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Review Article

Lipomas of the Oral Cavity

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ABSTRACT

The benign soft tissue neoplasm of mature adipose tissue is known as lipoma. It is seen as a common entity in the head and neck region. Although lipomas are the most common tumors of mesenchymal origin in human body their occurrence in the oral cavity is rare. Intraoral lipomas may be noticed only during routine dental examination as most of them are asymptomatic and hence delay in seeking treatment. The etiology is still unclear. Various different theories explain the pathogenesis of this adipose tissue tumor. Based on histopathological findings, variants of oral lipoma have been identified. This article presents a comprehensive review of different types of lipomas of the oral cavity as it is important for an oral physician to diagnose intraoral lipomas and treat them conservatively.

Introduction

Supporting tissue consists of cells which are adapted for storage of fat and these cells are called as adipocytes. They are derived from primitive mesenchyme which is developed as lipoblast. An abnormal neoplastic growth of adipocytes, as subcutaneous soft mass is termed as lipoma.[1]

Lipomas are benign tumors of white adipocytes and are the most common mesenchymal neoplasm.[2] It accounts 5% of all soft tissue tumor[3] and is majorly seen in adults over age of 30 years with equal sex predilection.[4] Although the incidence of lipomas in head and neck is about 15-20%, its occurrence in oral cavity is uncommon with 1-4% incidence.[5]

Usually they present as slow growing soft nodular asymptomatic mass with overlying normal mucosa.[5] Lipomas have few complaints or complications and also present with little diagnostic difficulty. Cause of occurrence is unknown.[3] They particularly occur in areas of fat accumulation, especially cheek, followed by tongue, floor of mouth, buccal sulcus, palate and gingiva.[5] Histologically, they show various subtypes which are angiolipoma, spindle cell lipoma, myelolipoma, chondrolipoma, myxolipoma, pleomorphic lipoma and fibrolipoma[5,6]

In 1848, Raux gave first description of oral lipoma in a review of alveolar mass where he found that the excised lesions were slow growing, soft, doughy and yellow coloured tissue with normal overlying mucosa and called it as *yellow epulis.*[3,5]

The etiology is still unclear but some factors include hormonal imbalance, trauma, chronic irritation and infection.[3] Certain theories are thought to induce it. Hypertrophic theory and metaplasia theory have tried to explain its pathogenesis. Hypertrophic theory stated that inadvertent growth of adipose tissue and obesity are cause for formation of these lesions. This theory was not satisfactory and was unconvincing in explaining those lesions occurring in areas devoid of preexisting adipose

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tissue. Also the lesions were not used up in usual metabolism during starvation like normal adipose tissue.[5] The metaplasia theory stated that lipomatous growth occurs due to aberrant differentiation of in situ mesenchymal cells into lipoblast, since fat cells can be derived from mutable connective tissue cells almost anywhere in the body. JJ Lin and F Lin stated that these benign entities are congenital lesions arising from multipotent cells of an embryo that remain clinically dormant until they differentiate into fat cells under hormonal influence during adulthood.[5] Subcutaneous lipomas show reproducible karyotypic abnormalities commonly involving 12q13-15, although these have no evident correlation with clinicopatholgic features.[4]

Clinically, normal fat is not circumscribed or encapsulated and never presents as a mass unlike the lipomas. Microscopically, lipoma shows mature white adipose tissue without atypia. The size of adipocytes will be 2-5 times more than normal white adipose tissue, with obvious large cells up to 300 microns. Cytoplasmic vacuoles are relatively uniform and it may have intranuclear vacuoles. It may also show thickened fibrous septa. Lipomas may contain areas of fat necrosis with histiocytes, infarct or calcification. Presence of bone or cartilage is rare. Diagnosis of lipoma requires presence of a mass clinically.[7]

Clinically the features vary according to the site of lesion.[5] Usually they present as asymptomatic, soft, smooth surfaced nodular masses that can be sessile or pedunculated.[8] Until the yellow color appears clinically, the lesion is difficult to diagnose. Generally, the size of lipomas vary from 0.2 to 1.5 cm in diameter. Signs and symptoms include feeling of fullness, discomfort and slip sign will be positive. Rarely dysphagia, difficulty in speech and mastication has been reported. Multiple lipomas have been reported in syndromes like neurofibromatosis, gardners syndrome, decrums disease (painful), encephalocraniocutaneous lipomatosis, proteus syndrome and pai syndrome.[5,9]

