CASE REPORT

Carcinoma of the Gingiva Invading the Bone - A Clinico-radiographic Presentation

M. Mounika Reddy, M. L. Avinash Tejasvi, Aradhana Mavani, M. Julia Mary Rachel
Department of Oral Medicine and Radiology, Kamineni Institute of Dental Sciences, Narketpally, Telangana, India

Email for correspondence: mounikareddy.mekala18@gmail.com

ABSTRACT

Jawbones are the most common sites for epithelial cysts and tumors affecting the human skeleton. These lesions are thought to arise from the epithelium involved in odontogenesis; hence, they are designated as odontogenic cysts and tumors. Carcinoma of the oral cavity accounts for only 4% of all cancers, squamous cell carcinoma being the most frequent. Oral cancer is on the rise and worldwide is estimated to be the sixth most common cancer. The cause of oral squamous carcinoma is multifactorial, both extrinsic and intrinsic factors may be responsible. Unlike most head and neck cancers, alveolar ridge cancer is more common in women than in men. Here, in this case report, a 61-year-old female patient with a carcinoma of the alveolar ridge is presented.

Key words: Alveolar carcinoma, bone invasion, computed tomography, gingival carcinoma, oral cancer, oral squamous cell carcinoma

INTRODUCTION

Squamous cell carcinoma (SCC) of the oral cavity accounts for 4% of malignancies in men and 2% of malignancies in women, and is responsible for 3% of all cancer deaths.[1] The most common site of intraoral carcinoma is the tongue and lip vermillion. Other sites of involvement, in descending order of frequency are the soft palate, gingiva, buccal mucosa, labial mucosa, and hard palate. The lesions of the buccal mucosa and gingiva each account for approximately 10% of oral SCCs.[2] Gingival and alveolar ridge carcinomas usually are painless and most frequently arise from keratinized mucosa on a posterior mandibular site.[3] Although generally classified as a subset of oral SCC, gingival SCC is a unique malignancy and can mimic a multitude of other lesions, especially those of inflammatory origin. In addition, predisposing and presenting factors are different from those of other oral SCCs.[4] The bone invasion in carcinoma of the mandibular gingiva is one of the most important factors to determine the treatment planning and the prognosis, because the extent and pattern of bone invasion is associated with the outcome of the patients with carcinoma of the mandibular gingiva.[5] Here, in this case report, a 61-year-old female patient with a carcinoma of the alveolar ridge is presented.

Quick Response Code

Article Info:

doi: 10.5866/2023.13.10062

Received: 12-04-2023
Revised: 29-04-2023
Accepted: 20-05-2023
Available Online: 02-07-2023, (www.nacd.in)

CASE REPORT

A 61-year-old female patient was referred to the department of Oral Medicine and Radiology with a complaint of swelling on the left side of face after extraction of lower left back tooth region. The patient stated that the swelling had been present for more than 3 months and enlarged progressively after extraction to the present size. Patient's medical history and habit history were non-contributory. Extraoral examination revealed facial asymmetry extending from tragus of ear to angle of mandible antero-posteriorly and from 2 cm below infraorbital rim to 2 cm below the lower border of mandible supero-inferiorly on left side. On palpation the swelling was hard in consistency, non-fluctuant, non-compressible, and tender on palpation [Figure 1]. A solitary left submandibular lymph node was palpable, firm, and mobile tender measuring 2 × 2 cm.

Intraoral examination revealed elevated ulcero-proliferative growth on gingiva, extending from the left second premolar region to retromolar region [Figure 2]. The ulcero-proliferative growth was prone to bleeding, tender, fixed to underlying structures, and step deformity near angle of mandible when palpated.

