

ENHANCED TREATMENT MODALITIES FOR ORAL MUCOSAL COMPLICATIONS  
IN REMOVABLE DENTURE PATIENTS

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**Abstract:** Removable dentures play a significant role in the development of oral mucosal disorders, with denture stomatitis being among the most common manifestations. Continuous mechanical pressure, disruption of the oral microbial balance, and alterations in local immune responses collectively promote inflammatory changes in the mucosa. These processes often progress with subtle or minimally expressed clinical signs, which can hinder timely detection. Recent clinical findings indicate that advanced therapeutic modalities may provide superior outcomes compared to conventional methods.

**Keywords:** oral mucosa; denture stomatitis; epithelial restoration; hyperemia; innovative therapy.

**Introduction:** The oral mucosa is characterized by distinct structural and functional features that ensure resilience against mechanical, thermal, and chemical impacts, while also demonstrating a high capacity for regeneration (Бородовицына С.И., 2019). Nevertheless, despite its significant protective and physiological functions, pathological conditions affecting the oral mucosa remain highly prevalent and continue to represent a major concern in contemporary dental practice. Epidemiological data reported by the World Health Organization indicate that over 90% of individuals in middle and older age groups are affected by diseases of the oral mucosa and periodontal tissues (Арзуканян А.В., 2021).

Adverse environmental influences, together with the limited effectiveness of existing therapies, highlight the need for a precise and clinically relevant classification of inflammatory conditions affecting the oral mucosa—an issue that remains both scientifically and practically significant (Заркумова А.Е., 2017). Alterations within the oral cavity frequently reflect underlying systemic disorders, metabolic imbalances, and shifts in immune reactivity. Moreover, the etiological and pathogenetic diversity of dental diseases, coupled with overlapping clinical presentations among different nosological forms, underscores the importance of developing well-grounded, evidence-based approaches to prevention and treatment (Робакидзе Н.С., 2019).

Saliva represents a convenient and informative medium for the diagnosis of oral mucosal pathologies. Its complex composition, rich in biologically active molecules, contributes to antimicrobial defense, immune regulation, and antioxidant activity. Comprehensive analysis of salivary biomarkers creates opportunities for early disease identification and supports the refinement of therapeutic strategies and overall patient management (Al Shaar A., Hamadeh O., Ali A., 2024).

**Materials and Methods** . The investigation was carried out at the Department of Orthopedic Dentistry and the Dental Center of the Abu Ali ibn Sina Bukhara State Medical Institute. A total of 149 patients requiring removable prosthetic rehabilitation were included over the period of 2024–2025 . According to the clinical status of the oral mucosa and the selected treatment protocol, participants were stratified into three cohorts: a control group, a group receiving conventional therapy, and a group undergoing an expanded therapeutic approach.

Clinical evaluations were performed prior to prosthetic intervention and subsequently at 1 week, 1 month, and 3 months following treatment. The examination protocol comprised quantitative assessment of mucosal hyperemia, evaluation of epithelial healing and regenerative



dynamics, patient-reported discomfort, and identification as well as progression of denture-induced stomatitis and other mucosal lesions.

Additionally, the pH of mixed saliva was determined to evaluate local biochemical alterations associated with the use of removable dentures. The structural and functional status of the oral mucosa was analyzed through standardized clinical indices alongside relevant laboratory indicators. Clinical examination was complemented by photographic recording, allowing for objective monitoring of the progression and dynamics of observed changes.

Eligibility criteria encompassed patients with partial or complete tooth loss who required removable prosthetic treatment and had no signs of acute systemic or infectious conditions. Exclusion criteria included the presence of malignant lesions in the oral cavity, pronounced systemic immune disorders, and inadequate adherence to scheduled follow-up assessments. All participants provided informed consent prior to enrollment, and the study design was conducted in accordance with established principles of biomedical ethics.

The therapeutic potential of *Calendula officinalis* is largely attributed to its biologically active constituents, including glycyrrhizin and a broad spectrum of flavonoids, which exhibit pronounced anti-inflammatory, antioxidant, and immunoregulatory effects. These compounds are believed to facilitate mucosal healing by stimulating epithelial cell proliferation, mitigating oxidative damage, and regulating local immune mechanisms, ultimately contributing to the restoration of oral mucosal equilibrium.

In comparison, patients managed with standard therapeutic protocols showed a relatively delayed recovery process, with persistent signs of hyperemia observed in a subset of cases. Overall, the application of *Calendula officinalis* extract was associated with enhanced epithelial regeneration, decreased subjective discomfort, and better adaptation to removable dentures, indicating its value as a promising adjunct or alternative approach in the management of denture-related stomatitis.

**Results :** Before treatment, all patients exhibited pronounced inflammation of the oral mucosa, characterized by pain, itching, and burning (VAS:  $6.8 \pm 1.2$ ). Clinical findings included diffuse erythema, edema, and, in some cases, erosions, affecting 100% of patients. Baseline indicators showed high subdenture reactivity ( $2.8 \pm 0.4$ ), poor oral hygiene (OHI-S:  $4.5 \pm 0.6$ ), significant pain (VAS:  $6.7 \pm 1.1$ ), and absence of denture adaptation (0%).

Following treatment with removable dentures combined with *Calendula officinalis* extract, a marked improvement was observed. After 1 month, hyperemia decreased to 42% and edema to 40%, while erosions were reduced to 10%. Clinical indices improved significantly: reactivity decreased to  $1.4 \pm 0.3$ , OHI-S to  $2.0 \pm 0.4$ , and VAS to  $2.1 \pm 0.7$ . Denture adaptation reached 70%, indicating satisfactory tolerance.

By the third month, near-complete recovery was achieved. Hyperemia and edema were reduced to 16% and 14%, respectively, while erosions persisted in only 4% of patients. Reactivity further declined to  $0.6 \pm 0.2$ , OHI-S improved to  $1.1 \pm 0.3$ , and pain decreased to  $0.9 \pm 0.4$ . Denture adaptation reached 90%, demonstrating effective functional integration and minimal discomfort.

**Conclusions.** The findings demonstrate a steady and progressive improvement in the condition of the oral mucosa throughout the course of prosthetic rehabilitation. A consistent decrease in hyperemia, edema, erosive lesions, subprosthetic reactivity, and pain confirms the clinical efficacy of the applied therapeutic approach. Enhanced adaptation to dentures further emphasizes the importance of proper prosthetic design and patient education in achieving optimal functional outcomes, as well as the necessity for continuous oral hygiene control in patients using removable prostheses.



The use of *Calendula officinalis* extract proved to be highly effective in reducing both pain and inflammatory manifestations associated with denture stomatitis. Clinical observations revealed that 78% of patients reported a decrease in pain intensity to 0–3 points on the visual analog scale (VAS). Within 14 days, a marked reduction in mucosal hyperemia and erosive lesions was noted, and follow-up assessments showed complete epithelial regeneration and resolution of inflammatory signs in 85% of cases.

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