

## Lower lip verrucous lesion unmasking squamous cell carcinoma: A diagnostic pitfall

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### Abstract

Squamous cell carcinoma (SCC) is one of the most common malignant neoplasms affecting the skin and oral mucosa.

A 79-year-old man with a history of prostate adenocarcinoma presented with a verrucous lesion of the lower lip that had been evolving for six months. The patient reported repeated use of traditional remedies. He was a former smoker and had a history of chronic sun exposure. Dermatological examination revealed a verrucous plaque with a crusted surface and a papillomatous hyperkeratotic appearance located on the lower lip.

Dermoscopic examination showed white structureless areas, polymorphous vessels, and hemorrhagic foci, supporting the suspicion of a keratinizing epithelial neoplasm and prompting immediate biopsy. Histopathological examination of the initial biopsy suggested verrucous carcinoma (VC) without definite stromal invasion. However, comprehensive examination of the surgical specimen revealed a well-differentiated infiltrating squamous cell carcinoma (pT2N0M0).

The patient underwent complete surgical excision followed by reconstructive surgery and remained free of local recurrence during three years of follow-up. This case underscores the diagnostic challenge of verrucous lip lesions and highlights the complementary role of dermoscopy in guiding early biopsy. It also illustrates the limitations of incisional biopsy in verruciform lesions, as the invasive component was identified only after examination of the entire resection specimen.

**Keywords:** Squamous Cell Carcinoma; Lower Lip; Verrucous Lesion; Dermoscopy; Differential Diagnosis; Biopsy.

### 1. Introduction

Squamous cell carcinoma (SCC) is one of the most common malignant neoplasms affecting the skin and oral mucosa [1]. It accounts for approximately one-quarter of all oral cavity cancers. Compared with other head and neck malignancies, SCC is generally associated with a favorable prognosis when diagnosed and treated early, with a 5-year survival rate of up to 82.1% [2]. We report a diagnostically challenging case of lower lip SCC presenting as a verrucous lesion, in which dermoscopic evaluation and comprehensive histopathological assessment were essential to establish the final diagnosis.

### 2. Case report

A 79-year-old man with a history of metastatic prostate adenocarcinoma involving the lungs, treated with androgen deprivation therapy (GnRH agonist, triptorelin/Decapeptyl®), who was a former smoker (having quit more than 20 years earlier) and had a history of chronic occupational sun exposure, presented with a painful raised reddish lesion of the lower lip that had been evolving for six months. The lesion was tender on palpation, without bleeding or serous

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discharge. The patient reported repeated use of traditional remedies, including the application of saliva and thermal cauterization ("fire branding").

Dermatological examination revealed a well-demarcated blackish keratotic plaque with irregular borders, arising on a non-indurated, non-infiltrated erythematous base, measuring approximately 2 cm in its greatest diameter and located on the lower lip (Figure 1).

The lesion had a papillomatous verrucous surface covered with yellowish keratinous and hemorrhagic crusts and arose on an erythematous base without obvious clinical induration (Figure 1). The remaining vermilion border was carefully examined and showed no obvious features suggestive of underlying actinic cheilitis, oral lichen planus, or other premalignant disorders. Examination of the entire oral cavity and upper aerodigestive tract revealed no additional suspicious mucosal lesions or synchronous squamous cell carcinoma.

Dermoscopic examination (Figure 2) showed white structureless areas (Figure 2a), areas of hemorrhagic sufficiency (Figure 2b), polymorphous vascular patterns, including hairpin, dotted and linear vessels (Figure 2c)

Based on the patient's risk factors, clinical appearance, and the absence of additional oral premalignant lesions, the main differential diagnoses included verrucous carcinoma, squamous cell carcinoma arising on occult actinic cheilitis, squamous cell carcinoma developing on lichenoid degeneration, keratoacanthoma, and verrucous cutaneous leishmaniasis.

Histopathological examination of the initial biopsy revealed a verrucous, hyperplastic, and papillomatous squamous epithelial proliferation with broad bulbous epithelial downgrowths extending into the superficial dermis. Focal nuclear enlargement and mild hyperchromasia were observed. The lesion was covered by a thick orthokeratotic keratin layer, and the underlying dermis showed a dense inflammatory infiltrate composed of lymphocytes, plasma cells, and eosinophils. No definite evidence of stromal invasion or vascular emboli was identified in the biopsy specimen. These findings were highly suggestive of verrucous carcinoma (VC). However, given the well-recognized possibility of an associated conventional invasive squamous cell carcinoma, complete histopathological examination of the surgical specimen was required. Analysis of the resection specimen ultimately demonstrated a well-differentiated infiltrating squamous cell carcinoma, staged as pT2N0M0, highlighting the limitations of incisional biopsy in excluding an invasive component.

