

# Oncocytic carcinoma: A rare malignancy of the parotid gland

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## Abstract

Salivary gland oncocytomas are very rare tumors with very few malignant cases reported in the literature. We describe a 77-year-old man with an oncocytic carcinoma of the parotid gland. The tumour was found in the right parotid region with enlarged lymph nodes in the neck. FNA smears revealed tumor cells with round-to-oval, centrally or eccentrically located moderately pleomorphic nuclei with fine chromatin and prominent nucleoli. These cells contained abundant granular cytoplasm and well-defined cell borders. Microscopic examination of the resected tumor showed solid sheets, nests, islands and cords of oncocytic cells diffusely infiltrating the surrounding tissues. The cervical lymph nodes also showed metastatic deposits.

## INTRODUCTION

Oncocytomas are very rare tumors that are usually benign and typically occur in the parotid gland. Oncocytic carcinomas are exceedingly rare in the salivary glands. We present cytological and histopathological findings of a case of malignant oncocytoma of the parotid gland in a 77 year old male and make a summary of all the accepted criteria in the reviewed publications as definitive of oncocytoma and malignant oncocytoma of the salivary gland. Furthermore a differential diagnosis with other neoplasms is also discussed.

## CASE REPORT

A 77year old male presented with a painless swelling in the right side of the neck since 6 months . On examination , an irregular hard mass measuring 3x2.5cm was arising from the right parotid gland. The mass was fixed to the underlying tissues. There was a single enlarged lymph node in the right cervical region. CT scan was also suggestive of a malignant parotid tumor in the superficial lobe of right parotid gland.

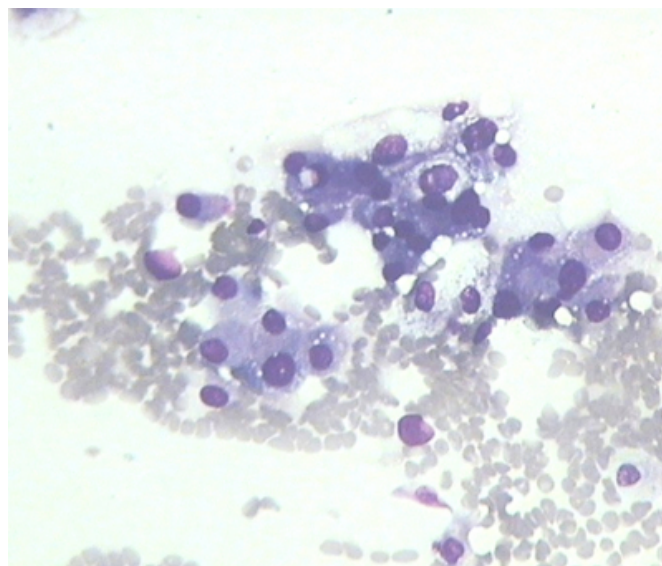
FNA of the mass was done. Smears showed the tumor cells occurred singly and in multilayered sheets. The tumor cells had round-to-oval, centrally or eccentrically located moderately pleomorphic nuclei with fine chromatin and prominent nucleoli. Many cells contained abundant granular cytoplasm and well-defined cell borders; Some tumour cells showed fine vacuolations in the cytoplasm

(Fig1&2).However, several stripped nuclei with prominent nucleoli were also noted in the background. Keeping in view

these cytological findings possibilities of Oncocytic carcinoma and Acinic cell carcinoma were suggested.

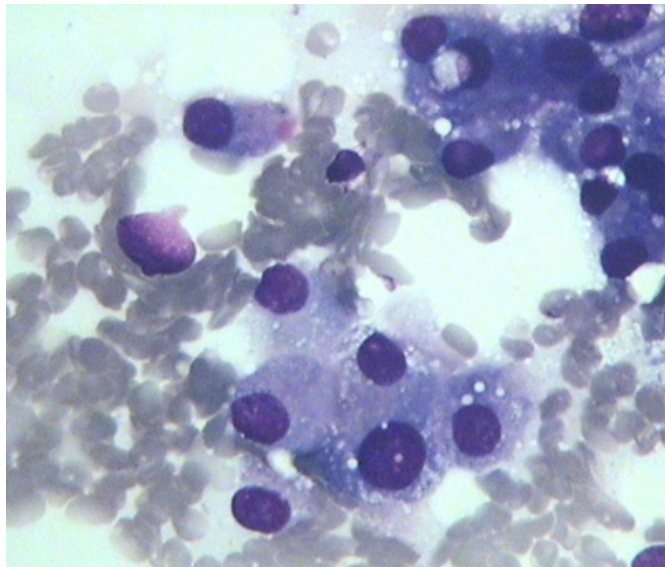
## Figure 1

Figure 1:Cluster of oncocytic cells showing moderate pleomorphism(Giemsa,200x)



