established as important evaluation parameters. Previous studies have consistently reported that prosthodontic treatment with conventional complete dentures significantly improves OHRQoL.¹⁻³ Longitudinal studies have demonstrated that OHRQoL significantly improves approximately three months after new denture insertion, and this effect is maintained for at least 12 months.¹⁻³ Systematic reviews and meta-analyses have also confirmed significant improvements using assessment tools such as OHIP-EDENT, OHIP-14, OHIP-49, and GOHAI, demonstrating that complete

denture treatment positively affects patients' daily living and oral function.⁴⁻⁷

On the other hand, insufficient denture retention and stability are major factors contributing to reduced patient satisfaction and QoL with conventional complete dentures, and many cases, particularly with mandibular complete dentures, present difficulties in achieving adequate retention. Therefore, improving retention through refinements in impression techniques and denture fabrication methods remains an important challenge.

The suction effective impression is a technique designed to achieve peripheral seal and suction during function, and is expected to enable the fabrication of complete dentures with high retention and stability. Recent reports have indicated that dentures fabricated with this technique demonstrate higher OHRQoL compared to conventional methods.⁸ However, these reports are cross-sectional studies, and it remains unclear whether the observed QoL improvements are maintained over the long term.

Therefore, this prospective study aimed to evaluate longitudinal changes in OHRQoL over a two-year period in patients wearing complete dentures fabricated using the suction effective impression technique. Additionally, factors associated with long-term OHRQoL maintenance were investigated.

II. Subjects and Methods

A total of 68 patients who received complete dentures fabricated using an impression technique designed for mandibular complete denture suction between 2021 and 2022 and who attended maintenance/adjustment visits were included in this study. Following an interview regarding patient background, OHIP-EDENT-J and occlusal score⁹ recordings were performed. The same recordings were repeated after two years.

Mandibular Complete Denture Suction Effective Impression Technique

Detailed procedures for the mandibular complete denture suction effective impression technique have been reported previously;⁸ therefore, a brief overview is provided here. For the preliminary impression, two types of alginate impression materials with different viscosities were used. A custom tray for functional impression was fabricated from the preliminary impression, designed to adequately include the retromolar pads, buccal shelves, and retromylohyoid fossae. For the first precision impression, a soft relining material adjusted to high viscosity was used, and functional impressions were obtained while patients performed five types of functional movements: "pursing the lips," "drawing the mouth corners backward,"

"licking the lips," "pushing the operator's finger with the tongue," and "swallowing." Border molding was performed using a heavy-body silicone impression material as needed, followed by a second precision impression using an injection-type silicone impression material for functional impressions to obtain the final impression.

Assessment Items

At baseline (BL) and at the two-year follow-up visit, patient-reported OHRQoL was recorded using the OHIP-EDENT-J as a subjective assessment. The OHIP-EDENT-J is a questionnaire-based assessment comprising 19 items rated on a 5-point scale (0–4). Higher scores indicate lower QoL and more problems. Occlusal status was also recorded using the occlusal score, a patient-reported outcome measure (Figure 1). The occlusal score is a self-check sheet developed by The Japanese Academy of Clinical Occlusion, in which patients circle applicable responses to occlusal score questions. Scores were calculated as: rarely = 0 points, slightly = 3 points, present = 5 points, with lower total scores indicating better occlusal status. For complete denture wearers, the item "Are you concerned about the alignment of your teeth?" was excluded because artificial tooth arrangement could be modified, and the survey was conducted using the remaining five items more directly related to occlusion. Scores ranged from a minimum of 0 to a maximum of 25. Furthermore, patients' intraoral conditions were examined, and information on subject characteristics (general and intraoral) and treatment details was collected from clinical records, and past treatment history was investigated.

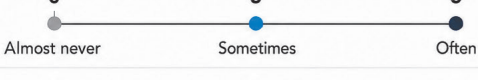
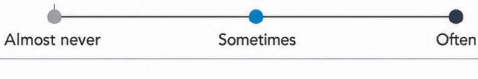
Question	Evaluation (3-point scale)
1 I felt that my bite position was not stable.	
2 I had difficulty opening my mouth as if I was thinking.	
3 I was dissatisfied with the height of my bite.	
4 I had soreness in my jaw muscles when chewing or clenching.	
5 I chewed more on one side than the other.	

Figure 1. Occlusion Score (Modified)

Patients were asked about their experiences over the past month.

Each question was rated on a 3-point scale (almost never = 0 points, sometimes = 3 points, often = 5 points).

Total score range: 0–25 points (lower scores indicate better occlusal status).

Data Analysis

Changes in OHIP-EDENT-J scores and occlusal scores between baseline (BL) and two years were analyzed using paired t-tests. For comparisons of factors between the stable group and the worsened group for OHIP-EDENT-J scores and occlusal scores, respectively, unpaired t-tests were used for continuous variables and chi-square tests for categorical variables. The statistical significance level was set at 5% ($p < 0.05$).

III. Results

Twenty-five patients returned for the two-year follow-up. The mean age at baseline was 73.2 ± 11.2 years (Table 1). During this period, two patients received new dentures. No

adverse events or complications were observed. The OHIP-EDENT-J score showed no significant change from 8.32 ± 6.86 at baseline to 8.32 ± 8.46 at two years (Figure 2a). Similarly, the occlusal score showed no statistically significant change from 3.92 ± 4.32 at baseline to 3.56 ± 4.10 at two years (Figure 2b). Individually, 11 patients showed deterioration in OHIP-EDENT-J over the two years (Figure 3a), and 8 patients showed deterioration in occlusal score (Figure 3b).

Factors influencing stabilization or improvement of OHIP-EDENT-J were maxillary denture retention/stability score and treatment by a certified dentist in clinical occlusion (Table 2). In contrast, for the occlusal score, no statistically significant differences were found between the stable and worsened groups for any of the examined items (Table 3).

Table 1. Demographic characteristics of the participants

Variable	Male (N = 14)	Female (N = 11)	Total (N = 25)
Age, mean (SD), years	69.9 (10.8)	77.5 (10.7)	73.2 (11.2)
Patients with systemic diseases, n (%)	6 (42.9)	6 (54.5)	12 (48.0)
Patients with $\geq$ high school education, n (%)	12 (85.7)	7 (63.6)	19 (76.0)

Values are presented as mean (SD) or number (%).

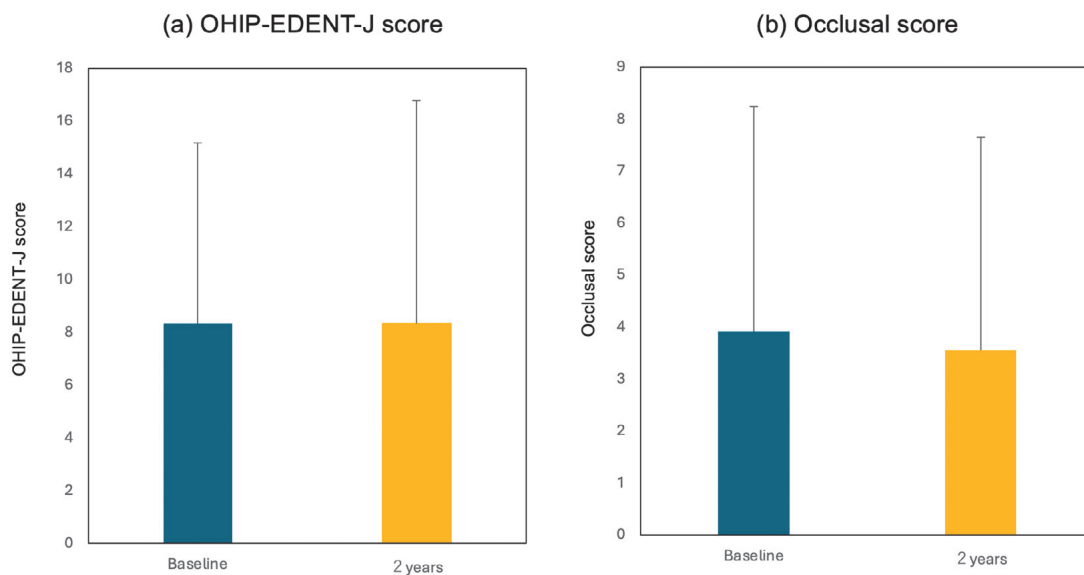


Figure 2. Changes in the OHIP-EDENT-J score and occlusal score over 2 years.

(a) OHIP-EDENT-J score; (b) Occlusal score.

Note: Bars indicate mean values, and error bars indicate standard deviations (SD).

