

## An Invasive Squamous Cell Carcinoma of Mandible Presenting as Chronic Osteomyelitis: A Case Report

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### Abstract

A systematic approach for the diagnosis of oral squamous cell carcinoma is important because of the poor overall 5-year survival rate. Patients with chronic swelling of the head and neck, even in the presence of pain or drainage, may have a malignant neoplasm. This is particularly germane when appropriate treatment for a presumed infection (including culture guided antibiotic therapy) elicits limited or no clinical improvement. This article describes a case of invasive squamous cell carcinoma of the mandible that presented with features suggestive of chronic osteomyelitis.

**Keywords:** Invasive Carcinoma; Squamous Cell Carcinoma; Chronic Osteomyelitis; Mandible; Radiographic Confusing Picture

### Introduction

Osteomyelitis is an inflammatory disease of the bone that usually begins as an infection of the medullary cavity, rapidly involves the haversian system, and quickly extends to the periosteum of the area. It occurs more frequently in mandible than in the maxilla and is often associated with suppuration and pain [1]. The osseous spaces are usually filled with exudates that can lead to pus formation. Chronic osteomyelitis can be the result of a non-treated acute mild inflammation or emerge after a chronic odontogenic infection or for a variety of other reasons such as trauma, inadequate treatment of fracture, or irradiation to the mandible or without a precursor. When osteomyelitis occurs in the mandible, it is usually more diffused and widespread [1-6]. Clinical examination alone is often enough to diagnose chronic mandibular osteomyelitis due to the progression of this disease and suppuration [1,2]. In cases of chronic osteomyelitis, a radiolucent circumscribed image can be seen encapsulating central radiopaque sequestra, as well as radiopacities of the surrounding bone due to a local osteogenic reaction [7]. When antimicrobial agents or drainage prove unsuccessful, acute osteomyelitis may become chronic. We present a rare case of squamous cell carcinoma arising from chronic suppurative osteomyelitis associated with a draining extraoral sinus.

### Case Report

A 56 years old male patient reported to our department with the chief complaint of pain and pus discharge from the chin region since 5 - 6 months. On palpation soft, fluctuant, painful swelling of 2

x 4 cm extending anterioposteriorly from mid symphysis to corner of mouth and superioinferiorly 4 cm below lower lip to 2cm below the lower border of mandible along with a draining fistula present on left side of lower border of mandible (Figure 1). Overlying skin was reddish in colour and ulcerative in appearance. Submental and submandibular lymph nodes were slightly palpable. Patient had a history of chronic tobacco chewing since 15-16 years. Medical history and family history were non-contributory.



**Figure 1:** Extraoral picture showing sinuses.

Intraorally mandibular anterior teeth were periodontally compromised and grade three mobile. Grade three stains and calculus was present.

Radiographically, orthopantomogram revealed mixed radiolucent and radio opaque area extending from mandibular first premolar of third quadrant to first premolar of fourth quadrant with sclerosed borders (Figure 2).



Figure 2: OPG showing mixed radiolucent and radio opaque picture.

Based on the clinical and roentgenographic findings a presumptive, preoperative diagnosis of chronic osteomyelitis was made. Extraction of mandibular anterior teeth and an extraoral incisional biopsy was done and 1.5 cm x 1.0 cm piece sent for histopathological examination.

Histopathologically, the lesion showed nests and cords of large, atypical cells with pale eosinophilic cytoplasm and pleomorphic, hyperchromatic nuclei with numerous abnormal mitotic figures. Keratin formation was present in some areas. The connective tissue stroma exhibited foci of dense lymphocytic infiltrate. Background showed chronic inflammatory granulation tissue. The overall features confirmed grade II squamous cell carcinoma (Figure 3).

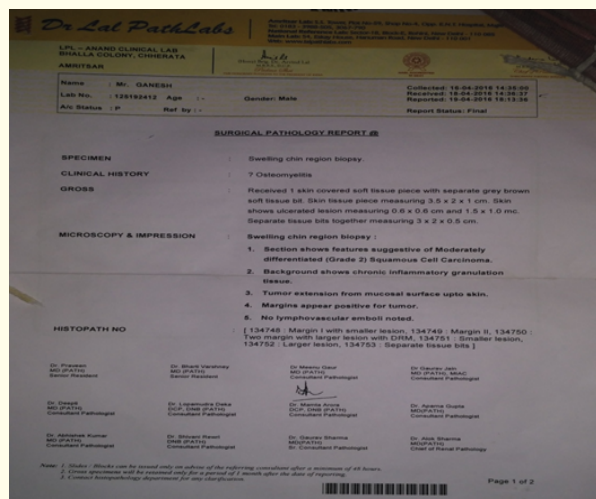


Figure 3: Histopathological report.

