

# Utilization of Carbon dioxide laser as a potential therapy for verrucous hyperplasia of the oral cavity

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**Abstract** There is a significant link between the practice of tobacco chewing, areca nut chewing, and smoking and the development of VH, which can transform into VC or oral squamous cell carcinoma. Studies have shown that the rate of malignant transformation of VH is 5.1% is approximately 54.6 months, while the transformation rate of VL is between 4-15% within 5-8 years. The location of the lesions poses a great challenge for a dermatologist to treat this disease, while there are various treatments like surgical excision, electrosurgery, cryotherapy and immunotherapy. Here we explore a simple and efficient way that can be implemented by dermatologists in their clinical practice with the use of Carbon dioxide laser.

**Key words**

Carbon dioxide Lasers; Verrucous hyperplasia; Energy based devices; Oral cancers.

## Introduction

The potential occurrence of verrucous hyperplasia (VH) is a pathological condition exhibiting whitish or pinkish exophytic lesions of the mucosa with a characteristic wart-like or papillary surface. VH is a variant of oral verrucous carcinoma (VC), and it presents with a clinical and histopathological resemblance to VC.<sup>1</sup>

There exists a significant correlation between the use of tobacco, areca nut chewing, and smoking, and the onset of VH, which may ultimately lead to the development of VC or oral squamous cell carcinoma. According to studies, VH carries a 5.1% rate of malignant transformation within approximately 54.6 months, while VL exhibits a transformation rate

between 4-15% within 5-8 years.<sup>1</sup> The location of the lesions poses a great challenge for a dermatologist to treat this disease, while there are various treatments like surgical excision, electrosurgery, cryotherapy and immunotherapy. Here we explore a simple and efficient way that can be implemented by dermatologists in their clinical practice.

## Case report

A 32-year-old woman presented with concerns about a white plaque in her mouth. The plaque was located on the hard palate and buccal mucosal, measuring 7x5 cm (**Figure 1**). The patient had a history of tobacco chewing for 12 years and had noticed the lesion growing gradually for four months which she noticed when she visited a local clinic for complaints of sore throat secondary to bacterial tonsillitis. Wherein the treating doctor first noticed the plaque and advised for a punch biopsy which showed findings of verrucous carcinoma confirmed with two biopsies from different location of the lesions.

After considering the nature and progression of

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**Figure 1** Verrucous white plaque involving the hard palate and buccal mucosa of size 7x5cm.



**Figure 2** Post-procedure showing minimal bleeding and effective excision of the lesions.

the disease and acquiring her consent, an ablative carbon dioxide laser (CO<sub>2</sub>) laser procedure was performed under local anesthesia (**Figure 2**).

## Results

The lesions were successfully treated with no intraoperative complications and no scarring contracture or recurrence in one-month follow-up.

## Discussion

The effective treatment of VH relies on prompt diagnosis by the clinician and confirmation by a pathologist which is earned through awareness and knowledge of the lesion's clinical and histological findings. VH can be treated in the same norms as that of VC due to overlapping clinical features. Surgical excision is the treatment of choice, requiring a wide excision with adequate soft tissue margin and depth to prevent recurrence.<sup>2-4</sup>

CO<sub>2</sub> lasers are uniquely suited for removing mucosal soft tissue lesions, offering precision beyond scalpels or electrocautery. The procedure involves outlining the target with repeated 175 mJ pulses, each creating a 0.2 mm spot at 0.5 W. Control over tissue depth is a key advantage, as CO<sub>2</sub> lasers are rapidly absorbed, preventing excess damage. Their shallow 0.02 mm penetration minimizes impact on healthy tissue, but expertise is vital for safe use, and healthcare professionals should be consulted for personalized guidance.<sup>5</sup>

**Declaration of patient consent** The authors certify that they have obtained all appropriate patient consent.

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## Authors' contribution

**DsH, DIH, TH:** Identification and management of the case, manuscript writing, final approval of the version to be published.

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