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Original Research Article

Short-term changes in key quality-of-life domains and early functional recovery profiles in patients with oral cavity squamous cell carcinoma undergoing surgery and adjuvant radiotherapy/concurrent chemoradiotherapy

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ABSTRACT

Background: Surgery followed by adjuvant radiotherapy (RT) or concurrent chemoradiotherapy (CTRT) for oral cavity squamous cell carcinoma (SCC) can cause substantial short-term impairment in pain, swallowing, speech, and mouth opening. This study evaluated early longitudinal changes and recovery patterns in these patient-reported domains.

Methods: This prospective longitudinal observational study included 50 patients with resectable oral cavity SCC undergoing curative-intent surgery followed by adjuvant RT/CTRT. Patient-reported outcomes were assessed using four prespecified domains of the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire-Head and Neck Module (EORTC QLQ-H and N43) pain, swallowing, speech problems, and problems opening mouth. Assessments were performed at pretreatment baseline and at 6, 10, and 14 weeks after completion of adjuvant treatment. Scores were transformed to a 0-100 scale, with higher scores indicating greater symptom burden. Longitudinal changes were assessed using the Friedman test.

Results: All four domains demonstrated significant longitudinal changes ($p<0.001$). Symptom burden increased markedly at 6 weeks, with median scores for pain, swallowing, speech problems, and mouth opening reaching 66.7, 58.3, 63.3, and 66.7, respectively. Scores subsequently declined at 10 weeks and further at 14 weeks, reaching approximately or below pretreatment levels.

Conclusions: Marked early post-treatment morbidity was followed by progressive recovery. The 10-14-week period represents an important early recovery phase and may assist patient counseling and supportive rehabilitation.

Keywords: Oral cavity squamous cell carcinoma, Head and neck cancer, Quality of life, EORTC QLQ-H and N43, Patient-reported outcomes, Radiotherapy, Chemoradiotherapy, Swallowing, Speech, Mouth opening

INTRODUCTION

Head and neck squamous cell carcinoma (HNSCC) and its treatment can substantially impair swallowing, speech, oral intake, and mouth opening. In resectable oral cavity cancer, treatment typically involves surgical resection with neck dissection and reconstruction when indicated, followed by adjuvant RT or CTRT for high-risk histopathological features. Although potentially curative, this multimodality approach can cause significant short-term morbidity and adversely affect health-related quality of life (HRQoL).[1,2]

Surgery may alter the anatomy and mobility of structures involved in mastication, swallowing, articulation, and mouth opening, while subsequent RT/CTRT may further contribute to mucositis, pain, odynophagia, edema, salivary dysfunction, taste alteration, and nutritional compromise.[1-3] Longitudinal studies have shown substantial deterioration during treatment, followed by variable recovery after treatment completion.[4,5] Nikoloudi et al. reported worsening of pain, swallowing, speech problems, and mouth opening by the end of RT, with improvement toward pretreatment levels by approximately 12 weeks.[4]

Patient-reported outcome measures (PROMs) provide direct insight into symptoms and functional difficulties perceived by patients. The EORTC QLQ-H and N43 is a validated head-and-neck-specific instrument with demonstrated reliability and responsiveness to longitudinal changes following treatment.[6-8] Its utility has also been demonstrated in Indian patients receiving RT.[9]

The present prospective longitudinal study evaluated patient-reported pain, swallowing, speech problems, and mouth opening at baseline and at 6, 10, and 14 weeks after completion of adjuvant RT/CTRT in patients undergoing surgery for resectable oral cavity SCC. Study aimed to characterize early recovery, identify period of greatest observed symptom burden, and determine timing and extent of early functional improvement.

Aim

Aim was to prospectively evaluate longitudinal changes and early recovery trajectory of selected patient-reported symptoms and functional domains using EORTC QLQ-H and N43 in patients with resected oral cavity SCC undergoing surgery followed by adjuvant RT or CTRT.

Objectives

Objectives were to evaluate the longitudinal changes in four prespecified patient-reported domains-Pain, swallowing, speech problems, and mouth opening-from pre-treatment baseline to 6, 10, and 14 weeks following completion of adjuvant RT or CTRT, to characterize the temporal trajectory of the four patient-reported domains from pre-treatment baseline through 14 weeks following completion of adjuvant treatment, to identify the time point at which the maximum patient-reported symptom burden occurs for each of the four domains and to assess the extent of early patient-reported recovery in the four domains at 6, 10, and 14 weeks following completion of adjuvant treatment.

METHODS

Study design and setting

This was a prospective, longitudinal, observational study conducted in the Department of Surgical Oncology at Sapthagiri Institute of Medical Sciences, Bengaluru, over a period of 18 months, from June 2024 to December 2025. The study was designed to evaluate longitudinal changes and early recovery trajectories in selected patient-reported symptom and functional domains among patients with oral cavity SCC undergoing surgical resection followed by adjuvant RT or CTRT.

