

# Verrucous lesions of the oral cavity treated with surgery: Analysis of clinico-pathologic features and outcome

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## Abstract

**Objective:** Verrucous lesions of the oral cavity can be of varied histopathology. The present study evaluates the clinico-pathological features of verrucous lesions of the oral cavity and analyzes the treatment outcomes. **Materials and Methods:** This is a retrospective study of 15 consecutive patients who presented with verrucous lesions of the oral cavity, during the 5-year period from January 2006 to December 2010. Demographic, clinico-pathological features, treatment details, and outcomes were analyzed. **Results:** Fifteen patients with verrucous lesions of the oral cavity were treated with surgery as the primary modality. The mean age was 62.8 years (range 35–85 years). Wide excision of the primary lesion with adequate mucosal and soft-tissue margins was carried out. Free-flap reconstruction was done in eight patients. All patients remain loco-regionally controlled with good functional speech and swallowing outcome. **Conclusions:** Verrucous lesions of the oral cavity are a distinct clinical entity with varied histopathology. A surgical excision with wide margins and appropriate reconstruction is necessary to optimize the disease and functional outcome.

**Keywords:** Head and neck cancer, oral cancer, pathology, verrucous carcinoma, verrucous hyperplasia

## Introduction

The diagnosis in verrucous lesions of the oral cavity can range from verrucous hyperplasia to verrucous proliferative leukoplakia (VPL), and verrucous carcinoma. VPL is a distinct entity among these, and it has a high potential for malignant transformation. The present study evaluates the clinico-pathological features of verrucous lesions of the oral cavity and analyzes the treatment outcomes.

## Materials and Methods

This is a retrospective study of 15 consecutive patients who presented with verrucous lesions of the oral cavity, during the 5-year period from January 2006 to December 2010. An institutional review board approval was obtained for this study. A prospectively maintained tumor board database: electronic medical records of outpatient clinic visits as well as inpatient records, operative notes, histopathology

reports, and clinical photographs were studied to obtain the data. Demographic, clinico-pathological features, treatment details, and outcomes were analyzed.

## Results

Fifteen patients with verrucous lesions of the oral cavity [Figure 1] presented during the study period. The mean age was 62.8 years (range 35–85 years). Eleven (73%) of them were males and four (27%) were females. Six patients had history of smoking, 11 chewed tobacco with or without areca nut, two had history of alcohol abuse, and four patients had multiple habits (tobacco in different forms as well as alcohol). Nine cases presented with lesions in the buccal mucosa and five cases with lesions on the lateral border of the tongue. Mean size of the lesion was 3.1 cm in the greatest dimension (range 1–5 cm). Two patients had clinically palpable ipsilateral level I cervical lymph nodes. At presentation, the preoperative biopsy was reported as verrucous carcinoma in seven patients

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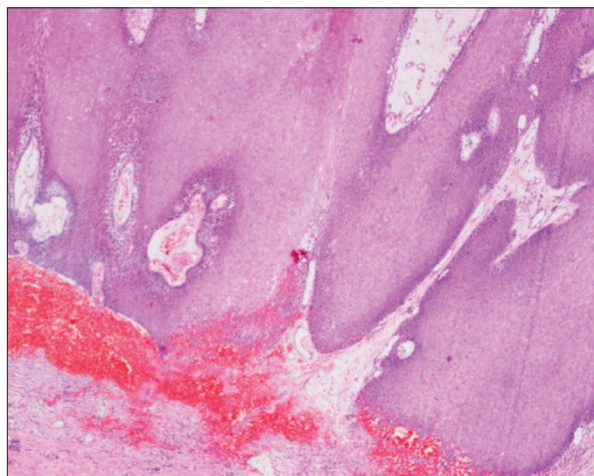


**Figure 1:** Verrucous lesion on lateral border tongue

and verrucous hyperplasia in eight patients. Demographic and tumor details are shown in Table 1.

### Treatment

All these patients were offered surgery as definitive treatment and adjuvant radiotherapy if necessary, depending on the nodal and margin status in the histopathological evaluation. Wide local excision of the primary lesion, with adequate mucosal and soft-tissue margins in all three dimensions, was carried out. Eleven cases could be resected via a per oral approach, while four cases were approached using a midline lip-split after raising the cheek flap, for better access to the



**Figure 2:** Verrucous hyperplasia: H and E  $\times 100$ , section shows verrucous proliferation of epithelium with minimal atypia

**Table 1: Demographics and tumor characteristics**

		n=15
Gender	Male	11
	Female	4
Habits	Smoking	6
	Tobacco chewing	11
	Alcohol	2
	Multiple	4
Site	Buccal mucosa	9
	Lateral border of tongue	5
	Hard palate	1

