Case Report
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Papillary Variant of Oral Squamous Cell Carcinoma of Alveolar Mucosa- A Case Report and Review

Mahalakshmi Loganathan, Shobana Murugavel*, Immudi Paranjothi Shenpaga Priya and Senthilkumar Balasubramaniam

KSR Institute of Dental Science and Research, Tiruchengode - 637215, Tamil Nadu, India; shobiden@gmail.com

Abstract

Papillary Squamous Cell Carcinoma (PSCC) is a less frequent subtype of Squamous Cell Carcinoma (SCC) with a more favorable prognosis compared to conventional oral squamous cell carcinoma. PSCC has a distinctive exophytic and papillary projection. The upper aerodigestive tract is the most commonly affected site with a higher incidence of occurrence in the larynx. The papillary variant of oral squamous cell carcinoma involving gingiva or alveolar ridge is relatively uncommon and less reported. Other differential diagnosis of papillary gingival masses is reactive gingival lesions and fungal infections. An accurate diagnosis is vital for both therapeutic and prognostic purposes. This article describes the case of papillary variant oral squamous cell carcinoma in a 75-year-old male in the maxillary alveolar region depicting histopathological features of exophytic growth with hyperplastic stratified squamous epithelium with basaloid cells invading the underlying connective tissue.

Keywords: Alveolar Mucosa, Papillary Squamous Cell Carcinoma, Verrucous Carcinoma

1. Introduction

Oral Squamous Cell Carcinoma (OSCC) is the most common malignant neoplasm of the head and neck accounting for over 90% of all malignancies[1]. OSCC represents the sixteenth most common cancer in females and the eleventh most common cancer in males. Aetiological factors of OSCC are multifactorial including smokeless tobacco, smoked tobacco, malnutrition, chronic infection, viruses, and immunosuppression[2]. Totally 10-15 % of conventional oral squamous cell carcinoma exhibit several unique morphological variations which include verrucous carcinoma, adenoid/acantholytic/pseudoglandular SCC, spindle cell/sarcomatoid carcinoma, mucoepidermoid carcinoma, adenosquamous carcinoma, basaloid SCC, papillary SCC, mucin-producing SCC, lymphoepithelioma, nasopharyngeal SCC, oral carcinoma cunniculatum, clear cell carcinoma, primary intraosseous carcinoma, etc[1,2]. Papillary squamous cell carcinoma often mimics verrucous carcinoma and SCC with verrucoid features. The important overlapping features of oral squamous cell carcinoma with verrucoid features and verrucous carcinoma are wider exophytic growth with rounded projections and excessive characteristic keratinization[3]. Verrucous carcinoma does not show significant cellular atypia, whereas OSCC exhibiting verrucous features shows cellular atypia[3].

PSCC shows finger-like papillary growth and is characterized by significant malignant components, thin fibrovascular cores filled with immature basaloid cells or squamous cells with dysplastic features, minimal or nil keratinization, and mitotic figures[3].

2. Case Report

A 75-year-old male patient reported with the chief complaint of intermittent pain in the left back region of upper jaw since ten days and with difficulty in mastication. The patient gave a history of multiple mobile teeth which were extracted a few days ago. He had the habit of smokeless tobacco, pan, and betel nut consumption for 30 years.

An Intraoral examination revealed ulcero-proliferative growth measuring approximately 1.5x1 cm on the edentulous alveolar ridge in the region of tooth

*Author for correspondence

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#26, extending from the crest of alveolar ridge to buccal sulcus, antero-posteriorly from 24 to 26 region with ill-defined border, and medio-laterally on edentulous alveolar ridge (Figure 1(A) and (B)). The surface of the growth appears nodular, slightly erythematous, and medially covered with a yellowish slough with no pus discharge. On palpation, the ulcer exhibited a papillary surface with everted margins and the patient had extreme tenderness on the adjacent mucosa. There was generalized atrophy of the papilla of the tongue with mild fissuring. There were palpable bilateral submandibular groups of lymph nodes which were mobile and non-tender. Provisionally, it was diagnosed as a malignant growth in the left maxillary alveolar ridge in relation to #26.

Panoramic radiograph revealed an ill-defined radiolucency seen in the edentulous region of #24, #25, and #26 with a periapical abscess in relation to #12, #14, and #47. Root stump #47, #11 (Figure 2).

