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ORIGINAL RESEARCH

Assessing the Impact of Treatment on Symptoms in Oral Cavity Cancer

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ABSTRACT

Background: Oral cavity cancer presents a significant health burden, particularly in the Indian subcontinent. Late diagnosis often leads to complex treatment and poorer prognoses. This study aims to analyze the impact of various treatment modalities on symptom relief in oral cavity cancer patients. **Materials and Methods:** A prospective study was conducted at the Department of ENT, Jhalawar Medical College, Jhalawar, India, between 2022-2023. 50 patients diagnosed with oral cavity cancer were enrolled. Data on demographics, risk factors, tumor characteristics (subsite, type, grade, stage), treatment modalities and pre- and post-treatment symptom severity (pain, bleeding, trismus, swallowing) were collected. The Wilcoxon signed-rank test and Pearson Chi-Square test were used to analyze the data. **Results:** The majority of patients were male (76%) and presented with early-stage disease (Stage I & II, 54%).The tongue was the most common subsite (46%), followed by the buccal mucosa (34%). Squamous cell carcinoma was the predominant histological type (98%). The most common treatment modality was chemotherapy combined with radiotherapy (44%). A statistically significant reduction in pain was observed post-treatment ($p=0.0005$). Trismus significantly improved after treatment ($p<0.01$). Swallowing function showed significant improvement post-treatment ($p<0.01$). While bleeding improved clinically, the difference was not statistically significant ($p=0.111$). **Conclusion:** This study demonstrates that multimodality treatment for oral cavity cancer leads to significant improvement in pain, trismus and swallowing. Early diagnosis and treatment are crucial for better outcomes and improved quality of life for patients.

Keywords: Oral cavity cancer, treatment, symptoms, pain, trismus, swallowing, quality of life.

INTRODUCTION

Oral cavity cancer represents a significant global health concern, posing a particular challenge in the Indian subcontinent where it contributes substantially to morbidity and mortality (1,2). The often late presentation of the disease, frequently attributed to socioeconomic factors and limited access to healthcare, necessitates complex treatment strategies and is associated with poorer prognoses (3,4). Early detection and intervention are paramount to improving survival rates and enhancing the quality of life for those affected (5).

While advancements in surgical techniques, radiotherapy, and chemotherapy have improved treatment outcomes, these modalities can significantly impact a patient's ability to speak, swallow, and tolerate oral intake (6,7). Therefore, understanding the effectiveness of various treatment approaches in alleviating debilitating symptoms, such as pain, trismus, and dysphagia, is crucial for optimizing patient care and improving overall well-being (8).

This study aims to prospectively assess the impact of different treatment modalities on symptom relief in a cohort of patients diagnosed with oral cavity cancer at a tertiary care center in India.

MATERIALS AND METHODS

This prospective study was conducted at the Department of ENT, Jhalawar Medical College, Jhalawar, India, over a one-year period from 2022 to 2023. Ethical approval was obtained from the institutional ethical committee of Jhalawar Medical College.

Study Population

- A total of 50 patients diagnosed with oral cavity carcinoma were included in the study.
- All patients presented to the ENT department of Jhalawar Medical College and met the inclusion criteria.

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Inclusion Criteria

- Diagnosed with oral cavity carcinoma.

Exclusion Criteria

1. Young children (0–12 years old)
2. Patients in poor general health
3. Patients ineligible for any type of cancer treatment.
4. Individuals with additional head and neck cancers.

Data Collection

1. **History:** A detailed history was obtained from each patient, including:

- Demographics (age, sex, occupation, socioeconomic status)
- Presenting complaints (duration and progression of symptoms like difficulty swallowing, breathing, voice change, neck swelling, mass in the ear, nose, or throat, weight loss, loss of appetite)
- Personal history (smoking, alcohol consumption, betel nut/tobacco chewing habits, dietary habits, headphone usage, exposure to loud sounds, radiation, chemicals, fumes, previous drug usage, speaking in a loud voice, GERD, obesity, stress, family history of malignancy).

2. **Clinical Examination:** A comprehensive clinical examination was performed, including:

- General examination (height, weight, blood pressure, pulse, temperature, pallor, cyanosis, icterus, breathing difficulty, clubbing, lymphadenopathy, dietary deficiencies)
- ENT examination (oral cavity, buccal mucosa, dentition, oropharynx).

3. **Diagnostic Investigations:**

- Histopathological analysis of a punch biopsy was used to confirm the diagnosis of oral cavity carcinoma.
- Baseline investigations included a complete hemogram, necessary X-rays (mandible, chest), and blood biochemistry.
- Additional investigations like FNAC of neck nodes, orthopantomogram, CT scan, VDRL, laryngoscopy, bronchoscopy, and esophagoscopy were performed as needed for staging and treatment planning.

4. **Treatment:** Treatment modalities were determined based on the tumor's site, stage, and pathological findings. These included:

- Surgery (wide local excision, hemiglossectomy, partial maxillectomy, composite resection, neck dissections)
- Radiotherapy (external beam radiation, brachytherapy)
- Chemotherapy (single-agent or combination therapy).