Radiographic Examination

Pre-extraction orthopantomogram (OPG) showed bone loss extending from 33 to 1 cm distal to 37 antero-posteriorly and from alveolar ridge to 0.5 cm above lower border of mandible supero-inferiorly [Figure 3]. Cone-beam computed tomography (CBCT) scans showed hypodense area extending from 33 to angle of the mandible in the axial section [Figure 4]. Discontinuity of the lower border of mandible suggesting of pathological fracture is seen at the angle of the mandible is seen in reformatted Panoromic image [Figure 5]. Loss of both buccal and lingual cortical plates is seen

Figure 1: Clinical picture showing extaoral swelling on the left side of the face

Figure 2: Intraoral examination shows an ulcero-proliferative growth on the left gingiva extending to retromolar region

Figure 3: Pre-extraction orthopantomogram showing radiolucency extending from 33 to distal to 37 with floating tooth irt 37

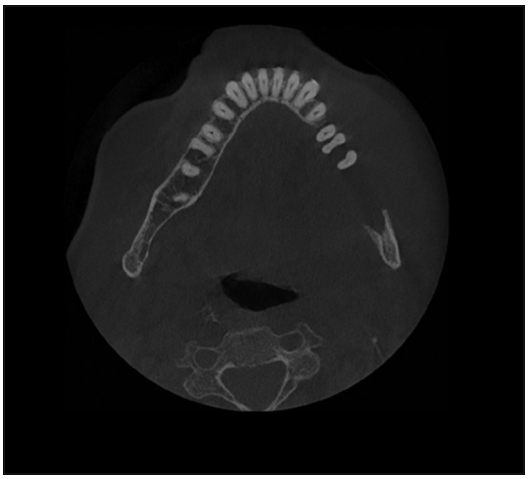

Figure 4: Axial section cone-beam computed tomography scan showing hypodense area in the left side of the mandible

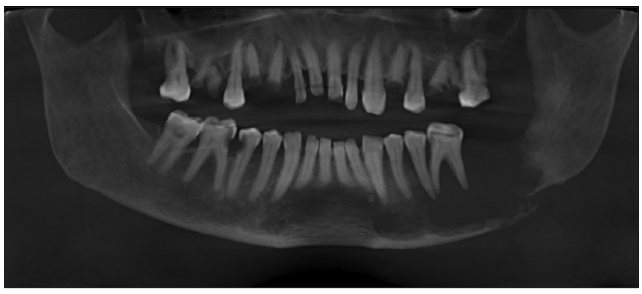

Figure 5: Reformatted panoromic image showing discontinuity of the lower border of mandible suggesting of pathological fracture, seen 1 cm away from the angle of the mandible

in sagittal section [Figure 6]. An incisional biopsy was performed and sent for histopathological examination.

Histologic Examination

Histologic examination revealed presence of parakeratinized stratified squamous epithelium with dysplastic features such as cellular, nuclear pleomorphism, nuclear hyperchromatism and mitotic figures. The connective tissue stroma showed islands and sheets of malignant epithelial cells invading into the underlying connective tissue stroma along with few individual cell keratinication and keratin pearl formation suggesting a diagnosis of moderately-differentiated SCC [Figure 7].

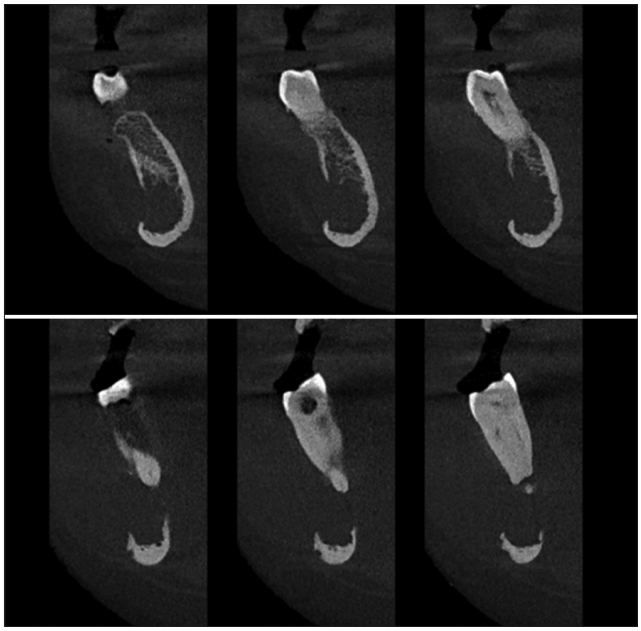

Figure 6: Sagittal section showing loss of both buccal and lingual cortical plates