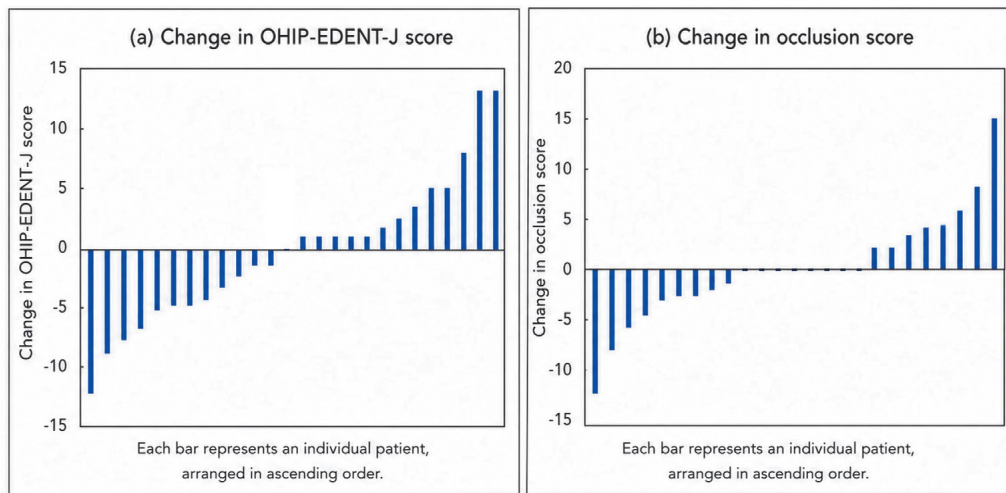


Figure 3. Individual changes in OHIP-EDENT-J score (a) and occlusion score (b) over 2 years. Each bar represents the change in score for an individual patient, arranged in ascending order. The horizontal line (0) indicates no change from baseline. Negative values indicate deterioration in score, and positive values indicate improvement.

Table 2. Factors associated with patients with stable or deteriorated OHIP-EDENT-J scores over 2 years

Variable	OHIP-stable (N = 14) n (%) or mean (SD)	OHIP-deteriorated (N = 11) n (%) or mean (SD)	P value
Patients with maxillary retention and stability score ≥ 5 , n (%)	14 (100)	7 (63.6)	0.03
Patients with mandibular retention and stability score ≥ 5 , n (%)	8 (57.1)	4 (36.4)	0.53
Average months of denture use (SD)	52.8 (39.9)	62.0 (57.0)	0.68
Average number of denture repairs (SD)	0.5 (0.9)	1.3 (2.9)	0.23
Patients with flabby ridge, n (%)	1 (7.1)	3 (27.3)	0.27
Patients who received regular check-ups, n (%)	13 (92.8)	10 (90.9)	0.99
Patients treated by occlusion-certified dentists, n (%)	12 (85.7)	4 (36.4)	0.02
Patients who reported oral dryness, n (%)	2 (14.3)	3 (27.3)	0.61
Patients using denture cleansers, n (%)	13 (92.8)	10 (90.9)	0.99

Values are presented as number (%) or mean (SD). OHIP: Oral Health Impact Profile; EDENT-J: Japanese version for edentulous subjects.

Table 3. Factors associated with patients with stable or deteriorated occlusion scores over 2 years

Variable	Occlusion-stable (N = 17) n (%) or mean (SD)	Occlusion-deteriorated (N = 8) n (%) or mean (SD)	P value
Patients with maxillary retention and stability score ≥ 5 , n (%)	15 (88.2)	6 (75.0)	0.57
Patients with mandibular retention and stability score ≥ 5 , n (%)	10 (58.8)	4 (50.0)	1.00
Average months of denture use (SD)	53.8 (44.4)	68.4 (51.1)	0.40
Average number of denture repairs (SD)	0.5 (0.9)	1.9 (3.2)	0.09
Patients with flabby ridge, n (%)	3 (17.6)	1 (12.5)	1.00
Patients who received regular check-ups, n (%)	16 (94.1)	7 (87.5)	1.00
Patients treated by occlusion-certified dentists, n (%)	12 (70.6)	4 (50.0)	0.39
Patients who reported oral dryness, n (%)	2 (11.8)	3 (37.5)	0.28
Patients using denture cleansers, n (%)	16 (94.1)	8 (100.0)	1.00

Values are presented as number (%) or mean (SD). SD: standard deviation.

IV. Discussion

In this study, OHIP-EDENT-J and occlusal scores in patients wearing complete dentures fabricated with the mandibular suction effective impression technique remained stable without statistically significant changes over two years. The mean occlusal score changed from 3.92 ± 4.32 to 3.56 ± 4.10 , maintaining the criterion of "no occlusal problems" (≤ 5 points) established by The Japanese Academy of Clinical Occlusion. Factors significantly associated with OHIP-EDENT-J stabilization were maxillary denture retention/stability score and treatment by a certified dentist in clinical occlusion. In the OHIP-EDENT-J stable group, all patients (100%) had a maxillary denture retention/stability score of 5 or higher, compared to only 63.6% in the worsened group, with a significant difference between groups ($p = 0.03$). For the occlusal score, 88.2% of the stable group and 75.0% of the worsened group had maxillary retention/stability scores of 5 or higher, but the difference was not significant ($p = 0.57$). Additionally, the proportion of patients who received treatment by a certified dentist in clinical occlusion was 85.7% in the OHIP-EDENT-J stable group versus 36.4% in the worsened group, showing a significant difference ($p = 0.02$).

For the occlusal score, the proportions were 70.6% in the stable group and 50.0% in the worsened group, with no significant difference ($p = 0.39$). Considering the report by Kimoto et al.,¹⁰ which found significant differences in the number of adjustment visits for new complete dentures between junior clinicians and experienced clinicians, operator-related factors may have influenced treatment outcomes.

The proportion of patients with a mandibular retention/stability score of 5 or higher was somewhat higher in the occlusal score stable group (58.8%) than in the worsened group (50.0%), but the difference was not significant ($p = 1.00$), and the difference between groups was smaller than for the maxilla. This suggests that in cases with challenging anatomical conditions, achieving occlusal stability remains relatively difficult even with this impression technique.

A study by Kono et al.,¹¹ which evaluated outcomes in 35 patients provided with new maxillary and mandibular complete dentures using masticatory function, patient satisfaction, and ridge status as parameters for technology assessment, also showed that at one month post-insertion, "maxillary denture fit" and "mandibular denture discomfort" were determining factors for patient satisfaction, which is

generally consistent with the present findings.

As shown in the study by Fenlon et al.,¹² establishing appropriate intermaxillary relationships is important for complete denture patient satisfaction. To achieve this, retention and stability of both maxillary and mandibular dentures are essential. However, it is readily inferable that deteriorating anatomical conditions of the maxillary and mandibular ridges may hinder the maintenance of good OHRQoL.

Furthermore, although OHRQoL stability was maintained over the two-year period in this study, this may have been partly attributable to regular maintenance by certified dentists in clinical occlusion, including appropriate management such as occlusal adjustment.

Study limitations include the small sample size (25 patients) due to a high dropout rate, which precluded multivariate analysis, and the relatively short two-year observation period. Future studies with larger sample sizes, longer-term follow-up, and comparative studies with conventional methods are warranted.

V. Conclusion

The following conclusions were drawn from this study:

- OHIP-EDENT-J and occlusal scores remained stable over the two-year period overall.
- Denture retention and stability, as well as treatment by a certified dentist in clinical occlusion, were considered to be associated with score stabilization and improvement.

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Original Article

一项针对采用下颌吸附性义齿印模技术取模的全口义齿的口腔健康相关生活质量的纵向研究

A Longitudinal Study of Oral Health-Related Quality of Life Following Complete Denture Treatment Using a Suction-Effective Mandibular Impression Technique

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摘要

本研究旨在以下颌全口义齿吸附性印模法 (Suction effective impression) 制作的全口义齿佩戴者为对象, 探讨口腔健康相关生活质量 (OHRQoL) 在两年期间的经时变化及其维持相关的影响因素。研究对象为 2021—2022 年间采用同一术式制作全口义齿并因维护来院的 68 名患者, 在基线及两年后分别评估了 OHIP-EDENT-J 和咬合评分。对完成两年追踪的 25 名患者进行分析, 结果显示: OHIP-EDENT-J 评分基线为 8.32 ± 6.86 , 两年后为 8.32 ± 8.46 ; 咬合评分从 3.92 ± 4.32 变化为 3.56 ± 4.10 , 上述变化均无统计学显著性。另一方面, OHIP-EDENT-J 的稳定或改善与上颌义齿的维持稳定性及咬合认定医师的治疗显著相关; 而咬合评分的稳定则未发现显著相关因素。以上结果表明, 采用下颌全口义齿吸附性印模法制作的全口义齿, 在两年期间能够良好地维持口腔相关生活质量及咬合状态。同时, 义齿的维持稳定性及咬合认定医师的治疗可能是促进长期口腔相关生活质量维持的贡献因素。

关键词 (Key word): OHIP-EDENT-J, Occlusion Score Complete denture, Oral-health related Quality of Life, Suction-Effective Mandibular Complete Denture

1. 绪言

对完全无牙颌患者进行的可摘式全口义齿治疗, 不仅旨在恢复咀嚼功能和发音功能, 还以改善口腔健康相关生活质量 (OHRQoL) 为目标。牙齿的丧失不仅导致咀嚼障碍和美观障碍, 还对心理和社会层面产生重大影响, 因此近年来患者报告结局指标 (PROMs) 已被定位为重要的评估项目。