**Table 2: Treatment**

		n=15
Modality	Surgery alone	13
	Surgery + radio-therapy	2
Surgical approach	Per oral	11
	Cheek flap	4
	Mandibulotomy	0
Mandibulectomy	Marginal	4
	Segmental	0
Neck dissection	Selective	7
Reconstruction	None	5
	Split Skin Graft	1
	Local flap	1
	Free flap	8

posterior margin of the tumour in the posterior tongue and retromolar trigone regions. A marginal mandibulectomy was done in four patients to get an adequate margin as the lesions were abutting the lower alveolus. Seven patients underwent ipsilateral selective neck dissection, levels I–IV. The indications for neck dissection in this series were clinically palpable nodes, invasive carcinoma at presentation, or tumor size more than 4 cm. Fasciocutaneous free-flaps, either anterolateral thigh or radial artery forearm flap, were used to cover the defect after ablative surgery in eight patients. Treatment details including reconstruction are depicted in Table 2.

### Outcome

Three patients had positive or close margins on final histopathology. Two of them were invasive carcinoma, and received adjuvant radiotherapy. One case of oral tongue proliferative verrucous leukoplakia, where the margins were close, had to be taken for re-excision. There was no bony involvement in any patient. Five out of eight verrucous hyperplasia, on final histopathology, were found to have an invasive component. Two lesions were designated as oral proliferative verrucous leukoplakia. Table 3 shows the pathological details. All patients remain loco-regionally controlled at the end of follow-up period. The mean follow-up was 11.2 months (range 1–39 months). All the patients could speak intelligibly and were able to take normal oral diet.

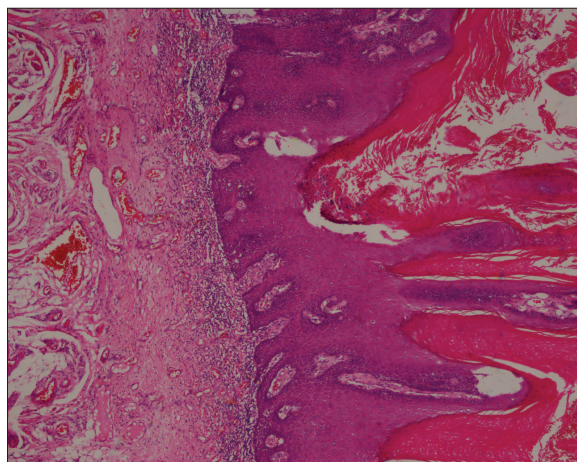
### Discussion

Verrucous lesions of the oral cavity can have varied histopathology. Verrucous hyperplasia [Figure 2] is a forerunner of verrucous carcinoma, and the transition is so consistent that the hyperplasia, once diagnosed, should be treated like verrucous carcinoma. There is a slight female predilection with the sixth to eighth decades, the years of peak frequency. The gingival and alveolar mucosa is most frequently involved. These are followed, in order, by the buccal mucosa, tongue, floor of mouth, lip, and palate. Wang *et al.*,<sup>[1]</sup> in a study of 60 patients of oral verrucous hyperplasia concluded that the lesions occur more commonly on the buccal mucosa and are highly associated with the areca quid chewing and cigarette smoking habits. The overall 5-year malignant transformation rate was 10% in their study. Occasionally, lesions with the general morphology of verrucous carcinoma may contain foci of invasive squamous cell carcinoma of varying grade. These lesions have been designated hybrid tumors.<sup>[2]</sup>

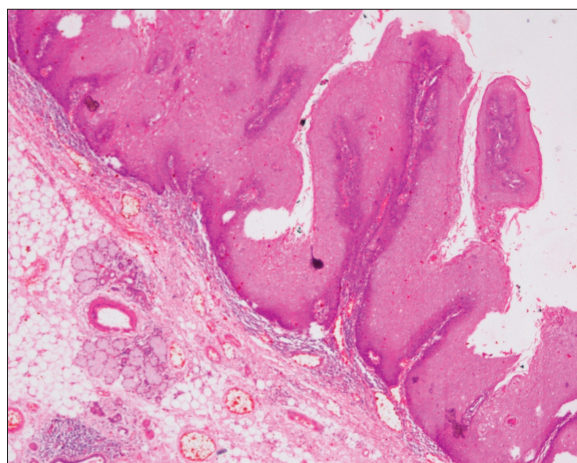
Proliferative verrucous leukoplakia (PVL) [Figure 3], defined by Hansen and Colleagues in 1985,<sup>[3]</sup> consists generally of proliferative, irregular white patches or plaques that progress slowly and multifocally on the oral mucous membrane. PVL is a form of field cancerization in which the tissues that appear clinically normal progress through advanced stages to dysplasia, to culminate in some form of epithelial cancer.

