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Non-Hodgkin Lymphoma Mimicking an Antibioma Following Dental Extraction

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ABSTRACT

Non-Hodgkin lymphoma (NHL) comprises a heterogeneous group of lymphoid malignancies with clinical behaviour ranging from indolent to highly aggressive. These neoplasms arise from lymphoid cells at different stages of differentiation, and their biological characteristics reflect their cellular origin. Intraoral NHL is uncommon and may involve either the jaw bones or the soft tissues of the oral cavity. We report the case of a 54-year-old man who presented with persistent buccal space swelling following extraction of the mandibular right second molar (tooth 47) for presumed odontogenic infection. Despite antibiotic therapy, the swelling progressively increased in size and was associated with the development of lower-lip paresthesia. An initial clinical diagnosis of antibioma was made; however, the persistence and progression of the lesion prompted further investigation. Histopathological examination and immunohistochemical analysis established a diagnosis of diffuse large B-cell lymphoma (DLBCL). This case highlights the importance of considering malignant disease in the differential diagnosis of persistent or progressive orofacial swellings, particularly when presumed odontogenic lesions fail to respond to appropriate treatment or are accompanied by neurosensory disturbances.

Keywords: Non-Hodgkin lymphoma; diffuse large B-cell lymphoma; oral lymphoma; buccal space; dental extraction; paresthesia; antibioma

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INTRODUCTION

Orofacial swellings are frequently encountered in dental practice and are most commonly associated with odontogenic infections. An antibioma is an uncommon inflammatory lesion characterized by persistent induration or swelling following inadequately resolved infection despite antibiotic therapy. Although an odontogenic infection may initially appear to be the most likely diagnosis, lesions that persist or progress despite appropriate treatment require careful reassessment and consideration of alternative diagnoses.

Malignant neoplasms, including NHL, may present with clinical features that closely resemble dental infections, potentially resulting in delayed diagnosis and treatment. (3) Oral and maxillofacial lymphomas may involve the jaw bones or soft tissues and can present as painless swelling, tooth mobility, pain, ulceration, or neurosensory disturbances.

Lymphomas are a heterogeneous group of malignant neoplasms of the lymphoid system, with clinical behaviour ranging from relatively indolent to highly aggressive. They are broadly classified into Hodgkin lymphoma and non-Hodgkin lymphoma (NHL), with NHL comprising numerous distinct entities based on cellular morphology, immunophenotype, genetic characteristics, and clinical behaviour.

The pathogenesis of NHL is complex and involves genetic and epigenetic alterations affecting lymphoid cells, together with dysregulation of immune responses and interactions between malignant cells and their microenvironment. Chronic antigenic stimulation may promote sustained B-cell proliferation and increase the likelihood of genetic errors, particularly during immunoglobulin gene rearrangement and somatic hypermutation. Such alterations may contribute to the development and progression of B-cell lymphomas. (2)

We report a case of diffuse large B-cell lymphoma (DLBCL) presenting as a persistent buccal space swelling following dental extraction and initially diagnosed as an antibioma. The case emphasizes the importance of maintaining a high index of suspicion for malignancy in patients with persistent or atypical orofacial swellings.

CASE REPORT

A 54-year-old man presented with a chief complaint of swelling of the right cheek following dental extraction. One week earlier, the patient had undergone extraction of the mandibular right second molar (tooth 47) at another hospital for presumed odontogenic infection associated with buccal space swelling. He had subsequently received a one-week course of antibiotic.

On clinical examination, a diffuse swelling measuring approximately 2 × 2 cm was noted in the right buccal space adjacent to the healing extraction socket of tooth 47 (Figure 1). The swelling was firm to hard in consistency and non-tender. The extraction socket appeared to be

healing without obvious evidence of residual infection.