Computed tomography (CT) demonstrated two exophytic lesions involving the lower lip, one located in the midline and the other on the left side. No cervical lymphadenopathy was detected. Bilateral dilatation of the intraglandular ducts of the submandibular glands was observed, associated with dilatation of the left Wharton's duct without any visible obstructive lesion. The known pulmonary and osseous metastatic lesions related to the patient's prostate adenocarcinoma remained radiologically stable.

The patient was referred to the Maxillofacial Surgery Department for surgical management and underwent complete surgical excision followed by reconstructive surgery. While the initial biopsy showed features suggestive of a verrucous squamous proliferation without definite stromal invasion, comprehensive examination of the surgical specimen revealed a well-differentiated infiltrating squamous cell carcinoma invading the underlying dermis, staged as pT2N0M0. Complete excision was achieved with histologically negative margins measuring 2 mm at the superior margin (oral cavity side), 5.5 mm at the inferior margin, 6.5 mm at the deep margin, 12 mm at the left margin, and 10 mm at the right margin. Three reactive lymph nodes were identified, and the associated salivary gland tissue was unremarkable.



**Figure 1** A well-circumscribed verrucous plaque involving the lower two-thirds of the lower lip, covered with a hemorrhagic crust and exhibiting focal hyperkeratosis.



**Figure 2** Dermoscopy showed white structureless areas (blue star), hemorrhagic areas (green star), and polymorphous vascular patterns comprising hairpin (purple star), dotted (red circle), and linear vessels (red arrow). The lesion displayed a papillomatous hyperkeratotic surface with yellowish keratinous crusts (yellow arrow).

### 3. Discussion

Lip squamous cell carcinoma (SCC) accounts for approximately 25–30% of all oral cavity cancers. Established risk factors for lip SCC include male sex, advanced age (typically during the sixth decade of life and beyond), fair skin phototype, chronic sun exposure, tobacco use, alcohol consumption, and immunosuppression. In most cases, SCC develops from a pre-existing premalignant lesion, such as actinic cheilitis. The lower lip is by far the most frequently affected site [3]. Our patient illustrates the cumulative effect of several established carcinogenic factors, including advanced age, long-term sun exposure, former tobacco use, and a history of metastatic prostate adenocarcinoma. Although prostate cancer is not considered a direct etiological factor for lip SCC, the coexistence of malignancy, advanced age, and cumulative environmental exposures may have contributed to carcinogenesis. Furthermore, the repeated use of traditional treatments before medical consultation probably delayed diagnosis and appropriate management.

VC is a rare, well-differentiated, low-grade variant of squamous cell carcinoma characterized by an exophytic papillomatous architecture, broad pushing margins, minimal cytological atypia, and a very low metastatic potential. It most commonly affects the oral cavity and lower lip, where its clinical appearance frequently overlaps with infectious, inflammatory, and benign verrucous lesions, making diagnosis particularly challenging.

The main diagnostic challenge in this case was the lesion's verrucous appearance. Clinically, the differential diagnosis included VC, conventional SCC developing on an underlying actinic cheilitis or lichenoid lesion, verrucous cutaneous leishmaniasis, and keratoacanthoma. Such lesions frequently share overlapping clinical features, making clinicopathological correlation essential [4,5].

Dermoscopy is a valuable non-invasive tool that improves the diagnostic accuracy of keratinizing tumors. Although dermoscopic features of lip SCC have been less extensively described than those of cutaneous SCC, reported findings include white structureless areas, keratotic scales, polymorphous vessels, hemorrhagic spots, and a milky-red background [4].

In our patient, dermoscopy did not establish the diagnosis of SCC by itself, as the clinical suspicion of malignancy was already high. However, it helped refine the diagnostic approach by supporting a keratinizing epithelial neoplasm while simultaneously narrowing the differential diagnosis.

In particular, dermoscopy was useful in distinguishing between VC and verrucous cutaneous leishmaniasis and in suggesting the presence of an underlying premalignant lip disorder, particularly actinic cheilitis or lichenoid degeneration, which are recognized precursor lesions for lip SCC. This distinction was clinically relevant because the main diagnostic dilemma was whether the verrucous lesion represented a malignant epithelial tumor requiring immediate biopsy or an infectious lesion such as verrucous cutaneous leishmaniasis, for which parasitological investigations, including smear examination, could initially be considered. Consequently, dermoscopic findings supported the decision to proceed directly to biopsy rather than performing cytological sampling or delaying histopathological confirmation. Indeed, the combination of white structureless areas, polymorphous vessels, and hemorrhagic foci reinforced the suspicion of a keratinizing squamous neoplasm and justified prompt histopathological assessment, which ultimately established the diagnosis and guided definitive surgical management.