The diagnosis of lipomas is majorly clinical. Other techniques like xeroradiography and achography are often used to find the anatomic extent but they have limited extent. CT and MRI enable the diagnosis readily. In spite of these techniques, they cannot differentiate the variants of lipomas and hence the histopathology remains the gold standard in diagnosis.[5]

Grossly, lipomas are well circumscribed and have a yellow greasy cut surface. Different types of lipomas are basically similar in appearance, however bone formation can be seen in osteolipoma and grey glistening nodules may be seen in chondrolipoma. Intramuscular and intermuscular lipoma do not show any specific gross features except that a portion of skeletal muscle is often attached to the periphery of the tumour.[10]

Histologically, it is well circumscribed and composed of adult adipocytes that are subdivided into lobules by fibrous connective tissue septa. On rare occasions, central cartilaginous or osseous metaplasia may occur within an otherwise typical lipoma.[5,8]

Immunophenotypically, mature adipocytes are positive for vimentin, S100 protein and leptin. Ultrastructurally, it is composed of cells that have a large and single lipid droplet compressing a peripherally situated nucleus.[10]

Microscopically, the variants of lipoma are as follows:

1) **Angiolipoma:** A subcutaneous nodule consisting of mature fat cells, intermingled with small and thin-walled vessels, a number of which contain fibrin thrombi. Classically these capillaries contain small thrombi and help in diagnosis. The extent of vascular component in a given lesion is variable and may range upto 90% or more

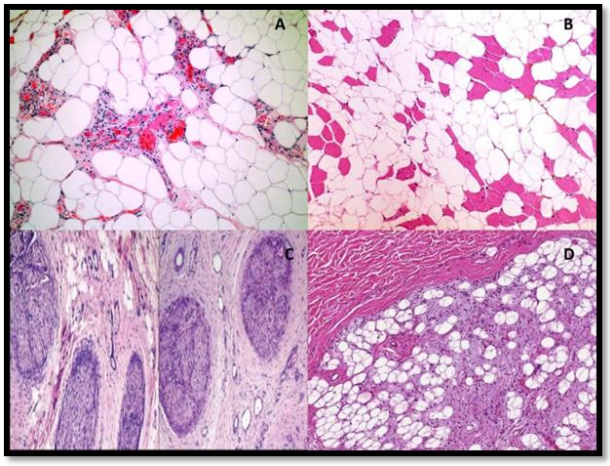

Figure 1: (A) Angiolipoma (B) Intramuscular lipoma (C) Perineural fibrolipoma (D) Spindle Cell Lipoma

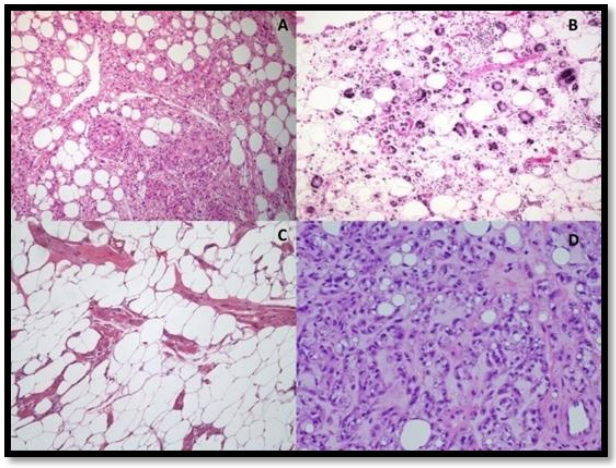

Figure 2: (A) Angiomyolipoma (B) Pleomorphic lipoma (C) Myolipoma (D) Chondroid Lipoma

and is termed as *cellular angiolipoma*. These cellular angiolipomas should be distinguished from angiosarcoma and Kaposi sarcoma because they show spindled endothelial appearance, with prominent pericapillary pericytes. Long standing lesion show degenerative changes like perivascular fibrosis, hyalinization and stromal myxoid change. In the past, deep seated intramuscular lipoma was termed as *infiltrating angiolipoma* which is presently classified as

