Case Study

From The Eye Of Microscope - Pleomorphic Adenoma

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ABSTRACT

The most common salivary gland tumor encountered in the oral cavity is Pleomorphic Adenoma. It has dual origin i.e. from epithelium and myoepithelium hence also known as Benign mixed tumor. Because of these variations it becomes challenging even for experienced surgeon to diagnose it. Clinically it is manifested as a slow progressing asymptomatic, parotid gland swelling without facial nerve involvement, which can be diagnosed on either tissue sampling or radiographic studies. Tissue sampling procedures include fine needle aspiration cytology (FNAC) and core needle biopsy which can be done in an outpatient setting. Our case report also do focus on the essence and preference of fine needle aspiration cytology in the diagnosis, which can also be a determining factor for malignant transformation with an approximate sensitivity of 90%.
INTRODUCTION:
World Health Organization (1972) defined Pleomorphic Adenoma (PA) as a well-defined tumour characterized by its pleomorphic or mixed appearance. There is intermixing of the clearly recognizable epithelial component with mucoid, myxoid and chondroid component. Although the lesion presents several histological features due to the different compounds with a myxoid or chondroid matrix, it is generally considered to be a benign neoplasm.

The etiology of this is unknown, but the incidence of this is increasing in the last 15-20 years in relation to exposure of radiation. While one study even quoted that oncogenic simian virus (SV40) may play a role in the onset or progression. Prior head and neck irradiation is also amongst the risk factor.

Mostly, PA is located in the parotid glands (85%), minor salivary glands (10%), and the submandibular glands (5%). In the majority of cases, tumours originate in the superficial lobe. However, occasional cases may involve the deep lobe of the parotid gland and the parapharyngeal space. Minor salivary gland tumours are frequently encountered on the palate, followed by the lip, cheek, tongue and floor of the mouth. PA usually manifest as a slow progressing asymptomatic, parotid gland swelling without facial nerve involvement.

The tumour has a female predilection between 30–50 years of age. Slowly progressing asymptomatic swelling is the usual presentation of the tumour. These are generally discovered during routine physical examination, as an asymptomatic mass. It has a glandular origin in the head and neck region and usually manifests as a mobile, slow progressing, asymptomatic firm swelling that does not cause ulceration of the overlying mucosa.

The majority of these tumours measure 2–6 cm in size when excised. However, large tumour may be seen as a single, irregular nodular mass stretching the overlying skin or mucosa. The tumour may weigh from several grams to more than 8 kilograms.

Parotid gland PA is usually seen below the lobule of the ear and overlying the angle of the mandible. Facial nerve weakness is an infrequent sign in parotid tumours although large neglected tumours may present with facial nerve weakness. Oral retro tonsillar mass/ parapharyngeal space tumour may be a presenting sign in cases of deep lobe involvement.

CASE REPORT
A 37 years old male patient reported to the department of Oral Medicine and Radiology with a chief complain of swelling on right side of the palate which extended from 13 – 18 palatal region.

Clinical examination revealed swelling of approximately 3 cm x 2 cm on the right posterolateral palatal region. The mass was soft and the mucosa over the mass was smooth and erythematous. The swelling was not associated with discharge or paraesthesia. No remarkable medical history was revealed. On CBCT soft tissue shade was evident in 15-18 palatal region, while no relevant findings were there on intraoral periapical radiograph. After which fine needle aspiration cytology was performed. One drop of the
aspirated fluid was smeared on glass slide fixed in 95% alcohol and sent to the department of Oral Pathology and Microbiology which was PAP stained, and evaluated microscopically.

With a provisional diagnosis of Pleomorphic Adenoma after clinical, radiographic and FNAC examination the blood investigations of Pleomorphic Adenoma after clinical and radiographic examination was rendered. The blood investigations Hb, BT, CT, RBS were carried out and found to be within normal limits before the surgical procedure. After which excisional biopsy was performed under local anaesthesia without complications. It was possible to remove the lesion in-toto and submitted for histological examination.

Grossly the incisional biopsy tissue specimen consisted of two bits which were creamish in color, soft to firm in consistency and measuring 1.0 x 0.8 cms and 1.0 x 0.4 cms.

While the excisional biopsy tissue specimen grossly consisted of a mass of brownish-cream tissue, which was firm in consistency and measuring 2.0 x 1.8 cms.

The tissue specimen was processed and the sections were stained with haematoxylin and eosin (H and E) stain. H and E stained sections were evaluated under scanner view, low power view and high power view which revealed and confirmed the incisional biopsy specimen histopathological features. From histopathological features, confirmed diagnosis of Pleomorphic Adenoma was rendered. On clinicopathological correlation. On clinical and radiographical correlation, the lesion was finalized to be Pleomorphic Adenoma.