Discussion

Primary intraosseous carcinoma of the jaws, as defined by WHO, is a squamous cell carcinoma arising within the jaws, presumably from odontogenic epithelial remnants [8].

Signs and symptoms of chronic osteomyelitis and malignancy of the jaws can often be similar, posing a challenge in diagnosis for the clinician [9,10].

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 plane and panoramic views.

Clinical differential diagnosis of lesions of the maxillofacial region that present with pain may be difficult, with diagnostic confirmation not possible until microscopic examination is performed. This patient had significant risk factors for the development of squamous cell carcinoma, since he had a history of tobacco consumption for the last 15 - 16 years, however, clinical examination failed to show mucosal lesion in the affected region. The clinical and radiographic appearance suggested chronic osteomyelitis, with some response to therapy directed towards this presumptive diagnosis. The partial remission of this patient’s symptoms was seen after extraction, incision and drainage and antibiotic therapy. This further obscured the definitive diagnosis as culture sensitivity tests revealed the presence of *Klebsiella pneumoniae* as a causative agent and it came out to be sensitive for the empirical antibiotics that we had started. Later, incisional biopsy under local anaesthesia was done and 1.5 cm x 1 cm piece sent in formalin for histopathological examination. The biopsy report revealed stage II squamous cell carcinoma.

Radiographic changes associated with osteomyelitis and malignant disease may be similar in appearance characterized by a moth-eaten appearance on plan and panoramic views and cortical bone destruction on plane films and CT. However, malignancies are typically more localized eroding adjacent teeth and the contents of the inferior alveolar neurovascular canal.

Technetium 99 bone scintigraphy has been useful for detecting regions of osteoblastic activity that may be associated with both chronic osteomyelitis and malignancies of bone [11]. In both processes the extent of technetium uptake generally exceeds the radiographic extent of the lesion, although the size of actual lesion is smaller than the image produced by the scan. However, a bone scan may demonstrate poor uptake (a cold spot) if the regional blood supply is compromised by thrombosis or periosteal necrosis. This may be indicative of rapid aggressive growth, therefore, differentiation of malignancy from chronic osteomyelitis by conventional radiography or bone scanning may be difficult because of the similar appearance of such lesions.

Gallium-67 radionuclide studies are thought to be beneficial for identifying regions of inflammation as gallium uptake sites are associated with leukocytic uptake and with several proteins found in regions with inflammation [12]. Gallium scans have been shown to identify regions of acute head and neck infection with somewhat less correlation in chronic infection. However, gallium uptake is relatively nonspecific, and also occurs in nasal and oral mucosa, lacrimal and salivary glands, spleen, marrow, liver, and regions of inflammation not associated with infection. Additionally, poor sensitivity has been noted for head and neck tumors.

Indium 1-labeled leukocytes have been reported to be more specific markers of regions of inflammation, with less accumulation in other regions. However, indium labeled leukocytes have been thought to be no more specific than gallium for identification of chronic osteomyelitis [12]. The use of technetium scintig-

raphy and gallium scanning together in maxillofacial lesions has been shown to be of value for differentiation of chronic osteomyelitis from other processes. A negative  $^{99}\text{Tc}$  scan mitigates against malignancy or osteomyelitis, whereas a positive technetium and gallium scan (or indium labeled leukocyte) may be suggestive of osteomyelitis. A positive technetium scan with an equivocal or negative gallium/indium scan may indicate a neoplasm, infection with little inflammation, or a healing bone. The use of gallium scanning or labeled leukocytes for diagnostic imaging of this case may have been of diagnostic benefit, although acute inflammation associated with necrosis and purulence at the tumor site may have caused a positive gallium or indium uptake, further obscuring the diagnosis.

Clinical differential diagnosis of lesions of the maxillofacial region that present with pain may be difficult. This particular case had significant risk factors for the development of squamous cell carcinoma, but the obvious clinical and mimicking radiographic picture of the lesion made it difficult to make a definitive diagnosis. Furthermore, the temporary remission period after extraction and incision drainage and a positive response to given antibiotic therapy, made it look more like chronic osteomyelitis than malignancy.

Management of similar lesions should include evaluation for malignancy to avoid a delay in diagnosis.

### Conclusion

Clinical differential diagnosis of lesions of the maxillofacial region that present with pain may be difficult, with diagnostic confirmation not possible until microscopic examination is performed. The difficulty of diagnosis of chronic painful maxillofacial lesions illustrates the need for a high degree of suspicion concerning any inflammatory lesion not responding to appropriate therapy. Accurate diagnosis and treatment of such lesions most often necessitates microscopic examination.

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