

# Tumors In Parapharyngeal Space: 4 Years Review

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## Citation

M Marina, P Putra, M Hazim, M Shiraz, A Abdullah. *Tumors In Parapharyngeal Space: 4 Years Review*. The Internet Journal of Otorhinolaryngology. 2005 Volume 4 Number 2.

## Abstract

Primary parapharyngeal space (PPS) neoplasms are rare. Three main groups are identified, namely those of salivary origin, neurogenic tumors and paragangliomas<sup>1</sup>. The most common is pleomorphic adenoma, followed by neurogenic tumors and paragangliomas<sup>1</sup>. The PPS is a complex anatomical potential space and high risk for complication. Optimum preoperative evaluation is essential to minimize intraoperative risk<sup>3</sup>. Six cases are reviewed.

## INTRODUCTION

Primary parapharyngeal space (PPS) neoplasms are rare. Three main groups are identified, namely those of salivary origin, neurogenic tumors and paragangliomas<sup>1</sup>. The most common is pleomorphic adenoma, followed by neurogenic tumors and paragangliomas<sup>1</sup>. The PPS is a complex anatomical potential space and high risk for complication. Optimum preoperative evaluation is essential to minimize intraoperative risk<sup>3</sup>. Six cases are reviewed.

## MATERIAL AND METHOD

A retrospective data of 6 patients from Otorhinolaryngology Clinic of HUKM who were diagnosed as parapharyngeal tumors and underwent excision from January 2001 to January 2005. The medical and radiological data were analysed.

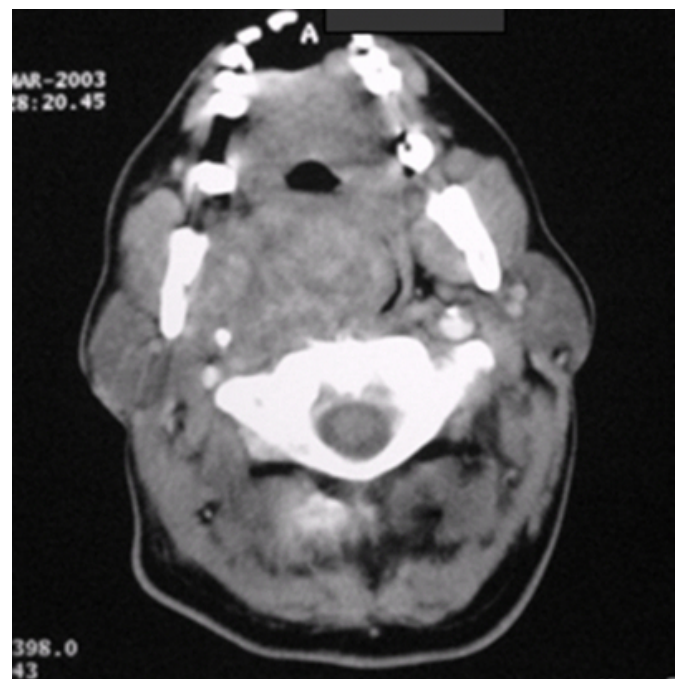
## RESULTS

Six patients were diagnosed as parapharyngeal tumors within 4 years in HUKM. Two were females and 4 were males with the age ranging from 34 years to 56 years (mean – 45.8 years). Three of the patients were Malay, 2 Chinese and 1 Indian. Commonest presentation is neck swelling. Computed tomography scan of the neck was done in all patients. All except one underwent excision via transcervical approach. Mandibular swing approach was done for one patient to get a better surgical exposure. Histopathological reports were vagal schwannoma (2 patients), Vagal paraganglioma (1 patient), sympathetic schwannoma (1 patient) and pleomorphic adenoma (2 patients). One patient had tracheostomy due to airway obstruction secondary to postoperative haematoma and another patient

prophylactically had tracheostomy to secure the airway. Only 1 patient had postoperative complication that was haematoma causing airway obstruction that requires tracheostomy and exploration. Postoperatively, three patients had unilateral vocal cord palsy and 1 patient had Horner's syndrome in which they were due to the origin of the tumor itself.

## Figure 1

Figure 1: Pleomorphic adenoma



**Figure 2**

Figure 2: Sympathetic Schwannoma



## DISCUSSION

Parapharyngeal space (PPS) tumors are rare. It accounts only 0.5% of all head and neck tumors<sup>1</sup>. Benign tumor is commoner than malignant tumor. Three main groups are identified, namely those of salivary origin, neurogenic tumors and paragangliomas. A study by Malone et al in 2001 reported 73% of the neoplasms were benign and 27% were malignant. The most common neoplasm was pleomorphic adenoma followed by carotid and vagal paraganglioma<sup>2</sup>. There are difficulty in diagnosing and managing these tumors due to their inherent location.

