allogenic bone grafting, MBL was observed in only one case with a large OAF on both sides of the maxilla) at 3 months after implant loading and at the final follow-up visit (3 years) compared with the time of implant fixture installation, whereas the MBL at the final visit compared with 3 months after loading was not significantly different. There were no signs of peri-implantitis, such as swelling, redness, bleeding on probing, increased probing depth, or exudate discharge around all implants. This can be explained by the long span of the bone-grafting area with no underlying bony support, the free end of the augmented bone on the mesial surface of most anterior implants, or stress-induced bone loss after implant loading.

CONCLUSION

Despite its limitations, such as a retrospective nature and limited sample size, the present study elucidated the proper management and considerations among OAF patients during the period from OAF closure to implant installation. The elimination of sinus infections using MESS is recommended before definitive OAF closure. Careful separate sinus membrane and oral mucosa closure with sequential bone grafting in between can ensure stable and predictable outcomes for subsequent implantation. The implant installation can be performed safely in the augmented maxilla using either autogenic or allogenic bone graft materials. An internal submerged implant with a tapered, threaded body, particularly one 7 mm in length, can be reliably installed in the augmented posterior maxilla after OAF closure.

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Unusual Presentation of Oral DLBCL Resembling a Canine Fossa Abscess

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The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Abstract: This report aims to describe a unique case of diffuse large B-cell lymphoma originating from the oral cavity, which presented with symptoms mimicking a canine fossa abscess. It emphasizes the importance of accurate differential diagnosis and appropriate treatment. A 64-year-old female patient visited the authors' clinic with a painful swelling in the left anterior region of the maxilla, persisting for 1 month. Initially, an abscess drainage procedure was performed, accompanied by extraction of the maxillary left canine and parenteral antibiotherapy. However, no improvement was observed during the follow-up appointment after 3 days. An incisional biopsy was then conducted under local anesthesia, leading to a histopathologic diagnosis of diffuse large B-cell lymphoma. The patient is currently under the care of the hematology department and receiving maintenance chemotherapy. Lymphomas occurring in the oral cavity are uncommon and may exhibit non-specific clinical features that resemble benign oral and dental conditions. Therefore, a comprehensive clinical evaluation is necessary to achieve an early and accurate diagnosis, with histopathologic examination being essential for suspicious lesions.

Key Words: Canine fossa abscess, diffuse large B-cell lymphoma, non-Hodgkin lymphoma

Lymphomas, particularly within the head and neck region, rank as the third most common malignancy, surpassed only by squamous cell carcinoma and salivary gland tumors.[1] They are typically divided into Hodgkin's lymphoma (HL) and non-Hodgkin's lymphoma (NHL) based on histopathologic criteria.[2] In the oral cavity, NHLs are most commonly seen in the Waldeyer's ring, although they can also affect other structures such as the tongue, buccal mucosa, mandible, and the floor of the mouth.[3,4] Oral lymphomas generally present as ulcerative lesions or swelling, often accompanied by symptoms like altered sensation, pain, or tissue discoloration.[5] The similarity of these symptoms to benign conditions, including periodontal disease or periapical infections, makes differential diagnosis critical.[6]

Diffuse large B-cell lymphoma (DLBCL), a subtype of NHL, is an aggressive malignancy accounting for ~30% to 40% of all NHL cases.[7] This cancer is typically seen in older adults, with the majority of cases diagnosed in individuals aged 60 or older.[8] DLBCL typically presents as rapidly enlarging masses in both nodal and extranodal sites, often associated with systemic symptoms. If left untreated, the prognosis is poor, with survival rates under 1 year.[9]

Infections involving the canine fossa, typically originating from the maxillary canine teeth, are another common cause of swelling and pain in the maxillary region.[5] These infections often present with facial swelling, obliteration of the nasolabial fold, and involvement of the upper lip and nasal wing.[10] Radiographically, these infections often manifest as periapical radiolucencies associated with the affected tooth. Initial treatment often involves drainage and antibiotic therapy, but persistent or unusual presentations warrant further investigation.[5]

This case report discusses an unusual presentation of primary DLBCL in the oral cavity, initially misdiagnosed as a canine fossa abscess, and highlights the importance of thorough differential diagnosis and histopathologic evaluation in such cases.

CASE REPORT

A 64-year-old female patient presented to the Oral and Maxillofacial Surgery clinic with a chief complaint of painful swelling in the left maxillary region, which had persisted for ~1 month. The patient denied any relevant medical history, including infectious diseases such as hepatitis or HIV/AIDS, and no lymphadenopathy was detected upon clinical examination. Extraoral evaluation revealed a noticeable swelling extending from the left maxilla toward the orbital floor, causing a deviation of the nasal dorsum to the right (Fig. 1A).

Intraorally, the patient exhibited poor oral hygiene, with extensive calculus buildup, deep periodontal pockets, and generalized periodontal disease leading to mobility in most teeth. Several carious lesions were also noted. A panoramic radiograph demonstrated a significant enlargement at the apex of the left maxillary canine (Fig. 1B). On the basis of these clinical findings, a provisional diagnosis of canine fossa abscess, secondary to deep caries, was made. Abscess drainage was performed by extracting the left maxillary canine, and parenteral antibiotic therapy was initiated. The patient was scheduled for follow-up.

However, after 3 days, no improvement in the swelling was observed. Consequently, an incisional biopsy was performed under local anesthesia from both vestibular and palatal sites to investigate further. During the procedure, bone destruction was noted in the palatal region, which had not been detected during the initial examination. Three tissue samples, each ~1 cm in diameter, were collected and sent for histopathologic analysis.

