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Ossifying Lipoma: A Rare And Intriguing Case Report

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Abstract
Ossifying lipoma is a rare benign tumour composed of mature adipocytes and bony tissue. It can occur in various locations, but it is extremely uncommon in the oral cavity. The clinical presentation is usually asymptomatic or with mild pain. The radiological features vary depending on the degree of ossification and necrosis within the lesion. Histological examination is essential for the definitive diagnosis, as ossifying lipoma can mimic other benign or malignant bone tumours. Surgical excision is the most preferred treatment option, and it offers excellent prognosis.
The etiology and pathogenesis are unknown, but two main theories have been proposed: multidirectional differentiation of mesenchymal cells or metaplastic transformation of adipocytes.
Here, we illustrate a rare case of ossifying lipoma of a 52-year-old male patient, who presented with a soft tissue growth. This case showcases the importance of considering ossifying lipoma in the differential diagnosis of oral soft tissue lesions, especially in unusual locations.

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I. Introduction

Lipoma is the most common benign soft tissue tumour which is mesenchymal in origin. [1, 2]

It is a slow-growing neoplasm composed of mature fat cells or the adipocytes whose cells differ metabolically from normal fat cells even though they are histologically similar. [3]

They are usually found in the subcutaneous regions but can appear in any location in body, frequently in the head and neck region, oral cavity, back, trunk and extremities. [4, 5, 6]

When present in the oral cavity, the buccal mucosa is the most common site due to the vicinity of the buccal fat pad, it may also appear in the lips, tongue, palate, vestibule, floor of mouth and retromolar pad. [1]

There are many microscopic variants of the lipoma, for example fibrolipoma, angiolipoma, spindle cell lipoma, pleomorphic lipoma, intra muscular (infiltrating) lipoma, and many more. [3] Rarely, chondroid or osseous metaplasia may be seen in a lipoma (osteolipoma, ossifying lipoma, chondroid lipoma, ossifying chondromyxoid lipoma). [3]

Lipomas are not usually adjacent to bone, but if present are referred to as parosteal or periosteal lipomas. Just in some sporadic cases, lipomas with no connection to any bony structure have shown these osseous or chondrous changes. [5]

In English literature review, a total of 38 cases of ossifying lipoma were identified out of which 21 were in the oral cavity. [8]

In this case report, a rare such occurrence of Osteolipoma is presented.

II. Case Report

Clinical presentation

A 52-year-old man presented in the Department of Oral and Maxillofacial Pathology and Microbiology of Kusum Devi Sunderlal Dugar Jain Dental College and Hospital, with a painless swelling on the inside of his right cheek, near the posterior region of his mouth. It had been growing for quite some time, and making it uncomfortable for him to even speak or eat.

On intra oral inspection a well-defined swelling in the right buccal mucosa was noted, of about 20 mm × 21 mm in size. It was a soft tissue mass with the hard core of the submucosal lesion, which was non tender on palpation.

Radiological imaging

MRI was performed which revealed a well-defined T2 hyperintense submucosal lesion in the right bucco-masseteric space which measured 23 mm × 21 mm. (Fig. 1&2)

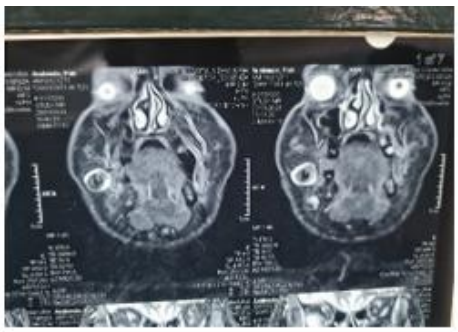

Fig. 1 The lesion showed central lamellar calcification with its peripheral area appearing cystic.