An incisional biopsy was performed in the left maxillary alveolar region under local anesthesia for histopathological examination. Microscopic examination of H and E-stained sections showed a thin discontinuous and atrophic stratified squamous epithelium, with features of severe dysplasia. The epithelium was predominantly made up of basaloid cells, showing papillary projections, and appeared exophytic in nature. In some areas, the epithelium appeared hyperplastic with extensive keratin formation. The underlying connective tissue was invaded by small nests of dysplastic basaloid epithelial cells. Dense diffuse chronic inflammation, predominantly of lymphocytes and numerous engorged capillaries was also noticed in the connective tissue. Histopathological features were suggestive of the papillary variant of squamous cell carcinoma (Figure 3). Following Histological confirmation of malignancy and extent of involvement, local-wide excision along with left alveolectomy under GA was done. Excisional biopsy was histopathologically examined and the diagnosis was confirmed. The patient was reviewed at two and six months, and no recurrence was noticed.

3. Discussion

Papillary Squamous Cell Carcinoma (PSCC) is an infrequent variant of squamous cell carcinoma with increased male predisposition occurring in the 6th and 7th decades of life. Like any other variants of SCC of the upper aerodigestive tract[4], PSCC also shows a higher incidence among older men. Although the larynx is the most commonly affected site in the upper aerodigestive tract, it may also occur throughout the upper aerodigestive tract with greater occurrence in the sinonasal tract[2-4].

As in conventional SCC, smoking, and alcohol have been considered to be important etiological factors in PSCC[2]. Also, due to the histopathological and clinical resemblance between PSCC and oral squamous papilloma, it was hypothesized that HPV might be an important causative organism in PSCC[2,4]. Interestingly, recent studies have shown the frequent association of high-risk HPV-16 in the SCC of the sinonasal tract, oropharynx, and larynx[2,5].

Definitive stromal invasion may be considerably significant, as invasive tumors tend to respond in a more

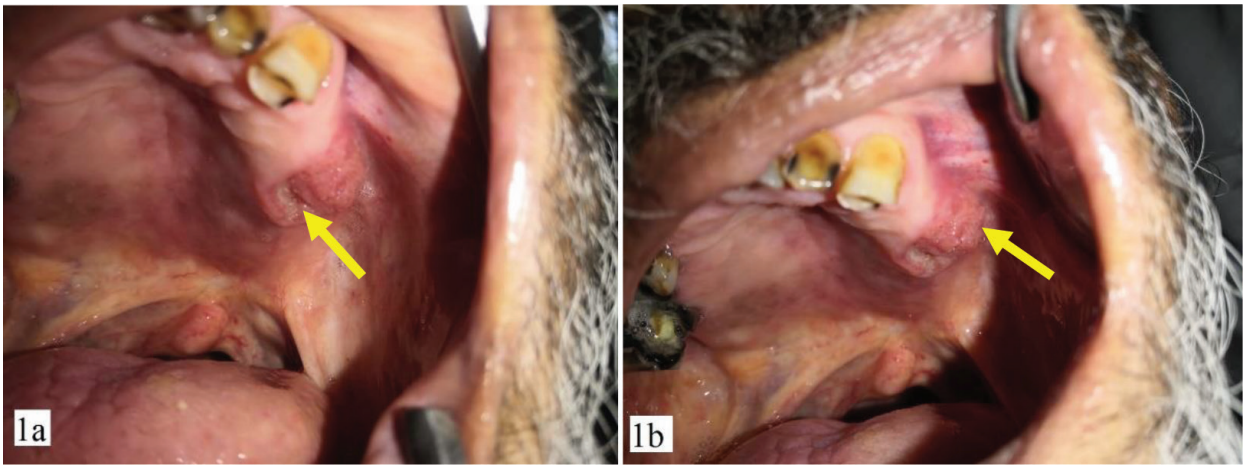


Figure 1. **(A)** Nodular proliferative growth on left posterior alveolus. **(B)** Ulcero-proliferative growth involving the left maxillary gingiva and buccal sulcus, slightly erythematous covered with yellowish slough.



Figure 2. An ill-defined radiolucency seen in the edentulous region of corresponding tooth#24, #25, and #26 site.