Study population

Patients with histologically confirmed, previously untreated, resectable oral cavity SCC who were planned for curative-intent surgical resection followed by adjuvant RT or CTRT were included in our study.

The study population comprised patients with primary tumors arising from the following subsites: Buccal mucosa, retromolar trigone, gingivobuccal sulcus, anterior two-thirds of the tongue and floor of mouth.

Inclusion criteria

Patients fulfilling the following criteria were included-Age≥18 years, histologically confirmed SCC involving one of the specified oral cavity subsites, resectable disease planned for curative-intent surgical treatment and patients who underwent curative-intent surgery and subsequently received indicated adjuvant RT or CTRT based on postoperative histopathology.

Exclusion criteria

Patients meeting any of following criteria were excluded: Presence of distant metastatic disease at presentation, recurrent oral cavity carcinoma and previous surgery, RT/chemotherapy for oral cavity malignancy.

Treatment protocol

All patients underwent standard-of-care surgical resection of the primary tumor with appropriate neck dissection. Reconstruction was performed when clinically indicated according to the primary tumor site, extent and size of the surgical defect. Following surgery, the requirement for adjuvant treatment was determined based on final histopathological findings and multidisciplinary tumor board recommendations. Patients received either adjuvant RT alone or CTRT according to established postoperative risk factors and institutional treatment protocols. Patients selected for CTRT received cisplatin-based chemotherapy concurrently with adjuvant RT according to institutional protocols and treating team's assessment. For purpose of longitudinal follow-up, date of completion of final fraction of adjuvant RT was considered reference date for all subsequent post-treatment assessments.

Baseline assessment

Baseline assessment was performed before initiation of any treatment and prior to surgical intervention.

Demographic and clinical characteristics, including age, sex, and primary tumor subsite, were recorded. At the same visit, baseline patient-reported outcome assessment was performed using the prespecified domains from the EORTC QLQ-H and N43 included in the study.

Patient-reported outcome instrument

Patient-reported outcomes were assessed using prespecified domains from the EORTC QLQ-H and N43.

For our study, four prespecified EORTC QLQ-HN43 scales/items were evaluated: Pain, swallowing, speech, and problems opening mouth.

Pain

The pain domain comprised four items assessing: Pain in the mouth, pain in the jaw, soreness in the mouth and pain in the throat.

Swallowing

The swallowing domain comprised four items assessing: Problems swallowing liquids, problems swallowing pureed food, problems swallowing solid food and choking when swallowing.

Speech problems

The speech problems domain comprised five items assessing: Problems with hoarseness, problems talking to other people, problems talking on the telephone, problems in a noisy environment and problems speaking clearly

Mouth opening

The mouth opening domain comprised a single item assessing: Problems opening the mouth wide.

The four prespecified domains constituted the principal patient-reported outcomes evaluated in the study. Individual questionnaire items served as components of their respective domains and were not analyzed as independent primary outcomes.

EORTC scoring

Patients responded to the selected EORTC QLQ-H and N43 items using the standard four-point response scale. The scoring was given as follows: 1-Not at all, 2-A little, 3-Quite a bit and 4-Very much.

For the multi-item domains, the raw score was calculated as the mean of the constituent item responses within the respective domain. Thus, the pain and swallowing domain scores were derived from four items each, while the speech problems domain score was derived from five items. The raw scores were subsequently linearly transformed to a standardized 0-100 scale according to the EORTC scoring methodology. For the symptom/problem domains, the transformed score was calculated using the following formula:

$$\text{Score}=[(\text{Raw score}-1)/3]\times 100$$

For the single-item mouth opening domain, the individual item response was similarly transformed to the 0-100 scale using the EORTC single-item scoring principle. For all four domains, a higher score represented greater patient-reported symptom burden or functional difficulty, whereas a lower score represented lesser symptom burden or functional difficulty. The same scoring methodology was applied consistently at all four assessment time points. Longitudinal assessment and time points

Patient-reported outcomes were assessed prospectively at four predefined time points: T0-Pre-treatment baseline: Assessment performed before initiation of any treatment and prior to surgical intervention. T1-6 weeks post RT or CTRT. T2-10 weeks post RT or CTRT. T3-14 weeks post RT or CTRT.

The date of completion of the final fraction of adjuvant RT was considered the reference date for all post-treatment assessments.

The same four prespecified patient-reported domains were assessed at each time point, allowing evaluation of longitudinal changes and early recovery trajectories from pre-treatment baseline through 14 weeks following completion of adjuvant treatment.

No objective clinical measurements of pain, swallowing, speech, or mouth opening were performed, as the study was specifically designed to assess patient-reported symptom burden and functional difficulties.

Data collection

Demographic, clinical, treatment-related, and patient-reported outcome data were collected prospectively using a structured study proforma.

Recorded variables relevant to present analysis included: age, sex, primary tumor subsite, date of surgery.