Several infections and inflammatory disorders may mimic lip SCC. Lip leishmaniasis may present as a chronic infiltrated crusted lesion, whereas keratoacanthoma typically appears as a rapidly growing crateriform nodule. Likewise, chronic inflammatory disorders such as oral lichen planus may occasionally undergo malignant transformation and should be considered in the differential diagnosis. These entities may share overlapping clinical and even dermoscopic features with VC, making histopathological examination essential for establishing the diagnosis. The chronic evolution, verrucous morphology, and heterogeneous appearance of the lesion in our patient initially broadened the differential diagnosis, emphasizing the importance of histopathological confirmation.

Histopathological examination further reinforced the diagnostic challenge. The incisional biopsy demonstrated a verruciform squamous proliferation with papillomatous hyperplasia, broad bulbous epithelial downgrowths, abundant orthokeratosis, and no definite stromal invasion, findings that were highly suggestive of verrucous carcinoma. However, these features should always be interpreted cautiously because superficial biopsies may fail to sample an associated invasive component. An additional noteworthy aspect of this case was the discrepancy between the initial biopsy and the definitive surgical specimen. Although the biopsy favored VC, complete histopathological examination of the resected specimen ultimately demonstrated a well-differentiated infiltrating squamous cell carcinoma (pT2N0M0). This

discrepancy illustrates one of the major diagnostic pitfalls of verruciform lesions. Because incisional biopsies frequently sample only the superficial exophytic component, they may underestimate or completely miss an underlying invasive carcinoma [5,6,7].

Verrucous carcinoma is a well-differentiated, low-grade variant of squamous cell carcinoma with broad pushing margins and minimal metastatic potential, whereas conventional squamous cell carcinoma demonstrates infiltrative stromal invasion and a greater risk of metastasis. Moreover, verrucous carcinoma may coexist with or evolve into conventional invasive squamous cell carcinoma, making thorough histopathological evaluation of the entire lesion essential.

Surgical resection, cryosurgery, Mohs micrographic surgery, and radiotherapy are among the described therapeutic modalities. Wide surgical excision with clear margins remains the gold standard treatment for lip squamous cell carcinoma [3]. However, surgical management may be associated with anatomical, functional, and aesthetic defects. Beyond its therapeutic benefit, complete surgical excision also plays a crucial diagnostic role in verruciform lesions by allowing examination of the entire specimen and identification of an invasive component that may not be represented in an incisional biopsy. In our patient, complete surgical excision not only achieved tumor-free margins but also enabled comprehensive histopathological examination of the entire lesion, ultimately establishing the definitive diagnosis. This finding further supports the importance of complete surgical excision in clinically suspicious verrucous lesions of the lip.

Although photodynamic therapy and radiotherapy may be considered in selected patients, surgery remains the preferred treatment whenever feasible because it offers both definitive diagnosis and curative management [2].

The prognosis of lip SCC is mainly determined by cervical lymph node involvement, depth of invasion, tumor differentiation, perineural invasion, TNM stage, and surgical margin status [8,9]. In the present case, the absence of nodal involvement together with complete excision with histologically negative margins were favorable prognostic factors despite the infiltrating nature of the tumor.

This observation reinforces the importance of maintaining a high index of suspicion for malignancy in chronic verrucous lip lesions, even in the absence of obvious clinical induration. It also highlights that an apparently verrucous lesion may harbor an underlying invasive squamous cell carcinoma, reinforcing the need for early biopsy and, when indicated, complete histopathological evaluation of the resected specimen.

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#### 4. Conclusion

Verrucous lesions of the lower lip constitute a diagnostic challenge because they may mimic infectious, inflammatory, or premalignant conditions while concealing an underlying invasive squamous cell carcinoma. Our case highlights the value of integrating clinical examination, dermoscopy, and histopathological assessment to guide appropriate management. It also illustrates the limitations of incisional biopsy in verruciform lesions, as the invasive component was identified only after complete examination of the surgical specimen. Early biopsy and comprehensive histopathological evaluation remain essential to avoid delayed diagnosis and optimize patient outcomes, particularly in individuals with multiple carcinogenic risk factors.

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#### Compliance with ethical standards

##### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

##### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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