



MANAGEMENT OF WARTHIN'S TUMOUR FOLLOWING FNA CYTOLOGY DIAGNOSIS

Dental Science

Sah SK	MBBS, BDS, MFDS, MRCS, MSc(Oncology), FRCS(OMFS), Craniofacial Center, Janakpurdham, Nepal and Pinderfields Hospital, Wakefield, UK.
Sah NK	MBBS (Nepal), MS (India), MRCS (Eng), Senior Resident, Department of Plastic Surgery, PGIMER, Chandigarh, India.
Khan ZA*	BDS, MDS (India), Craniofacial Center, Janakpurdham, Nepal and Mamata Dental College, Khamman, Telangana, India. *Corresponding Author

ABSTRACT

Background: This paper examines the management options for a histologically confirmed diagnosis of intra-parotid Warthin's tumour. Of 144 patients examined, we found FNAC had a sensitivity of 85.7% when performed by an experienced radiologist with ultrasound. However, false positives were found in 14.3% of cases and six of these results did show malignancy. Our findings suggest, there is no definitive answer and that decisions must be made case by case weighing up the sensitivity of FNAC result etc.

Warthin's tumour is usually treated surgically to confirm histological diagnosis. Although there is controversy regarding therapeutic options for Warthin's tumour, conservative management is considered appropriate for patients at high risk. This study highlights the risk of adopting this approach in light of the 6 out of 77 which proved to be malignant.

KEYWORDS

Warthin's Tumour, FNAC Histology, Salivary Gland, Superficial Parotidectomy.

INTRODUCTION

Warthin's tumour is the second most common benign neoplasm of the parotid gland¹, comprising 6-10% of all tumours of the salivary glands² and 4-30% of all parotid tumours³ with the reported incidence of malignancy of the major salivary glands to be 0.7 per 100 000 population⁴. It typically presents as a slow growing parotid mass⁵, more common in men, with a peak incidence in the seventh decade³. Over the years the prevalence of parotid tumours among the women has increased, with a slight decline in occurrence in their male counterpart⁵. The prevalence of smoking has been reported to be as high as 79-100%³ and is thought to be a possible trigger for its pathogenesis.

In order to come to an appropriate treatment plan it is necessary to differentiate the benign from the malignant nature of the tumour and radiological investigations can prove to be an important tool in deciding the therapeutic approach⁶. Various imaging modalities such as CT, MRI or USG can be incorporated to know the anatomical relationships of the lesion as well as the disease process within the neck⁷. Some authors have also suggested the use of Positron Emission Tomography in Malignant tumours of the Parotid salivary gland⁸.

Warthin's tumour is an encapsulated lesion with both solid and cystic areas³, consisting of an epithelial component (oncocytes) and a variable lymphoid stroma³. Most of the evidence suggests that the majority of Warthin's tumours develop from heterotopic salivary ducts within pre-existing intra-parotid or para-parotid lymphoid tissue⁹. Reactive changes follow, resulting in an increase in the volume of lymphatic tissue⁹. It is possible that a few tumours form by adenomatous proliferation of oncocytic duct epithelium within normal parotid glands, followed by a secondary accumulation of lymphoid tissue⁹.

In today's era surgery for the parotid tumours are based on the principles of modern oncology, which aims at conserving the functional organs as well as tissues in full measure¹⁰.

Role of Fine Needle Aspiration Cytology (FNAC) in the Diagnosis of Warthin's Tumour

Cytological diagnosis is a safe and minimally invasive method of providing information about the nature of a parotid mass, helping to distinguish between benign and malignant tumours, and in many cases providing an accurate diagnosis¹¹. However the histopathological result, following surgical excision is considered the gold standard for diagnosis. Surgical treatment is often preferred because of uncertainty regarding the pre-operative cytological accuracy, and not because of the aggressive nature of the lesion¹.

The sensitivity, specificity and diagnostic accuracy of FNAC in diagnosing Warthin's tumour has been reported as ranging from 74-100%³.

Strategy For Management Of Warthin's Tumour

The possibility of a false positive diagnosis of Warthin's tumour following FNA cytology is the basis for a surgical excision. The alternative management is a conservative approach with strict follow up¹. This option is clearly appealing to the patient, since it avoids risk as permanent facial nerve palsy and obviates surgery will only confirm histological diagnosis. Warthin's tumour is more common when patients are over 60 years and presence of co-morbidities, may carry unnecessary risk of general anaesthesia¹. However, despite the high specificity of US guided cytology, it may fail to make the diagnosis of malignant tumours¹¹, and this remains a significant risk in the balance of therapeutic options.