既往研究一致表明, 传统全口义齿修复治疗能够显著改善 OHRQoL。¹⁻³ 纵向研究显示, 戴用新义齿后约 3 个月时 OHRQoL 即有显著改善, 且该效果至少可维持 12 个月。^{1,3} 此外, 系统综述和 Meta 分析也证实, 使用 OHIP-EDENT, OHIP-14, OHIP-49, GOHAI 等评估指标均观察到显著改善, 表明全口义齿治疗对患者的日常生活和口腔功能具有良好影响。⁴⁻⁷

另一方面, 传统全口义齿中, 义齿的维持和稳定不足是导致患者满意度和 QOL 下降的主要因素, 尤其是下颌全口义齿中难以获得足够维持力的病例不在少数。因此, 通过改进印模方法和义齿制作方法来提高维持力已成为重要课题。

吸附性印模法 (Suction effective impression) 是一种旨在获取功能性边缘封闭和吸附力的印模技术, 有望制作出具有高维持性和稳定性的全口义齿。近年来有报道显示, 采用该术式制作的全口义齿较传统方法表现出更高的 OHRQoL。⁸ 然而, 这些报道均为横断面研究, 所获得的 QOL 改善能否长期维持尚不明确。

因此, 本研究旨在以采用吸附性印模法制作的全口义齿佩戴者为对象, 前瞻性评估戴用后 2 年期间 OHRQoL 的经时变化, 并探讨长期 OHRQoL 维持的相关影响因素。

II. 对象与方法

研究对象为 2021 年至 2022 年间, 因维护调整而来院就诊的 68 例患者, 这些患者均佩戴了采用下颌全口义齿吸附性印模法制作的全口义齿。在采集患者背景信息后, 记录 OHIP EDENT J 及咬合评分。⁹ 2 年后进行同样记录。

下颌全口义齿吸附性印模法

关于下颌全口义齿吸附性印模法的详细操作步骤, 已在既往报道⁸中描述, 本文仅简述概要。初印模使用两种不同流动性的藻酸盐印模材。根据初印模制作功能性个别托盘, 形态需适当包含磨牙后垫, 颊棚区及下颌舌骨后窝。第一次精密印模使用高黏度软衬材料, 在患者进行“噘嘴”, “拉口角”, “舔唇”, “舌推术者手指”, “吞咽”5 种功能运动的同时取功能性印模。必要时使用重型硅橡胶印模材进行边缘整塑, 之后第二次精密印模采用注射型硅橡胶印模材进行功能性印模, 取得最终印模。

评价项目

在基线 (BL) 及 2 年后复诊时, 主观评价采用 OHIP EDENT J 记录患者口腔相关生活质量。OHIP EDENT J 为患者问卷形式, 共 19 个项目, 按 5 级 (0-4) 评分, 分值越高表示 QoL 越低, 问题越多。同时, 采用患者报告的咬合评分记录咬合状态 (图 1)。咬合评分由日本颞颌关节学会制作的自评表, 患者针对“咬合评分”问题勾选相应选项。计分方式: 几乎没有 = 0 分, 稍有 = 3 分, 有 = 5 分, 总分越低表示咬合越好。针对上下全口义齿佩戴者, 因人工牙排列可调整, 删除“是否在意自己的牙列”一项, 仅用其余 5 项与咬合更相关的项目进行调查。评分最小值为 0, 最大值为 25。此外, 检查患者口腔内状况, 从诊疗记录中收集患者特征 (全身, 口腔内) 及治疗内容相关信息, 并调查既往治疗史。

Question	Evaluation (3-point scale)
1 I felt that my bite position was not stable.	
2 I had difficulty opening my mouth as if I was thinking.	
3 I was dissatisfied with the height of my bite.	
4 I had soreness in my jaw muscles when chewing or clenching.	
5 I chewed more on one side than the other.	

Figure 1. Occlusion Score (Modified)

Patients were asked about their experiences over the past month.

Each question was rated on a 3-point scale (almost never = 0 points, sometimes = 3 points, often = 5 points).

Total score range: 0–25 points (lower scores indicate better occlusal status).

数据分析

基线 (BL) 与 2 年后 OHIP EDENT J 评分及咬合评分的变化采用配对 t 检验分析。对于 OHIP EDENT

J 评分和咬合评分, 分别比较 2 年内稳定组与恶化组的各因素, 连续变量采用非配对 t 检验, 分类变量采用 χ^2 检验。统计学显著性水平设为 5% ($p < 0.05$)。

III. 结果

25 例患者在 2 年后复诊。基线时平均年龄为 73.2 ± 11.2 岁 (表 1)。在此期间, 有 2 例患者重新制作了义齿。未见不良事件及并发症。OHIP EDENT J 基线平均为 8.32 ± 6.86 , 2 年后为 8.32 ± 8.46 , 差异无统计学意义 (图 2a)。咬合评分基线平均为 3.92 ± 4.32 , 2 年

后为 3.56 ± 4.10 (图 2b), 亦无统计学显著差异。从个体变化看, 2 年间 OHIP EDENT J 恶化的有 11 例 (图 3a), 咬合评分恶化的有 8 例 (图 3b)。

影响 OHIP EDENT J 稳定或改善的因素为上颌义齿固位稳定评分及经咬合认定医治疗 (表 2)。而咬合评分方面, 所分析的各项因素在稳定组与恶化组之间均未见统计学显著差异 (表 3)。

Table 1. Demographic characteristics of the participants

Variable	Male (N = 14)	Female (N = 11)	Total (N = 25)
Age, mean (SD), years	69.9 (10.8)	77.5 (10.7)	73.2 (11.2)
Patients with systemic diseases, n (%)	6 (42.9)	6 (54.5)	12 (48.0)
Patients with $\geq$ high school education, n (%)	12 (85.7)	7 (63.6)	19 (76.0)

Values are presented as mean (SD) or number (%).

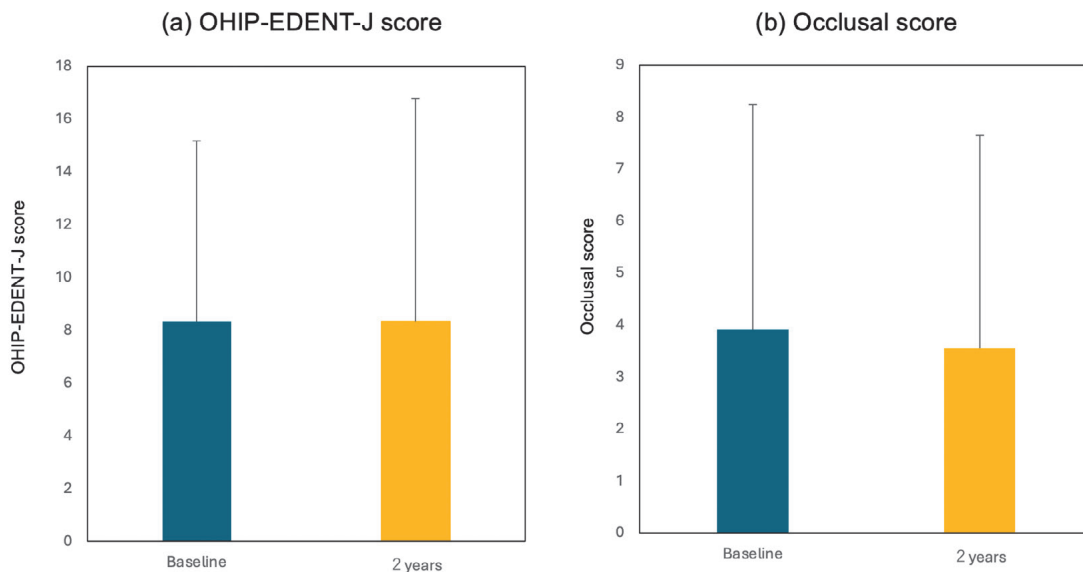


Figure 2. Changes in the OHIP-EDENT-J score and occlusal score over 2 years.
(a) OHIP-EDENT-J score; (b) Occlusal score.

Note: Bars indicate mean values, and error bars indicate standard deviations (SD).

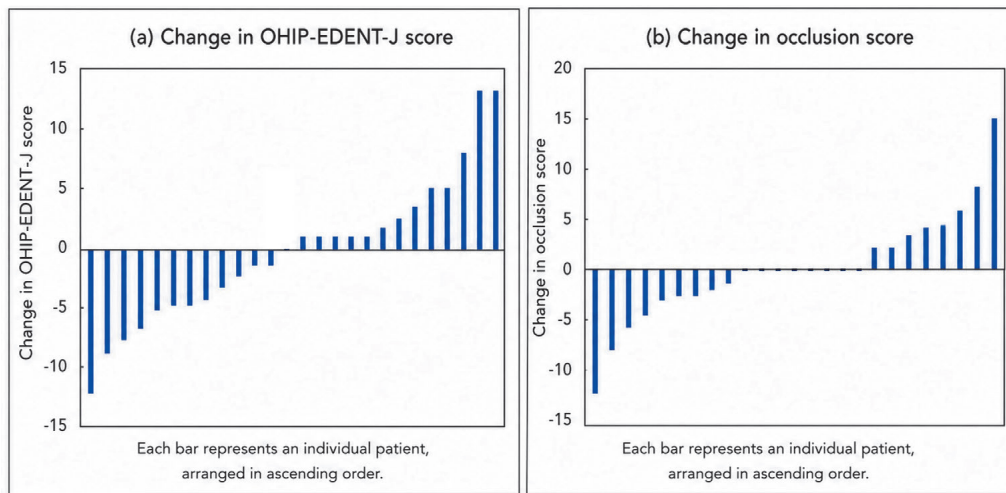


Figure 3. Individual changes in OHIP-EDENT-J score (a) and occlusion score (b) over 2 years. Each bar represents the change in score for an individual patient, arranged in ascending order. The horizontal line (0) indicates no change from baseline. Negative values indicate deterioration in score, and positive values indicate improvement.