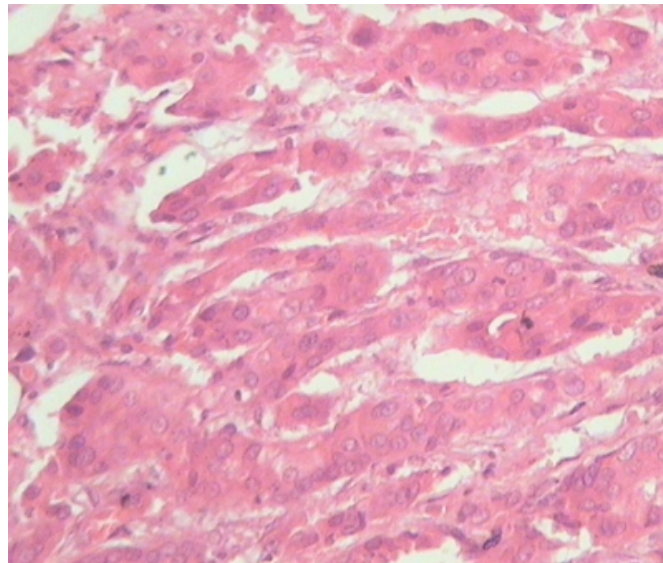
**Figure 2**

Figure 2: Oncocytic cells with eccentrically placed nucleus and abundant granular basophilic cytoplasm



**Figure 3**

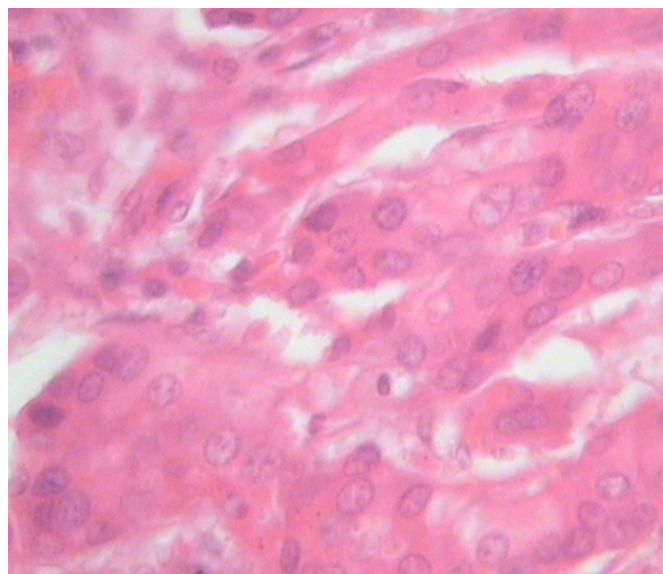
Figure 3: Diffusely infiltrating cords and nests of oncocytic cells(H&E,200X)



Superficial parotidectomy was conducted. The gross specimen measured 4x3x1.5cms. The cut section revealed an irregular greywhite growth measuring 3x2.5cms with a central hemorrhagic area. Microscopic examination showed tumor cells arranged in solid sheets, nests, islands and cords. These tumor cells were large, round or polyhedral cells and were arranged in solid sheets, islands and cords, and invaded the surrounding tissues. The cytoplasm was abundant, eosinophilic and finely granular. The nuclei were large and located centrally or peripherally. The nucleoli were distinct and large. Occasional mitotic figures are also seen. Periodic acid Schiff stain demonstrated PAS positive diastase resistant granules in the cytoplasm. The right cervical lymph node also showed metastatic tumor deposits.