METHODS

All patients over a period of 13 years (2006-2019) at a Hospital in UK who had been investigated by US guided FNA cytology for Warthin's tumours were included in this study. Electronic medical records for 144 cases of FNA cytology diagnosis of Warthin's tumour were assessed for treatment strategy and compared with histological diagnosis in cases of surgical excision. Approval from the Hospital was received prior to data collection. In addition basic demographics were recorded. Case records for those patients who had an FNA cytology diagnosis of Warthin's but who were not managed surgically were examined for the details of why surgery was not elected.

FNA cytology was performed by a radiologist under ultrasound guidance using a 21 gauge hypodermic needle, coupled with a 10ml disposable syringe using gentle constant suction by a 'braced thumb' technique or capillary pressure system. The aspirate was rapidly air-dried, methanol fixated, and stained with Giesma alone or with May-Grunwald Giemsa. Throughout the period of study (13 years) all slides were provisionally reported on site within a rapid access ultrasound guided FNA clinic, by an expert Head and Neck Cytopathologist.

RESULTS

144 cases of FNA cytology diagnosed Warthin's tumour were reported in the study period. There were 100 men and 44 women with a mean age of 52 years (range 35-82). Of the 144 cases, 73 cases were managed by the oral & maxillofacial team, 40 by ENT, and 31 by general surgeon. Table 1 shows the frequency of surgical versus conservative management between surgical specialities within the hospital.

Table1: Comparison Of Surgical Versus Conservative Management By Surgical Team

Surgical Specialty	Surgical Treatment	Conservative Treatment
OMFS	42	31
ENT	26	14
Other	9	22

Out of 144 patients, 77 cases (53.5%) underwent surgical excision and 67 cases (46.5%) were managed conservatively. Histology confirmed a diagnosis of Warthin's tumour in 66(86%) out of 77 cases. Of the remaining 11 (14.3%), 5 cases were benign and 6 cases were malignant. (See table 2)

Table 2: Other Histological Diagnoses

PLEOMORPHIC SALIVARY ADENOMA	1
BENIGN LYMPHO-EPITHELIAL CYST	1
ONCOCYTIC PAPILLARY CYSTADENOMA	1
MULTI-FOCAL NODULAR ONCOCYTIC HYPERPLASIA	2
BASALOID SQUAMOUS CARCINOMA	1
LOW GRADE MUCOEPIDERMOID CARCINOMA	2
CYSTIC MUCOEPIDERMOID CARCINOMA	1
METASTATIC SQUAMOUS CARCINOMA	2

Of the 66 patients with FNA cytology diagnosis of Warthin's tumour that did not undergo surgery, 21 case notes could not be examined for various reasons. 9 case notes have been destroyed as a result of 8 years passing since the patient deceased, 8 case notes could not be located. In 4 patients, US guided FNAC had been requested to exclude for metastases from another primary tumour.

Of the 45 case notes available for patients who had FNA diagnosis of Warthin's tumour but did not have surgery, the reasons for not electing surgical management for definitive histological diagnosis are shown in Table 3.

Table 3: Reason Stated For Non-surgical Management

Reason for Not Electing Surgical Treatment	Number of Cases
Surgeon Advice	16
Surgeon & Patient (agree that surgery is either not advisable/not essential/not in patient's best interest)	12
Patient Declines (despite surgeon's advice)	4
Patient Declines (on basis of complication suffered from previous surgery)	1
Significant Medical Co-morbidities (despite surgeon or patient preference for surgery)	6
Swelling Resolved	4
Patient Died	1
Patient denied all review appointments	1

Surgeon Advice' to avoid a surgical strategy tended to involve appreciation of:

- The 'benign' nature of Warthin's tumour
- No sinister features either clinically or on US guided FNA cytology
- Asymptomatic
- Patient age
- Patient's general health and/or presence of medical co-morbidities, which is a major reason for avoiding surgery.

The length of follow up for patients who did not have surgery varied between surgeons and cases, with some patients being discharged straight after review, and others being followed up to a maximum 3 years. Patient factors were main reason for non surgical management and the duration of follow up. In all cases, patients were advised to contact the relevant department should they have any concerns or notice any changes in the lesions.

DISCUSSION

Dong Hoon Lee et al in the year 2018 analysed the clinical features of 118 patients who were diagnosed with Warthin's tumour and thereafter underwent surgery for the same. Of the 118 patients studied, 98 were male (89.1%) and 12 were females (10.9%)¹².

