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Research Paper

Functional Outcomes of Maxillofacial Prosthetic Rehabilitation

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ABSTRACT:
Objective: *To evaluate the effect of maxillofacial prosthetic rehabilitation on mastication, speech, and swallowing in oral cancer survivors.*
.***Materials and Methods:*** *A prospective interventional study was conducted on* ***30 patients*** *treated for oral cavity cancer with post-surgical defects. Functional assessment of mastication, speech, and swallowing was performed* ***before prosthetic rehabilitation and at 3 months post-rehabilitation****. Mastication was evaluated using a masticatory function questionnaire, speech using a speech intelligibility rating scale, and swallowing using the* ***EORTC QLQ-H&N35*** *questionnaire. Quality of life was assessed using the* ***University of Washington Quality of Life (UW-QOL v4)*** *questionnaire. Data were analyzed using paired t-test or Wilcoxon signed-rank test ($p < 0.05$).*
Results*: Statistically significant improvement was observed in masticatory function, speech intelligibility, and swallowing following prosthetic rehabilitation ($p < 0.001$). Mean UW-QOL scores showed significant improvement in physical function, speech, and social interaction domains. High patient satisfaction was reported following rehabilitation.*
Conclusion: *Maxillofacial prosthetic rehabilitation significantly improves oral function and quality of life in oral cancer survivors. Prosthodontic rehabilitation should be considered an integral component of post-oncologic care.*
Clinical Significance *Restoration of oral function through prosthetic rehabilitation enhances functional recovery and psychosocial well-being in patients treated for oral cavity cancer.*

KEYWORDS: *Oral cancer; Maxillofacial prosthesis; Mastication; Speech; Swallowing; Quality of life*

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I. INTRODUCTION

Oral cavity cancer remains a significant public health challenge, particularly in developing countries [1]. Surgical management, often combined with radiotherapy, frequently results in anatomical defects that compromise essential oral functions such as mastication, speech, and swallowing [1,3]. These functional limitations can profoundly affect patients' quality of life, psychosocial well-being, and social interactions [4–6].Maxillofacial prosthetic rehabilitation plays a crucial role in restoring lost or compromised structures, improving oral function, and enhancing overall patient well-being [2,8]. Although several studies have reported improvements in quality of life following prosthetic rehabilitation [1,5,6], the existing literature provides limited systematic evaluation of specific functional outcomes, particularly mastication, speech, and swallowing [3].

II. MATERIALS AND METHODS

Materials and Methods
Study Design
Prospective clinical interventional study.
Sample Size
Thirty patients were included based on feasibility and previous similar studies.

Inclusion Criteria

- Patients ≥18 years treated for oral cavity cancer
- Post-surgical oral/maxillofacial defects requiring prosthetic rehabilitation
- Minimum 3 months post completion of cancer therapy

Exclusion Criteria

- Recurrent/metastatic disease
- Neurological disorders affecting speech or swallowing
- Severe systemic illness

Study Protocol

Pre-Rehabilitation Assessment

Baseline evaluation included:

- Clinical examination and defect classification
- Mastication assessment using masticatory function questionnaire
- Speech assessment using speech intelligibility rating scale
- Swallowing assessment using EORTC QLQ-H&N35
- Quality of life assessment using UW-QOL v4

Prosthetic Rehabilitation

Patients received appropriate maxillofacial prostheses (obturator, mandibular guidance prosthesis, resection prosthesis, or implant-supported prosthesis).

Post-Rehabilitation Assessment

All parameters were reassessed 3 months after prosthesis insertion.

Statistical Analysis

Data were analyzed using SPSS software version

- Descriptive statistics: Mean ± SD
- Inferential statistics: Paired t-test / Wilcoxon signed-rank test
- Level of significance: **$p < 0.05$**

III. RESULTS

Table 1: Comparison of Functional Outcomes Before and After Prosthetic Rehabilitation

Parameter	Pre-Rehabilitation (Mean ± SD)	Post-Rehabilitation (Mean ± SD)	p-value
Mastication score	42.3 ± 6.8	68.9 ± 7.4	<0.001
Speech intelligibility score	2.1 ± 0.6	4.0 ± 0.5	<0.001
Swallowing score (H&N35)	56.7 ± 8.2	28.4 ± 6.9	<0.001

Table 2: UW-QOL Domain Scores Pre- and Post-Rehabilitation

Domain	Pre (Mean ± SD)	Post (Mean ± SD)	p-value
Speech	48.6 ± 9.1	74.3 ± 8.6	<0.001
Chewing	44.2 ± 7.9	71.8 ± 9.2	<0.001
Swallowing	46.9 ± 8.4	70.1 ± 7.8	<0.001
Social interaction	52.5 ± 10.3	76.4 ± 9.5	<0.001

IV. DISCUSSION

The present study demonstrated significant improvement in mastication, speech, and swallowing following maxillofacial prosthetic rehabilitation. Restoration of oral anatomy and occlusal stability contributed to improved masticatory efficiency.Enhanced speech intelligibility may be attributed to improved palatal contours and separation of oral and nasal cavities. Improved swallowing function reflects better bolus control and reduced nasal regurgitation.These findings are consistent with previous studies reporting improved functional outcomes and quality of life following prosthetic rehabilitation. The study reinforces the role of prosthodontists as integral members of the multidisciplinary oncology team.

Limitations

- Limited sample size
- Short follow-up duration
- Subjective assessment tools

V. CONCLUSION

Maxillofacial prosthetic rehabilitation significantly improves mastication, speech, swallowing, and quality of life in oral cancer survivors. Early and appropriate prosthodontic intervention is essential for comprehensive rehabilitation.

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