5. **Symptom Assessment:**

- Pain was evaluated using the Universal Pain Assessment Scale (0-10).
- Bleeding and swallowing difficulty were clinically graded (0-3).
- Trismus was assessed clinically using a finger test (1F-4F).

6. **Treatment Response:**

- Treatment response was assessed six weeks after treatment completion using the WHO evaluation response scale for solid tumors.

Statistical Analysis

- Data analysis was performed using IBM SPSS Statistics for Windows, Version 23.0.
- Descriptive statistics (mean, standard deviation, frequency, percentage) were used to summarize the data.
- The Wilcoxon signed-rank test was used to compare pre- and post-treatment symptom severity for paired data.
- The Pearson Chi-Square test was used to analyze categorical data.
- A p-value of <0.05 was considered statistically significant.

RESULTS

1. Age and Gender Distribution

The study population consisted of 50 patients with oral cavity cancer. The majority were male (76%, n=38), with a male-to-female ratio of 3.1:1. The age distribution is shown in Table 1. The age group with the highest presentation was 56-65 years (30%), followed by the age group below 35 years (28%).

Table 1: Age Distribution

Age Group (years)	Frequency (n)	Percentage (%)
Up to 35	14	28
36 to 45	10	20
46 to 55	8	16
56 to 65	15	30
66 to 75	3	6
Total	**50**	**100**

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2. Stage Distribution

The distribution of patients across different stages of oral cavity cancer is presented in Table 2. The majority of patients presented with early-stage disease (Stage I & II, 54%).

Table 2: Stage Distribution

Stage	Number (n)	Percentage (%)
Stage I	8	16
Stage II	19	38
Stage III	14	28
Stage IV	9	18
Total	**50**	**100**

3. Nodal Status

Most patients presented with N0 nodal status (74%, n=37), followed by N1 (16%, n=8) and N2 (10%, n=5). No patients had N3 nodal status.

4. Risk Factor Distribution

The analysis of risk factors revealed that the majority of cases were associated with habits of betel nut chewing and tobacco use in various forms. The detailed distribution is shown in Table 3.

Table 3: Risk Factor Distribution

Risk Factor	Frequency (n)	Percentage (%)
Betel nut chewing (B)	8	16
Tobacco chewing (T)	7	14
Smoking (S)	3	6
Alcohol (A)	1	2
B+T	20	40
S+A	4	8
B+S	2	4
S+T	3	6
A+T	2	4
Total	**50**	**100**

5. Subsite Distribution

The tongue was the most common subsite involved (46%, n=23), followed by the buccal mucosa (34%, n=17) and the hard palate (10%, n=5). The detailed distribution is shown in Table 4.

Table 4: Subsite Distribution

Subsite	Frequency (n)	Percentage (%)
Alveolus	2	4
Floor of mouth	1	2
Hard palate	5	10
Lip	2	4
Tongue	23	46
Buccal mucosa	17	34
Total	**50**	**100**

6. Histological Type and Grade Distribution

Squamous cell carcinoma was the predominant histological type, accounting for 98% (n=49) of the cases. Only one case of verrucous carcinoma was observed. Among the squamous cell carcinoma cases, 34% (n=17) were well-differentiated and 66% (n=33) were moderately differentiated. No cases of poorly differentiated squamous cell carcinoma were found.

7. Treatment Modality Distribution

The most common treatment modality was chemotherapy combined with radiotherapy (44%, n=22), followed by surgery plus radiotherapy (24%, n=12), surgery alone (18%, n=9), and surgery plus chemotherapy plus radiotherapy (14%, n=7).

8. Surgical Procedure Distribution

Among the 28 patients who underwent surgical treatment, the majority (34%, n=17) underwent hemiglossectomy with modified radical neck dissection. Other procedures performed included wide local excision (10%, n=5), partial maxillectomy with modified radical neck dissection (4%, n=2), and other composite resections with neck dissections.

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9. Treatment Response

Six weeks after treatment completion, 56% (n=28) of the patients showed a complete response, 32% (n=16) had a partial response, and 12% (n=6) had progressive disease, as assessed by the WHO response evaluation criteria for solid tumors.

10. Symptom Improvement

- **Pain:** The mean pain score before treatment was 6.5 ± 2.1. After treatment, the mean pain score significantly decreased to 3.7 ± 2.5 (p=0.0005, Wilcoxon signed-rank test).
- **Bleeding:** While the percentage of patients without bleeding symptoms increased from 44% pre-treatment to 90% post-treatment, this difference was not statistically significant (p=0.111, Pearson Chi-Square test).
- **Trismus:** A highly statistically significant difference in trismus was observed between pre- and post-treatment ($p<0.01$, Pearson Chi-Square test), indicating significant improvement in trismus after treatment.
- **Swallowing:** The swallowing function showed significant improvement post-treatment ($p<0.01$, Pearson Chi-Square test).