Table 2. Factors associated with patients with stable or deteriorated OHIP-EDENT-J scores over 2 years

Variable	OHIP-stable (N = 14) n (%) or mean (SD)	OHIP-deteriorated (N = 11) n (%) or mean (SD)	P value
Patients with maxillary retention and stability score ≥ 5 , n (%)	14 (100)	7 (63.6)	0.03
Patients with mandibular retention and stability score ≥ 5 , n (%)	8 (57.1)	4 (36.4)	0.53
Average months of denture use (SD)	52.8 (39.9)	62.0 (57.0)	0.68
Average number of denture repairs (SD)	0.5 (0.9)	1.3 (2.9)	0.23
Patients with flabby ridge, n (%)	1 (7.1)	3 (27.3)	0.27
Patients who received regular check-ups, n (%)	13 (92.8)	10 (90.9)	0.99
Patients treated by occlusion-certified dentists, n (%)	12 (85.7)	4 (36.4)	0.02
Patients who reported oral dryness, n (%)	2 (14.3)	3 (27.3)	0.61
Patients using denture cleansers, n (%)	13 (92.8)	10 (90.9)	0.99

Values are presented as number (%) or mean (SD). OHIP: Oral Health Impact Profile; EDENT-J: Japanese version for edentulous subjects.

Table 3. Factors associated with patients with stable or deteriorated occlusion scores over 2 years

Variable	Occlusion-stable (N = 17) n (%) or mean (SD)	Occlusion-deteriorated (N = 8) n (%) or mean (SD)	P value
Patients with maxillary retention and stability score ≥ 5 , n (%)	15 (88.2)	6 (75.0)	0.57
Patients with mandibular retention and stability score ≥ 5 , n (%)	10 (58.8)	4 (50.0)	1.00
Average months of denture use (SD)	53.8 (44.4)	68.4 (51.1)	0.40
Average number of denture repairs (SD)	0.5 (0.9)	1.9 (3.2)	0.09
Patients with flabby ridge, n (%)	3 (17.6)	1 (12.5)	1.00
Patients who received regular check-ups, n (%)	16 (94.1)	7 (87.5)	1.00
Patients treated by occlusion-certified dentists, n (%)	12 (70.6)	4 (50.0)	0.39
Patients who reported oral dryness, n (%)	2 (11.8)	3 (37.5)	0.28
Patients using denture cleansers, n (%)	16 (94.1)	8 (100.0)	1.00

Values are presented as number (%) or mean (SD). SD: standard deviation.

IV. 讨论

本研究中, 采用下颌全口义齿吸附性印模法制作的全口义齿佩戴者, 其 OHIP EDENT J 和咬合评分在 2 年内保持稳定, 无统计学显著变化。咬合评分平均值从 3.92 ± 4.32 变为 3.56 ± 4.10 , 维持在日本顎咬合学会规定的“咬合无问题”标准 (5 分以下) 内。与 OHIP EDENT J 稳定显著相关的因素为上颌义齿固位稳定评分及咬合认定医治疗。OHIP EDENT J 稳定组中所有患者 (100%) 的上颌义齿固位稳定评分均 ≥ 5 , 而恶化组仅 63.6%, 两组间差异显著 ($p = 0.03$)。咬合评分方面, 稳定组 88.2%, 恶化组 75.0% 的上颌固位稳定评分 ≥ 5 , 但差异不显著 ($p = 0.57$)。此外, 接受咬合认定医治疗的患者比例, OHIP EDENT J 稳定组为 85.7%, 恶化组为 36.4%, 差异显著 ($p = 0.02$)。咬合评分稳定组为 70.6%, 恶化组为 50.0%, 无显著差异 ($p = 0.39$)。参考 Kimoto 等¹⁰的报道, 在新制全口义齿调整就诊次数上,

年轻临床医师组与资深临床医师组之间存在显著差异, 提示术者因素可能影响治疗预后。

下颌固位稳定评分 ≥ 5 的患者比例, 咬合评分稳定组 (58.8%) 略高于恶化组 (50.0%), 但无显著差异 ($p = 1.00$), 且上下颌间的组间差异较小。这提示在解剖条件困难的病例中, 即使采用本印模法, 确保咬合稳定性仍相对困难。

河野等¹¹的研究以咀嚼功能, 满意度及牙槽嵴状况为技术评估指标, 对 35 例重新制作上下全口义齿的患者进行了结局分析, 结果显示新义齿戴用 1 个月后患者满意度评价中, “上颌义齿适合性”和“下颌义齿不适感”是影响因子, 与本研究结果大致相似。

如 Fenlon 等¹²的研究所示, 全口义齿患者的满意度依赖于适当的颌间关系建立, 为此上下颌义齿的固位稳定至关重要。然而, 若上下颌牙槽嵴解剖条件恶化, 势必会妨碍良好口腔相关生活质量的维持。

此外, 本研究显示口腔相关生活质量在 2 年内维持

稳定，这可能也与咬合认定医的定期维护，即包括咬合调整在内的适当管理有关。

研究局限性包括：失访较多导致样本量较小（25 例），未能进行多变量分析；以及观察期仅 2 年较短。今后需扩大样本量进行长期追踪，并与传统方法进行比较研究。

V . 结论

本研究得出以下结论：

- OHIP EDENT J 及咬合评分总体在 2 年内保持稳定。
- 义齿的固位稳定及咬合认定医的治疗与评分的稳定和改善相关。

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Original Article

下顎全部床義歯の吸着を目的とした印象法による全部床義歯の口腔関連 QOL に関する縦断研究

A Longitudinal Study of Oral Health-Related Quality of Life Following Complete Denture Treatment Using a Suction-Effective Mandibular Impression Technique

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抄録

本研究は、下顎全部床義歯吸着印象法により製作した全部床義歯装着患者を対象に、口腔関連 QOL (Oral Health-Related Quality of Life : OHRQoL) の 2 年間にわたる経時的変化と、その維持に関連する因子を検討することを目的とした。2021 ~ 2022 年に同術式で製作した全部床義歯を装着し、メインテナンスのため来院した 68 名を対象とし、ベースラインおよび 2 年後に OHIP-EDENT-J および咬合スコアを評価した。2 年間の追跡が可能であった 25 名を解析対象とした結果、OHIP-EDENT-J はベースライン 8.32 ± 6.86 、2 年後 8.32 ± 8.46 、咬合スコアは 3.92 ± 4.32 から 3.56 ± 4.10 へ推移し、いずれも統計学的に有意な変化は認められなかった。一方、OHIP-EDENT-J の安定・改善には上顎義歯の維持安定性および咬み合わせ認定医による治療が有意に関連していた。他方、咬合スコアの安定に有意に関連する因子は認められなかった。以上より、下顎全部床義歯吸着印象法により製作した総義歯では、口腔関連 QOL および咬合状態は 2 年間にわたり良好に維持されることが示された。また、義歯の維持・安定および咬み合わせ認定医による治療は、長期的な口腔関連 QOL の維持に寄与する因子である可能性が示唆された。

キーワード : OHIP-EDENT-J, Occlusion Score Complete denture, Oral-health related Quality of Life, Suction-Effective Mandibular Complete Denture

I . 緒言

完全無歯顎患者に対する可撤式全部床義歯治療は、咀嚼機能や発音機能の回復だけでなく、口腔関連 QOL (Oral Health-Related Quality of Life: OHRQoL) の改善を目的としている。歯の喪失は咀嚼障害や審美障害のみならず、心理的・社会的側面にも大きな影響を及ぼすことから、近年では患者報告型アウトカム (Patient-Reported Outcome Measures: PROMs) が重要な評価項目として位置付けられている。これまでの研究では、従来型全部床義歯による補綴治療は OHRQoL を有意に改善することが一貫して報告されている。¹⁻³ 縦断研究では、新義歯装着後約 3 か月で OHRQoL が有意に改善し、その効果は少なくとも 12 か月間維持されることが示されている。^{1,3} また、システマティックレビューおよびメタアナリシスにおいても、OHIP-EDENT, OHIP-14, OHIP-49, GOHAI

などの評価指標で有意な改善が確認されており、全部床義歯治療が患者の日常生活や口腔機能に良好な影響を及ぼすことが明らかとなっている。⁴⁻⁷

一方で、従来型全部床義歯では義歯の維持・安定不足が患者満足度や QOL 低下の主要因であり、特に下顎全部床義歯では十分な維持力を得ることが困難な症例も少なくない。そのため、印象採得法や義歯製作法の改良による維持力向上が重要な課題となっている。

