

ORAL HEALTH RELATED QUALITY OF LIFE IN HEMIMANDIBULECTOMY PATIENTS WITH GUIDE FLANGE PROSTHESIS

Dentistry

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ABSTRACT

Objective: To assess the quality of life in patients who undergone hemimandibulectomy and rehabilitated with guide flange prosthesis. **Survey design:** prospective study, after delivering the prosthesis and 2 months after prosthesis usage. **Method:** Forty-four patients who had undergone hemimandibulectomy and was rehabilitated with guide flange prosthesis were assessed for this prospective study. OHRQoL was assessed in these patients using Obturator Functioning Scale (OFS) and a novel scale Maxillofacial Prosthesis Performance Scale (MFPPS). The scores were obtained 1 week and after 2 months of guide flange prosthesis usage. The data were analyzed using unpaired and paired sample t-test. **Results:** After 3 months, the results showed a significant improvement with prosthesis. There was a notable improvement in chewing, swallowing, appearance and psychological issues. The scores of OFS and MFPPS for mandibular guidance prosthesis after 1 week was 25.48 and 26.82 respectively and scores after 2 months were 20.28 and 13.16 respectively. **Conclusion:** The findings of the study show significant improvement in the scores after prosthesis usage in terms of functional, physical, social and psychological parameters in the patients after follow up.

KEYWORDS

Quality of life, cancer, hemimandibulectomy, guide flange prosthesis, mandibular resection prosthesis, obturator functioning scale (OFS-15), maxillofacial prosthesis performance scale (MFPPS-10)

INTRODUCTION

Health related quality of life is a multidimensional concept with five broad domains: opportunity/resilience, health perception, functional states, impairments/diseases, and duration of life. The health-related quality of life approach has provided greater opportunity for investigation of the interrelations among oral health, health and related outcomes.¹

One of the most consistently challenging area of rehabilitation is the maxillofacial rehabilitation of patients who have had radical cancer surgery of the tongue, floor of the mouth and mandible. Mandibulectomy and commando procedures involve the extensive loss of tissues and associated functions. Swallowing, speech, mandibular movements, mastication, control of saliva, respiration and psychic functions are adversely affected by radical mandibular surgery. These dysfunctions radically alter the prosthetic prognosis and quality of life of individuals.²

Over the years, Oral Health –Related Quality of Life has gained enormous impact in cancer patients. However, only a few studies have evaluated the changes in quality of life in maxillofacial defect patients with intraoral prosthesis.³ Thus this study was designed to establish the questionnaire system for mandibular defects and evaluate the impact of mandibular guidance prosthesis on OHRQoL in mandibular defects by Obturator Functioning Scale (OFS) and Maxillofacial Prosthesis Performance Scale (MFPPS).

METHOD:

Study Design:

This was a prospective study conducted in Department of Prosthodontics and crown & bridge, Government Dental college and hospital, Ahmedabad, Gujarat between September 2023 and January 2024 with approval from the ethical committee. Forty four patients were selected with Brown's classification were selected for this study. Informed consent was taken from all the participants. The 'inclusion criteria' were hemimandibulectomy defects having provision of guidance prosthesis and has worn for at least 2 months. Patients with other facial defects or paralysis and completely edentulous mandible were excluded from the study. All the patients were rehabilitated with mandibular guidance prosthesis, respectively. Post maintenance instructions are given and recalled visits are scheduled on periodic basis. Oral health related quality of life is measured 1 week and after 2 months of prosthesis function. Patients are asked series of questions using 2 scales: Obturator functioning scale (OFS-15) and Maxillofacial Prosthesis Performance Scale (MFPPS-10). Answers are recorded by a single operator.

Questionnaires:

The Obturator Functioning Scale (OFS) was developed at Memorial Sloan Kettering Cancer Center (New York, NY, USA) as a means of assessing self-reported functioning of an obturator. It was designed by Kornblith et al. to assess eating ability, speech, and cosmetic satisfaction. To rate the items with higher scores (reflecting greater difficulty with obturator function), a 5-point Likert scale was used ("not at all", "a little difficult", "somewhat difficult", "very difficult", "extremely difficult").⁴

Maxillofacial prosthesis performance scale (MFPPS) comprises of 10 statements which includes functional discomfort, retention/stability, phonetics, aesthetics, oral hygiene, saliva, taste ability, psychology and satisfaction.