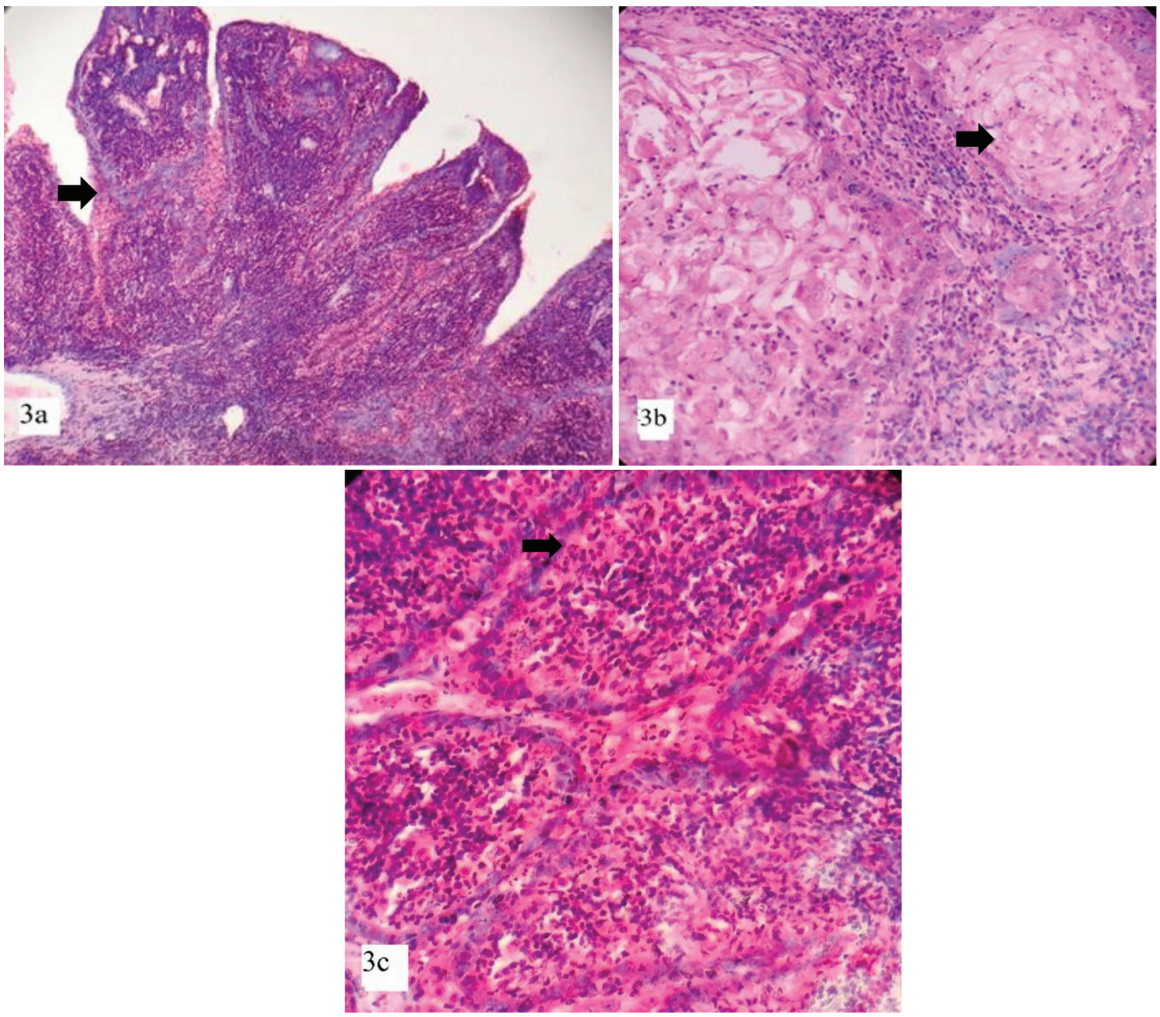


Figure 3. Histopathological Sections: **(A)** At 4x magnification: Hyperplastic epithelium, predominantly made up of basaloid cells, with papillary projections. **(B)** At 40x magnification Extensive keratin formation. **(C)** At 100x magnification: Connective tissue stroma with small nests of dysplastic basaloid epithelial cells.

