

## Short Communication

# Oncocytes, Lymphocytes, Bicameral: Warthin's Tumour

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## Preface

Benign tumours elucidate 60-80% of parotid neoplasm with specific clinical and histological aspects [1,2]. Warthin's tumour is an infrequent and usually benign neoplasm categorised by a slow evolution and an undefined aetiology. Aldrin Scott Warthin in 1929 investigated the then recently discovered Papilliferous Cystadenoma Lymphomatosum for its occult features, thus labelled Warthin's tumour. The familiar Adenolymphoma or Papillary cystadenoma lymphomatosum occurs preponderantly the parotid (84%). Warthin's tumour proportions 5-14% of the parotid neoplasm and 2-5% of the sub-maxillary gland. The tumour occurs during the 6th and 7th decades and is frequent in males with a male to female ratio of 4:6 [2,3]. 1) The extent of the females involved is rising due to enhanced tobacco consumption. The current ratio for Males: Females is 1:1. Warthin's tumour is eight times more frequent in smokers than in the non-smokers [6].

The glandular evolution of parotid with lymphoid elements corresponds to the evolution of the tumour. True lymph nodes may also develop on the gland surface. The tumour may emanate with ionizing radiation which produces metaplasia of the parotid duct [4,5]. The principal premise in Warthin's tumour maintains that the lesion is basically a neoplasm. An alternative theory elucidates the inflammatory character of the lesion consequent to tobacco consumption and ionizing radiation. Warthin's tumour may be bilateral, and 90% lesions arise in the superficial parotid lobe.

## Observable Features

Warthin's tumour has a round to oval, unwrinkled external surface and a consistency of a resilient, cystic, soft to consolidated mass usually confined to the parotid gland. Cross section demonstrates a part or a predominant cystic area with an effusion of a serious, milky or purulent fluid that incorporates cholesterol crystals. A lump with lobules and adherent skin simulating a malignancy is discerned. Fluid filled cysts are divided by irregular, thick grey septa. The tumour may expound a haemorrhagic

infarct with intervention [1,3].

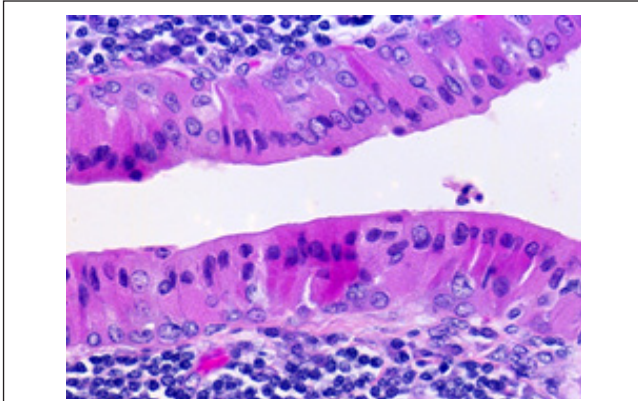
## Histological Aspects

Exemplifies the two classic components of Warthin's tumour as the epithelial parenchyma and the lymphoid stroma partitioned by a thin basement membrane [1] The well circumscribed tumour is enveloped by a thick fibrous capsule which dissociates it from the circumferential tissues The tumour on histology, delineates an oncocytic epithelium configuring uniform cellular tiers surrounded by a cystic space with adjuvant lymphoid stroma often with prominent germinal centres. Malignant conversion ensues in only 0.1% cases and usually arises in the lymphoid tissue [9]. Malignant conversion comprises of the lymphoid component evolving into a malignant lymphoma and the epithelial component emerging into an adenocarcinoma, mucopidermoid carcinoma, squamous cell carcinoma, oncocytic carcinoma, Warthin's adenocarcinoma or merkel cell tumour [1,2].