Patient-reported pain domain scores at baseline, 6 weeks, 10 weeks, and 14 weeks. Patient-reported swallowing domain scores at baseline, 6 weeks, 10 weeks, and 14 weeks. Patient-reported speech problems domain scores at baseline, 6 weeks, 10 weeks, and 14 weeks. Patient-reported mouth opening domain scores at baseline, 6 weeks, 10 weeks, and 14 weeks.

Patient-reported responses were scored according to the predefined EORTC scoring methodology and transformed to a 0-100 scale prior to statistical analysis.

Statistical analysis

Data were entered into Microsoft excel and analyzed using IBM SPSS 26 software.

Demographic and clinical characteristics of the study population were summarized using descriptive statistics. Continuous variables were expressed as mean with standard deviation or median with interquartile range, as appropriate. Categorical variables were expressed as frequencies and percentages.

The EORTC QLQ-H and N43 scores for the four prespecified domains-pain, swallowing, speech problems, and mouth opening-were transformed to a 0-100 scale according to the predefined scoring methodology. Higher scores represented greater patient-reported symptom burden or functional difficulty. For each domain, scores were summarized separately at pre-treatment baseline and at 6-, 10-, and 14-weeks following completion of adjuvant treatment. As the same patients were assessed repeatedly at four predefined time points, longitudinal changes in each of the four domain scores were evaluated using the Friedman test.

When the Friedman test demonstrated a statistically significant overall difference across the four time points, post-hoc pairwise comparisons using the Wilcoxon signed-rank test were performed to identify the specific time points between which significant changes occurred. Appropriate correction for multiple comparisons was applied.

All statistical tests were two-sided, and a $p<0.05$ was considered statistically significant.

Written informed consent was obtained from all participants prior to enrollment. Participation was voluntary, and patients were informed that participation in the study would not influence their clinical treatment. Patient confidentiality was maintained throughout the study, and study data were recorded and analyzed using coded identifiers.

RESULTS

Study population

A total of 50 patients with oral cavity SCC were included in the study and completed patient-reported outcome assessments at all four predefined time points.

The mean age of the study population was 54.3±11.2 years, with a median age of 53.5 years (IQR, 45.5-63.0) and an age range of 34-82 years. There were 26 males (52%) and 24 females (48%). The baseline demographic and clinicopathological characteristics of the study populationare summarised in the following Table 1, Figure 1 and 2.

Table 1: Baseline demographic and clinical characteristics.

Characteristics	Results
Total patients	n=50
Age, mean±SD (in years)	54.3±11.2
Age, median (IQR)	53.5 (45.5-62.8)
Age range (in years)	34-82
Male	26 (52%)
Female	24 (48%)
Buccal mucosa	22 (44%)
Retromolar trigone	10 (20%)
Tongue	8 (16%)
Gingivobuccal sulcus	8 (16%)
Floor of mouth	2 (4%)

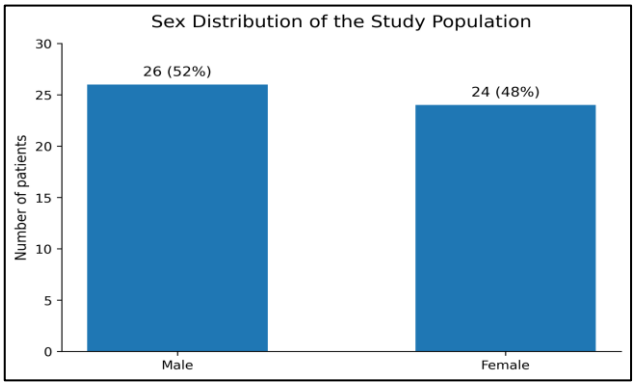

Figure 1: Sex distribution of the study population.

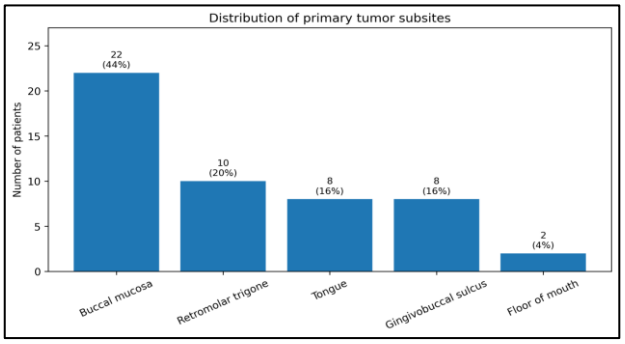

Figure 2: Distribution of primary tumor subsites.

The most common primary tumor subsite was the buccal mucosa, accounting for 22 patients (44%), followed by the retromolar trigone in 10 patients (20%). Tumors of the tongue and gingivobuccal sulcus were present in 8 patients (16%) each, while 2 patients (4%) had tumors involving the floor of mouth.