RESULT

The mean scores of total 44 patients after 1 week and 2 months of follow up was 25.48 and 26.82 for OFS-15 and 20.28 and 13.16 for MFPPS-10.

Result of OFS-15:

The result of the scale reveals significant improvements in various patient-related outcomes over a period of three months. Conversely, retention problems significantly increased ($p < 0.01$), indicating a deterioration in retention over time. Leakage problems and taste problems did not exhibit significant changes. Overall, the results suggest notable improvements in most areas, except for retention.

Result of MFPPS-10:

The scores of the index shows chewing problems decreased from a mean score of 2.98 at 1 week to 1.30 at 3 months. Speech difficulties saw a reduction from a mean of 2.98 at 1 week to 1.45 at 3 months. Psychological discomfort decreased from 2.73 to 1.41, and psychological disability from 2.45 to 1.43, indicating better psychological well-being. Overall, these results indicate substantial positive impacts on patient satisfaction and quality of life following the interventions.

Table 1: Mean, Standard Deviation Of OfS-15 Scale After 1 Week And 3 Months Of Guidance Prosthesis: Paired Samples Statistics

S. No.	Item	Mean	Std. Deviation	Std. Error Mean
Pair 1	Chewing: 1 week	2.98	0.590	0.089
	Chewing: 3 months	1.30	0.930	0.140
Pair 2	Voice: 1 week	2.43	1.189	0.179
	Voice: 3 months	1.52	1.110	0.167

Pair 3	Speech: 1 week	2.98	0.821	0.124
	Speech: 3 months	1.45	1.088	0.164
Pair 4	Psychological discomfort : 1 week	2.73	1.436	0.217
	Psychological discomfort : 3 months	1.41	1.127	0.170
Pair 5	Psychological disability : 1 week	2.4545	0.95124	0.14341
	Psychological disability : 3 months	1.43	0.998	0.150
Pair 6	Saliva - 1 week	1.61	1.351	0.204
	Saliva - 3 months	1.07	1.169	0.176
Pair 7	Prosthesis appearance : 1 week	2.09	1.326	0.200
	Prosthesis appearance : 3 months	1.16	1.238	0.187
Pair 8	Aesthetic: 1 week	2.70	0.632	0.095
	Aesthetic: 3 months	0.70	0.734	0.111
Pair 9	Physical disability : 1 week	0.66	0.805	0.121
	Physical disability : 3 months	0.41	0.622	0.094
Pair 10	Social interaction: 1 week	3.64	0.613	0.092
	Social interaction: 3 months	1.16	1.010	0.152
Pair 11	Retention and stability : 1 week	1.82	0.786	0.118
	Retention and stability : 3 months	1.23	0.985	0.149
Pair 12	Others : 1 week	0.73	0.544	0.082
	Others : 3 months	0.32	0.561	0.085

Table 2: Mean, Standard Deviation Of Mfpps-10 Scale After 1 Week And 3 Months Of Guidance Prosthesis: Paired Samples Statistics

S. No.	Item	Mean	Std. Deviation	Std. Error Mean
Pair 1	Chewing: 1 week	3.27	1.065	0.160
	Chewing: 3 months	2.43	1.021	0.154
Pair 2	Swallowing: 1 week	2.82	1.040	0.157
	Swallowing: 3 months	2.07	0.900	0.136
Pair 3	Retention: 1 week	1.80	0.823	0.124
	Retention: 3 months	2.20	1.112	0.168
Pair 4	Speech: 1 week	2.82	0.995	0.150
	Speech: 3 months	2.39	0.993	0.150
Pair 5	Appearance: 1 week	2.43	1.228	0.185
	Appearance: 3 months	1.93	1.065	0.161
Pair 6	Maintenance: 1 week	2.09	1.158	0.175
	Maintenance: 3 months	1.73	0.899	0.135
Pair 7	Leakage: 1 week	1.91	0.772	0.116
	Leakage: 3 months	1.82	0.691	0.104
Pair 8	Taste: 1 week	2.16	1.140	0.172
	Taste: 3 months	2.16	1.140	0.172
Pair 9	Psychological: 1 week	3.73	1.086	0.164
	Psychological: 3 months	1.82	0.971	0.146
Pair 10	Others : 1 week	2.45	0.975	0.147
	Others : 3 months	1.73	0.924	0.139