Table 1. Summary of previously reported cases of PSSC in the literature

Authors	Cases	Sex	Age Group (years)	Site of PSSC	Treatment	Follow-Up
Ishiyama *et al.*,[12]	Head & neck (n = 52) (oral mucosa (n = 44)	M-28 F-24	50 to 69	Oral cavity (n = 44), Alveolar mucosa (n = 20), Buccal mucosa (n = 13), FOM/ tongue (n = 11), Glottis and supraglottis (n = 8)	Surgery + Radiation	17 cases of recurrence
Takeda *et al.*,[10]	N = 2	M = 2	68 &72	FOM, soft palate	Surgery	No recurrence
Khan *et al.*,[11]	N = 1	F = 1	72	Lingual gingiva in anterior mandible	Surgery + RND	Recurrence after 3 months
Marques *et al.*,[13]	N = 1	F = 1	80	Tongue	Surgery + SOHND	No Recurrence after 6 months
Russell *et al.*,[6]	N = 52	M = 36 F = 16	38 to 84	Laryngopharynx (n = 19) oral mucosa (n = 18) sinonasal tract (n = 8) oropharynx (n = 7)	Surgery + Radiation	30 cases recurrence
Y. Ding *et al.*,[16]	n=12	M=5 F=7	53 to 83	Buccal mucosa (n = 4), Gingiva (n = 3), Lower lip (n = 2), Palate (n = 1), Tongue (n = 1), FOM (n = 1)	Surgery + SND	4 cases of recurrence, 3 dead of disease
Sarah G, Fitzpatrick *et al.*,[4]	N = 61	M = 33 F = 28	27 to 99	Maxilla gingiva (n = 39) Mandible gingiva (n = 22)	Surgery	Not available
Qi Xiaofeng *et al.*,[10]	N = 1	F	63	Buccal Mucosa	Surgery	No Recurrence after 3 years
K.P. Karthik *et al.*,[14]	N = 1	M	68	Palate	Surgery	Not Available

FOM- Floor of the Mouth; RND – Radical Neck Dissection; SOHND – Supramyohyoid Neck Dissection

likely manner to conventional type SCC. However, definitive stromal invasion was often difficult to assess due to minimal or absent stromal interface. Usually, stromal invasion is composed of one or numerous nests of tumor cells with rich lymphoplasmacytic cellular infiltration at the lamina propria adjacent to the lesion rather than within the lesion itself[6].

Morphologically, two distinct types of PSCC were identified: (1) a Keratinizing (K) type, in which the epithelium showed dysplastic changes with lesser surface para keratinization; and (2) a Non-Keratinizing (NK) type, in which the papillary projections were covered with immature basaloid cells[3]. Terada has reported a case of PSCC showing acantholytic and pseudovascular features in the oral cavity[7]. Depending on the differential growth pattern of PSCC he puts forth a clinical and histopathologic differential diagnosis varying from solitary papilloma to verrucous carcinoma.

Clinically, differentiating VC and OPSCC can be very challenging as both present as exophytic and papillary tumors. Microscopically, verrucous carcinoma is distinguishable from PSCC by its lack of cellular atypia, marked surface keratinization and the presence of advancing, pushing and well-demarcated margins, absence of absolute stromal invasion and lymph node metastasis[8]. However, both VC and PSCC show prominent koilocytic cells with dark pyknotic nuclei.

Oral papillary squamous cell carcinoma is a rare malignant epithelial tumor and oral squamous papilloma is a common benign epithelial tumor. Squamous papilloma shows well-demarcated hyperparakeratotic epithelium with no cytologic atypia in papillary fronds, whereas papillary squamous cell carcinoma exhibits immature basaloid cells, marked nuclear pleomorphism, numerous atypical mitotic figures in exophytic papillary projections with fibrovascular cores[9].

Sinonasal or Schneiderian papillomas are benign epithelial neoplasms arising from sinonasal (Schneiderian) mucosa that are related with three major

characteristic features: Tendency for recurrence, capability for local destruction, and interlink with squamous cell carcinoma is observed as the most common differential diagnosis of PSCC[7]. However, Sinonasal papillomas exhibit an ectodermally derived epithelium comprising of respiratory-type pseudostratified ciliated columnar epithelial cells, inconspicuous basal cells, and variable admixed mucus-producing goblet cells.