Longitudinal changes in patient-reported outcomes

Significant longitudinal changes were observed in all four prespecified patient-reported domains across the four assessment time points. Longitudinal changes in the selected QoL domains across the assessment time points are presented in Table 2.

Table 2: Longitudinal changes in EORTC patient-reported domain scores.

Domains	Baseline median (IQR)	6 weeks median (IQR)	10 weeks median (IQR)	14 weeks median (IQR)	Friedman χ^2	P value
Pain	25.0 (16.7-39.6)	66.7 (50.0-81.3)	25.0 (16.7-41.7)	8.3 (0.0-16.7)	100.93	<0.001
Swallowing	33.3 (16.7-47.9)	58.3 (50.0-75.0)	25.0 (16.7-33.3)	8.3 (0.0-16.7)	112.16	<0.001
Speech problems	33.3 (20.0-46.7)	63.3 (40.0-80.0)	26.7 (13.3-45.0)	13.3 (6.7-20.0)	109.38	<0.001
Mouth opening	33.3 (0.0-33.3)	66.7 (33.3-91.7)	33.3 (0.0-66.7)	0.0 (0.0-0.0)	111.39	<0.001

*Higher EORTC scores indicate greater symptom burden or functional difficulty. All four domains demonstrated statistically significant longitudinal change.

Pain

The median pain score increased from 25.0 (IQR, 16.7-39.6) at pretreatment baseline to 66.7 (IQR, 50.0-81.3) at 6 weeks following completion of adjuvant treatment. The score subsequently decreased to 25.0 (IQR, 16.7-41.7) at 10 weeks and further declined to 8.3 (IQR, 0-16.7) at 14 weeks (Figure 3).

The overall longitudinal change in Pain scores was statistically significant (Friedman χ^2=100.93, p<0.001).

Swallowing

The median swallowing score was 33.3 (IQR, 16.7-47.9) at baseline and increased to 58.3 (IQR, 50-75.0) at 6 weeks. This was followed by improvement to 25.0 (IQR, 16.7-33.3) at 10 weeks and 8.3 (IQR, 0-16.7) at 14 weeks (Figure 4).

The longitudinal variation in Swallowing scores was statistically significant (Friedman χ^2=112.16, p<0.001).

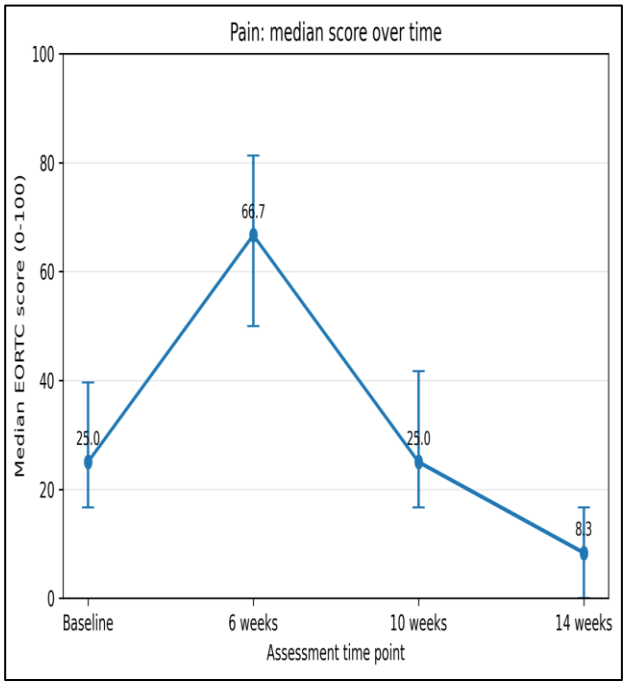

Figure 3: Pain score trajectory.
*Points represent median scores and error bars represent the interquartile range.

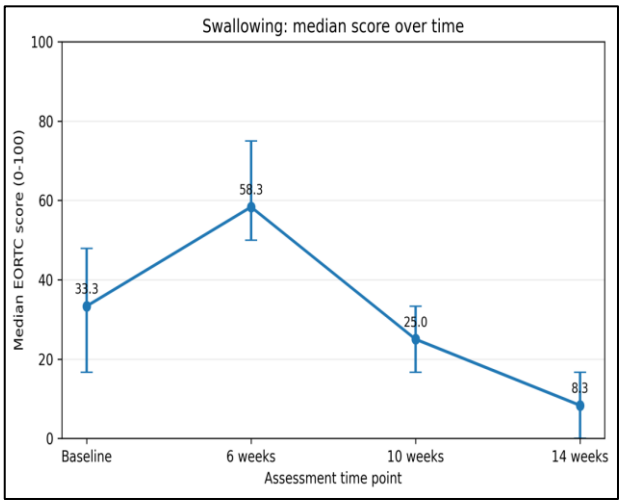

Figure 4: Swallowing score trajectory.
*Points represent median scores and error bars represent the interquartile range.