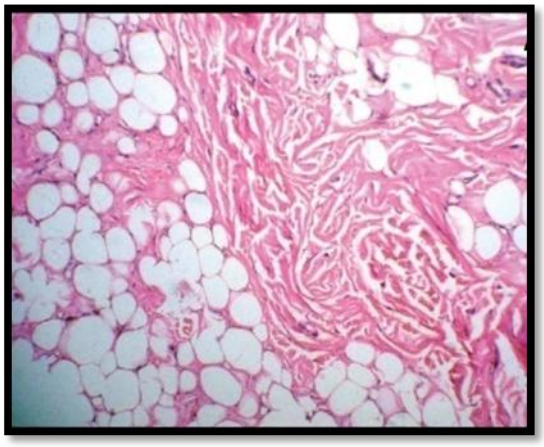

Figure 3: Fibrolipoma

intramuscular hemangioma with prominent adipocytic component. This is important in view of very high local recurrence rate in intramuscular hemangiomas. Angiolipomas are always benign and show no tendency to recur. Malignant transformation does not occur.[4,10] (Figure 1A)

2) **Intrmuscular/Infiltrating Lipoma:** Adults are most commonly affected and it may become very large & measure upto 20 cm in diameter. Histologically, muscle is replaced by adipose tissue which is mature, creating an alternating checkboard pattern of fat and striated muscle cells. Recurrence is more (about 15%) which is due to its diffuse nature.[11] (Figure 1B)

3) **Perineural Fibrolipoma:** It is a hamartoma of nerves that causes disfiguring enlargement at a very young age and sometimes multiple.[12] There will be excess of mature adipose tissue surrounding the nerves, which often display concentric perineural fibrosis that is characteristic for this subtype of lipoma.[11] (Figure 1C)

4) **Spindle Cell Lipoma:** It is a circumscribed tumor, commonly occuring in the subcutaneous tissue. It

consists of adipose tissue interspersed with short fascicles of bland undifferentiated spindle cells in a matrix containing bands of hyaline collagen and occasional mast cells.[4,11] (Figure 1D)

5) **Angiomyolipoma:** It is most probably a hamartomatous lesion which is mostly asymptomatic. Histologically, it consists of mature adipose tissue and dilated blood vessels that are surrounded by sheets of well differentiated smooth muscle.[11] (Figure 2A)

6) **Pleomorphic Lipoma:** Pleomorphic lipoma and spindle cell lipoma are considered as closely related lesions because of significant proportion of cases showing over lapping of clinicomorphologic features. Now, it is considered as variations of single entity.[4] But pleomorphic lipoma typically contains spindled, rounded and multinucleated floret like giant cells because of their multiple radially arranged nuclei which resembles petals of flowers. Its superficial location and sharp circumscription differentiates it from liposarcoma. Transitional form between spindle cell and pleomorphic is seen rarely.[11] (Figure 2B)

7) **Myolipoma:** Rarest lesion with admixture of mature adipose tissue and smooth muscle in varying proportions in which the muscular component is predominant.[13] Female predominance is seen and are often large. Differential diagnosis include angiomyolipoma and well differentiated liposarcoma with smooth muscle component.[4] (Figure 2C)

8) **Chondroid Lipoma:** Very uncommon and often mistaken as sarcoma because of prominent population of cells that closely resembles lipoblasts and chondroblasts. Histologically, it is present with admixture of mature adipose tissue, lipoblasts with bland nuclei, and hibernoma like cells in a myxohyaline and pseudochondroid matrix.[4] (Figure 2D)

9) **Fibrolipoma:** Fibrolipoma is a microscopic variant of lipoma characterized by a significant fibrous component intermixed with lobules of fat cells. The consistency of this lesion varies from soft to firm, depending on the quantity and distribution of fibrous tissue and the depth of the tumor.[14] (Figure 3)

Generally, lipomas require no treatment unless they are large, painful, in an inconvenient site, and/or unaesthetic. Surgical excision is the usual mode of treatment. The other modes include injection of steroid to reduce the size of lipomas, which causes atrophy of adipose tissue. Lidocaine and triamcinolone acetonide (1:1) is also used for the regression of lipomas. Liposuction is also recommended in order to avoid scarring. According to some authors, IFN alpha can be used for infiltrating angiolipoma. For large lipomas surgical excision is done after regression therapy. Overall prognosis of lipomas is good.[3,6,15]

Conclusion:

Intraoral lipomas are rare lesions which is asymptomatic and seen during routine dental examination. As it is painless in majority of the times, patients may visit for aesthetic concern or due to any discomfort. It represents about 1-4% of all neoplasms of the oral cavity. Histological diagnosis and categorization is mandatory because of its variants. Prognosis is good.

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