



A RARE SQUAMOUS CELL CARCINOMA OF MANDIBLE, MIMICKING CHRONIC OSTEOMYELITIS: CASE REPORT

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Abstract:

Oral cavity squamous cell carcinoma (SCC) is the most common malignancy of the head and neck, excluding non-melanoma skin cancer, accounting for 30% of all head and neck cancers. SCC accounts for approximately 90% of oral and oropharyngeal malignancies. (1) Of all head and neck squamous cell carcinomas (SCC), oral SCC with mandibular invasion has the highest local recurrence rates. the study by Langdon JD et.al. Shows 194 carcinomas of the oral cavity, tumours involving the mandibular alveolus had one of the highest recurrence rates (61.9%) and one of the lowest 5-year overall survival (25.8%). (2) The ratio between male and female is approximately 2:1. More prevalent areas for oral cancers include the tongue, oropharynx and floor of the mouth. These regions are less keratinized and more susceptible to carcinomas. Oral SCC spreads by local infiltration or metastasis to regional lymph nodes but distant metastasis is rare and maxillary lesions have a greater tendency to metastasize. (3)Alveolar ridge SSC comprised 9% of all patients with oral SCC according to a report by Ildstad et al.(4) The second position is accounted for by Alveolar ridge SSC, with the first being tongue carcinoma according to site-specificity.According to the local rate of recurrence by site, mandibular alveolus carcinoma has the maximum local rate of recurrence (26/42), the second being tongue carcinoma (20/47). Oral squamous cell carcinoma of the mandibular region is noticed to have the lowest rate of survival particularly in comparison to all other oral carcinomas. (5)

Keywords: Oral squamous cell carcinoma, Mandibular invasion, Mandibular resection, Osteomyelitis, cigarette smoking, tobacco.

Introduction

Oral cavity squamous cell carcinoma (SCC) is the most common malignancy of the head and neck, excluding non-melanoma skin cancer, accounting for 30% of all head and neck cancers. SCC accounts for approximately 90% of oral and oropharyngeal malignancies. (1) Of all head and neck squamous cell carcinomas (SCC), oral SCC with mandibular invasion have the highest local recurrence rates. the study by Langdon JD et.al. Shows 194 carcinomas of the oral cavity, tumours involving the mandibular alveolus had one of the highest recurrence rates (61.9%) and one of the lowest 5-year overall survival (25.8%). (2) The ratio between male and female is approximately 2:1. More prevalent areas for oral cancers include the tongue, oropharynx and floor of the mouth. These regions are less keratinized and more susceptible to carcinomas. Oral SCC spreads by local infiltration or metastasis to regional lymph nodes but distant metastasis is rare and maxillary lesions have a greater tendency to metastasize. (3)Alveolar ridge SSC comprised 9% of all patients with oral SCC according to a report by Ildstad et al.(4) The second position is accounted for by Alveolar ridge SSC, with the first being tongue carcinoma according to site-specificity.According to the local rate of recurrence by site, mandibular alveolus carcinoma has the maximum local rate of recurrence

(26/42), the second being tongue carcinoma (20/47). Oral squamous cell carcinoma of the mandibular region is noticed to have the lowest rate of survival particularly in comparison to all other oral carcinomas. (5)

Various examination tools are available for mandibular invasion is through clinical examination, thorough case history, radiographic examinations such as OPG, lateral ceph., CT scan, CBCT, MRI scan, Bone scintigraphy, PET scan etc., but histopathological examination is "gold standard" for diagnosis of mandibular invasion by OSCC.