Speech problems

The median speech problems score increased from 33.3 (IQR, 20.0-46.7) at baseline to 63.3 (IQR, 40.0-80.0) at 6 weeks. The median score subsequently decreased to 26.7 (IQR, 13.3-45.0) at 10 weeks and 13.3 (IQR, 6.7-20.0) at 14 weeks (Figure 5).

The change in speech problems scores over time was statistically significant (Friedman χ^2=109.38, p<0.001).

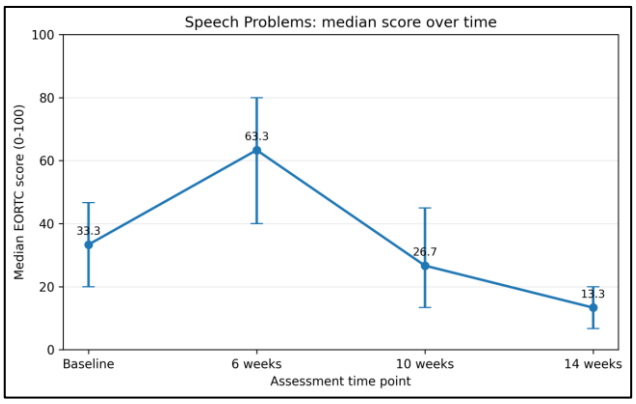

Figure 5: Speech problems score trajectory.
*Points represent median scores and error bars represent the interquartile range.

Mouth opening

The median mouth opening score was 33.3 (IQR, 0-33.3) at baseline and increased to 66.7 (IQR, 33.3-91.7) at 6 weeks. It subsequently decreased to 33.3 (IQR, 0-66.7) at 10 weeks and to 0 (IQR, 0-0) at 14 weeks (Figure 6).

The longitudinal change in mouth opening scores was statistically significant (Friedman χ^2=111.39, p<0.001).

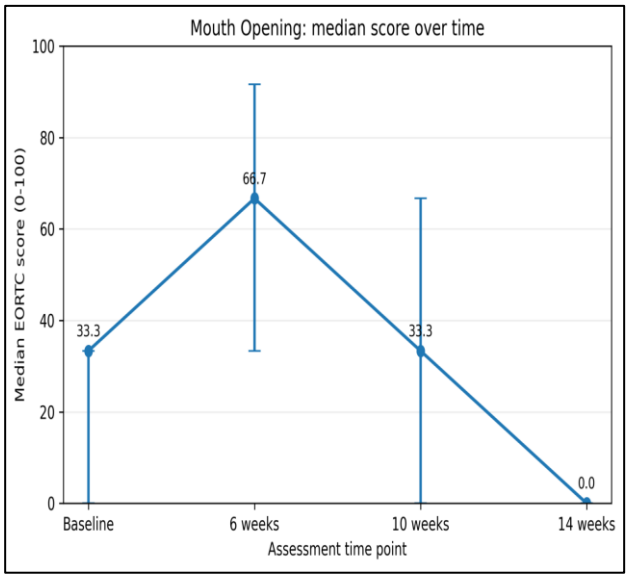

Figure 6: Mouth opening score trajectory.
*Points represent median scores and error bars represent the interquartile range.

Post-hoc pairwise comparisons

Post-hoc Wilcoxon signed-rank testing with correction for multiple comparisons demonstrated a consistent temporal pattern across all four patient-reported domains.

There was no statistically significant difference between pretreatment baseline and 10-week scores for any of 4 domains, indicating that patient-reported symptom burden had returned approximately to pretreatment levels by 10 weeks following completion of adjuvant treatment (Figure 7).

Early recovery trajectory

Across all four domains, highest observed patient-reported symptom burden among the predefined assessment time points were pain and mouth opening following completion of adjuvant treatment. This was followed by substantial improvement by 10 weeks and further recovery by 14 weeks.

The overall trajectory therefore demonstrated an early post-treatment worsening of pain, swallowing, speech, and mouth-opening difficulties, followed by progressive recovery during the subsequent follow-up period.

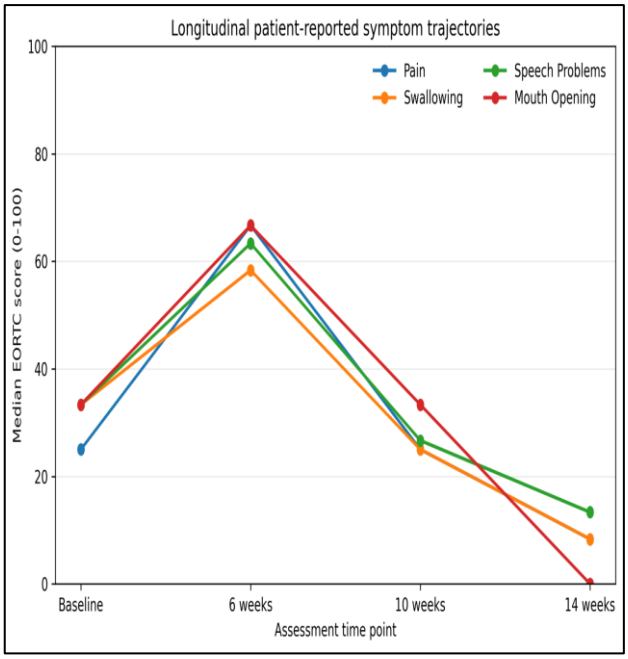

Figure 7: Median longitudinal trajectories of pain, swallowing, speech problems, and mouth opening. symptom burden peaked at 6 weeks and declined thereafter.

