The American Journal of Applied Sciences
ISSN 2689-0992 Volume 08 - 2026

Improving the Prevention and Treatment of Oral Mucositis During Chemotherapy for Oral Cavity Cancer

Malika Shavkatovna Akhrorova
PhD, Associate Professor, Department of Pediatric Dentistry, Samarkand State Medical University, Uzbekistan

Shohsanam Azamat qizi Khushboqova
Assistant, Department of Dentistry, Alfraganus University, Uzbekistan

Received: 22 Mar 2026 | Received Revised Version:18 Apr 2026 | Accepted: 06 May 2026 | Published: 31 May 2026

Volume 08 Issue 05 2026 | Crossref DOI: 10.37547/tajas/Volume08Issue05-25

Abstract

Oral mucositis is one of the most common and clinically significant complications of anticancer therapy, particularly in patients receiving chemotherapy for malignant neoplasms of the oral cavity. It is characterized by inflammation, erythema, ulceration, pain, impaired oral intake, and deterioration of the patient's quality of life. Severe mucositis may also increase the risk of secondary infection, treatment interruptions, dose reductions, and hospitalization. Therefore, early prevention, timely diagnosis, and individualized treatment are important components of comprehensive dental and oncological care. This article reviews current approaches to the prevention and management of chemotherapy-induced oral mucositis in patients with oral cavity cancer. Particular attention is given to oral hygiene, professional dental care, patient education, nutritional support, saline and bicarbonate rinses, pain control, infection prevention, and selected pharmacological and supportive interventions. A multidisciplinary approach involving oncologists, dentists, dental hygienists, nurses, and nutrition specialists can significantly improve oral health outcomes and help patients maintain continuity of cancer treatment.

Keywords: Oral cancer, chemotherapy, oral mucositis, stomatitis, oral hygiene, prevention, supportive therapy, dental care, pain management, cancer treatment.

Cite This Article: Malika Shavkatovna Akhrorova, & Shohsanam Azamat qizi Khushboqova. (2026). Improving the Prevention and Treatment of Oral Mucositis During Chemotherapy for Oral Cavity Cancer. The American Journal of Applied Sciences, 8(5), 184–187. https://doi.org/10.37547/tajas/Volume08Issue05-25

1. Introduction

Cancer of the oral cavity remains an important medical and social problem. Treatment frequently involves surgery, radiotherapy, chemotherapy, or combinations of these modalities. Although chemotherapy is essential for controlling malignant disease, it can cause a range of adverse effects involving rapidly dividing normal tissues. The oral mucosa is particularly vulnerable because of its high cellular turnover and exposure to mechanical, chemical, and microbial factors.

Oral mucositis is an inflammatory and ulcerative process that may develop during anticancer treatment. Patients may initially experience mucosal erythema, burning, dryness, and increased sensitivity. As the condition progresses, painful ulcerations may develop, making eating, drinking, speaking, and maintaining oral hygiene difficult. In severe cases, mucositis can contribute to dehydration, malnutrition, local and systemic infections,

and interruption of antineoplastic treatment.

For patients with oral cavity cancer, the problem is especially important because the primary tumor itself may already compromise oral function. Chemotherapy-associated mucosal damage can further aggravate existing oral problems. Consequently, prevention should begin before chemotherapy whenever possible and continue throughout the treatment period.

Pathogenesis of Chemotherapy-Induced Oral Mucositis

The development of oral mucositis is a complex biological process involving direct and indirect mechanisms. Cytotoxic agents damage the DNA of rapidly dividing epithelial cells and stimulate the production of reactive oxygen species. This leads to cellular injury and the activation of inflammatory signaling pathways.

The mucosal barrier subsequently becomes thinner and more vulnerable. Pro-inflammatory cytokines contribute to tissue inflammation, while epithelial destruction results in ulceration. Once ulcerations develop, the damaged mucosa becomes susceptible to colonization by microorganisms. Pain may become severe because inflammatory mediators and exposed nerve endings increase sensitivity.

Several factors may increase the risk of mucositis, including the type and dose of chemotherapy, treatment duration, poor oral hygiene, existing periodontal disease, dental trauma, ill-fitting prostheses, smoking, inadequate nutrition, dehydration, and individual susceptibility.

Prevention of Oral Mucositis

Prevention should be considered an integral part of cancer treatment rather than a response to complications after they occur. A comprehensive dental examination before chemotherapy is therefore recommended. Potential sources of infection, including carious lesions, periodontal inflammation, traumatic restorations, and problematic prosthetic appliances, should be identified and managed appropriately.

Professional oral hygiene and patient education are also essential. Patients should be instructed to brush their teeth gently with a soft toothbrush and fluoride-containing toothpaste. Excessive mechanical trauma should be avoided, but oral hygiene should not be discontinued simply because chemotherapy has started.

Regular mouth rinsing can help maintain a clean and moist oral environment. Simple saline or sodium bicarbonate solutions are commonly used as supportive measures. Alcohol-containing mouthwashes should generally be avoided because they may irritate and dry the mucosa.

Adequate hydration and nutritional support are equally important. Patients should be encouraged to drink sufficient fluids and consume nutritionally balanced, soft foods that do not cause mechanical or chemical irritation. Very spicy, acidic, salty, or extremely hot foods may aggravate mucosal discomfort and should be limited when symptoms develop.