It is well recognized and documented that tumours invading bone are unlikely to be cured by radiation therapy alone and require partial or hemimandibulectomy to provide adequate surgical margins. Lesions not involving bone, however, may be amenable to operations that spare mandibular continuity without affecting survival or recurrence rates. (6)

Two distinct histological patterns of mandibular invasion by oral squamous cell carcinoma have been described. The erosive pattern is characterized by a broad, expansive tumour front with a sharp interface between tumour and bone. In contrast, the infiltrative pattern is composed of nests of tumour cells with finger-like projections along an irregular tumour front. The erosive pattern of bone

invasion has been hypothesized to extend more predictably than the infiltrative pattern.(7)

CASE HISTORY:

52-year-old male patient, reported to the department of oral and maxillofacial surgery, K.D. Dental College & Hospital in the month of FEB. 2019,(FIG.2) with a chief complaint of non-healed extraction socket in mouth since 2 months & ulceration since 6months.

After a thorough case history, the patient revealed that he was chronic smoker & tobacco chewer for 30 years. he had a habit of cigarette smoking 4-5 cigarettes/ day over 30 years. Patient quit the habit 2 years ago. The patient noticed small growth over mucosa in lower left posterior back teeth region 6 months back. For which he visited a private dental clinic where the growth was excised.but after excision the growth reoccurred, for which the patient underwent extraction 2 months back. Upon palpation tenderness seen on the retro-molar region. Bleeding was also evident upon palpation from the ulcerated margin. submandibular lymph node of the involved site was palpable.(FIG.3)

The radiographic examination done using O.P.G. (FIG.1) showed radiolucency from the distal aspect of #46 which extends retro-molar trigone. The radiolucency also involves inferior alveolar nerve canal. From which radiographic diagnosis of chronic osteomyelitis was made. A full hemogram was requested, all the blood investigation report was within normal range except for the sedimentation level of erythrocytes, which was slightly elevated.

Based upon the case history, clinical examination, radiographic examination & blood investigation an incisional biopsy was planned. The patient was posted for surgical exploration under general anaesthesia. Both hard & soft tissue specimen were collected & sent for histopathological examination. (FIG.4)The operated site closed by primary closure done using horizontal mattress suture.but in follow up it showed absence of healing with ulceration causing failure of primary closure. (FIG.5) Which strongly suggest the diagnosis of neoplasm. Histopathological examination of the sections revealed ulcerated stratified squamous epithelium that shows hyperplasia & dysplastic changes overlying connective tissue stroma. The epithelium shows invasion with sheets of cords of atypical squamous cells extending deep into underlying connective tissue stroma. (FIG.6)The squamous cells show atypical changes like cellular & nuclear pleomorphism, hyperchromatism, altered nuclear-cytoplasmic ratio, few atypical mitosis, dyskeratotic cells & keratin pearls. The supporting stroma consists of collagenous tissue interspersed with sheets of atypical squamous epithelial cells ,keratin pearls & epithelial

pearls,blood vessels, extravasated RBCs and diffused inflammatory cell infiltrates.(FIG.7) from the given tissue specimen, features suggestive of well differentiated squamous cell carcinoma.

After confirmation of squamous cell carcinoma of gingiva by histopathological examination patient referred to Dharamsheela Narayan Cancer Institute Delhi for definitive treatment, where hemimandibulectomy was performed with radical neck dissection then mandibular reconstruction through free microvascular fibular graft. The patient was kept on a regular follow- up.



Figure 1: Orthopantomograph showing radiolucency from distal aspect of # 46 which extends retro-molar trigone. the radiolucency also involves inferior alveolar nerve canal.



Figure 2: showing pre operative occlusal view



Figure 3: preoperative intraoral view showing exposed greyish yellow bone along with bleeding ulcerative margin.