下顎全部床義歯吸着印象法は、機能時の辺縁封鎖と吸着を獲得することを目的とした印象法であり、高い維持・安定性を有する全部床義歯の製作を可能とすることが期待されている。近年、この術式により製作された全部床義歯は、従来法と比較して高い OHRQoL を示すことが報告されている。⁸ しかし、これらの報告は横断研究であり、得られた QOL の改善が長期間維持されるかについては明らかではない。

そこで本研究では、下顎全部床義歯吸着印象法を用いて

製作した全部床義歯装着患者を対象として、装着後2年間にわたる OHRQoL の経時的変化を前向きに評価することを目的とした。また、長期的な OHRQoL の維持にかかわる要因について検討した。

II. 被験者と方法

2021 年から 2022 年までの間に、下顎全部床義歯の吸着を目的とした印象法により製作した全部床義歯を装着後、メンテナンス・調整のために来院した 68 名を対象とした。患者の背景について問診を行ったのち、OHIP-EDENT-J および咬合スコア⁹の記録を行った。2 年後にも同様の記録を行った。

下顎全部床義歯吸着印象法

下顎全部床義歯吸着印象法の詳細な術式については、既報⁸に記載されているため、本稿ではその概要を簡潔に記載する。概形印象には、流動性の異なる 2 種類のアルジネート印象材を用いた。得られた概形印象から機能印象用トレーを製作し、レトロモラーパッド、頬棚および後顎舌骨筋窩部を適切に包含する形態とした。一次精密印象では、高粘稠度に調整した義歯床用短期弾性裏層材を用い、「口を尖らす」「口角を引く」「口唇をなめる」「舌で術者の指を押す」「嚥下」の 5 種類の機能運動を行わせながら機能印象を採得した。必要に応じてヘビーボディタイプシリコン印象材による筋圧形成を行った後、二次精密印象ではインジェクションタイプのシリコン印象材を用いて機能印象を行い、最終印象を採得した。

評価項目

ベースライン（以下 BL）および 2 年後の再来院時に、主観評価として患者口腔関連 QOL を OHIP-EDENT-J にて記録した。OHIP-EDENT-J は、患者に対するアンケート形式となっており、19 項目を 5 段階（0–4）で評価する。スコアが高いほど QOL が低く問題が多いと判定する。また、咬合の状態を患者報告型アウトカムである咬合スコアにて記録した（図 1）。咬合スコアは日本顎咬合学会が作成したセルフチェックシートであり、患者に「咬合スコア」の質問に対して該当するものに○をつけてもらう方式である。ほとんどない = 0 点、少しある = 3 点、ある = 5 点と計算し、合計点が小さいほど良好な咬み合わせを示す。上下全部床義歯装着者を対象とし、人工歯排列の変更が可能のため、「自分の歯ならばが気になることはありますか」の項目を削除し、より咬合に関連した 5 項目で調査した。スコアは最小値が 0、最大値が 25 である。さらに、患者の口腔内条件を確認し、診療録から被験者の特性（全身、口腔内）及び治療内容に関する情報を収集し、過去の治療履歴を調査した。

データ解析

BL と 2 年後における OHIP-EDENT-J スコアおよび咬合スコアの変化は、対応のある t 検定を用いて解析した。また、OHIP-EDENT-J スコアおよび咬合スコアについて、それぞれ 2 年間で安定した群と悪化した群との各要因の比較には、連続変数には対応のない t 検定、カテゴリカル変数には χ^2 検定 (chi-square test) を用いた。統計学的有意水準は 5% ($p < 0.05$) とした。

Question	Evaluation (3-point scale)
1 I felt that my bite position was not stable.	
2 I had difficulty opening my mouth as if I was thinking.	
3 I was dissatisfied with the height of my bite.	
4 I had soreness in my jaw muscles when chewing or clenching.	
5 I chewed more on one side than the other.	

Figure 1. Occlusion Score (Modified)

Patients were asked about their experiences over the past month.

Each question was rated on a 3-point scale (almost never = 0 points, sometimes = 3 points, often = 5 points).

Total score range: 0–25 points (lower scores indicate better occlusal status).

Ⅲ．結果

25名の患者が2年後に来院した。BL時の平均年齢は 73.2 ± 11.2 歳であった（表1）。この期間中、2名の患者には新義歯が製作されていた。有害事象および偶発症は見られなかった。OHIP-EDENT-Jは、BL時平均 8.32 ± 6.86 、2年後は 8.32 ± 8.46 で有意差は見られなかった（図2a）。また、咬合スコアはBL時平均 3.92 ± 4.32 から2年後 3.56 ± 4.10 （図2b）となったが統計学的な有意差は見られなかつ

た。個別に見ると、2年間でOHIP-EDENT-Jが悪化したのが11名（図3a）、咬合スコアが悪化したのは8名であった（図3b）。

OHIP-EDENT-Jの安定化または改善に影響したのは、上顎の義歯の維持安定スコアおよび咬み合わせ認定医による治療であった（表2）。一方、咬合スコアについては、検討したいずれの項目においても安定群と悪化群の間に統計学的有意差は認められなかった（表3）。

Table 1. Demographic characteristics of the participants

Variable	Male (N = 14)	Female (N = 11)	Total (N = 25)
Age, mean (SD), years	69.9 (10.8)	77.5 (10.7)	73.2 (11.2)
Patients with systemic diseases, n (%)	6 (42.9)	6 (54.5)	12 (48.0)
Patients with $\geq$ high school education, n (%)	12 (85.7)	7 (63.6)	19 (76.0)

Values are presented as mean (SD) or number (%).

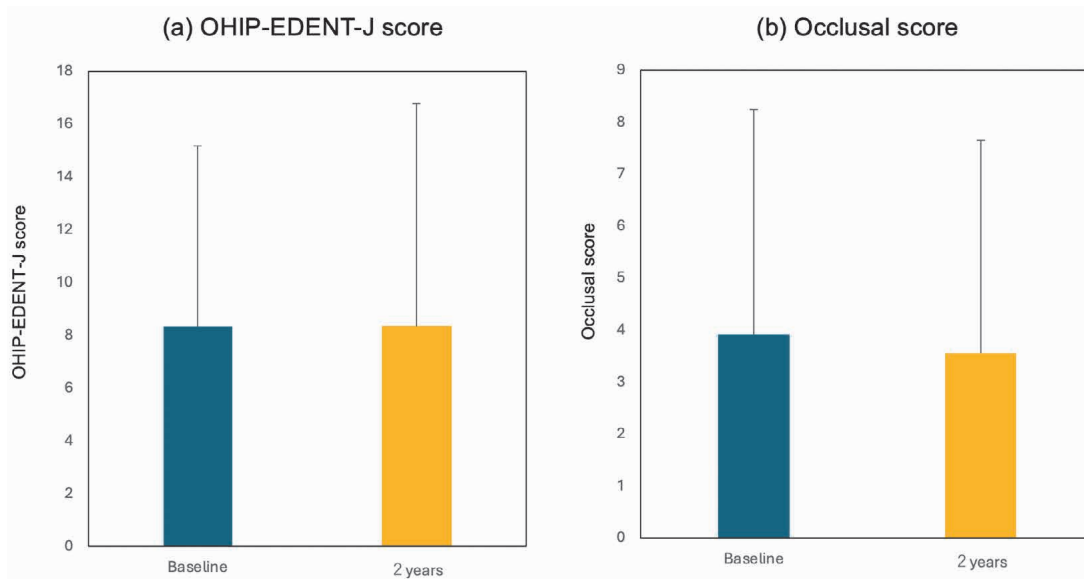


Figure 2. Changes in the OHIP-EDENT-J score and occlusal score over 2 years.
(a) OHIP-EDENT-J score; (b) Occlusal score.

Note: Bars indicate mean values, and error bars indicate standard deviations (SD).

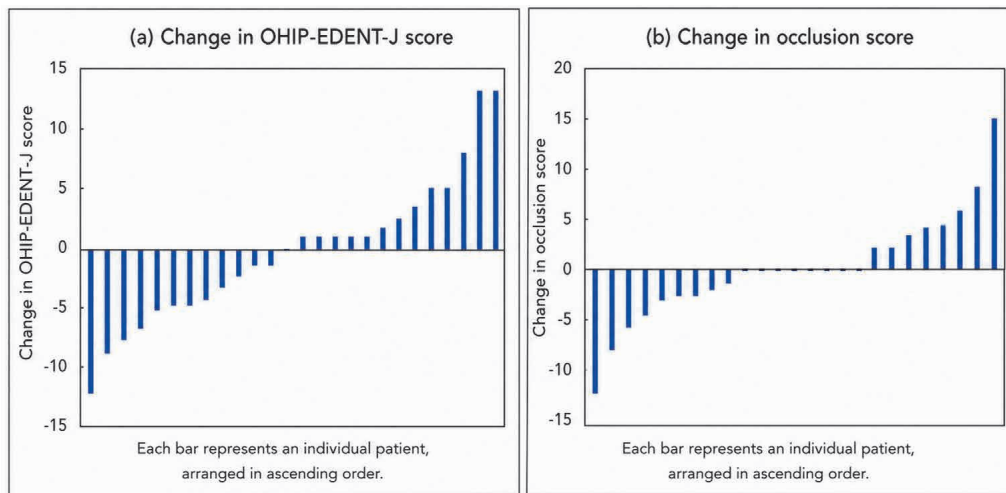


Figure 3. Individual changes in OHIP-EDENT-J score (a) and occlusion score (b) over 2 years. Each bar represents the change in score for an individual patient, arranged in ascending order. The horizontal line (0) indicates no change from baseline. Negative values indicate deterioration in score, and positive values indicate improvement.