DISCUSSION

This study investigated the prevalence, presentation, and management of oral cavity malignancies, focusing on the impact of treatment on symptom improvement. Our findings highlight the significant burden of this disease, particularly in the Indian subcontinent, and underscore the importance of early diagnosis and intervention.

Demographic Trends and Risk Factors:

Consistent with previous studies in India (1,2,3), our results demonstrate a male predominance in oral cavity cancer, with a male-to-female ratio of 3.1:1. While the highest presentation was observed in the 56-65 year age group, a concerning trend emerged with a substantial proportion (28%) of cases diagnosed in individuals under 35 years, suggesting a shift towards younger demographics. This alarming finding underscores the need for targeted public health initiatives aimed at younger populations.

As expected, the use of tobacco and betel nut emerged as the most significant risk factors (4,5). This reinforces the crucial role of public health campaigns focused on tobacco cessation and raising awareness about the dangers of betel nut chewing.

Clinical Presentation and Subsite Distribution:

Encouragingly, the majority of patients in our study presented with early-stage disease (Stage I & II, 54%), which is associated with better treatment outcomes and survival rates (6,7). This finding emphasizes the importance of early detection and prompt referral for specialized care.

The tongue was the most common subsite involved, followed by the buccal mucosa and hard palate. This distribution aligns with other studies conducted in India (8,9), highlighting the vulnerability of these specific anatomical locations to carcinogenic insults.

Treatment Modalities and Symptom Improvement:

Multimodality treatment, including surgery, radiotherapy, and chemotherapy, remains the cornerstone of oral cavity cancer management (10). In our study, the most common treatment approach was chemotherapy combined with radiotherapy.

Importantly, we observed significant improvements in pain, trismus, and swallowing following treatment, regardless of the modality used. This finding aligns with previous research demonstrating the effectiveness of various treatment approaches in alleviating these debilitating symptoms (11,12). While bleeding also improved clinically, the difference was not statistically significant.

Limitations and Future Directions:

This study has limitations, including the relatively small sample size and the single-center design. Future research with larger, multicenter studies is needed to further validate these findings and explore the long-term impact of treatment on quality of life. Additionally, investigating the potential role of novel therapies, such as targeted agents and immunotherapy, in improving symptom control and survival outcomes is crucial.

CONCLUSION

Our study confirms the significant burden of oral cavity cancer in India, particularly among younger individuals and males. Early diagnosis and multimodality treatment lead to significant improvements in pain, trismus and swallowing, highlighting the importance of timely intervention. Continued efforts are needed to raise awareness about risk factors, promote early detection strategies, and optimize treatment approaches to enhance the quality of life for patients with oral cavity cancer.

REFERENCES

1. Borse V, Konwar AN, Buragohain P. Indian perspectives on oral cancer diagnosis. International Sensors. 2020 Sep 24:100046.
2. Varshitha A. India's oral cancer prevalence. Journal of Pharmaceutical Sciences and Research. 2015;7(10):845.
3. Nair S, Chaturvedi P, Laskar SG, et al. Treatment outcomes of patients with oral cancer managed surgically at a tertiary cancer hospital in India. Indian Journal of Cancer. 2017;54(4):616.
4. Coelho KR. Obstacles associated with India's oral cancer burden. Cancer Epidemiology. 2012;2012.
5. Thavarool SB, Philip S, Satheesan B, et al. Improved survival in patients with oral cancer: Results of a retrospective study from a tertiary care cancer center in rural Kerala, India. International Journal of Surgical Oncology. 2019;17(1):1–7.

DOI: 10.69605/ijlbpr_13.9.2024.28

6. Neville BW, Day TA. Oral cancer and precancerous lesions. CA: a cancer journal for clinicians. 2002;52(4):195–215.
7. Fein DA, Million RR, Cassisi NJ, et al. An analysis of the outcome and late effects of radiation alone vs. combined surgery and radiation for cancer of the oral cavity. Head & Neck. 1994;16(4):358-365.
8. Griner RH, Giralt J, Maingon P, et al. Chemotherapy in head and neck cancer. New England Journal of Medicine. 2004;350(19):1945–1952.
9. Pires FR, Santos TC, Tavares AS, et al. Oral squamous cell carcinoma: clinicopathological characteristics from 346 patients over an 8-year period from a single oral pathology service. Journal of Applied Oral Science. 2013;21:460-7.
10. Dzioba A, Aalto D, Seikaly H, et al. Impact of partial glossectomy on function and quality of life: A multi-institutional longitudinal Head and Neck Research Network study. Otolaryngology–Head and Neck Surgery. 2017;46(1):1-1.
11. Langdon JD, Harvey PW, Rapidis AD, et al. Oral cancer: the behaviour and response to treatment of 194 cases. Journal of Maxillofacial Surgery. 1977;5:221-37.
12. Padmanabhan TK, Sankaranarayanan R, Krishnan Nair M. Evaluation of role of radiotherapy in the management of carcinoma of buccal mucosa. Cancer.