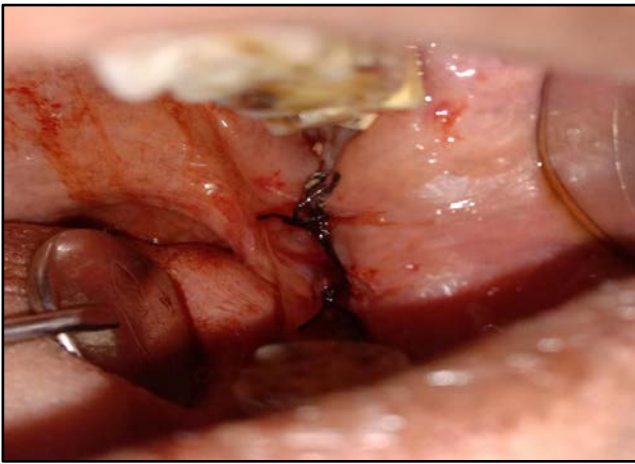


Figure 4: showing post operative, primary closure done using horizontal mattress suture



Figure 5: post operative 1 week follow up showing absence of healing with ulceration causing failure of primary closure.

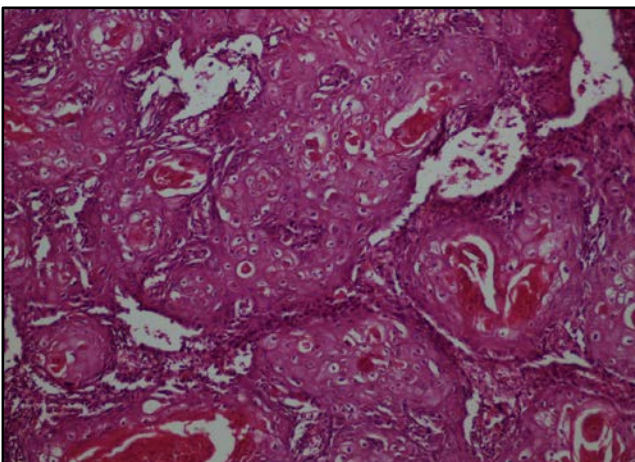


Figure 6: High power photomicrograph showing keratin pearls, cellular atypia, cytoplasmic vacuoles, indicating invasive squamous cell carcinoma

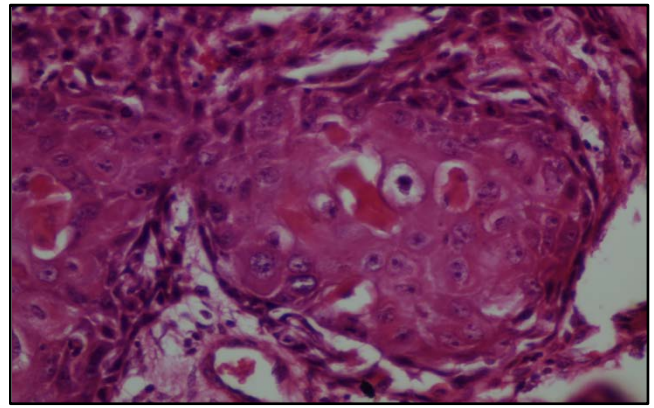


Figure 7: Photomicrograph showing hyperchromatism, altered nuclear cytoplasmic ratio, atypical mitosis, dyskeratotic cells (H&E stain, x100)

Discussion:

The majority of oral cancers involve the tongue, oropharynx, and the floor of the mouth. The lips, gingiva, dorsal tongue and palate are less common sites. Primary squamous cell carcinoma of bone is rare.(4) The extension of oral squamous cell carcinoma into the mandible classifies the tumor as stage IV and is considered an indicator of poor prognosis. studies have shown that once the carcinoma has invaded the mandible it may progress through the bone in an infiltrative, mixed, or erosive histological pattern.(7)

McGregor and MacDonald' first pointed out that "subsequent spread within the mandible usually appeared to be on a broad front, with tumor progressively filling the cancellous spaces." Slootweg and Muller found the presence of a rather sharp tumor bone interface with a pushing tumor margin in only 10 of 22 specimens.(8)

The use of tobacco in its various forms, including smokeless tobacco is considered to be the principal cause of oral cancers, particularly when linked to the use of excessive alcohol consumption. Tobacco and alcohol are known as risk factors for oral and oropharyngeal cancers. Tobacco comprises potent carcinogens such as nitrosamines (nicotine), polycyclic aromatic hydrocarbons, nitrosodichthanolamine, nitrosoprotein, and polonium. Nicotine is a powerful and addicting drug.(9) In our case patient gave history chronic smoking & tobacco chewing since 30 years. he had habit of cigarette smoking 4-5 cigarettes/ day over 30 years which is similar to review literature.