Table 2. Factors associated with patients with stable or deteriorated OHIP-EDENT-J scores over 2 years

Variable	OHIP-stable (N = 14) n (%) or mean (SD)	OHIP-deteriorated (N = 11) n (%) or mean (SD)	P value
Patients with maxillary retention and stability score ≥ 5 , n (%)	14 (100)	7 (63.6)	0.03
Patients with mandibular retention and stability score ≥ 5 , n (%)	8 (57.1)	4 (36.4)	0.53
Average months of denture use (SD)	52.8 (39.9)	62.0 (57.0)	0.68
Average number of denture repairs (SD)	0.5 (0.9)	1.3 (2.9)	0.23
Patients with flabby ridge, n (%)	1 (7.1)	3 (27.3)	0.27
Patients who received regular check-ups, n (%)	13 (92.8)	10 (90.9)	0.99
Patients treated by occlusion-certified dentists, n (%)	12 (85.7)	4 (36.4)	0.02
Patients who reported oral dryness, n (%)	2 (14.3)	3 (27.3)	0.61
Patients using denture cleansers, n (%)	13 (92.8)	10 (90.9)	0.99

Values are presented as number (%) or mean (SD). OHIP: Oral Health Impact Profile; EDENT-J: Japanese version for edentulous subjects.

Table 3. Factors associated with patients with stable or deteriorated occlusion scores over 2 years

Variable	Occlusion-stable (N = 17) n (%) or mean (SD)	Occlusion-deteriorated (N = 8) n (%) or mean (SD)	P value
Patients with maxillary retention and stability score ≥ 5 , n (%)	15 (88.2)	6 (75.0)	0.57
Patients with mandibular retention and stability score ≥ 5 , n (%)	10 (58.8)	4 (50.0)	1.00
Average months of denture use (SD)	53.8 (44.4)	68.4 (51.1)	0.40
Average number of denture repairs (SD)	0.5 (0.9)	1.9 (3.2)	0.09
Patients with flabby ridge, n (%)	3 (17.6)	1 (12.5)	1.00
Patients who received regular check-ups, n (%)	16 (94.1)	7 (87.5)	1.00
Patients treated by occlusion-certified dentists, n (%)	12 (70.6)	4 (50.0)	0.39
Patients who reported oral dryness, n (%)	2 (11.8)	3 (37.5)	0.28
Patients using denture cleansers, n (%)	16 (94.1)	8 (100.0)	1.00

Values are presented as number (%) or mean (SD). SD: standard deviation.

Ⅳ．考察

本研究では、下顎総義歯吸着印象法により製作された全部床義歯装着患者の OHIP-EDENT-J および咬合スコアが2年間にわたり統計学的有意差なく安定していた。咬合スコアの平均値は 3.92 ± 4.32 から 3.56 ± 4.10 となり、日本顎咬合学会が定める「咬み合わせに問題がない」基準（5点以下）を維持していた。OHIP-EDENT-J の安定化に有意に関連した要因は、上顎義歯の維持安定スコアおよび咬み合わせ認定医による治療であった。OHIP-EDENT-J の安定群では全員（100%）が上顎義歯の維持安定スコア 5 以上であったのに対し、悪化群では 63.6% にとどまり、両群間に有意差を認めた ($p=0.03$)。咬合スコアでは、安定群の 88.2%、悪化群の 75.0% が上顎維持安定スコア 5 以上であったが、有意差は認められなかった ($p=0.57$)。また、咬み合わせ認定医による治療を受けた患者の割合は、OHIP-EDENT-J の安定群で 85.7%、悪化群で 36.4% と有意差を認めた ($p=0.02$)。咬合スコアでは安定群 70.6%、悪化群 50.0%

であり、有意差は認められなかった ($p=0.39$)。総義歯新製時の義歯調整のための来院回数において、若手臨床家群と熟練臨床家群の間に有意差が認められたとする Kimoto ら¹⁰ の報告を鑑みると、術者による違いが治療の予後に影響を与えたのかもしれない。

下顎の維持安定スコアが 5 以上の患者の割合は、咬合スコアの安定群（58.8%）で悪化群（50.0%）よりやや高かったが、有意差は認められず ($p=1.00$)、上顎の場合より両群間の差は小さかった。これは解剖学的条件が厳しい症例では、本印象法を用いても咬合安定性の確保が相対的に困難であることを示唆している。

河野ら¹¹ の行った咀嚼機能・満足度・顎堤の状態をテクノロジーアセスメントとし上下総義歯を新製した患者 35 名のアウトカムを検討した研究でも、新義歯装着 1 ヶ月後の患者満足度評価において、「上顎義歯の適合性」と「下顎義歯の違和感」が左右する因子であることが示されており、今回の結果とおおよそ相似している。

Fenlon らの研究¹² で示されたように、全部床義歯患者

の満足度には適切な顎間関係の確立が重要とされている。そのためには、上下顎義歯の維持安定が大切である。しかし、上下顎顎堤の解剖学的条件が悪化していれば、良好な口腔関連 QOL を維持することの妨げになることは容易に推測される。

さらに、本研究では 2 年間という期間、口腔関連 QOL の安定が維持されていたが、これには咬み合わせ認定医による定期的なメンテナンス、すなわち咬合調整をはじめとする適切な管理が行われたことも一因として寄与した可能性が考えられた。

研究の限界として、ドロップアウトが多かったため、サンプルサイズが小さくなり (25 名)、多変量解析が行えなかったことや、2 年間という観察期間の短さが挙げられる。今後は多数例での長期的追跡調査や従来法との比較研究が必要である。

V. 結論

本研究より以下の結論が得られた。

- ・ OHIP-EDENT-J 及び咬合スコアは全体的には 2 年間安定していた
- ・ 義歯の維持安定と咬み合わせ認定医による治療がスコアの安定化および改善に関連すると考えられた

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Original Article

Estudio longitudinal de la calidad de vida relacionada con la salud bucodental después del tratamiento con prótesis completas mediante una técnica de impresión mandibular con efecto de succión

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Resumen

El objetivo de este estudio fue investigar los cambios longitudinales en la calidad de vida relacionada con la salud oral (OHRQoL) durante un período de dos años, así como los factores asociados a su mantenimiento, en pacientes portadores de prótesis completas fabricadas mediante la técnica de impresión por succión efectiva para la prótesis completa mandibular. Se incluyeron 68 pacientes que recibieron prótesis completas elaboradas con esta técnica entre 2021 y 2022 y que acudieron a citas de mantenimiento. Se evaluaron el OHIP-EDENT-J y la puntuación oclusal al inicio y a los dos años. Se analizaron 25 pacientes que completaron el seguimiento de dos años. La puntuación OHIP-EDENT-J pasó de $8,32 \pm 6,86$ al inicio a $8,32 \pm 8,46$ a los dos años, y la puntuación oclusal de $3,92 \pm 4,32$ a $3,56 \pm 4,10$, sin que se observaran cambios estadísticamente significativos en ninguna de las dos mediciones. Sin embargo, la estabilidad/mejoría del OHIP-EDENT-J se asoció significativamente con la retención y estabilidad de la prótesis maxilar y con el tratamiento realizado por un odontólogo certificado en oclusión. No se identificaron factores significativos para la estabilidad de la puntuación oclusal. Estos hallazgos indican que la OHRQoL y el estado oclusal se mantienen adecuadamente durante dos años en pacientes con prótesis completas tratados con la técnica de impresión por succión efectiva mandibular. Además, la retención y estabilidad de la prótesis, así como el tratamiento por un odontólogo certificado en oclusión, pueden ser factores que contribuyan al mantenimiento a largo plazo de la OHRQoL.

Palabras clave : OHIP-EDENT-J, Occlusion Score Complete denture, Oral-health related Quality of Life, Suction-Effective Mandibular Complete Denture

I. Introducción

El tratamiento con prótesis completas removibles para pacientes completamente desdentados tiene como objetivo no solo restaurar la función masticatoria y fonética, sino también mejorar la calidad de vida relacionada con la salud oral (OHRQoL). La pérdida de dientes afecta no solo la masticación y la estética, sino que también tiene importantes consecuencias psicológicas y sociales; por ello, en los últimos años las medidas de resultados reportadas por el paciente (PROMs) se han establecido como parámetros de evaluación fundamentales. Estudios previos han informado consistentemente que el tratamiento protésico con prótesis completas convencionales mejora significativamente la OHRQoL.¹⁻³ Los estudios longitudinales han demostrado que la OHRQoL mejora significativamente aproximadamente tres meses después de la inserción de una nueva prótesis, y que este efecto se mantiene durante al menos 12 meses.¹⁻³ Las

revisiones sistemáticas y metaanálisis también han confirmado mejoras significativas utilizando instrumentos como OHIP-EDENT, OHIP-14, OHIP-49 y GOHAI, lo que demuestra que el tratamiento con prótesis completas afecta positivamente la vida diaria y la función oral de los pacientes.⁴⁻⁷

Por otro lado, la retención y estabilidad insuficientes de las prótesis completas convencionales son factores principales que contribuyen a la reducción de la satisfacción del paciente y de la calidad de vida, y muchos casos, particularmente con prótesis completas mandibulares, presentan dificultades para lograr una retención adecuada. Por lo tanto, mejorar la retención mediante refinamientos en las técnicas de impresión y en los métodos de fabricación de prótesis sigue siendo un desafío importante.