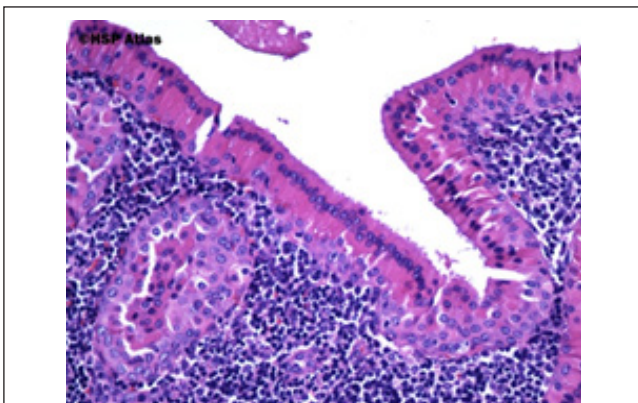
Prominence of lymphoid tissue propounds that the lesion arises from excretory ducts of the intra-parotid lymph node. Warthin's tumour is also hypothesized to develop from acquired multicystic reactive conditions such as the benign lympho-epithelial cyst or lesions of the branchial pouch derivation. The polyclonal lymphoid stroma primarily displays B lymphocytes besides T lymphocytes, mast cells and S-100 protein positive dendritic reticulum cells with salient Immunoglobulin A producing cells. The two layered tumour is composed of lymphoid follicles enveloped by large oncocytic epithelial cells. Apical cells and signet ring cells may be identified. The oncocytes are immunoreactive for keratin, secretory component, mitochondrial associated markers and focally positive for ribonuclease, lactoferrin, CEA, and lysozyme and negative for amylase, vimentin, desmin. The immunoreactive keratin is specific columnar differentiation i.e. CK 7, 8, 18,19(8,9). Myo epithelial differentiation is absent. Parotid lesions with multiple cysts lined by oncocytes but lacking a lymphoid stroma are designated as oncocytic cystadenoma. A subset of Warthin's tumour show CRTC-1 MAML-2 gene fusion characteristic of mucopidermoid carcinoma [1].

## Electron Microscopy

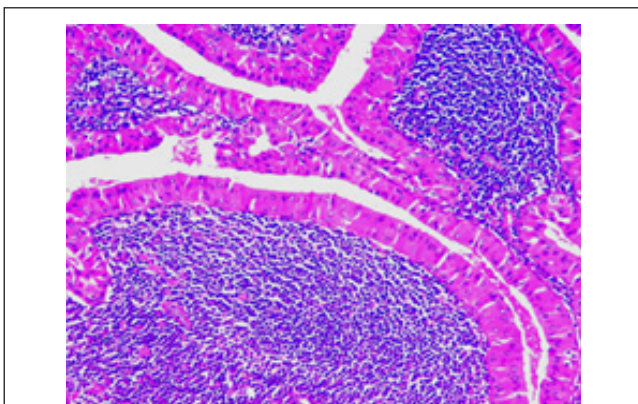
Cytoplasm of the glandular epithelial cells is packed with mitochondria.



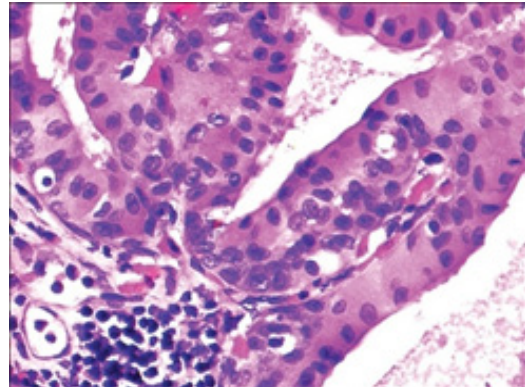
**Figure 1:** Warthin 's tumour with oncocytes and lymphoid infiltrate [17]



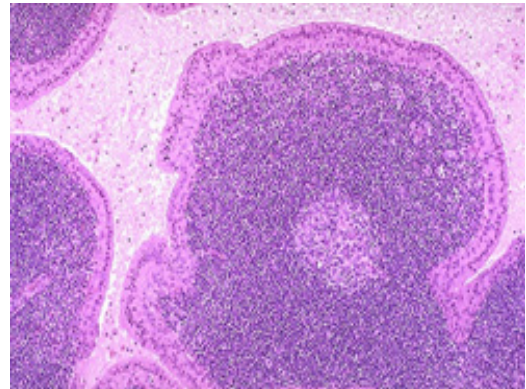
**Figure 2:** Warthin's tumour with uniform epithelium overlying lymphoid follicles [18]



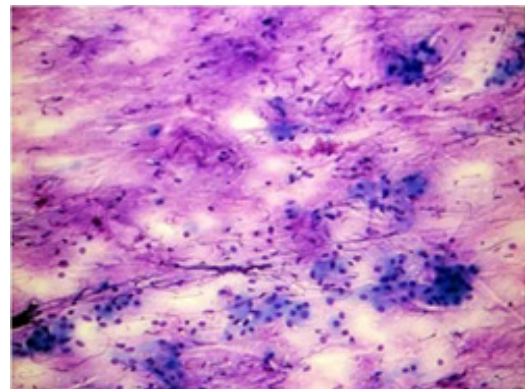
**Figure 3:** Warthin's tumour with oncocytic epithelium and lymphoid follicles [19]