Gingiva carcinoma is an insidious disorder, doesn't have the clinical appearance of a malignant neoplasm, but is frequently misdiagnosed among the many other periodontal inflammatory lesions. Gingival carcinoma typically arises from keratinized mucosa, most often in the posterior mandible, where it destroys the underlying bone

structure causing tooth mobility.(10) Signs and symptoms of chronic osteomyelitis and malignancy of the jaws can often be similar, posing a challenge in diagnosis for the clinician. Both entities can cause localized, prolonged swelling, pain and draining sinuses. Radiographic changes associated with osteomyelitis and malignant disease may be similar in appearance characterized by a moth-eaten appearance on plain and panoramic views.(11)

As squamous cell carcinoma of gingiva is rare & pt didn't come to us before extraction features of neoplasm could not be assessed, so we ruled out squamous cell carcinoma at the time of differential diagnosis.as there was a presence of exposed bone due to non-healing with a history of extraction 2 months back differential diagnosis of chronic osteomyelitis were made.

Histopathological picture of lesion is described as, the epithelium shows invasion with sheets cords of atypical squamous cells extending deep into underlying connective tissue stroma. The squamous cells shows atypical changes like cellular & nuclear pleomorphism, hyperchromatism, altered nuclear cytoplasmic ratio, few atypical mitoses, dyskeratotic cells & keratin pearls. The supporting stroma consists of collagenous tissue interspersed with sheets of atypical squamous epithelial cells, keratin pearls & epithelial pearls, blood vessels, extravasated RBCs and diffused inflammatory cell infiltrates. from the given tissue specimen, features suggestive of well differentiated squamous cell carcinoma.

Metastasis is a common sequel of gingival carcinoma. Mandibular gingival carcinoma metastasizes more frequently than maxillary gingival cancer. Metastasis from carcinoma of the mandibular gingiva have a predilection for the cervical lymph nodes of the submandibular triangle and the upper jugular regions. Approximately 13 percent of carcinomas are diagnosed with the second primaries, although the most are earlier stage lesions. Ilstad et al. reported a 66% 2- year and 49% 5- year overall survival.(4)Treatment of squamous cell carcinoma is primarily a surgical excision followed by radiation therapy and chemotherapy as postoperative adjunct treatment modalities. The composite resection or "Commando" operation with segmental or hemi mandibulectomy has been the mainstay of surgical treatment for oral cancers for many decades.(6) whereas Hellmuth Miiller et.al. stated that a substantial percentage of patients with squamous cell carcinoma of the oral cavity, mandible sparing surgery can be done without concession to radicality, not only in patients where the tumour is freely movable about the adjacent bone, but also in patients with tumours fixed to the mandible.(11) In our situation, hemimandibulectomy with radical dissection of the neck with mandibular reconstruction through free fibular microvascular graft has been performed.

Conclusion:

Even though squamous cell carcinoma is most common neoplasm, it has varied oral signs & symptoms. Many times it mimics most common oral lesions such as granuloma, oral ulcers, chronic osteomyelitis, periodontal infections etc.Hence clinicians must know various features of squamous cell carcinoma. Extension of squamous cell carcinoma into mandible refers to poor prognosis & survival hence early diagnosis & treatment is essential for avoiding poor prognosis & survival rates.When making a diagnosis of such oral lesion, squamous cell carcinoma should be considered in differential diagnosis & oral lesions that do not respond normally to routine therapy for more than 2 weeks, should be biopsied to rule out the malignancy.

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