La impresión por succión efectiva es una técnica diseñada para lograr el sellado periférico y la succión durante la función, y se espera que permita la fabricación de prótesis

completas con alta retención y estabilidad. Informes recientes han indicado que las prótesis fabricadas con esta técnica demuestran una mayor OHRQoL en comparación con los métodos convencionales.⁸ Sin embargo, estos informes son estudios transversales, y no está claro si las mejoras observadas en la QoL se mantienen a largo plazo.

Por lo tanto, este estudio prospectivo tuvo como objetivo evaluar los cambios longitudinales en la OHRQoL durante un período de dos años en pacientes portadores de prótesis completas fabricadas con la técnica de impresión por succión efectiva. Además, se investigaron los factores asociados con el mantenimiento a largo plazo de la OHRQoL.

II. Sujetos y métodos

Se incluyeron en este estudio un total de 68 pacientes que recibieron prótesis completas fabricadas mediante una técnica de impresión diseñada para la succión de la prótesis completa mandibular entre 2021 y 2022, y que acudieron a citas de mantenimiento/ajuste. Tras una entrevista sobre los antecedentes del paciente, se registraron el OHIP-EDENT-J y la puntuación oclusal.⁹ Los mismos registros se repitieron a los dos años.

Técnica de impresión por succión efectiva para la prótesis completa mandibular

Los procedimientos detallados de la técnica de impresión por succión efectiva para la prótesis completa mandibular se han descrito previamente;⁸ por lo tanto, aquí se proporciona una breve visión general. Para la impresión preliminar se utilizaron dos tipos de materiales de impresión de alginato con diferentes viscosidades. A partir de la impresión preliminar se fabricó una cubeta individual para impresión funcional, diseñada para incluir adecuadamente las almohadillas retromolares, los rebordes bucales y las fosas retromilohioideas. Para la primera impresión de precisión se utilizó un material de rebasado blando ajustado a alta viscosidad, y se obtuvieron impresiones funcionales mientras

los pacientes realizaban cinco tipos de movimientos funcionales: "fruncir los labios", "tirar de las comisuras hacia atrás", "lamer los labios", "empujar el dedo del operador con la lengua" y "tragar". Se realizó un modelado de bordes con un material de impresión de silicona de cuerpo pesado según fuera necesario, seguido de una segunda impresión de precisión utilizando un material de impresión de silicona tipo inyección para impresiones funcionales, obteniendo así la impresión final.

Elementos de evaluación

En la visita inicial (VI) y en la visita de seguimiento a los dos años, la OHRQoL reportada por el paciente se registró mediante el OHIP-EDENT-J como evaluación subjetiva. El OHIP-EDENT-J es un cuestionario que consta de 19 ítems valorados en una escala de 5 puntos (0-4). Las puntuaciones más altas indican una menor calidad de vida y más problemas. El estado oclusal también se registró mediante la puntuación oclusal, una medida de resultado reportada por el paciente (Figura 1). La puntuación oclusal es una hoja de autoevaluación desarrollada por la Academia Japonesa de Oclusión y Salud, en la que los pacientes marcan las respuestas aplicables a las preguntas sobre la puntuación oclusal. Las puntuaciones se calcularon como: casi nunca = 0 puntos, leve = 3 puntos, presente = 5 puntos; una puntuación total más baja indica una mejor oclusión. Para los portadores de prótesis completas, se eliminó el ítem "¿Le preocupa la alineación de sus dientes?" porque la disposición de los dientes artificiales puede modificarse, y la encuesta se realizó con los cinco ítems restantes más directamente relacionados con la oclusión. Las puntuaciones oscilaron entre un mínimo de 0 y un máximo de 25. Además, se examinaron las condiciones intraorales de los pacientes, y se recopiló información sobre las características de los sujetos (generales e intraorales) y los detalles del tratamiento a partir de las historias clínicas, y se investigaron los antecedentes de tratamiento previo.

Question	Evaluation (3-point scale)
1 I felt that my bite position was not stable.	
2 I had difficulty opening my mouth as if I was thinking.	
3 I was dissatisfied with the height of my bite.	
4 I had soreness in my jaw muscles when chewing or clenching.	
5 I chewed more on one side than the other.	

Figure 1. Occlusion Score (Modified)

Patients were asked about their experiences over the past month.

Each question was rated on a 3-point scale (almost never = 0 points, sometimes = 3 points, often = 5 points).

Total score range: 0–25 points (lower scores indicate better occlusal status).

Análisis de datos

Los cambios en las puntuaciones del OHIP-EDENT-J y en las puntuaciones oclusales entre el inicio (VI) y los dos años se analizaron mediante pruebas *t* pareadas. Para las comparaciones de factores entre el grupo estable y el grupo empeorado para las puntuaciones OHIP-EDENT-J y las puntuaciones oclusales, respectivamente, se utilizaron pruebas *t* no pareadas para las variables continuas y pruebas de chi-cuadrado para las variables categóricas. El nivel de significación estadística se fijó en el 5% ($p < 0,05$).

III. Resultados

Veinticinco pacientes regresaron para el seguimiento de dos años. La edad media al inicio fue de $73,2 \pm 11,2$ años (Tabla 1). Durante este período, dos pacientes recibieron prótesis nuevas. No se observaron eventos adversos ni

complicaciones. La puntuación OHIP-EDENT-J no mostró cambios significativos, pasando de $8,32 \pm 6,86$ al inicio a $8,32 \pm 8,46$ a los dos años (Figura 2a). De manera similar, la puntuación oclusal no mostró cambios estadísticamente significativos, pasando de $3,92 \pm 4,32$ al inicio a $3,56 \pm 4,10$ a los dos años (Figura 2b). Individualmente, 11 pacientes mostraron deterioro en el OHIP-EDENT-J durante los dos años (Figura 3a), y 8 pacientes mostraron deterioro en la puntuación oclusal (Figura 3b).

Los factores que influyeron en la estabilización o mejora del OHIP-EDENT-J fueron la puntuación de retención/estabilidad de la prótesis maxilar y el tratamiento por un odontólogo certificado en oclusión (Tabla 2). En contraste, para la puntuación oclusal, no se encontraron diferencias estadísticamente significativas entre los grupos estable y empeorado para ninguno de los ítems examinados (Tabla 3).

Table 1. Demographic characteristics of the participants

Variable	Male (N = 14)	Female (N = 11)	Total (N = 25)
Age, mean (SD), years	69.9 (10.8)	77.5 (10.7)	73.2 (11.2)
Patients with systemic diseases, n (%)	6 (42.9)	6 (54.5)	12 (48.0)
Patients with $\geq$ high school education, n (%)	12 (85.7)	7 (63.6)	19 (76.0)

Values are presented as mean (SD) or number (%).

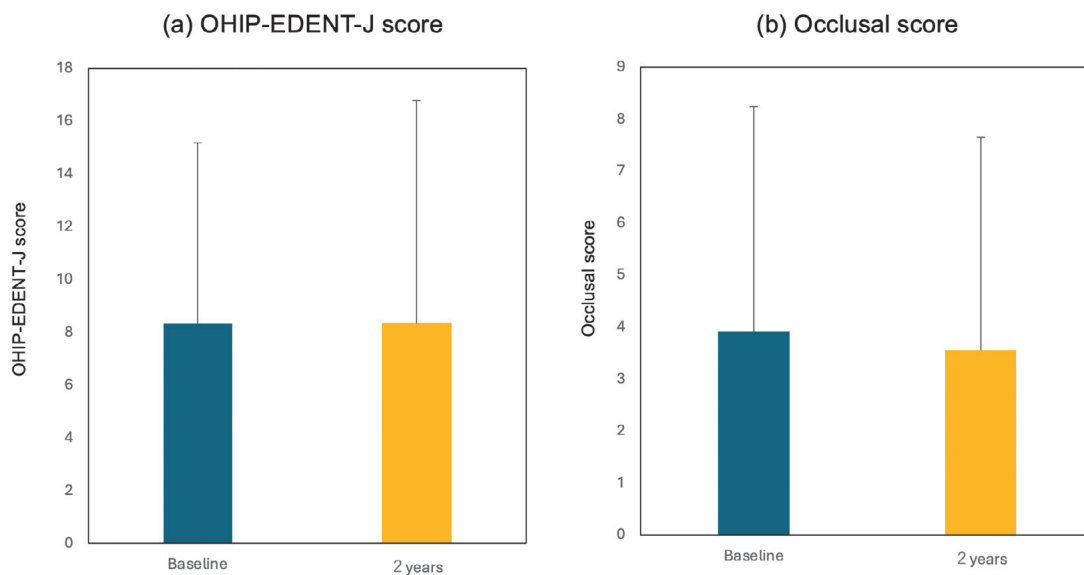


Figure 2. Changes in the OHIP-EDENT-J score and occlusal score over 2 years.