**Figure 4:** High grade adenocarcinoma in Warthin's tumour [20]



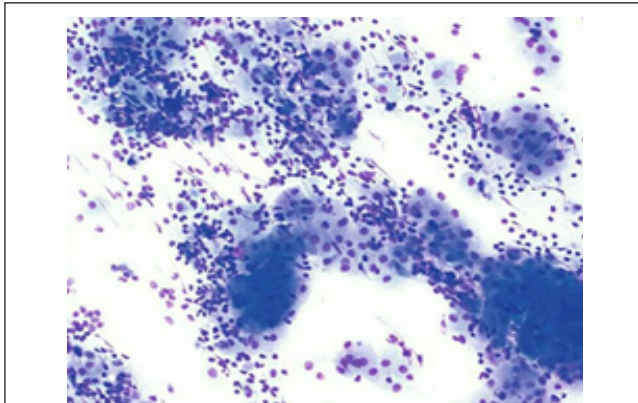
**Figure 5:** Lymphoid follicle with germinal centre-Warthin's epithelium [21]



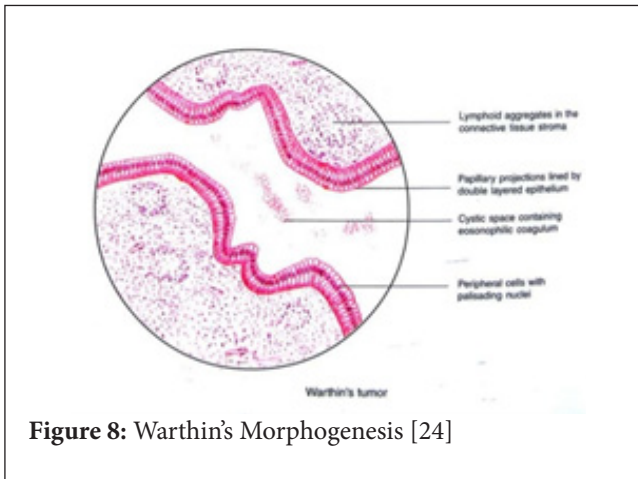
**Figure 6:** Warthin's lymphoid stroma with epithelial oncocytes - aspiration cytology [22]

## Investigatory Selections

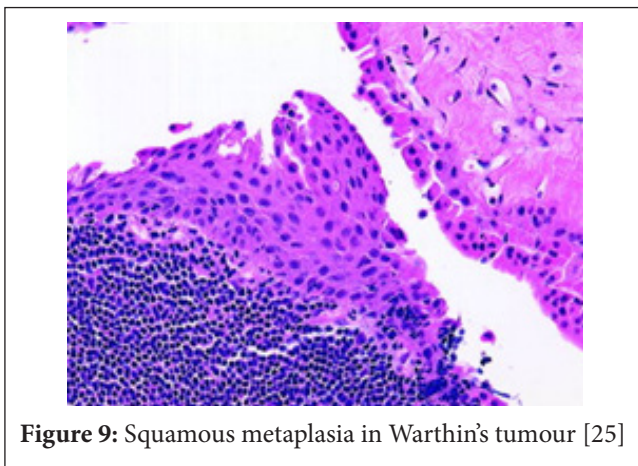
The lesion can be evaluated with the soft tissue ultrasound to assess the morphology and the architectural aspects. The diagnosis can be further confirmed by a fine needle aspiration cytology or a tru-cut needle biopsy. The tumours are normally conspicuous on



**Figure 7:** Lymphocytes and Oncocytic epithelium \_ aspiration cytology [23]



**Figure 8:** Warthin's Morphogenesis [24]



**Figure 9:** Squamous metaplasia in Warthin's tumour [25]

account of a superficial location and effortless palpation. Extensive investigation or procedure may or may not enhance the previously elicited diagnostic information [10]. Thus, a Fine Needle Aspiration Cytology may be restricted to the equivocal cases which may assist in revising the surgical strategy. Synchronous or metachronous bilateral lesions can be efficiently determined by a Fine Needle Aspiration Cytology or a corroborative Histopathology.