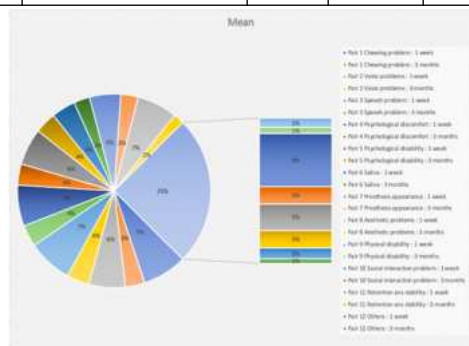


Figure 1: Comparison of OFS-15 score between 1 week and 3 months of prosthesis

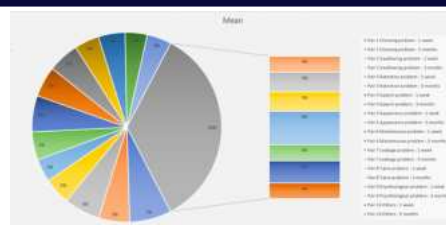


Figure 2: Comparison of MFPPS-10 score between 1 week and 3 months of prosthesis

DISCUSSION

The mandible, a crucial structure in the human skeletal system, plays an integral role in various complex functions of the oral cavity and hypopharynx, including mastication, speech, and deglutition. The mandibular anatomy, with its unique combination of strength and mobility, is essential for these critical actions. Historically, segmental mandibular resection, often necessitated by malignancies, trauma, or severe infections, resulted in significant functional and aesthetic deficits.⁵

Patients undergoing such resections frequently faced profound disabilities. The loss of mandibular continuity disrupted occlusion and masticatory efficiency, leading to compromised nutrition and speech difficulties⁶. Additionally, the absence of structural support often caused severe facial disfigurement. These physical impairments were compounded by the psychological impact, as patients struggled with social isolation and reduced quality of life.⁷

The primary challenge in the early management of mandibular defects was the lack of reliable reconstructive techniques.⁸ Traditional methods were often inadequate in restoring both form and function. Consequently, patients were left with debilitating conditions that hindered their daily activities and social interactions⁹.

Guidance therapy plays a pivotal role in enhancing both the form and function of individuals who have undergone mandibulectomy or experienced significant occlusal derangements. By providing a structured framework for neuromuscular adaptation, guidance therapy serves as an interim measure to correct existing occlusal discrepancies. This therapeutic approach helps in re-establishing proper occlusal relationships, thereby facilitating more coordinated mandibular movements and improving overall masticatory efficiency.¹⁰

The OFS-15 scores after 3 months showed significant improvement in chewing (25.7%), swallowing (26.6%), aesthetics (20.6%) and psychological well-being (51%) post treatment. However retention problems increases (22.2%) after prosthesis usage. Overall, the results reflect positively on the rehabilitative efforts and patient adaptation over time.

The MFPPS score data also indicated the dramatic improvement and positive outcomes associated with the rehabilitative efforts and patient adaptation processes. The data supports the effectiveness of the interventions in enhancing patients' quality of life and functional capabilities.

The patients were reviewed again 3 months later, confirming an even higher level of overall satisfaction with the mandibular resection prosthesis.

CONCLUSION

The study concludes that there is a remarkable improvement in prosthesis outcomes in terms of functional, physical, psychological, and social parameters after long-term follow-up (3 months). Significant differences were found in all three scales at both 1 weeks and 3 months follow-up, indicating that the Mandibular Resection Guidance Prosthesis significantly enhances oral health-related quality of life. Within the confines of this study, there is a highly positive association between OHRQoL and the use of maxillofacial prosthesis.

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