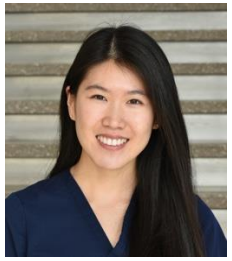
Oral Verrucous Carcinoma: A Case Report and Literature Review of Clinical Features and Managements

Cara Zou, Sally Sheng DDS, MS, Hsiu-Wan Meng DDS, MS.
University of Texas Health Science Center School of Dentistry , Houston, Texas, USA



Introduction

Oral verrucous carcinoma (OVC) is a low-grade variant of oral squamous cell carcinoma characterized by its slow growth, exophytic presentation, and minimal metastatic potential. Although the etiology is unknown, it is strongly associated with risk factors such as chronic smokeless tobacco use, betel quid chewing, and alcohol consumption. HPV strains 16 and 18 have also been identified as a possible etiologic factor. Other risk factors include irritants to the oral mucosa including poor fitting oral prosthesis or mucosal injuries. OVC is most commonly seen in middle-aged to older adults, predominantly males.

While it rarely metastasizes, OVC is able to aggressively invade into underlying tissue. OVC has a good prognosis compared to squamous cell carcinoma and its effective management hinges on early diagnosis and appropriate treatment, which typically involves surgical excision with negative margins. Other treatment modalities can include radiotherapy, chemotherapy, or a combination.

Differential diagnosis can be difficult due to similarities with other diseases. In particular, hybrid verrucous carcinoma consists of both OVC and differently differentiated oral squamous cell carcinoma (OSCC) which has more aggressive invasion and is capable of metastasis. The coexistence may be found in around 20% of patients with oral verrucous carcinoma. Higher proportion of OVC to OSCC in these lesions may lead to better prognosis.

Clinical Presentation:

OVC typically appears as a slow-growing, painless, rough cauliflower-like lesion in the oral cavity, most commonly found on the buccal mucosa, gingiva, and tongue. Due to the low mitotic activity, it may take years for the lesion to grow to a size in which symptoms arise such as discomfort, difficulty chewing/speaking, and bad breath. Pain usually arises when the lesion has invaded into surrounding tissue.

Radiologic features:

Computed tomography and/or magnetic resonance imaging may be useful in identifying the extent of the lesion and allowing us to determine potential invasion to surrounding tissues such as muscle and bone. Some superficial bone erosion may be observed.

Histologic features:

Histological analysis shows OVC is characterized by well-differentiated squamous epithelium with a thickened, hyperkeratotic surface. Cellular atypia is minimal. It has a distinctive "**pushing" pattern of invasion** into the underlying connective tissue. The epithelium demonstrates elongated "elephant foot-like" rete ridges that project into the lamina propria all at around the same level. Basement membrane appears intact.

Oral Verrucous Carcinoma Case Report:

Figure 1a & 1b: Clinical presentation

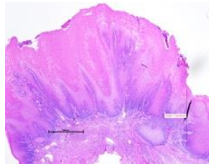


Figure 2: Histological analysis

Figure 3: Panoramic radiograph

A 35yo Indian male presented to the UTHealth School of Dentistry with no known medical history and a 15 pack year cigarette smoking history. Patient was referred from GP for a lesion on the right side of the tongue.

- Papillary, white, pedunculated, soft lesion measuring around 9x8mm noted on right side of tongue. Red, flat spots noted around the white lesion. Several white/gray flat patches noted on left side of tongue and right and left cheek mucosa. Excisional biopsy indicated with a margin of 1mm (Fig 1a,b)
- Microscopic report: Acanthosis and wide and elongated rete ridges extending into the underlying lamina propria with a **pushing border** (Fig 2). Dysplasia with cellular and nuclear atypia characterized by nuclear pleomorphism, hyperchromatism, and increased nuclear cytoplasmic ratio. Chronic inflammation consisting of mostly lymphocytes. Special stain (PAS) reveals focal loss of basement membrane around invasive front of tumor.
- DD: **Hybrid verrucous squamous carcinoma**, well-differentiated (grade 1) , Depth of invasion: at least 1.7mm, No perineural or vascular invasion detected
- Referral to UT OMFS. Extraction of #3 and glossectomy performed and margins were safe. Follow up appointments with OS every 6 months
- 2-year follow up panoramic radiograph taken with multiple caries noted and an apical lesion #19 (Fig 3). Scheduled with GP for comprehensive exam