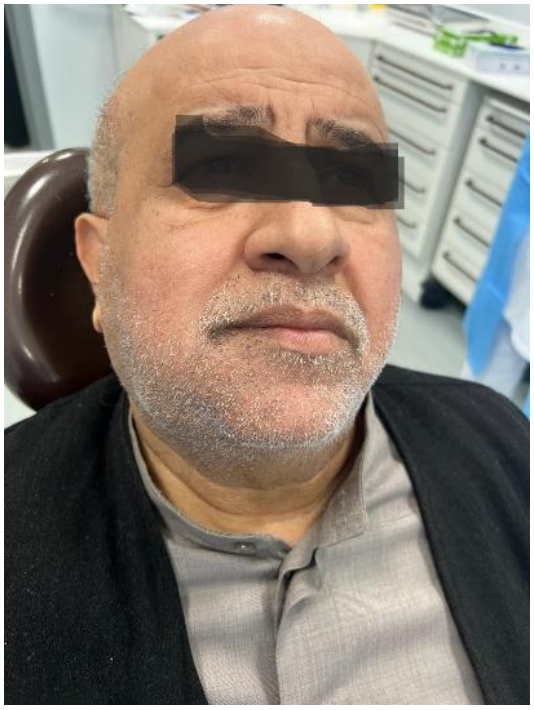

Figure 1: Facial edema and a diffuse swelling measuring approximately 2 × 2 cm was noted in the buccal space in relation to the healing socket of tooth 47. The swelling was hard in consistency and non-tender.

Panoramic radiography demonstrated the extraction socket without evidence of retained root fragments, significant periapical pathology, or cortical bone destruction (Figure 2). Based on the clinical history and examination findings, a provisional diagnosis of antibioma was made. The patient was prescribed appropriate medication and advised to return for follow-up.

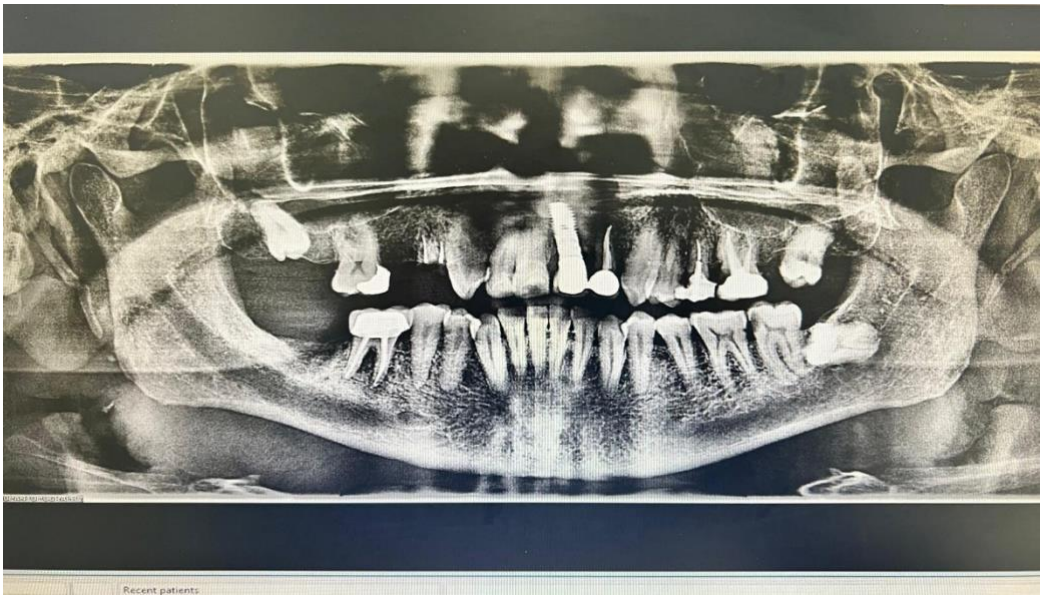

Figure 2: Panoramic radiography demonstrated the extraction socket without evidence of retained root fragments, significant periapical pathology, or cortical bone destruction.

At follow-up one week later, the swelling had increased in size and remained firm to hard and non-tender. The patient additionally reported numbness of the lower lip on the affected side. Cone-beam computed tomography (CBCT) did not demonstrate substantial osteolytic destruction or other definitive radiographic features suggestive of malignancy (Figure3). Nevertheless, the progressive enlargement of the lesion, its indurated consistency, and the development of paresthesia raised concern for a non-odontogenic pathological process.