Cryotherapy, particularly during administration of certain chemotherapeutic agents, may reduce exposure of oral tissues to the drug through temporary vasoconstriction. Its usefulness depends on the specific chemotherapy regimen and should therefore be determined by the oncology team.

Treatment of Established Mucositis

When mucositis develops, treatment should focus on reducing pain, maintaining oral function, preventing secondary infection, and supporting tissue recovery. The severity of mucositis should be assessed regularly using an appropriate clinical grading system.

Pain control is a major component of treatment. Mild symptoms may respond to topical agents and simple analgesics, whereas moderate or severe pain may require systemic analgesic therapy under medical supervision. Topical anesthetic preparations can temporarily reduce discomfort and facilitate eating and oral hygiene.

Maintaining oral cleanliness remains important even in patients with painful ulcerations. Gentle tooth brushing and appropriate rinsing can reduce microbial accumulation. However, aggressive brushing, alcohol-based rinses, and other irritating products should be avoided.

Secondary infection should be considered when clinical findings suggest bacterial, fungal, or viral involvement. Antimicrobial treatment should not be used indiscriminately but should be prescribed according to the patient's clinical condition and the recommendations of the treating medical team.

Patients with severe mucositis may experience difficulty eating and drinking. Nutritional counseling can help maintain adequate caloric and protein intake. If oral intake becomes insufficient, additional nutritional support may be necessary.

Role of the Dentist in Multidisciplinary Care

The dentist has an important role before, during, and after chemotherapy. Pre-treatment dental assessment allows potential sources of infection and trauma to be addressed before immunosuppression develops. During chemotherapy, regular monitoring permits early recognition of mucosal changes and timely intervention.

The dentist should also educate patients regarding oral hygiene, dietary habits, hydration, and warning signs that require medical attention. Communication between the dentist and oncologist is essential because oral complications may influence the patient's ability to tolerate cancer treatment.

For children and adolescents receiving anticancer therapy, preventive dental care requires particular attention because oral health problems can affect nutrition, growth, psychological well-being, and treatment adherence. Although the biological principles are similar, preventive and therapeutic interventions should be adapted to the patient's age and clinical condition.

Improving the Management Strategy

An improved approach to chemotherapy-induced mucositis should be individualized and based on risk assessment. Before chemotherapy, patients should undergo dental screening and receive an individualized oral-care plan. During chemotherapy, the oral mucosa should be evaluated systematically, and patients should be encouraged to report early symptoms such as burning, redness, dryness, or pain.

A practical management protocol may include five stages: pre-treatment dental assessment, preventive oral hygiene, continuous clinical monitoring, early symptomatic treatment, and post-treatment rehabilitation.

Digital patient education may also improve adherence. Written instructions, visual demonstrations, and regular communication with healthcare professionals can help patients understand the importance of oral hygiene and recognize mucositis at an early stage.

Future research should focus on identifying effective combinations of preventive measures and determining which interventions are most beneficial for different chemotherapy regimens and patient populations.

2. Conclusion

Chemotherapy-induced oral mucositis is a significant complication that can negatively affect nutrition, oral function, quality of life, and the continuity of cancer treatment. Its prevention and management should begin before chemotherapy and continue throughout the entire treatment period.

A comprehensive strategy should include pre-treatment dental examination, elimination of potential oral sources of infection and trauma, gentle but consistent oral hygiene, adequate hydration, nutritional support, appropriate mouth rinses, pain management, and timely treatment of secondary infections. The most effective results can be achieved through close cooperation between oncologists, dentists, dental hygienists, nurses, and nutrition specialists.

Improving preventive dental protocols and ensuring early recognition of mucosal changes may reduce the severity of oral mucositis and help patients tolerate chemotherapy more successfully. Thus, individualized oral care should be considered an important component of comprehensive supportive treatment for patients with oral cavity cancer.

References

1. Elad S, Cheng KKF, Lalla RV, et al. MASCC/ISOO clinical practice guidelines for the management of mucositis secondary to cancer therapy. Cancer. 2020;126(19):4423–4431.
2. Peterson DE, Boers-Doets CB, Bensadoun RJ, Herrstedt J. Management of oral and gastrointestinal mucosal injury: ESMO Clinical Practice Guidelines. Annals of Oncology. 2015;26(Suppl 5)–v151.
3. Sonis ST. The pathobiology of mucositis. Nature Reviews Cancer. 2004;4:277–284.
4. Lalla RV, Bowen J, Barasch A, et al. MASCC/ISOO clinical practice guidelines for the management of mucositis secondary to cancer therapy. Cancer. 2014;120(10):1453–1461.
5. Villa A, Sonis ST. Mucositis: pathobiology and

management. Current Opinion in Oncology. 2015;27(3):159–164.

6. Yarom N, Hovan A, Bossi P, et al. Systematic review of natural and miscellaneous agents for the management of oral mucositis in cancer patients. Supportive Care in Cancer. 2013;21:3209–3221.
7. Hong CHL, Gueiros LA, Fulton JS, et al. Systematic review of basic oral care for the management of oral mucositis in cancer patients. Supportive Care in Cancer. 2019;27:491–500.
8. Scully C, Epstein J, Sonis S. Oral mucositis: a challenging complication of radiotherapy, chemotherapy, and radiochemotherapy. Oral Diseases. 2004;10(6):321–330.