The PPS is a complex anatomic region located between the mandibular ramus and the lateral pharyngeal wall extending as an inverted pyramid from the skull base superiorly to the apex at the level of hyoid bone. The space is divided into prestyloid and poststyloid compartment. The prestyloid compartment is occupied by the parotid gland, fat and possibly lymph nodes. The poststyloid compartment contains the carotid sheath with the internal carotid artery, internal jugular vein, the last four cranial nerves and lymph nodes. Tumors arising from these spaces may originate from any of the structures normally occupying each compartment. The complex anatomy and potential for complication requires optimum assessment process to minimize risk at the time of surgery.

Because of the anatomic complexity, location and

surrounding vital structures, biopsy of the tumor is challenging and controversial. Obtaining a tissue diagnosis preoperatively is not crucial, because appropriate radiological evaluation may correctly identify tumor origin in more than 90% of cases<sup>3</sup>. Furthermore, most of these tumors are benign<sup>3</sup>. Preoperative biopsy may be indicated for those tumors that are suspicious for malignancy. There has always been objection to intraoral incisional biopsy because of the risk of haemorrhage, possibility of seedling the surrounding tissues with tumor cells, contamination with risk of infection and obliteration of surgical planes from associated inflammation<sup>1</sup>. However in one of our case series, the transoral incisional biopsy was uneventful. It can be performed provided CT scan is done to assess the relation of the tumor to the major vessels. Pang et al<sup>1</sup> in year 2002 reported a non complicated intraoral FNAC in 3 of his 31 PPS tumor cases and all these FNAC results correlated with their final histology. Extraoral FNAC PPS tumor is difficult because of its inherent location. Ultrasound guided FNAC may be helpful.

Radiological evaluation is the cornerstone of preoperative planning. CT scan was done in all of our 6 case series. CT scan can demonstrate the size and extent of the tumor and its relation to surrounding structures. The direction of displacement of the parapharyngeal fat plane, styloid process and carotid space vessels allows the site of origin of the mass to be accurately predicted<sup>1</sup>. CT scan can also differentiate parotid from nonparotid mass origin, and establishes the location of tumor in the prestyloid or poststyloid compartments. Tumors of the deep lobe of the parotid gland will displace the fat anteromedially and the carotid artery in a posterior direction (Figure 1). Prestyloid extraparotid tumors will have a fat plane interposed between them and the parotid gland. Schwannomas tend to displace the internal carotid artery anteriorly (Figure 2). Vagal paragangliomas displace the internal carotid artery anteriorly and medially, whereas carotid body paragangliomas cause a characteristic splaying of the internal and external carotid arteries<sup>3</sup>. The use of contrast during CT scan ascertains the vascularity of the tumor. MRI provides better soft tissue visualization of neural and vascular structures. However it is not readily available and more expensive. Angiography is recommended for a suspected vascular tumor in the post styloid compartment to enable carotid cross compression or balloon occlusion study in order to establish (a) identification of feeder vessels; (b) visualization of vascular mass; (c) demonstration of carotid displacement or distortion; (d) suggestion of tumor infiltration; and (e)

demonstration of cerebral circulation<sub>4</sub>.

Proper explanation regarding the complication of surgery such as hoarseness, horner's syndrome, dysphagia, excessive haemorrhage and stroke is pertinent. Patient must be well informed and consented.

Multiple surgical approaches to PPS tumors have been described in the literature. The four basic approaches are transoral, transcervical, transparotid and mandibular swing. Surgical approaches are considered according to size and site of the lesion. Most surgeons prefer transcervical excision of tumor. In our case series, all patients underwent transcervical approach in and 1 case combine with mandibular swing approach. Transparotid approach is employed for patients with deep lobe parotid tumors. Mandibular swing approach is used for very large parapharyngeal tumors that are vascular, or for which maximal exposure at the skull base is required to secure haemostasis.

### **CONCLUSION**

The PPS is located deep in the neck that makes it a difficult area for clinical assessment. A diagnostic radiological evaluation is essential before surgery to minimize intraoperative risk. The need of preoperative intraoral tissue incisional biopsy or FNAC is controversial. However it can be done after radiological assessment and is necessary if malignancy is suspected.

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