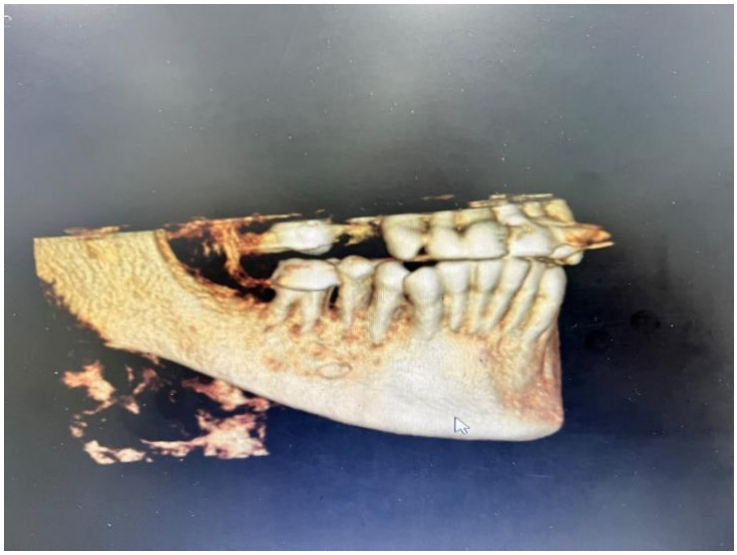

Figure 3: computed tomography (CBCT) did not demonstrate substantial osteolytic destruction or other definitive radiographic features suggestive of malignancy.

An incisional biopsy was therefore performed under local anesthesia. Histopathological examination revealed tissue fragments infiltrated by malignant lymphoid cells of medium-to-large size, with hyperchromatic and pleomorphic nuclei. The cells were arranged predominantly in sheets and infiltrated between skeletal muscle fibers .

Immunohistochemical examination demonstrated tumour-cell positivity for CD20 and CD30, with focal positivity for CD10 (Figure 4,5,6,7). The Ki-67 proliferative index was greater than 95%. Based on the histomorphological and immunophenotypic findings, a final diagnosis of diffuse large B-cell lymphoma (DLBCL), a subtype of NHL, was established.

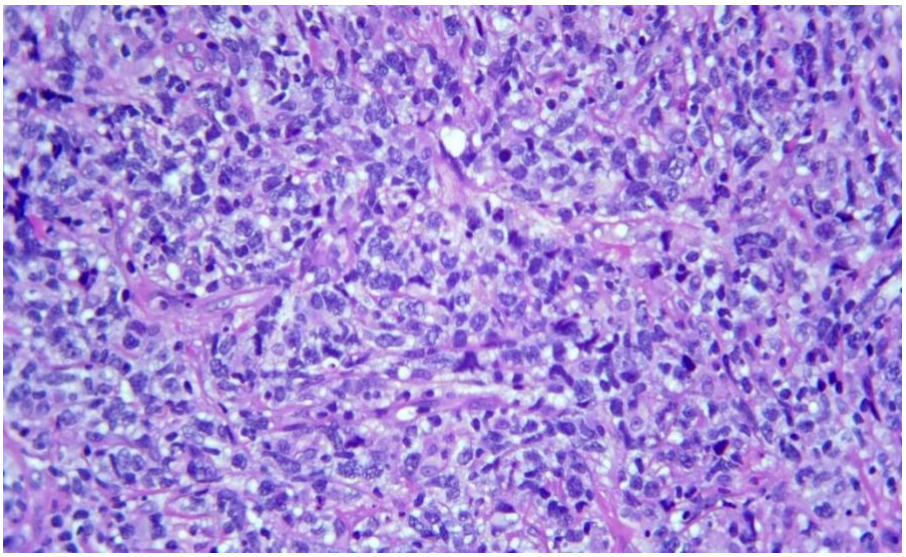

Figure 4: Atypical lymphoid cell infiltrate composed of large- to moderate-sized cells with vesicular nuclei and single to multiple nucleoli (haematoxylin-eosin stain, ×200).