**Table 3: Pathology**

		n =15
Pathology (Pre-op)	Verrucous hyperplasia	8
	Verrucous carcinoma	7
	Proliferative verrucous	0
	Leucoplakia	
	Invasive SCC	0
Pathology (Post-op)	Verrucous hyperplasia	2
	Verrucous carcinoma	7
	Proliferative verrucous	2
	Leucoplakia	
	Invasive SCC	4
Margins	Negative	13
	Close	2
Bony invasion		0



**Figure 3:** Oral proliferative verrucous leukoplakia: H and E x100, section shows mucosal hyperkeratosis, acanthosis, and papillomatosis



**Figure 4:** Verrucous carcinoma: H and E x100, section shows bulbous proliferation of edges, acanthosis, and hyperkeratosis. The cells show intercellular bridges, vesicular bland nucleus, and prominent nucleoli, with abundant eosinophilic cytoplasm

PVL is more common in women than in men, with a peak incidence at 60 to 70 years of age. No apparent link between human papilloma virus (HPV) and use of tobacco products

has been firmly established with regard to PVL<sup>[4,5]</sup> There is high degree of malignant transformation. Silverman and Gorsky<sup>[6]</sup> reported that 70.3 % of 54 patients developed a squamous cell carcinoma. Its aggressiveness relates not only to a high recurrence rate, but also to a relentless progression from a localized simple keratosis to extensive oral disease and squamous carcinomas of verrucous or conventional squamous cell type. Began *et al.*,<sup>[7]</sup> in a study of 19 patients have demonstrated the high frequency of OSCCs on many occasions manifesting several cancers at different oral locations, thus demonstrating the field cancerization of this entity.

Verrucous carcinoma [Figure 4] is a distinct low-grade variant of squamous cell carcinoma of the oral cavity. It was first identified as a clinical and histologic entity by Ackermann in 1948 in a study of 31 patients.<sup>[8]</sup> It is a rare tumor representing only 3–4% of all oral carcinomas, with an annual incidence of one to three cases for every one million persons.<sup>[9]</sup> The tumor typically appears in the sixth decade of life and accounts for 2–8% of all squamous cell carcinoma.<sup>[10]</sup> It is characterized by a slow-growing, painless, broad-based verrucous or wart-like papillary lesion. In contrast to oral squamous cell carcinoma, verrucous carcinoma does not metastasize regionally or distally. Rekha *et al.*,<sup>[11]</sup> studied 133 cases of verrucous carcinoma and concluded that they accounted for 16.08% among oral squamous cell carcinoma. They found a greater predilection in males with greater and buccal mucosa sub site. Walvekar *et al.*, have studied 101 cases of oral verrucous carcinoma and have found excellent prognosis with surgical management. They have emphasized the surgical resection with adequate margins and need for close follow-up.

Treatment modalities for verrucous lesions have included surgery, radiation therapy, chemotherapy, cryotherapy, laser therapy, photodynamic therapy, and treatment with recombinant alpha-interferon. Surgical excision remains the preferred treatment for the primary lesion.<sup>[12]</sup> Femiano *et al.*,<sup>[13]</sup> reported an open trial of surgery in 25 patients with oral HPV-positive PVL, compared with combined therapy using surgery and methisoprinol, a synthetic agent with immunomodulatory properties and some antiviral activity against HPV, in another group of 25 patients with oral PVL. After months of follow-up, there were 18 recurrences in the group treated by surgery alone, compared with four in those also receiving methisoprinol. Lin *et al.*,<sup>[14]</sup> has demonstrated the effectiveness of topical photodynamic therapy in oral verrucous hyperplasia. Huang *et al.*,<sup>[15]</sup> in a study of 39 patients have found that surgical treatment is effective in oral verrucous carcinoma. Walvekar *et al.*,<sup>[16]</sup> have studied 101 cases of oral verrucous carcinoma and have found excellent prognosis with surgical management. They have emphasized the surgical resection with adequate margins and need for close follow up.

The chances of finding a malignancy in final pathology after

resection are high. Five out of eight cases of verrucous hyperplasia in our series showed invasive carcinoma later. Biopsy sampling error is high in such lesions. Multiple attempts of biopsy can prove counterproductive. The possibility of the presence of adjacent altered mucosa is high.<sup>[17]</sup> This again necessitates a wider excision and serial sectioning of the excised lesion. Free vascularized flaps were used for reconstruction in eight of our cases, as the defects after ablative surgery were large and deep. An adequate reconstruction will help not to compromise the functional outcome.

## Conclusions

Verrucous lesions of the oral cavity are a distinct clinical entity with varied histopathology. A surgical excision with wide margins and an appropriate reconstruction is necessary to optimize the disease and functional outcome.

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