ISSN 2664-4177 (Print) & ISSN 2664-7931 (Online)
**South Asian Research Journal of Oral and Dental Sciences**
*Abbreviated Key Title: South Asian Res J Oral Dent Sci*

**| Volume-8 | Issue-1 | Jan-Feb- 2026** **DOI: https://doi.org/10.36346/sarjods.2026.v08i01.001**

**Review Article**

# Linea Alba of Oral Mucosa: A Review of Diagnosis and Management for Dental Clinicians

Dr. T. Maheswaran[1]*, Dr. S. Shamala[2], Dr. I. Janani[3], Dr. S. Kokila[3], Dr. B. Adhithya[3], Dr. Manisha Kumar[4]

[1]Professor, Department of Oral Pathology and Microbiology, Adhiparasakthi Dental College and Hospital, Tamil Nadu, India
[2]Professor and Head, Department of Oral Pathology and Microbiology, Adhiparasakthi Dental College and Hospital, Tamil Nadu, India
[3]Associate Professor, Department of Oral Pathology and Microbiology, Adhiparasakthi Dental College and Hospital, Tamil Nadu, India
[4]Assistant Professor, Department of Oral Pathology and Microbiology, Adhiparasakthi Dental College and Hospital, Tamil Nadu, India

***Corresponding Author:** Dr. T. Maheswaran
Professor, Department of Oral Pathology and Microbiology, Adhiparasakthi Dental College and Hospital, Tamil Nadu, India

**Article History**
Received: 13.11.2025
Accepted: 05.01.2026
Published: 07.01.2026

**Abstract:** Linea alba is a common benign white lesion that appears along the buccal mucosa at the occlusal plane. This reactive keratosis results from chronic frictional trauma against teeth surfaces and requires differentiation from potentially malignant oral lesions. Understanding the clinical characteristics, histopathologic features, and appropriate management strategies enables dental practitioners to provide accurate diagnosis and patient counseling. This review synthesizes the current evidence on the linea alba, emphasizing the diagnostic criteria, differential considerations, and conservative management approaches relevant to clinical practice.

**Keywords:** Linea Alba, White Lesion, Reactive Keratosis, Potentially Malignant Oral Lesions.

## INTRODUCTION

Linea alba manifests as a horizontal white linear elevation along the buccal mucosa, corresponding to the occlusal plane of the dentition [1]. This benign reactive hyperkeratosis develops from repetitive mechanical irritation between the teeth and adjacent mucosa [2]. Despite its benign nature, the linea alba frequently prompts clinical concerns because of its resemblance to potentially malignant white lesions [3]. Prevalence studies indicate that frictional keratoses occur in approximately 5.5% of the examined populations, although linea alba specifically affects an estimated 13 percent of young adults [2, 3]. Accurate recognition prevents unnecessary interventions while ensuring the appropriate monitoring of oral mucosal health [4]. This review provides a concise summary of the clinicopathological profile, differential diagnosis, and management strategies of the linea alba for dental clinicians.

### Clinical Characteristics and Etiology

The linea alba presents as an asymptomatic, raised white line extending bilaterally along the buccal mucosa at the level where the maxillary and mandibular teeth approximate each other during occlusion [1]. The lesion commonly extends from the oral commissure to the molar region and may involve the inner labial mucosa [5]. The characteristic horizontal orientation distinguishes the linea alba from other white oral lesions [1]. Etiologically, the linea alba develops through chronic friction from normal masticatory function rather than from parafunctional habits [2]. Contributing factors include cheek-biting behaviors, orthodontic appliances, ill-fitting dental prostheses, misaligned dentition, and aggressive oral hygiene practices [1-6]. Psychological stress may exacerbate habitual cheek manipulation and increase lesion severity [7]. Unlike tobacco-associated keratoses, linea alba is not correlated with smoking behavior [1].

**Histopathologic Features**

Microscopic examination reveals hyperkeratosis or hyperparakeratosis with variable granular layer thickness [1-2]. The epithelium demonstrates regular acanthosis with vacuolated cells in the upper spinous layers and occasional dyskeratotic cells without dysplastic changes [1]. Surface keratin may exhibit fissuring and clefting with bacterial colonization; however, inflammation remains minimal or absent [2-6]. Tapered rete ridges and the lack of inflammatory infiltrate distinguish frictional keratosis from lichenoid reactions [8]. Importantly, epithelial dysplasia is consistently absent, confirming its benign and reactive nature [1-7]. Studies have demonstrated that frictional keratoses resolve within two weeks of irritant removal, validating their reactive etiology [2].

**Differential Diagnosis**

Clinical differentiation from other white oral lesions is essential for appropriate management. Oral leukoplakia, defined as white plaques unexplained by other conditions, is a potentially malignant disorder requiring different clinical approaches [3-5]. Unlike the linear pattern of the linea alba at the occlusal plane, leukoplakia presents as irregular, non-scrapable plaques with ill-defined borders on various mucosal surfaces [1]. Leukoedema appears as a bilateral, opalescent gray-white mucosa that disappears upon stretching, contrasting with the persistent elevation of the linea alba [2]. Oral lichen planus exhibits characteristic reticular, papular, or erosive patterns bilaterally, but never as a singular horizontal line [1]. White sponge nevus, an autosomal dominant genodermatosis, manifests during childhood as bilateral, diffuse white plaques across multiple mucosal sites [9-10]. Pseudomembranous candidiasis produces scrapable white plaques that are readily distinguished by removability and microscopic fungal demonstration [4].