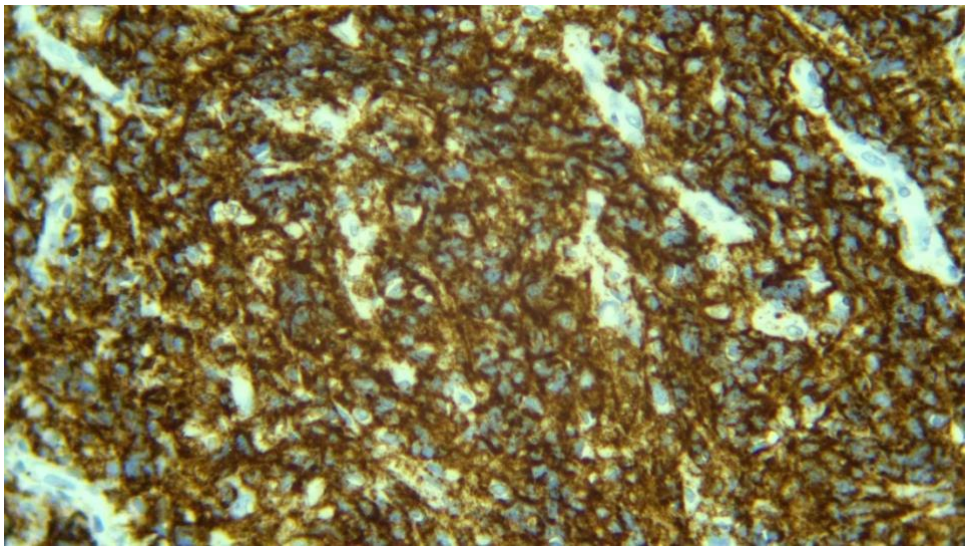

Figure 5: Atypical lymphoid cells positive for CD45 immunostain (CD45 stain, ×100).

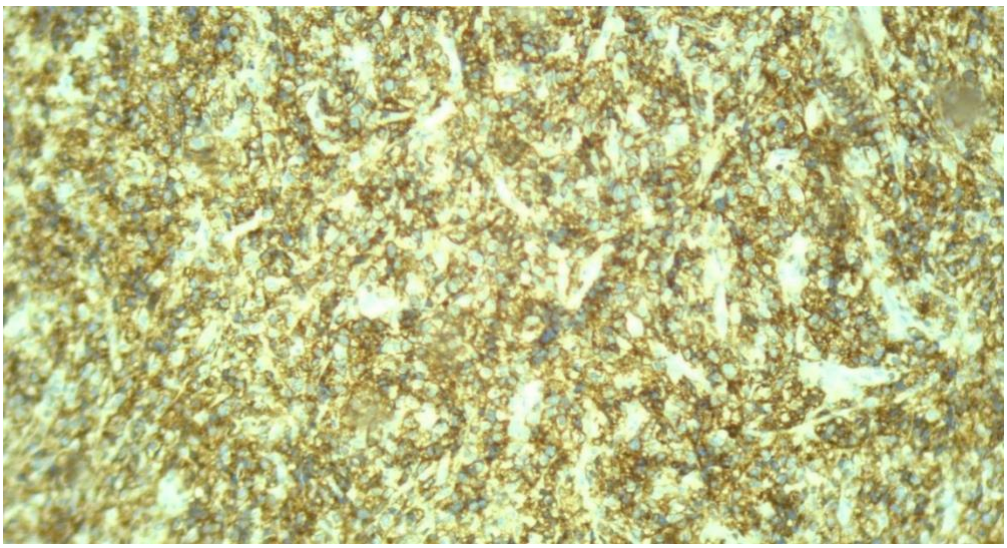

Figure 6: Non-Hodgkin large B-cell lymphoma showing diffuse positivity for CD20 immunostain (CD20 stain, ×200).

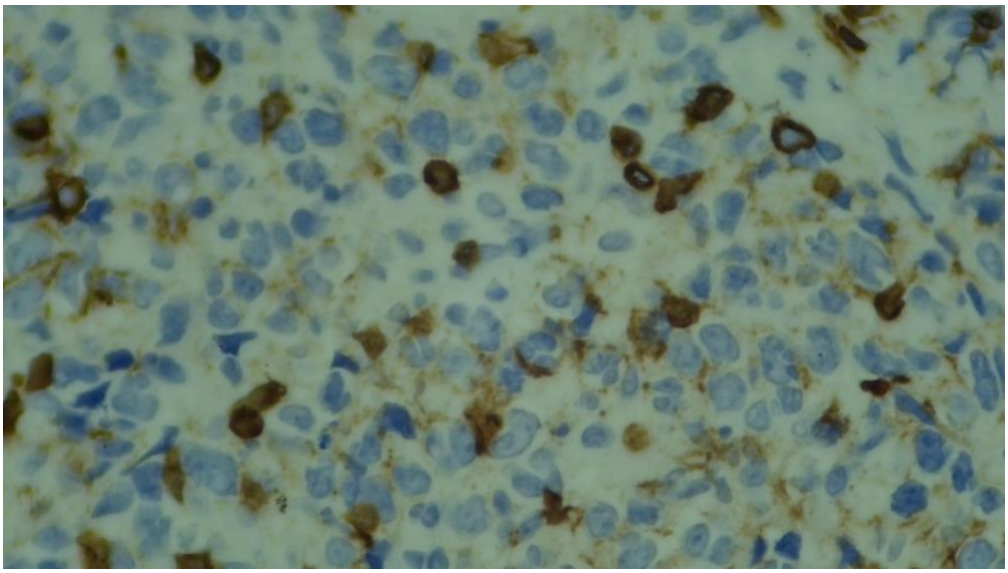

Figure 7: Non-Hodgkins Large B cell lymphoma, negative for CD3 immunostain. (CD3 stain. X400)

The patient was subsequently referred to the appropriate oncology/haematology service for further evaluation, staging, and management.