Takeda *et al.,* stated that PSCC has shown a high proliferative Ki-67 labelling index (53.2-59.0 %), nearly identical to that of SCC (56.770.4%), in contrast to Verrucous carcinoma with a remarkably low proliferative index (24.6-30.6 %). He concluded that PSCC, conventional SCC, and micro-invasive SCC showed no significant difference in expression for Ki-67 activity[10]. Table 1 summarizes previously reported cases of PSSC in the literature.

It is currently suggested that non-invasive PSCC can be treated by complete surgical excision and invasive PSCC, based on the stage of the invasive component which may even include additive radiotherapy and/or chemotherapeutic intervention. Generally, PSCC shows low/moderate grade of malignancy. So, it is assumed that distant metastasis of PSCC is very scarce and the prognosis is good[2,3,5].

4. Conclusion

It is crucial for the pathologist to differentiate PSCC from conventional SCC. Also, PSCC has a better prognosis than the conventional SCC despite no significant difference in the proliferative index among the two. Eventually, treatment modalities can be modified based on the overall prognosis of PSCC.

5. References

1. Pathak J, Swain N, *et al.* Histopathological variants of oral squamous cell carcinoma-institutional case reports. Oral Maxillofac Pathol. 2014; 18(1):143-5. https://doi.org/10.4103/0973-029X.131945 PMid:24959057 PMCid: PMC4065435
2. Singh J. Histopathology of oral squamous cell carcinoma-Review. TMU J Dent. 2014; 1(4):141-4.
3. Mehrad M, Carpenter DH, *et al.* Papillary squamous cell carcinoma of the head and neck: Clinicopathologic and molecular features with special reference to human papillomavirus. Am J Surg Pathol. 2013; 37(9):1349-56. https://doi.org/10.1097/PAS.0b013e318290427d PMid:23797720 PMCid:PMC3903508
4. Fitzpatrick SG, *et al.* Papillary variant of squamous cell carcinoma arisingon the gingiva: 61 cases reported from within a larger series of gingival squamous cell carcinoma. Head Neck Pathol. 2013; 7 (4):320-6. https://doi.org/10.1007/s12105-013-0444-1 PMid:23620148 PMCid:PMC3824797
5. Xiaofeng Q, Wei H, *et al.* Papillary squamous cell carcinoma of the cheek. J Craniofac Surg. 2016; 27:4. https://doi.org/10.1097/SCS.0000000000002681 PMid:27228376
6. Russell JO, Hoschar AP, *et al.* Papillary squamous cell carcinoma of the head and neck: a clinicopathologic series. Am J Otolaryngol. 2011; 32:557-63. https://doi.org/10.1016/j.amjoto.2010.09.010 PMid:21035908
7. Terada T. Papillary squamous cell carcinoma of the oral cavity with acantholytic and pseudovascular features. Int J Clin Exp Pathol. 2011; 4(8):794-6.
8. Alfio ferlito *et al.* Clinicopathological consultation papillary squamous cell carcinoma versus verrucous squamous cell carcinoma of the head and neck. Ann Otol Rhinol Laryngol. 1999; 108(3):318-22. https://doi.org/10.1177/000348949910800318 PMid:10086629
9. Bao Z, *et al.* Clinicopathologic features of oral squamous papilloma and papillary squamous cell carcinoma: A study of 197 patients from eastern China. Ann Diagn Pathol. 2012; 16:454-8 https://doi.org/10.1016/j.anndiagpath.2012.04.001 PMid:22627075
11. Khan *et al.* Papillary squamous cell carcinoma presenting on the gingiva. J Periodontal. 2005; 76:12. https://doi.org/10.1902/jop.2005.76.12.2316 PMid:16332246
12. Ishiyama *et al.* Papillary squamous neoplasm. Laryngoscope. 1994; 104:1446-52. https://doi.org/10.1288/00005537-199412000-00004 PMid:7990632
13. Marques *et al.* Papillary squamous cell carcinoma of the tongue. Otolaryngol Head Neck Surg. 2009; 141:298-9. https://doi.org/10.1016/j.otohns.2009.02.004 PMid: 19643273