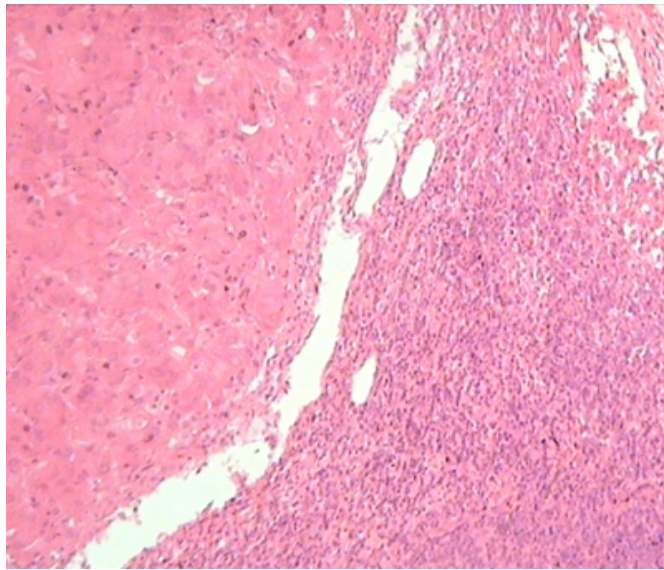
**Figure 4**

Figure 4: Higher magnification showing oncocytic tumor cells(H&E,400X)



**Figure 5**

Figure 5:Metastatic deposits in the cervical lymph node



## DISCUSSION

Malignant oncocytoma is an extremely rare tumor, especially when it arises in the major salivary glands.<sup>[12]</sup> They represent 0.5% of all epithelial salivary gland malignancies and 0.18% of all epithelial salivary gland tumors.<sup>[3]</sup> Malignant oncocytoma, malignant oxyphilic adenoma and oncocytic adenocarcinoma have been used synonymously for oncocytic carcinoma. The occurrence of this tumor is equal in both the sexes and occurs mainly between 50-60 years of age<sup>[4]</sup>. Oncocytic carcinomas appear to arise from benign oncocytomas, or may also arise de novo. The malignant nature of the neoplasm can be recognized by its morphologic features and infiltrative growth. Morphologic criteria for the diagnosis of a malignant nature are cellular pleomorphism, necrosis and frequent mitoses. Infiltrative growth of the neoplasm is represented by perineural, vascular or lymphatic invasion, destruction of adjacent structures and local lymph node metastasis.

The differential diagnosis of this tumor includes other tumors of salivary glands with granular eosinophilic cytoplasm i.e, oncocytoma, acinic cell carcinoma and salivary duct carcinoma. Oncocytoma can be differentiated by the presence of a well differentiated connective tissue capsule. Moreover, compared to oncocytoma, oncocytic carcinoma shows greater nuclear pleomorphism and mitotic activity. Acinic cell carcinoma can be differentiated from Oncocytic carcinoma by the presence of amphophilic or basophilic granules in the cytoplasm of tumor cells and their

predominant microcystic and papillary growth pattern. Salivary duct carcinoma, in contrast forms duct like spaces with papillary and cribriform growth pattern and also shows comedo necrosis. In addition, immunohistochemically, oncocytic cells show positivity for mitochondrial antigen,<sup>[5]</sup>keratin and alpha-1- antichymotrypsin.<sup>[6]</sup> Electron microscopy reveals numerous mitochondria filling the cytoplasm of oncocytic cells. Oncocytosis is non neoplastic proliferation of oncocytes, that can be differentiated from oncocytic carcinoma by the presence of multiple foci of oncocytic cells within salivary gland lobules without altering normal architecture.

Primary oncocytic carcinoma of salivary glands should be differentiated from metastatic oncocytic tumors in salivary glands by precise clinical history and immunohistochemical studies. Metastatic oncocytic carcinoma of thyroid (Hurthle cell carcinoma) can be differentiated by the immunohistochemical expression of thyroglobulin.

Extremely rare metastatic oncocytic adenocarcinoma of stomach can be differentiated by tubular pattern of growth and by the presence of microvilli on the luminal surface of tumor cells. Metastatic granular variant of Renal cell carcinoma is differentiated by the tumor cells arranged in sheets, organoid nests ,cords or as papillary fronds and are positive for Carcinoembryonic antigen and S-100 protein.

Despite being described 5 decades ago, not much is known about these rare tumors. The biologic behavior cannot be evaluated fully because of the paucity of cases reported and the lack of follow-up information.<sup>[7]</sup> However, the main treatment modality is surgery with or without adjuvant radiotherapy. Goode and Corio have reported that tumours smaller than 2 cm in diameter appeared to have a better prognosis than those that were larger.<sup>[8]</sup> Follow up of some of the reported cases reveal that these tumors have the potential risk of developing distant metastases and demand long term follow-up after therapy.<sup>[9]</sup> In oncocytic carcinoma of the head and neck, the presence of distant, rather than local lymph node, metastasis is the most important prognostic indicator.<sup>[10]</sup>

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