DISCUSSION

NHL involving the orofacial region may arise primarily within the jaw bones or involve extranodal soft tissues. Common intraoral sites include the gingiva, palate, buccal mucosa, and oral vestibule. Clinical manifestations are variable and may include painless swelling, tooth mobility, ulceration, unexplained dental pain, and, in cases involving the jaws or adjacent neural structures, paresthesia. Radiographic findings may range from subtle or nonspecific changes to extensive osteolytic destruction. (3)

Oral lymphomas account for a relatively small proportion of lymphoid malignancies and are reported more frequently in middle-aged and older men. (7) DLBCL is the most common histological subtype of NHL and is characterized by an aggressive clinical course and a high proliferative rate. The markedly elevated Ki-67 proliferative index (>95%) in the present case is consistent with the aggressive biological behaviour of the tumour.

A major diagnostic challenge in oral NHL is its ability to clinically mimic common odontogenic conditions. Patients may initially present with swelling or pain following dental infection or extraction, leading clinicians to consider an abscess, periodontal infection, postoperative infection, or other inflammatory conditions. In the present case, the lesion was initially interpreted as an antibioma because of its persistence following extraction and antibiotic therapy. However, the subsequent increase in swelling despite treatment and the development of lower-lip paresthesia were important warning signs of an alternative pathological process.

The absence of marked radiographic abnormalities should not be interpreted as evidence against malignancy. In the present case, panoramic radiography and CBCT did not demonstrate substantial osteolytic destruction. Nevertheless, the clinical progression of the lesion and the emergence of a neurosensory deficit prompted biopsy. This emphasizes the importance of correlating radiographic findings with the clinical course rather than relying solely on imaging.

Several reports have described cases of primary lymphoma of the mandible or oral cavity initially presenting as odontogenic disease. Parrington *et al.* reported a case of primary mandibular lymphoma presenting after tooth extraction. (6) Similarly, Gusenbauer *et al.* emphasized that malignant lymphoma should be included in the differential diagnosis of unexplained dental pain and swelling. (5) The present case further illustrates the diagnostic difficulty that may arise when a lymphoma develops in the context of a recent dental extraction and demonstrates minimal radiographic bone destruction.

Certain clinical features should raise suspicion for an underlying malignant process. These include progressive enlargement despite appropriate antimicrobial therapy, persistent induration, unexplained tooth mobility, failure of an extraction socket to heal normally, unexplained pain, ulceration, and particularly the development of paresthesia or other neurosensory abnormalities. In such circumstances, further diagnostic evaluation, including imaging and tissue biopsy, should be undertaken without unnecessary delay.

Once NHL is diagnosed, accurate staging is essential for determining prognosis and guiding treatment. Staging incorporates the primary site, extent of local involvement, nodal disease, extranodal involvement, and systemic dissemination. In the present case, the diagnosis of DLBCL necessitates comprehensive staging and systemic evaluation to determine the extent of disease and establish an appropriate treatment plan. The prognostic implications of localized extranodal NHL depend on histological subtype, tumour biology, patient-related factors, and response to therapy. Therefore, survival estimates should be interpreted in the context of the specific lymphoma subtype and contemporary staging and treatment criteria.

This case reinforces an important principle in oral and maxillofacial diagnosis: clinical progression should take precedence over an initial presumptive diagnosis when the expected response to treatment does not occur**.** A lesion that persists or enlarges following apparently adequate treatment for an odontogenic infection should prompt reconsideration of the diagnosis and, when indicated, early biopsy.

CONCLUSION

Non-Hodgkin lymphoma, particularly DLBCL, may clinically mimic odontogenic infection and may present following dental extraction. The absence of significant radiographic bone

destruction does not exclude an underlying malignant process. Persistent or progressive swelling, induration, failure to respond to appropriate antimicrobial therapy, and the development of neurosensory symptoms such as paresthesia should be regarded as important clinical warning signs.

Early recognition and biopsy of atypical or non-resolving oral lesions are essential for establishing a timely diagnosis and initiating appropriate management. Dentists and oral and maxillofacial clinicians should therefore maintain a high index of suspicion for malignancy when the clinical course is inconsistent with a routine odontogenic infection.

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