DISCUSSION

The present prospective longitudinal study evaluated short-term changes in four patient-reported domains-pain, swallowing, speech problems, and mouth opening-in patients with resected oral cavity SCC undergoing surgery followed by adjuvant RT or CTRT. A consistent temporal pattern was observed across all four domains, with the highest observed symptom burden at 6 weeks following completion of adjuvant treatment, substantial improvement by 10 weeks, and further recovery by 14 weeks. These findings demonstrate that the early post-treatment period is associated with considerable patient-reported morbidity, followed by a relatively rapid phase of early functional recovery.

Early post-treatment worsening

The greater symptom burden at 6 weeks likely reflects the combined effects of surgery and residual acute/subacute RT/CTRT toxicity. Surgical alteration of oral anatomy, together with mucositis, edema, xerostomia, odynophagia, pain, altered secretions, and nutritional compromise, may transiently impair patient-perceived function. Oral mucositis has been associated with worsening pain, swallowing, speech, and mouth-opening difficulties, followed by subsequent improvement.[3] Similar deterioration followed by recovery toward pretreatment levels by 12 weeks was reported by Nikoloudi et al.[4] However, as earlier assessments were unavailable, 6 weeks represents the highest observed, rather than necessarily biological, symptom burden.

Pain

Pain showed a marked increase at 6 weeks followed by progressive improvement at 10 and 14 weeks. This early worsening may be attributable to postoperative tissue injury compounded by radiation-induced mucosal inflammation, ulceration, edema, and associated odynophagia. As surgical tissues heal and acute radiation-related inflammation resolves, a corresponding reduction in patient-perceived pain would be expected.

Nikoloudi et al reported a marked increase in head-and-neck pain by the end of RT, followed by substantial improvement at 12 weeks.[4] Similar longitudinal recovery has been demonstrated following modern RT, with Chuang et al reporting that the greatest overall improvement in QoL and physical functioning occurred between 2 weeks and 3 months following completion of RT.[5] An Indian study using the EORTC QLQ-H and N43 similarly demonstrated improvement in overall QoL and mouth pain following RT.[9]

The reduction in pain below pretreatment levels by 14 weeks in the present study may additionally reflect removal of the primary tumor. As baseline assessment was performed before surgery, pretreatment pain included a component of disease-related pain. Once the tumor was removed and acute treatment-related toxicity subsided, some patients may therefore have experienced less pain than at initial presentation.

Swallowing

Swallowing demonstrated a comparable trajectory, with substantial deterioration at 6 weeks followed by progressive improvement at 10 and 14 weeks. During the early post-treatment period, swallowing may be impaired by mucositis, odynophagia, edema, reduced salivary lubrication, altered taste, thick secretions, postoperative anatomical changes, and treatment-related fatigue.[1,3]

The recovery observed in the present cohort is supported by previous longitudinal studies. Nikoloudi et al observed pronounced deterioration in swallowing by completion of RT followed by near-return toward pretreatment values at 12 weeks.[4] Chuang et al similarly demonstrated improvement in physical and functional outcomes during the first three months following RT.[5] The clinical relevance of longitudinal changes measured using the EORTC QLQ-H and N43 has also been supported in a large multinational prospective study.[7]

Nevertheless, early improvement should not be interpreted as indicating that all swallowing morbidity is transient. Longer-term longitudinal research has demonstrated that some aspects of swallowing and other head-and-neck-specific symptoms may require substantially longer periods to recover after RT and/or chemotherapy.[10] Persistent dysphagia may occur in a subgroup of survivors because of late treatment effects and other patient- and treatment-related factors.[1,2] The present findings should therefore be interpreted specifically as demonstrating an encouraging early recovery trajectory, rather than predicting long-term swallowing function. Also, it is important to consider the subset of patients we have included in our study is limited to oral cavity subsites.

Speech problems

Speech problems followed the same overall pattern, with maximum observed difficulty at 6 weeks followed by progressive improvement at 10 and 14 weeks. Speech following oral cavity cancer treatment may be influenced by tongue and jaw mobility, postoperative anatomical alteration, pain, edema, mucositis, salivary dysfunction, and changes in articulation.