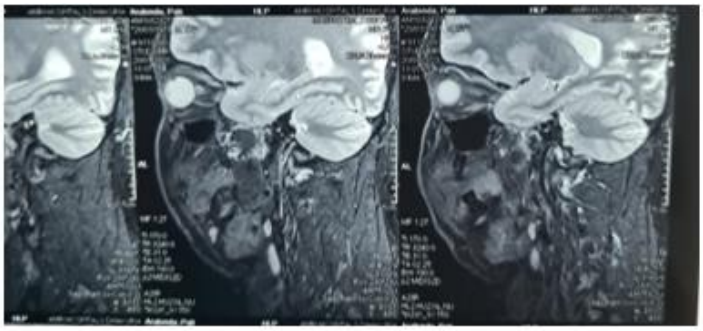

Fig 2. No fatty signal was noted and there was no infiltration of the masseter muscle. No restricted diffusion was seen

Thus, clinical and MRI findings suggested a benign mesenchymal tumour.

Biopsy

Excisional biopsy was done from the right buccal mucosa. (Fig. 3). The specimens were then sent for histopathological processing and evaluation.

Fig. 3 Surgical excision of lesion

Grossing

Three soft tissue bits were retrieved, which together measured 5 cm × 2.5 cm in size. They were brownish white in colour, soft in consistency and had an irregular surface. One hard tissue bit was retrieved, which was round in shape and showed lamellations on one aspect and was smooth on the opposite aspect measuring 1.5 cm × 1.5 cm. (Fig. 4)

Fig. 4 Grossing of specimen

Histopathology

The sections were stained with Haematoxylin and Eosin stain, and focused under different magnification. The soft tissue bits showed mature adipocytes admixed with collagen fibres.

The lesional cells showed a distinct lobular pattern. Connective tissue septa were seen in between the adult fat cells. Areas of haemorrhage with extravasated RBCs were seen peripherally (Fig. 5)

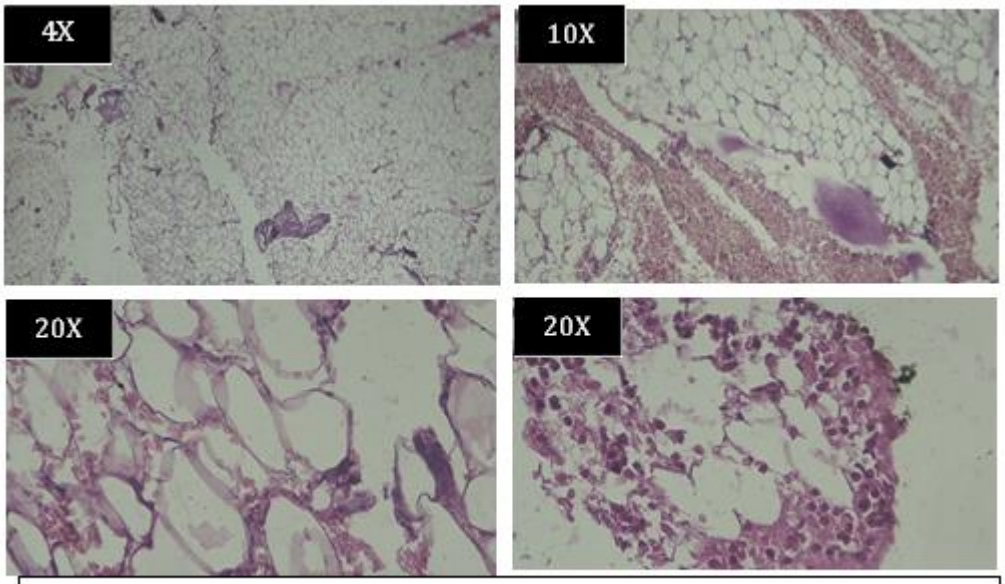

Fig. 5: H&E stained section sections of the soft tissue

The hard tissue bits were decalcified and thereafter sections prepared and stained with H&E.