## Therapeutic Options and Outcomes

comprise of partial, subtotal or total parotidectomy while conserving the facial nerve. Reoccurrence after surgical eradication is exceptional [11]. Generally, a single surgical mediation is sufficient for Warthin's tumour. Post-operative ramifications may ensue in 60% procedures. Facial nerve paresis is a frequent complication (< 50%) besides seroma and infections. The median hospital stays or the post-operative interaction with the gender, age, smoking, alcohol, type of parotidectomy, nodule size and use of sternocleidomastoid muscle flap (SMF) are assessable. Paresis is transient and the nerve function is restored in about 4-6 months in majority of the individuals. The marginal mandibular branch of the facial nerve is implicated in 90% cases, the concurrent branches in the remaining 10%. Post-operative paralysis of all the branches of the facial nerve is exceptional [12].

Aspirated and conservatively managed Seroma and Haematoma are evident in a few. Wound infection is perceived in certain (10%) patients irrespective of the type of drain inserted or the extent of infection. The Frey's syndrome (one fifth cases) is a delayed surgical consequence. Bilateral Frey's syndrome with duplicate tumours or surgeries are not evident. Frey's syndrome is sporadic when the padding of the parotid surgical bed by a rotation of the sternocleidomastoid muscle flap (SMF) is performed.

## Deliberation

Warthin's tumour is a benign neoplasm [5-9] with < 10% lesions encountered distinct from the parotid. The lesions are bilateral in 5-15% cases, synchronous in a few (4%) and multi-focal in 6-20% [12]. Warthin's tumour, a debatable malignancy, is of undefined derivation. Surgical eradication delineates a negligible recurrence (0-13%) which varies with the magnitude of surgery [13]. Superficial parotid resection with conservation of facial nerve is appropriate and preferred in a majority (97%) of the Warthin's besides other benign tumours of the parotid gland. The procedure creates early and late complications. Surgical eradication induces the facial nerve inertia and the Frey's syndrome. The transient or permanent post-operative facial nerve paralysis can be complete or partial (of few branches). Frey's syndrome can be asymptomatic or discovered late. The minor test is based on the skin application of a solution comprising of 1.5-gram iodine, 10-gram castor oil, 88.5-gram absolute alcohol over the parotid. Followed by application of starch powder, which with the local sweat displays a limited blue iodine starch reaction. The transient facial nerve inertia is more frequent in contradiction to the persistent paresis. [14].

The marginal mandibular nerve is frequently implicated. Post-operative facial nerve paralysis is contingent to the magnitude and nature of surgery, diabetes mellitus, inflammation. The extent of the Frey's syndrome varies as per the designated therapy. With gustatory sweating and appropriate clinical manifestations, Frey's syndrome can be elucidated in up to 95% of the parotid resections. Sternocleidomastoid muscle flap (SMF) when

unemployed for the parotid surgical space delineates a slightly increased incidence of Frey's syndrome in contrast to those with the application of the muscle flap. Severe Frey's syndrome is treated with botulinum toxin injection and with the application of deodorants or anti-perspirants. Frey's syndrome with the absent muscle flap display gustatory swelling with the positive minor test. The employment of the sternocleidomastoid muscle flap (SMF) fails to demonstrate a positive minor test [14]. A sternocleidomastoid flap (SMF) does not efficaciously inhibit the Frey's syndrome. Superficial or total parotid resection with the preservation of facial nerve is the accepted therapy for Warthin's tumour. Complete eradication of the parotid parenchyma is pertinent for prospective recurrences [15].

Superficial parotid elimination is an inherent and effective option with negligible facial nerve involvement and Frey's syndrome. The inferior terminus of the superficial parotid is excised in subjacent tumours to salvage the cranial branches of the facial nerve. Enucleation from the circumferential tissue is adopted for the superficial tumours. The absence of painful symptoms, the deep seated, non-palpable, localized lesions need a Neuro Muscular Rehabilitation (NMR) analysis to evaluate those which emanate within the facial nerve branches. Retro-neutral site and the tumefaction opposed to the facial nerve may thus be discerned. Pre-operative examination can decide the appropriate surgical intervention. Analogous therapies are suitable for deep retro-neural lesions. An iatrogenic facial nerve paresis or that of its major branches is probable with a total parotid resection. Absence of symptoms or a benign lesion may permit a partial resection [16].

The facial nerve and the main branches (cervico- facial, temporo facial) may be conditioned for surgery. The glandular parenchyma can be mutilated if the lesion is split by the two facial nerve branches. Superficial approachable nodules can be extirpated, which does not elucidate facial neurological deficit. The suspicious lesions can be defined on histology. A multifocal origin of the neoplasm has not been described. Total parotid resection may be unsuitable considering the complications and consequences of the benign tumefaction. Accuracy in the defining the surgical extent is essential to restore the fragile anatomical structures. Enucleation may be prudent in troublesome cases [2,3].

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