Resolution of acute inflammation and pain, together with adaptation to altered anatomy and progressive functional compensation, may contribute to improvement during the early recovery period. Trajectory reported by Nikoloudi et al was particularly similar, with speech-problem scores worsening substantially during RT and returning close to pretreatment values by 12 weeks.[4] Recent EORTC-based research also supports longitudinal assessment of speech-related patient-reported outcomes during head and neck cancer treatment and recovery.[7] The responsiveness of EORTC head-and-neck-specific patient-reported measures to longitudinal changes following surgical treatment has additionally been demonstrated.[8]

Mouth opening

Mouth-opening difficulty similarly worsened at 6 weeks and improved thereafter. Early restriction may result from postoperative pain, edema, scar formation, and radiation-related inflammation affecting the oral cavity and masticatory apparatus. These factors may be particularly relevant in tumors and surgical defects involving anatomical regions close to the muscles of mastication.

The subsequent improvement observed in the present cohort may reflect resolution of acute pain, edema, and mucosal inflammation together with progressive restoration of oral activity. A similar temporal pattern was reported by Nikoloudi et al with substantial deterioration in patient-reported mouth opening during RT followed by marked improvement at 12 weeks.[4]

However, the favorable results at 14 weeks in the present study should be interpreted as evidence of early patient-reported symptomatic recovery rather than objective evidence of absence of trismus. Mouth opening was assessed through patient reporting rather than objective measurement of maximal interincisal opening.

Furthermore, late treatment-related changes may develop beyond the relatively short follow-up period evaluated in the present study. Long-term survivorship data

demonstrate that mouth-opening problems remain an important HRQoL issue in some head and neck cancer survivors, particularly following multimodality treatment.[11] Thus, early improvement in perceived mouth opening does not exclude the possibility of persistent or delayed functional limitation.

Recovery at approximately 12-14 weeks

One of the most clinically relevant findings of the present study was the substantial recovery observed during the later follow-up period. By approximately 10 weeks, scores across all four domains were statistically comparable to their pretreatment levels, with further improvement evident at 14 weeks.

This pattern suggests that 12-14 weeks following completion of RT/CTRT may represent an important transition from acute treatment-related morbidity toward early functional recovery. This interpretation is supported by several longitudinal studies. Nikoloudi et al found that pain, swallowing, speech, and mouth-opening problems that had deteriorated markedly during RT returned toward pretreatment levels at approximately 12 weeks.[4] Chuang et al similarly demonstrated that substantial improvement in QoL and physical functioning occurred between 2 weeks and approximately 3 months following RT.[5]

The close correspondence between these observations and the present findings strengthens the clinical relevance of the approximately three-month post-treatment period as an early recovery milestone. However, the timing and magnitude of recovery may differ according to disease site, treatment modality, surgical extent, reconstruction, radiation dose and individual patient characteristics.

This observation has important implications for patient counseling. Patients undergoing treatment for resectable head and neck cancer frequently complete a prolonged multimodality treatment regimen consisting of major surgery followed by several weeks of adjuvant RT or CTRT. Considerable pain and functional difficulty during the initial weeks following treatment may therefore not represent their eventual functional state.

Improvement beyond pretreatment levels

Another notable finding was that by 14 weeks, patient-reported scores in all four domains were significantly lower than their corresponding pretreatment values. One possible explanation is the timing of the baseline assessment. In the present study, baseline assessment was performed before surgery, when the primary tumor was still present. Pretreatment symptom burden therefore included disease-related pain and functional impairment caused directly by the tumor.

Following surgical removal of the primary disease, completion of adjuvant treatment, resolution of acute toxicity, and adaptation to postoperative anatomy, patients may experience lower symptom burden than they did at diagnosis. Improvement in post-treatment QoL and mouth pain has similarly been reported using the EORTC QLQ-H and N43 in an Indian head and neck cancer population.[9]

However, this explanation remains inferential. The present observational study cannot establish that tumor removal alone was responsible for scores becoming lower than baseline. Differences in disease characteristics, treatment, adaptation and recovery may all contribute, and the finding should therefore be interpreted cautiously.

Clinical implications

The consistency of the recovery pattern across pain, swallowing, speech problems, and mouth opening has practical implications for patient counseling and postoperative survivorship care. The early post-treatment period, including the 6-week assessment point, appears to represent an important window for active supportive care, including adequate analgesia, nutritional assessment, oral care, and appropriate swallowing, speech, and mouth-opening rehabilitation.

At the same time, the progressive improvement between 6 and 14 weeks provides a clinically useful recovery window that can be communicated to patients. Rather than regarding their early post-treatment condition as permanent, patients may be counseled that meaningful improvement can occur during the subsequent weeks, with approximately three months after treatment representing an important early recovery milestone.[4,5]

Serial patient-reported outcome assessment may also help identify whether an individual patient is following the expected recovery trajectory. Persistent or worsening symptoms rather than progressive improvement may identify patients who require additional evaluation or targeted rehabilitative intervention.