(a) OHIP-EDENT-J score; (b) Occlusal score.

Note: Bars indicate mean values, and error bars indicate standard deviations (SD).

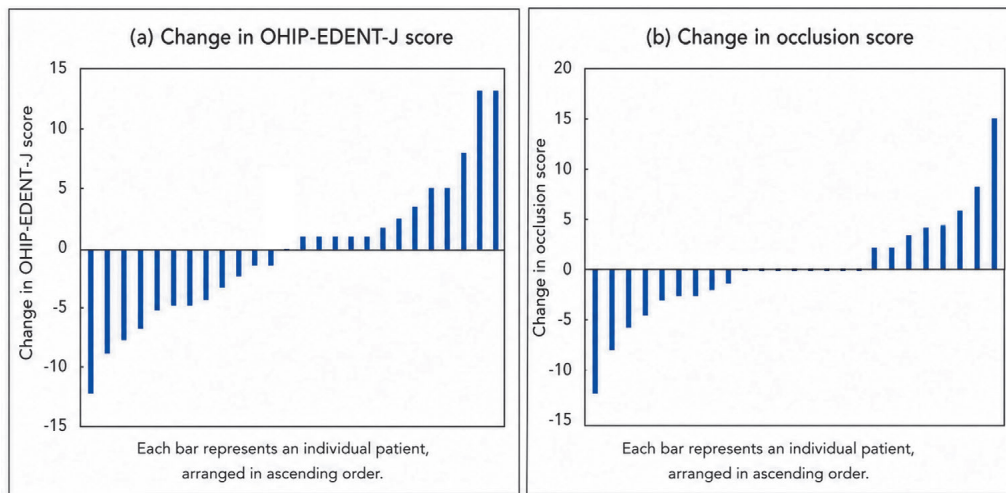


Figure 3. Individual changes in OHIP-EDENT-J score (a) and occlusion score (b) over 2 years. Each bar represents the change in score for an individual patient, arranged in ascending order. The horizontal line (0) indicates no change from baseline. Negative values indicate deterioration in score, and positive values indicate improvement.

Table 2. Factors associated with patients with stable or deteriorated OHIP-EDENT-J scores over 2 years

Variable	OHIP-stable (N = 14) n (%) or mean (SD)	OHIP-deteriorated (N = 11) n (%) or mean (SD)	P value
Patients with maxillary retention and stability score ≥ 5 , n (%)	14 (100)	7 (63.6)	0.03
Patients with mandibular retention and stability score ≥ 5 , n (%)	8 (57.1)	4 (36.4)	0.53
Average months of denture use (SD)	52.8 (39.9)	62.0 (57.0)	0.68
Average number of denture repairs (SD)	0.5 (0.9)	1.3 (2.9)	0.23
Patients with flabby ridge, n (%)	1 (7.1)	3 (27.3)	0.27
Patients who received regular check-ups, n (%)	13 (92.8)	10 (90.9)	0.99
Patients treated by occlusion-certified dentists, n (%)	12 (85.7)	4 (36.4)	0.02
Patients who reported oral dryness, n (%)	2 (14.3)	3 (27.3)	0.61
Patients using denture cleansers, n (%)	13 (92.8)	10 (90.9)	0.99

Values are presented as number (%) or mean (SD). OHIP: Oral Health Impact Profile; EDENT-J: Japanese version for edentulous subjects.

Table 3. Factors associated with patients with stable or deteriorated occlusion scores over 2 years

Variable	Occlusion-stable (N = 17) n (%) or mean (SD)	Occlusion-deteriorated (N = 8) n (%) or mean (SD)	P value
Patients with maxillary retention and stability score ≥ 5 , n (%)	15 (88.2)	6 (75.0)	0.57
Patients with mandibular retention and stability score ≥ 5 , n (%)	10 (58.8)	4 (50.0)	1.00
Average months of denture use (SD)	53.8 (44.4)	68.4 (51.1)	0.40
Average number of denture repairs (SD)	0.5 (0.9)	1.9 (3.2)	0.09
Patients with flabby ridge, n (%)	3 (17.6)	1 (12.5)	1.00
Patients who received regular check-ups, n (%)	16 (94.1)	7 (87.5)	1.00
Patients treated by occlusion-certified dentists, n (%)	12 (70.6)	4 (50.0)	0.39
Patients who reported oral dryness, n (%)	2 (11.8)	3 (37.5)	0.28
Patients using denture cleansers, n (%)	16 (94.1)	8 (100.0)	1.00

Values are presented as number (%) or mean (SD). SD: standard deviation.

IV. Discusión

En este estudio, las puntuaciones OHIP-EDENT-J y oclusales en pacientes portadores de prótesis completas fabricadas con la técnica de impresión por succión efectiva mandibular se mantuvieron estables sin cambios estadísticamente significativos durante dos años. La puntuación oclusal media pasó de $3,92 \pm 4,32$ a $3,56 \pm 4,10$, manteniendo el criterio de la Academia Japonesa de Oclusión y Salud de "sin problemas oclusales" (≤ 5 puntos). Los factores significativamente asociados con la estabilización del OHIP-EDENT-J fueron la puntuación de retención/estabilidad de la prótesis maxilar y el tratamiento por un odontólogo certificado en oclusión. En el grupo estable del OHIP-EDENT-J, todos los pacientes (100%) tenían una puntuación de retención/estabilidad de la prótesis maxilar de 5 o superior, en comparación con solo el 63,6% en el grupo empeorado, con una diferencia significativa entre los grupos ($p = 0,03$). Para la puntuación oclusal, el 88,2% del grupo estable y el 75,0% del grupo empeorado tenían puntuaciones de retención/estabilidad maxilar de 5 o superiores, pero la diferencia no fue significativa ($p = 0,57$). Además, la proporción de pacientes que recibieron tratamiento por un

odontólogo certificado en oclusión fue del 85,7% en el grupo estable del OHIP-EDENT-J frente al 36,4% en el grupo empeorado, mostrando una diferencia significativa ($p = 0,02$). Para la puntuación oclusal, las proporciones fueron del 70,6% en el grupo estable y del 50,0% en el empeorado, sin diferencia significativa ($p = 0,39$). Teniendo en cuenta el informe de Kimoto et al.,¹⁰ que encontró diferencias significativas en el número de visitas de ajuste para prótesis completas nuevas entre clínicos jóvenes y clínicos experimentados, los factores relacionados con el operador pueden haber influido en los resultados del tratamiento.

La proporción de pacientes con una puntuación de retención/estabilidad mandibular de 5 o superior fue algo mayor en el grupo estable de la puntuación oclusal (58,8%) que en el grupo empeorado (50,0%), pero la diferencia no fue significativa ($p = 1,00$), y la diferencia entre grupos fue menor que para el maxilar. Esto sugiere que en casos con condiciones anatómicas desafiantes, lograr la estabilidad oclusal sigue siendo relativamente difícil incluso con esta técnica de impresión.

Un estudio de Kono et al.,¹¹ que examinó los resultados en 35 pacientes que recibieron prótesis completas maxilares y mandibulares nuevas utilizando la función masticatoria, la

satisfacción y el estado del reborde como evaluaciones tecnológicas, también mostró que al mes de la inserción, el "ajuste de la prótesis maxilar" y la "incomodidad de la prótesis mandibular" eran factores determinantes para la satisfacción del paciente, lo que es generalmente consistente con los hallazgos actuales.

Como se muestra en el estudio de Fenlon et al.,¹² establecer relaciones intermaxilares adecuadas es importante para la satisfacción del paciente con prótesis completas. Para lograrlo, la retención y estabilidad de las prótesis maxilar y mandibular son esenciales. Sin embargo, es fácil inferir que el deterioro de las condiciones anatómicas de los rebordes maxilares y mandibulares puede dificultar el mantenimiento de una buena OHRQoL.

Además, aunque la estabilidad de la OHRQoL se mantuvo durante el período de dos años en este estudio, esto puede haberse debido en parte al mantenimiento regular por parte de odontólogos certificados en oclusión, incluyendo un manejo adecuado como el ajuste oclusal.

Las limitaciones del estudio incluyen el pequeño tamaño de la muestra (25 pacientes) debido a una alta tasa de abandono, lo que impidió realizar análisis multivariantes, y el período de observación relativamente corto de dos años. Se necesitan estudios futuros con muestras más grandes, seguimientos a más largo plazo y estudios comparativos con métodos convencionales.

V. Conclusiones

A partir de este estudio se extrajeron las siguientes conclusiones:

- Las puntuaciones OHIP-EDENT-J y oclusales se mantuvieron estables en general durante el período de dos años.
- La retención y estabilidad de la prótesis, así como el tratamiento por un odontólogo certificado en oclusión, se consideraron asociados con la estabilización y mejora de las puntuaciones.

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