Differential Diagnosis for Exophytic Soft Tissue Lesions

	Oral Verrucous carcinoma	Squamous cell carcinoma	Papillary squamous cell carcinoma	Verrucous Hyperplasia	Proliferative Verrucous Leukoplakia	Verruca Vulgaris	Oral squamous papilloma	Oral Condyloma Acuminata
Etiology	Smokeless tobacco, betel nut, alcohol, HPV	Tobacco, alcohol, HPV (types 16,18)	Alcohol, smoking, HPV (types 16, 18)	Chronic irritation	Unknown, possibly HPV and chronic irritation	HPV (types 2, 4, 40, 57)	HPV (types 6, 11)	HPV (types 6, 11)
Clinical appearance	Exophytic, Cauliflower-like	Ulcerated, infiltrative, red-white lesion	Exophytic, papillomatous with ulceration	Exophytic, rough, broad-based lesion	White, multifocal plaques that progressively enlarge	Small, rough, wart-like lesion	Pedunculated, soft, cauliflower -like lesion	Broad-based, pink, pebbly lesion
Preferred site	Buccal mucosa, gingiva, tongue	Tongue, floor of mouth	Tongue, soft palate, buccal mucosa	Buccal mucosa, gingiva	Buccal mucosa, tongue, gingiva	Lips, gingiva, hard palate	Soft palate, tongue, lips	Lips, labial mucosa, soft palate
Histological features	Hyperkeratosis, broad pushing margins, minimal atypia	Pleomorphic, dysplastic cells, infiltrative invasion, mitotic figures	Papillary architecture, atypical squamous cells, infiltrative	Hyperplastic squamous epithelium, no invasion, potential precursor to OVC	Hyperkeratosis, epithelial dysplasia, eventual invasive carcinoma	Koilocytosis, hyperkeratotic stratified epithelium	Papillary fronds with fibrovascular cores, koilocytosis	Acanthosis, koilocytosis, blunt papillary projections
Malignant potential	Locally aggressive, rare metastasis	High metastatic potential	Higher risk than OVC, but less than SCC	Premalignant (may transform into OVC)	Very high (often progresses to SCC or OVC)	Benign	Benign	Benign
Treatment	Surgical excision	Surgery, radiation, chemotherapy	Surgery, radiation	Surgical excision	Close monitoring, surgical removal	Excision, laser, cryotherapy	Excision, laser, cryotherapy	Excision, laser, cryotherapy

Literature Review of OVC

A PUBMED search of case reports on OVC's published within 2015-2025 was completed using the keyword: oral verrucous carcinoma. Systematic reviews and meta-analysis were excluded to avoid duplicate findings. Additionally, only articles in English were selected. Finally, studies with less than 10 cases were also excluded. A total of 8 articles were selected with **209** unique cases.

Table 1. Distribution of OVC Gender		
Male	125	59.8%
Female	84	40.2%

Average age was found to be **53.6 years** with individuals aged from 21-79 yrs. Gender distribution was found to be skewed towards **males** (59.8%) as seen in Table 1.

Table 2. Habits of OVC Patients	
Tobacco Chewing	60.0%
Tobacco smoking	33.3%
Alcoholics	4.8%
Betel nut	13.3%

Of the studies that reported the habits of the patients, the majority of individuals were found to have habits including **tobacco chewing** as observed above in Table 2. Distribution of the location of OVC as reported from the studies are shown in Table 3. The region with the highest number of reports was found to be the **buccal mucosa** at 63.2%.

Table 3. Distribution of OVC Location	
Buccal Mucosa	63.2%
Lip	10.5%
Tongue	13.2%
Hard palate	3.9%

References: Scan for list of references