A computed tomography (CT) scan was ordered to evaluate the extent of the lesion. The CT scan revealed a mass occupying the left maxillary sinus, extending into the nasal cavity and left ethmoid sinuses. In addition, the nasal septum was deviated to the right, and destruction of the left palate was noted, extending to the roots of the teeth.

Histopathologic evaluation confirmed the diagnosis of DLBCL (Fig. 1C). Immunohistochemical staining revealed diffuse proliferation of large atypical lymphoid cells, consistent with DLBCL. Given the radiologic findings and histopathologic results, the patient was referred to an oncological hospital for further management. The patient is currently undergoing chemotherapy under the supervision of the hematology department, with close monitoring of her condition.

DISCUSSION

Lymphomas account for ~14% of all head and neck malignancies, and they are primarily classified into Hodgkin's and non-Hodgkin's lymphomas, with DLBCL being the most common subtype of the latter.[6] Despite its prevalence among non-Hodgkin lymphomas, DLBCL rarely presents with initial symptoms in the oral cavity, especially involving the maxilla or mandible.[1,4] The aggressive nature of

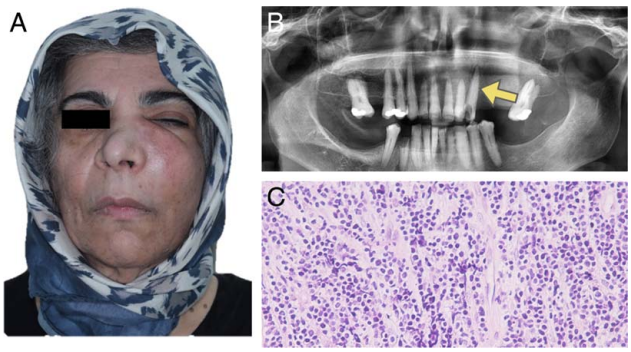

FIGURE 1. (A) The swelling in the left maxillary region extended to the orbital floor and deviated the nasal dorsum to the right side. (B) The panoramic radiograph showed significant apical enlargement of the left maxillary canine and a deep decay (C) immunohistochemical staining, original magnification ×200.

DLBCL underscores the need for early diagnosis, as delayed recognition can result in poor outcomes due to its rapid progression.[11]

The clinical presentation of DLBCL can vary greatly, often mimicking more common benign conditions such as periodontal infections, osteomyelitis, or squamous cell carcinoma.[2] In this case, the initial diagnosis was canine fossa abscess, a common odontogenic infection that typically arises from the maxillary canine tooth and presents with swelling in the infraorbital area.[10] Although such infections are commonly managed with drainage and antibiotics, the lack of response to treatment should raise suspicion for more serious underlying conditions, as observed in this patient.

Computed tomography scans play a critical role in differentiating between odontogenic infections and malignancies such as DLBCL. Computed tomography provides excellent contrast resolution, making it invaluable in determining the extent of soft tissue involvement and detecting bone destruction, as was evident in this case.[5] In cases of persistent swelling where conventional treatment fails, a biopsy is essential for establishing a definitive diagnosis. Histopathologic analysis, as performed in this case, remains the gold standard for diagnosing DLBCL and other malignancies.[4]

The treatment of DLBCL typically involves combination chemotherapy with rituximab (R-CHOP), which has been shown to induce remission in many patients.[10] However, the prognosis varies depending on factors such as the patient's age, serum lactate dehydrogenase (LDH) levels, and extranodal involvement. In this case, the patient had an elevated LDH level, which contributed to a high-risk classification according to the International Prognostic Index (IPI), predicting a 5-year survival rate of only 26%.[8]

Although DLBCL does not have a clearly defined etiology, various genetic and environmental factors, including autoimmune diseases and infections like Epstein-Barr virus (EBV) and Helicobacter pylori, have been associated with its development.[9] This case highlights the importance of considering rare malignancies in the differential diagnosis of oral and maxillofacial swellings, particularly when initial treatments for odontogenic infections fail.

Furthermore, recent advancements in immunotherapy, such as chimeric antigen receptor (CAR) T-cell therapy and bispecific T-cell engagers (BiTEs), offer hope for patients who do not respond to conventional R-CHOP treatment.[12] These novel therapies are still being studied, but they show promise in improving outcomes for patients with aggressive forms of DLBCL.

CONCLUSION

This case highlights the diagnostic challenges associated with DLBCL of the oral cavity, which can closely mimic more common dental pathologies such as a canine fossa abscess. The patient's lack of response to conventional treatment for odontogenic infection prompted further investigation, ultimately leading to the diagnosis of DLBCL. This underscores the importance of maintaining a broad differential diagnosis when managing persistent maxillofacial swellings that do not improve with standard interventions.

Computed tomography scanning played a pivotal role in this case by revealing the extent of the lesion and prompting the need for a biopsy, which confirmed the malignancy. Early biopsy and histopathologic evaluation remain critical in distinguishing between benign and malignant conditions, ensuring timely diagnosis and intervention.

The prognosis for DLBCL varies depending on several factors, including LDH levels, age, and the extent of the disease at presentation. Although the standard treatment involves R-CHOP chemotherapy, new therapies such as CAR T-cell therapy and BiTEs offer hope for patients with aggressive or treatment-resistant forms of DLBCL. This case serves as a reminder that, although rare, malignancies like DLBCL should be included in the differential diagnosis of persistent facial swellings, especially when initial treatment fails.

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Pediatric Solitary Epithelioid Histiocytoma of the Face

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