The results of our study correlate well with the literature, supporting the prevalence of Warthin's tumour in men and a high sensitivity of

FNA cytology in the diagnosis of Warthin's tumour.

FNAC is an appropriate investigation for assessment of a parotid lump. If carried out by an experienced cytologist, it is safe and relatively atraumatic and permits immediate assessment of the material¹³. The theoretical risk of needle track seeding of malignant cells by FNA has been discredited¹⁴. The technique is helpful in differentiating benign from malignant disease, specific tumour cell type, primary or secondary neoplasia and infected masses¹⁴.

N. Fakhry et al in 2012 did a retrospective study on 249 patients who underwent FNAC for the parotid masses. They did not find any complication during FNAC and among the 202 FNAC samples analysed a correct diagnosis was obtained in 87% of the cases¹⁵. It corresponds to our study where the confirmed diagnosis of Warthin's tumour was obtained in 86% of the cases.

Laura L. Veder et al in the year 2010 evaluated the diagnostic accuracy of fine-needle aspiration cytology (FNAC) for Warthin tumors of the parotid gland. They found that out of 133 cases examined, the histological diagnosis of Warthin's tumour of the parotid gland was confirmed in 127 of them¹⁶.

The similar study done by Thomas So et al in the year 2019 measured the sensitivity and positive predictive value of FNAB for WT. They found that of the 177 patients included in the study the sensitivity as well as the positive predictive values came out to be 95.8% and 97.2% respectively¹⁷.

The main sources of error are failure to obtain a representative sample and the variable cytological appearance of Warthin's³. Cytologically, Warthin's tumour shows cellular debris mixed with lymphocytes and oncocytes. There may be a predominance of the lymphoid component, squamous cells and necrotic debris³, which can cause a significant diagnostic challenge. Squamous cells in particular are seen in squamous cell carcinoma and muco-epidermoid carcinoma, which can make differential diagnosis difficult⁷. From this study and others, the sensitivity of FNA cytology to detect malignant tumours is low¹¹, and it is debatable whether the decisions to treat should be based solely on the results of FNA cytology.

Carla B. MacLeod and William J. Frable in 1993 studied the FNA biopsies of major and minor salivary glands in 582 patients. They found that 21 cases lacked the cytological histologic correlation¹⁸. In our study, of the 77 patients who underwent surgical excision the histological diagnosis did not correlate with the FNA diagnosis in 11 samples.

Anil V. Parwani, Syed Z. Ali in the year 2003 retrospectively studied the potential sources of diagnostic errors and overall accuracy of FNA diagnosis of Warthin's tumour in 97 patients. Out of this, 33 patients who underwent FNAC, 20 specimens were correctly diagnosed as Warthin's tumour whereas 7 of them were misdiagnosed¹⁹.

David C. Howlet in the year 2007 did sonographically guided core biopsy in 133 consecutive patients who presented with the parotid mass. They found that out of 76 patients who underwent surgery the histological diagnosis correlated with 74 patients²⁰. In our study the Ultrasound guided FNAC was performed and the histological diagnosis of Warthin's tumour was confirmed in 66 of 77 cases.

The facial nerve dominates parotid surgery. Superficial parotidectomy is in fact a dissection of the facial nerve¹². Temporary or permanent facial weakness is therefore a specific potential complication resulting from surgery and is an important cause of patient morbidity. Incidence of 32% temporary and 1.1% permanent facial palsy with superficial parotidectomy, compared to 11% and 1.8% with extra-capsular dissection²¹ is reported.

Despite high accuracy in differentiating benign and malignant disease, the primary reason for advocating surgical excision of a Warthin's tumour is to confirm histopathological diagnosis and exclude a malignant lesion.

Most long term studies suggest that, an untreated Warthin's tumour will probably remain static, or at worst fluctuate in size due to infection. A small number may become painful through infarction⁷. There is a rare possibility of malignant transformation, estimated by Batsakis to occur

in approx 0.3% of cases³. Although this is a small risk of squamous cell carcinoma, muco-epidermoid carcinoma and malignant follicular lymphoma have been found to arise within Warthin's tumour and this may contribute to the argument for surgical treatment of Warthin's tumour³.

CONCLUSION

The sensitivity of FNA cytology in the diagnosis of benign Warthin's tumours was found to be high (85.7%). This contributes to the discussion as to whether a surgical or conservative approach should be used in the primary management of Warthin's tumours, with clinical, surgical and patient factors influencing the strategy chosen.

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