DISCUSSION

The parotid gland is the largest salivary gland with an average weight ranging from 0.015 to 0.021 kg and measuring approximately 5.8×3.4 cm in the craniocaudal and ventrodorsal dimensions, respectively. Being the first salivary gland to develop in utero, during the 6th gestational week, it is anatomically located bilaterally between the mastoid process of temporal bone and ramus of the mandible. The terminal branches of the facial nerve are an important anatomic landmark which divide the parotid gland into its superficial and deep lobes.
The term Pleomorphic adenoma was suggested by Willis as it closely characterizes the histopathological appearance of this benign salivary gland tumour. The tumour cells undergo metaplasia and exhibit a complex histopathological picture consisting of fibrous, myxoid, chondroid, osseous and hyalinized areas. This can be explained by the reserve cell theory put forth by Batsakis and his associates who postulated that the intercalated duct reserve cell is the histogenetic precursor of Pleomorphic adenoma.

Pleomorphic Adenoma (PA) of minor salivary glands is most commonly seen in palate (42.63%), followed by lip (10%). The unusual sites are larynx, epiglottis, sinuses and trachea. PAs have also been reported in tongue, soft palate, uvula and external auditory canal. It can sometimes be clinically challenging when presented with extensive involvement of oropharynx leading to airway obstruction. Pleomorphic adenomas exhibit a female predominance with a female to male ratio of 1.9:1. In a study of 74 cases of palatal pleomorphic adenomas by Wu et al, a ratio of 2:1 with a marked female predilection was reported. In the same study it was correlated that the mean age of occurrence was 47 years and the peak age of incidence was 5th decade of life. Macroscopically it generally appear as an irregular to ovoid mass with well-defined borders. The cut surface may be rubbery, fleshy, mucoid, or glistening with a homogeneous tan or white colour.

Histopathologically, presence of ducts or duct-like structures begets the tumour the name ‘adenoma’.

Foote and Frazell in their histological classification of Pleomorphic adenoma in the year 1954 have identified four major types: Principally myxoid, myxoid and cellular components in equal proportion, predominantly cellular and extremely cellular. Principally myxoid type of Pleomorphic adenoma was found to be extremely rare in the palate according to a study by Wu et al. The epithelial component forms ducts and small cysts that may contain an eosinophilic coagulum; the epithelium may also occur as small cellular nests, sheets of cells, anastomosing cords, and foci of keratinizing squamous or spindle cells.

Myoepithelial cells are a major component of pleomorphic adenoma. They have a variable morphology sometimes appearing as angular or spindled, while some cells are more rounded with eccentric nuclei and hyalinized eosinophilic cytoplasm resembling plasma cells. Myoepithelial cells are also responsible for the characteristic mesenchyme-like changes; these changes are brought about by extensive accumulation of mucoid material around individual myoepithelial cells giving a myxoid appearance. Vacuolar degeneration of these myoepithelial cells then results in a cartilaginous appearance. Foci of hyalinization, bone and even fat can be noted in the connective tissue stroma of many tumors. Our case was representative of predominantly cellular type of Pleomorphic Adenoma with myxoid, fibrous areas.

PHOTOMICROGRAPH OF INCISIONAL BIOPSY
Photomicrograph of incisional biopsy tissue section revealed in scanner view bits of tissue with connective tissue stroma. Low power view revealed stroma composed of tumor mass. Tumor mass revealed epithelial component arranged in nests, sheets, duct containing eosinophilic coagulum and connective tissue comprised myxoid, fibrous area.. While high power view confirms the above findings.
Photomicrograph of excisional biopsy tissue section revealed in scanner view bits of tissue with connective tissue stroma. Low power revealed tumor mass comprised of epithelial component epithelial component, myxoid, fibrous areas. While high power view confirms the above findings. According to Krolls & Boyers, tumors with a prominent myxoid component tend to recur more.

Keratin pearls, characteristic of well differentiated squamous cell carcinoma, occurs in pleomorphic adenoma due to metaplasia of the epithelial cells. This feature when extensively present and insufficiently sampled can be over-diagnosed as a malignancy.

In recent years fine needle aspiration cytology guided by ultrasound is used for rapid diagnosis of lesions including Pleomorphic adenoma. Ultrasonography can help in distinguishing a benign from a malignant lesion in over 80% of cases. Fine needle aspiration cytology will aid in differentiating an inflammatory process from a neoplastic process. It can also help in distinguishing a primary tumour from a metastatic disease.  

Photomicrograph of aspirated fluid PAP stained smear (10x) revealed cluster of cells (10x) revealed clusters of cell’s of varying morphology such as spindle shaped and polyhedral in the background of moderately mixed inflammatory infiltrate, composed of neutrophils, lymphocytes, macrophages and RBCs with mucoid material in the background. On the basis of which diagnosis was rendered as Benign Salivary gland neoplasm – preferably Pleomorphic Adenoma. The treatment of choice for Pleomorphic adenoma is wide surgical resection of the affected gland along with a margin of normal tissue. Recurrence is rare although 6% recurrence rate is observed in cases of benign minor salivary gland adenomas. This could be attributed to inadequate excision of the surgical margins of the tumor.

**CONCLUSION**

This article emphasizes the fact that a thorough histopathological sampling of a specimen can help in arriving at an accurate diagnosis. Lastly, attempts must be made to diagnose and manage PA at an early stage and before they reach gigantic proportions, through better public health care initiatives and creating awareness among all physicians and patients.
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REFERENCES