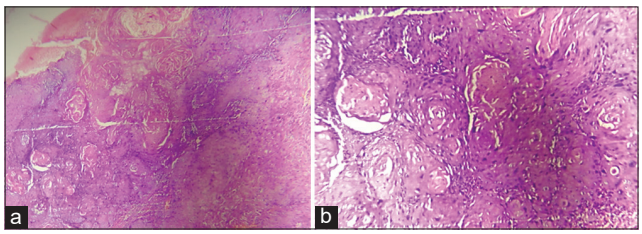

Figure 7: H and E stained sections shows overlying hyper parakeratinized stratified squamous epithelium with dysplastic features along with tissue stroma showing islands and sheets of malignant epithelial cells invading into the underlying connective tissue stroma with few individual cell keratinization and keratin pearl formation ([a] × 4 and [b] × 10)

DISCUSSION

Swearingen *et al.* (1966) characterized the radiologic appearance of carcinoma of the gingiva involving mandible into two types – "erosion" and "invasion." Erosion is described as U-shaped excavation of the medullary bone in shallower portion, or a punched-out or scalloped lesion usually along the superior margin of the alveolus. The cause of erosion is mainly the pressure of the gingival tumor, rather than the infiltration of tumor cells. Intraoral size of the tumor usually equals the measured size of the mandibular defect. The margins of the mandibular defect are smooth and the defect is lucent in radiographs. The term invasion should be applied only to actual infiltration of the tumor cells into the medullary bone. It is most often observed in rapidly growing tumors and small, diffuse patches of osseous degeneration in which spicules of bone are apparent in radiographs. Invasions are also characterized by poorly defined margin of the superior alveolar cortex. The more rapidly growing tumors produce an invasive mandibular defect which is generally much smaller than the intraoral lesions of the soft tissues.[3] The etiology of SCC remains unknown, but predisposing factors such as smoking associated with heavy alcohol use are well known.[6] Other habits have also been associated with SCC, such as chewing betel leaves and inverted smoking, practices commonly observed in India.[7] CBCT for detection of bone invasion due to carcinoma of the mandibular gingiva may be superior to that of whole body CT.[5] Momin *et al.* first used CBCT to assess mandibular invasion in the lower gingival carcinoma due its high spatial resolution and low radiation dose and the result was better than that of OPG.[8] From the present case report, it is clear that cone beam computed tomography is a sensitive tool and it has an acceptable range of specificity to detect mandibular invasion accurately.

CONCLUSION

Oral SCC of the gingiva is a rare entity that must be carefully diagnosed. Early recognition should be an attainable goal for most patients undergoing regular dental recall appointments. It is imperative for dental health care professionals as primary care providers of the gingiva, to include a cancer screening with every recall examination. At the same time, the evaluation of mandibular bone invasion in dental CBCT images is useful as a prognostic indicator for gingival carcinoma.

REFERENCES

1. Kramer D, Durham JS, Jackson S, Brookes J. Management of the neck in NO squamous cell carcinoma of the oral cavity. J Otolaryngol 2001;30:283-8.
2. Regezi JA, Sciubba JJ. Oral Pathology: Clinical Pathologic Correlations. 3rd ed. Philadelphia, PA: W.B. Saunders Co.; 1999. p. 69-79.
3. Swearingen AG, McGraw JP, Palumbo VD. Roentgenographic pathologic correlation of carcinoma of the gingiva involving the mandible. Am J Radiol 1966;96:15-8.
4. Barasch A, Gofa A, Krutchkoff DJ, Eisenberg E. Squamous cell carcinoma of the gingiva. A case series analysis. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 1995;80:183-7.
5. Nakayama E. Imaging diagnosis for bone invasion by gingival carcinoma of the mandible: The value and the limitation. Jpn Dent Sci Rev 2009;45:23-30.
6. Wallace ML, Neville BW. Squamous cell carcinoma of the gingiva with an atypical appearance. J Periodontol 1996;67:1245-8.
7. Misra S, Chaturvedi A, Misra NC. Management of gingivobuccal complex cancer. Ann R Coll Surg Engl 2008;90:546-53.
8. Momin MA, Okochi K, Watanabe H, Imaizumi A, Omura K, Amagasa T, *et al*. Diagnostic accuracy of cone-beam CT in the assessment of mandibular invasion of lower gingival carcinoma: Comparison with conventional panoramic radiography. Eur J Radiol 2009;72:75-81.