Importantly, early recovery should not lead to discontinuation of longer-term surveillance of functional problems. A large multinational study of long-term head and neck cancer survivors demonstrated meaningful differences between treatment groups in several HRQoL domains, including mouth pain, swallowing, mouth opening, dry mouth, and sticky saliva, with greater burden generally observed following multimodality treatment.[11] Similarly, prospective longitudinal data indicate that recovery of some quality-of-life domains may continue for one to two years after treatment, while symptoms such as dry mouth and sticky saliva may remain persistent.[10-12]

Strengths and limitations

The prospective longitudinal design, with assessments at four predefined time points, enabled evaluation of

recovery patterns during the early post-treatment period. Use of validated patient-reported outcomes provided insight into patients' perceived symptoms and functional difficulties. However, the single-center design and modest sample size (n=50) limit generalizability. The study relied solely on patient-reported measures and lacked objective functional assessments. Outcomes were not stratified by stage, surgical procedure, reconstruction, tumor subsite, or adjuvant treatment type. As assessment began at 6 weeks and ended at 14 weeks, the study reflects the highest observed burden during this period and early recovery rather than long-term outcomes.

CONCLUSION

This study demonstrates a consistent early recovery trajectory in patient-reported pain, swallowing, speech, and mouth opening following surgery and adjuvant RT/CTRT for HNSCC. Symptom burden was highest at 6 weeks, with substantial improvement by 10 weeks and further recovery by 14 weeks. The 12-14-week period appears particularly important for early functional recovery. These findings may help guide patient counseling and supportive care, while emphasizing that early improvement does not necessarily indicate complete or sustained long-term functional recovery.

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Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Rosenthal DI, Lewin JS, Eisbruch A. Prevention and treatment of dysphagia and aspiration after chemoradiation for head and neck cancer. J Clin Oncol. 2006;24(17):2636-43.
2. Langendijk JA, Doornaert P, Verdonck-de Leeuw IM, Leemans CR, Aaronson NK, Slotman BJ. Impact of late treatment-related toxicity on quality of life among patients with head and neck cancer treated with radiotherapy. J Clin Oncol. 2008;26(22):3770-6.
3. Karlsson C, Bohm N, Skoogh Andersson J, Finizia C, Almståhl A. Prospective study on health-related quality of life, oral mucositis and oral health during treatment of head and neck cancer. BMC Oral Health. 2024;24:697.
4. Nikoloudi M, Lymvaios I, Zygogianni A, Parpa E, Strikou DA, Tsilika E, et al. Quality of life, anxiety, and depression in the head-and-neck cancer patients, undergoing intensity-modulated radiotherapy treatment. Indian J Palliat Care. 2020;26(1):54-9.
5. Chuang EYH, Hou PY, Shueng PW, Lo WC, Lin PY, Lin SC, et al. Improved quality of life in head and neck cancer patients treated with modern arc radiotherapy techniques-a prospective longitudinal analysis. Front Oncol. 2024;14:1424034.
6. Singer S, Amdal CD, Hammerlid E, Tomaszewska IM. International validation of the revised European Organisation for Research and Treatment of Cancer Head and Neck Cancer Module, the EORTC QLQ-HN43: Phase IV. Head Neck. 2019;41(6):1725-37.
7. Singer S, Hammerlid E, Tomaszewska IM, Amdal CD, Herlofson BB, Santos M, et al. The European Organisation for Research and Treatment of Cancer Head and Neck Cancer Module (EORTC QLQ-HN43): estimates for minimal important difference and minimal important change. Eur J Cancer. 2024;212:115062.
8. Wu MP, Seshadri SC, Whittaker S, McCleary N, Uppaluri R, Rettig E, et al. EORTC Quality-of-Life Questionnaire responsiveness in surgical patients with head and neck cancer. JAMA Otolaryngol Head Neck Surg. 2025;151(4):409-11.
9. Waghmare CM, Pawar HJ, Bhalwar R. Quality of life before and after radiotherapy in head and neck squamous cell cancer patients measured using an updated head-neck specific EORTC QLQ-H&N43 at a rural tertiary cancer care center. South Asian J Cancer. 2025;14(2):170-8.
10. Okuyama M, Yanamoto S, Michi Y. Two-year evolution of quality of life following radiotherapy and/or chemotherapy in patients with head and neck cancer. Asia Pac J Oncol Nurs. 2023;10(11):100301.
11. Taylor KJ, Amdal CD, Bjordal K, Astrup GL, Herlofson BB, Duprez F, et al. Long-term health-related quality of life in head and neck cancer survivors: a large multinational study. Int J Cancer. 2024;154(10):1772-85.
12. Aghajanzadeh S, Tuomi L, Karlsson T. A 5-year prospective study of health-related quality of life in irradiated head and neck cancer patients: three trends of HRQL over time. Eur Arch Otorhinolaryngol. 2023;280(5):2617-22.

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