The hard tissue revealed mineralized areas in the fibrocellular connective tissue stroma. The mineralized masses were in the form of spicules of mature lamellated bone of irregular shapes and sizes. Innumerable osteocytic lacunae could be appreciated within the bone. The stroma was interspersed with chronic inflammatory cell infiltrates. (Fig. 6)

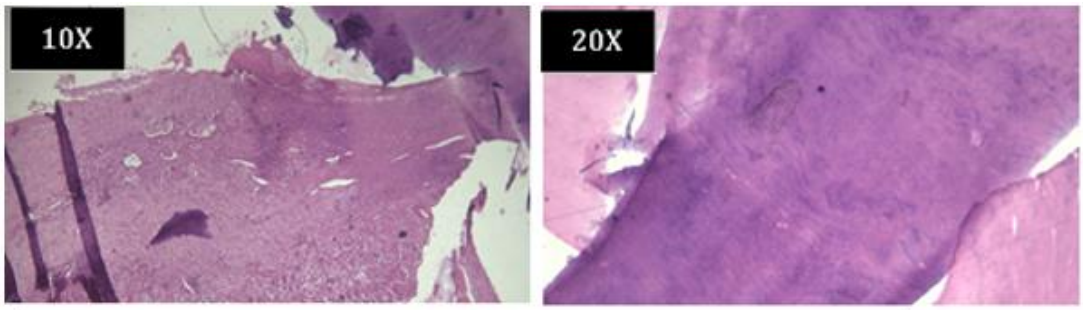

Fig. 6: H&E stained section sections of the hard tissue

Correlating the clinical, radiographic and histopathological features, a final diagnosis of Ossifying Lipoma was rendered.

III. Discussion

Ossifying lipoma is a rare, benign neoplasm and is characterized by the presence of mature adipose tissue interspersed with bone elements. [7] It can remain asymptomatic unless it compresses adjacent structures. Osteolipoma must be differentiated from other conditions, such as: pyogenic granuloma, traumatic fibroma, peripheral giant cell granuloma, peripheral ossifying fibroma, peripheral osteoma, phleboliths, myositis ossificans, neurofibroma, pleomorphic adenoma, cysticercosis, chondrolipoma, chondroblastoma, chondro myxofibroma, chondrosarcoma, osteosarcoma, and liposarcoma. [8]

The exact cause of osteolipoma remains uncertain yet some theories have been proposed.

One theory suggests that it may arise from multidirectional differentiation of pluripotential mesenchymal cells, which suggests that the mass contains the bony or cartilaginous elements since its appearance. [9, 10] This theory stands for the fact that osteolipomas bear close resemblance to benign mesenchymoma. [10]

A second theory proposes that they might originate from the metaplasia of the fibrous elements in bone tissue, secondary to an already existing lipoma. This can be a result of a response to several external factors like mechanical stress, repeated trauma or ischemia. [5]

There is another hypothesis, which suggests that the metaplasia may be induced by growth factors released from monocytes, or due to the ossification of a tissue which received inadequate nutritional supply within the core of the lipoma. [11, 12]

The metaplasia of fibroblasts into osteoblasts, may also take place due to any infection, chronic irritation, or, hormonal alterations. And it may also arise due to proliferation of lipoplastic embryonic cell nests. [8]

Surgical excision is a treatment of choice, and reports of recurrence has been low to nil. [7]

IV. Conclusion

Osteolipoma is a rare benign neoplasm characterized by mature adipose tissue and bone elements whose presentation in the oral cavity is a rare occurrence. This case report highlights the diagnostic and clinical significance of osteolipoma, presenting as a painless swelling in the right buccal mucosa of a middle aged male. The diagnosis was confirmed through imaging and histopathological evaluation, showing a mix of adipocytes and lamellated bone.

The report underscores the importance of including osteolipoma in the differential diagnosis for oral soft tissue lesions, especially when bony elements are detected. The etiology remains uncertain, with proposed mechanisms including mesenchymal cell differentiation or metaplastic transformation due to trauma or irritation. Surgical excision remains the treatment of choice, offering excellent prognosis with minimal recurrence risks.

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