Introduction
Oral proliferative verrucous leukoplakia (OPVL) is a form of oral leukoplakia which was first reported in 1985 by Hansen et al.\(^1\) as a chronic condition. It develops initially as a white plaque of hyperkeratosis that eventually becomes a multifocal disease with confluent, exophytic, and proliferative features. There is probably no racial preference with female predilection and significantly it is not associated with tobacco-related habits with etiologic factors including human papillomavirus (HPV) association, genetic susceptibility, and long-standing low-grade traumatic factors. The malignancy transformation rate varies from 0.13 to 17.5\% with frequent recurrences. Here, we have reported two cases of PVL seen over the tongue and palate. It is confirmed by clinical and histopathological features and treated with Vitamin A and its supplements and a long-term follow-up showed no recurrence, and hence, Vitamin A has proven as a potent treatment option of PVL by its antioxidant and epithelialization property.

**Keywords:** Isotretinoin, plaque, Vitamin A, verrucous leukoplakia

Case Report

A. CASE 1
A 62-year-old male patient reported to the department of oral medicine and radiology of the Haldia Institute of Dental Sciences with the chief complaints of white mass in the right side of the tongue for the last 2 months with no associated pain. The patient was taking medications for hypertension for the last 4 years. The past dental history was non-contributory. The patient gave a history of having no deleterious oral habits. On intraoral inspection, a white slightly raised lesion with a granular texture, sessile soft-tissue growth was present involving the posterolateral aspect of the right lateral border of the tongue in relation to the 46,47 region, which was ovoid, approximately 2 cm × 2.5 cm in diameter, the superficial surface was whitish, raised, with frictional keratosis, homogenous leukoplakia, squamous papilloma, verrucous hyperplasia, verrucous carcinoma, squamous cell carcinoma, and chronic hyperplastic candidiasis. The treatment modalities include carbon dioxide laser, radiation, topical bleomycin solution, oral retinoids, beta-carotene, and systemic chemotherapy with various degrees of success.\(^1\)
well-circumscribed border, and the surrounding tongue mucosa was normal in appearance. On palpation, the growth appeared non-scrapable, non-fluctuant, non-compressible, and firm in consistency, and non-tendered on palpation [Figure 1a–d].

B. CASE 2
A 55-year-old male patient reported with the chief complaint of the presence of a painless white mass in the right side of the posterior palatal mucosa, for the last 2 months. The past medical history revealed diabetes mellitus type II for the last 5 years and was under medication. The patient gave a history of having no deleterious oral habits. The intraoral examination revealed a well-defined hyperkeratotic granular exophytic growth on the right side of the posterior palatal mucosa, measuring approximately 2.5 cm × 3.5 cm in diameter, the overlying surface showed small finger-like projections. On palpation, all the inspectory findings were confirmed. The surface was rough in texture, firm in consistency, non-tender, and non-scrapable [Figure 2a–c].

Based on the above-mentioned clinical features in both the cases provisional diagnosis of verrucous leukoplakia was given with differential diagnosis as squamous papilloma, verrucous carcinoma, frictional keratosis, homogenous leukoplakia, verrucous hyperplasia, verrucous carcinoma, squamous cell carcinoma, and chronic hyperplastic candidiasis.

The complete hemogram reports was within normal limits. The incisional biopsy specimens were taken from the lesion area and were sent for histopathological analysis. The 10X and 40X microscopic views revealed parakeratinized stratified squamous epithelium with moderate acanthosis, intact basement membrane, and a few areas of parakeratin plugging. The lamina propria showed moderate infiltration of the chronic inflammatory cells in the collagenous stroma and concomitant presence of epithelial pearls suggestive of verrucous epithelial hyperplasia with hyperorthokeratosis [Figure 3a and b]. Based upon all the clinical and histopathological features, PVL was given as the final diagnosis in both cases.

The patient was treated with Vitamin A 25,000 IU twice daily after taking meals for 1 month along with isotretinoin ointment (0.5% w/w) topical application thrice daily for 1 month, and antiseptic, lignocaine anesthetic, and analgesic gel for topical application on the area 15 min before taking meals and advised to come after 1 month for follow-up of the case. And there was a marked reduction in the size of the lesion after 1 and 3 months, respectively.

The follow-up was done at 30, 60, and 90 days intervals which showed a good prognosis of the disease in both cases.

Discussion
The oral cavity is the mirror of the general well-being of an individual. The potentially malignant lesions of oral mucosa should be given prime importance by the primary care physician as its misdiagnosis can lead to malignant transformation with a poor prognosis. A primary care physician should be knowledgeable and skillful to deliver an effective screening of potentially malignant oral disorders like PVL.

PVL is one of the rarest forms of oral leukoplakia that acts aggressively to turn into a malignant form. Its malignant transformation rate varies within 0.13–17.5%. These lesions initially develop as a white plaque of hyperkeratosis that may

Figure 1: (a) Extraoral photograph of the patient. (b) An well-defined painless white mass is present over the right lateral border of the tongue. (c) On 1 month follow-up after treatment. (d): On 3 months of follow-up continuing treatment

Figure 2: (a) Extraoral photograph. (b) A whitish well-defined mass with superficial finger-like projection seen over the right posterior surface of hard palatal mucosa. (c) After 3 months of follow-up continuing treatment
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appear as solitary, flat homogeneously whitish-gray patches, and eventually become a multifocal disease with confluent, exophytic, and proliferative features. It is not strongly associated with alcohol or tobacco use, but the possible etiology includes Epstein–Barr virus, and immunity.

The diagnostic criteria of PVL are as follows:

**Major criteria**

a. A leukoplakia lesion with more than two different oral sites, which is most frequently found in the gingiva, alveolar processes, and palate
b. The presence of a verrucous area
c. The extensive spread of the lesion during the development of the disease
d. High chances of recurrence in a previously treated area

**Minor criteria**

a. An oral leukoplakia lesion that occupies at least 3 cm when adding all the affected areas
b. Commonly shows a female predilection
c. The patient should not be having a history of smoking
d. Disease progression is higher than 5 years

The diagnosis of PVL is based on one of the two following combinations of the criteria along with the presence of simple epithelial hyperkeratosis to verrucous hyperplasia, verrucous carcinoma, or oral squamous cell carcinoma:
1. Three major criteria
2. Two major criteria + two minor criteria

In this case, it has fulfilled two major and two minor criteria that helped in the final diagnosis of PVL (A, B—Major; A, C—Minor)

Various treatment modalities for the management of these lesions include conventional surgery, radiotherapy, cryotherapy, Vitamin A therapy, antiviral therapy, carbon dioxide laser surgery, and photodynamic therapy.

These cases have used Vitamin A 25,00 IU and ointment isotretinoin (0.5% w/w), which act mainly by their antioxidant and re-epithelialization properties, which showed a satisfactory result with no recurrence in the periodic follow-up.

**Conclusion**

OPVL is one of the rarely encountered aggressive lesions in oral mucosa that needs special attention due to its high malignant transformation rate (60–100%), recurrence rate (87–100%), and high mortality rates (30–50%). In this case, a thorough clinical examination along with histopathological correlation helped to reach an early diagnosis. The proper treatment modalities showed complete remission of the lesion in the tongue and palatal mucosa in both cases.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal.

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.

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