**Management Strategies**

Linea alba requires no specific treatment beyond the identification and elimination of causative irritants [1-2]. Management involves counseling patients regarding habitual behaviors, such as cheek biting, and recommending behavior modification techniques or stress reduction strategies [11]. Ill-fitting prostheses should be adjusted or replaced to minimize chronic trauma [2]. Orthodontic appliances may require modification if they cause excessive mucosal irritation [1]. Typical lesions demonstrating characteristic locations and appearances do not require biopsy [3]. However, biopsy is indicated when lesions persist despite irritant removal, exhibit atypical features, or occur in patients with significant risk factors such as tobacco use [2-12]. Follow-up examinations ensure the appropriate resolution of the intervention [13]. The excellent prognosis associated with linea alba, coupled with the absence of malignant potential, permits conservative observational approaches once a diagnosis is established [7].

## CONCLUSION

The linea alba is a common benign reactive keratosis that requires accurate differentiation from potentially malignant oral white lesions. Characteristic clinical presentation at the occlusal plane, benign histopathology, and resolution following irritant removal distinguish this condition. Dental clinicians should recognize the linea alba to provide appropriate patient education and avoid unnecessary interventions.

## REFERENCES

1. Hong, J., Choo, J., Kim, H. J., & Jae, S. Y. (2020). Gender-specific correlates of sufficient physical activity among vulnerable children. *Japan journal of nursing science: JJNS*, *17*(1), e12278. https://doi.org/10.1111/jjns.12278
2. Müller S. (2019). Frictional Keratosis, Contact Keratosis and Smokeless Tobacco Keratosis: Features of Reactive White Lesions of the Oral Mucosa. *Head and neck pathology*, *13*(1), 16–24. https://doi.org/10.1007/s12105-018-0986-3
3. Mortazavi, H., Safi, Y., Baharvand, M., Jafari, S., Anbari, F., & Rahmani, S. (2019). Oral White Lesions: An Updated Clinical Diagnostic Decision Tree. *Dentistry journal*, *7*(1), 15. https://doi.org/10.3390/dj7010015
4. Harris, P., Bissonnette, C., Tabet, P., & Wittmer, R. (2025). Common white lesions of the oral cavity: Review of clinical presentations and management. *Canadian family physician Medecin de famille canadien*, *71*(1), 19–25. https://doi.org/10.46747/cfp.710119
5. Warnakulasuriya S. (2019). White, red, and mixed lesions of oral mucosa: A clinicopathologic approach to diagnosis. *Periodontology 2000*, *80*(1), 89–104. https://doi.org/10.1111/prd.12276
6. Cam, K., Santoro, A., & Lee, J. B. (2012). Oral frictional hyperkeratosis (morsicatio buccarum): an entity to be considered in the differential diagnosis of white oral mucosal lesions. *Skinmed*, *10*(2), 114–115.
7. Nautiyal, M., Kumar Vadivel, J., & Ramalingam, K. (2024). Prevalence of Keratosis in the Oral Cavity: A Clinical Retrospective Study. *Cureus*, *16*(1), e52199. https://doi.org/10.7759/cureus.52199
8. Almazyad, A., Li, C. C., & Woo, S. B. (2020). Benign Alveolar Ridge Keratosis: Clinical and Histopathologic Analysis of 167 Cases. *Head and neck pathology*, *14*(4), 915–922. https://doi.org/10.1007/s12105-020-01151-1
9. Elfatoiki, F. Z., Capatas, S., Skali, H. D., Hali, F., Attar, H., & Chiheb, S. (2020). Oral White Sponge Nevus: An Exceptional Differential Diagnosis in Childhood. *Case reports in dermatological medicine*, *2020*, 9296768. https://doi.org/10.1155/2020/9296768

10. Kürklü, E., Öztürk, Ş., Cassidy, A. J., Ak, G., Koray, M., Çefle, K., Palandüz, Ş., Güllüoğlu, M. G., Tanyeri, H., & McLean, W. H. (2018). Clinical features and molecular genetic analysis in a Turkish family with oral white sponge nevus. *Medicina oral, patologia oral y cirugia bucal*, *23*(2), e144–e150. https://doi.org/10.4317/medoral.21437
11. Bukhari, A. F., Farag, A. M., & Treister, N. S. (2020). Chronic Oral Lesions. *Dermatologic clinics*, *38*(4), 451–466. https://doi.org/10.1016/j.det.2020.05.006
12. Mainville G. N. (2019). Non-HPV Papillary Lesions of the Oral Mucosa: Clinical and Histopathologic Features of Reactive and Neoplastic Conditions. *Head and neck pathology*, *13*(1), 71–79. https://doi.org/10.1007/s12105-019-01001-9
13. Jones, K. B., & Jordan, R. (2015). White lesions in the oral cavity: clinical presentation, diagnosis, and treatment. *Seminars in cutaneous medicine and surgery*, *34*(4), 161–170. https://doi.org/10.12788/j.sder.2015.0180