Parapharyngeal Space Tumors: A Clinico-pathological Study

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ABSTRACT

Objective — *To find out clinical presentation, radiological features, histopathological pattern, surgical treatment and outcome of parapharyngeal space (PPS) tumors.*

Study design — *Descriptive case series.*

Place & Duration of study — *Department of ENT/ Head and Neck Surgery, Jinnah Postgraduate Medical Centre (JPMC), Jinnah Sindh Medical University (JSMU) Karachi, from June 2010 to June 2018.*

Methodology — *All patients with parapharyngeal tumors who were diagnosed during the study period were included. Symptoms and the stage of presentation were noted. Baseline investigations including CBC, urea/creatinine/electrolytes, viral markers, PT/ APTT, ESR and X- ray chest were done. Ultrasound neck, CT scan contrast and magnetic resonance imaging (MRI), were done to assess the extent of tumor and appropriate surgical approach for its removal. Fine needle aspiration cytology (FNAC) was done to evaluate the cytology. Surgical excision of tumor under general anesthesia was carried out through different surgical approaches. Follow up was done at 3 months, 6 months and 1 year. Follow up was based on clinical examination and findings were recorded on a proforma. SPSS Version 16.0 was used for data entry and analysis.*

Results — *A total of 52 cases were managed during the study period. There were 29 (55.76%) males and 23 (44.24%) females. Mean age of the patients was 42 ± 6.48 year. There were 45 (86.5%) benign and 7 (13.4%) malignant tumors. The common presenting symptoms were neck swelling (n=32 - 61.5%), mass in oral cavity (n=14 - 26.9%) and dysphagia (n=6 - 11.5%). Transcervical approach was the most common approach (n=37 - 71.1%). Only 67.3% patients could be followed after surgery. In cases of transcervical and trans-mandibular approach the only complication occurred was marginal mandibular nerve palsy.*

Conclusions — *Parapharyngeal space tumors were difficult to diagnose and treat among head and neck tumors. Neck swelling was the most common symptom. Benign tumors found in majority of patients. Pleomorphic adenoma was the most common tumor in this series.*

Key words — *Parapharyngeal space tumors, Head and neck tumors, Nasopharynx tumors, Pleomorphic adenoma.*

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INTRODUCTION:

Parapharyngeal space tumors are rare among the head and neck neoplasms. They are among the most challenging neoplasms in terms of diagnosis and management.[1] The parapharyngeal region is a potential space where a diverse group of inflammatory diseases may co exit that involve the nasopharynx and tonsillar regions, including the parotid glands.[2] A broad range of benign and malignant invasive lesions tend to occur in this anatomic area.[3] Primary

malignancies in the region, direct advancement of tumors from surrounding areas and metastasis from other anatomical locations, can be found in the parapharyngeal space. Malignant neoplasms arising from this space can also invade through various structures of head and neck eroding intra facial and intra cranial structures through potential routes likes jugular foramen and base of skull. There is also likelihood of bone erosion and expansion into retropharyngeal space and infra temporal cavity.

Parapharyngeal space has a unique anatomy and is partitioned into different compartments through which various neuro vascular structures pass.[4] A wide range of tumors arise from this space out of which 80% are benign. Pleomorphic adenomas of pituitary gland are the most common of benign neoplasms, followed by paragangliomas and neurogenic tumors.[5]

The common presenting complaints of lesions in this space include neck swelling, mass in oropharynx and dysphagia. Patients may remain asymptomatic for a long period of time till the tumor size increases.[6] Surgical excision remains the mainstay of management for parapharyngeal space tumors intending to minimize the morbidity and mortality. Several surgical approaches have been used in cases of parapharyngeal space tumors which are predominately classified into four groups, transcervical, transoral, trans-parotid and trans-mandibular. Recent studies showed that endoscopic assisted trans-nasal maxillary sinus and combined with transoral approach is associated with better outcome.[7]

Parapharyngeal space tumors are among the least common tumors of head and neck region therefore no agreed upon guidelines are available for their management. A probable diagnosis can be made in most cases by gaining the knowledge of signs and symptoms at the time of presentation with the help of diagnostic modalities. The most appropriate surgical approach depends upon the patient factors and characteristics of the lesions. The goal of management is to reduce the disability and increasing patient's comfort and satisfaction. There is a need of documenting experience of management of such rare lesions as it will help those who may come across patients with similar pathologies. This study aimed at documenting clinicopathological features, approach to diagnosis and treatment provided to patients with parapharyngeal space tumors.

METHODOLOGY:

This descriptive case series was conducted from June 2010 to June 2018 in the Department of ENT / Head and Neck Surgery, Jinnah Postgraduate Medical Centre, JSMU Karachi. All adult patients, between 19 and 50 year of age with parapharyngeal space tumors, who were managed during the study period, were included. Data was recorded on pre designed form. The variables of interest were demographic information like age, and gender, clinical presentation, investigation modalities, (CT scan / MRI), diagnostic procedures, postoperative histopathological findings and surgical approaches to the pathologies. Ultrasound guided FNAC was performed for tissue diagnosis.

All procedures were performed under general anesthesia and specimens were sent for histopathology. The surgical approach was chosen according to the tumor location, size, and relationship to surrounding anatomical structures. Follow-up was carried out on monthly basis with clinical assessment and CT scan or MRI after 03 to 06 months in cases of proven malignancy and if patients again developed symptoms. Informed consent was obtained from each patient. SPSS Version 16.0 was used for data entry and analysis.

RESULTS:

A total of 52 patients were managed during the study period. It included 29 (55.8%) males and 23 (44.2%) females. The mean age of patients was 42 ± 6.48 year. The most common symptom was neck swelling in 32 (61.53%) patients. Mass in oral cavity was associated with hypoglossal nerve palsy in two patients while glossopharyngeal nerve was affected in two patients. Associated symptoms were referred earache, decrease in hearing and change in voice. The common clinical features with which patients presented are given in table I.

Of the total, in 45 (86.53%) patients tumors of parapharyngeal space were benign as shown in table II. This included benign pleomorphic adenoma (n=29 - 55.76%) followed by schwannoma (n=8 - 15.38%). There were 7 (13.46%) malignant tumors which included ex-pleomorphic parotid carcinoma in 4 (7.62%) patients. Malignant tumors are given in table III. Malignant parapharyngeal space tumor patients were sent for oncological opinion and management. Surgical approaches used for parapharyngeal tumors are given in table IV.

DISCUSSION:

The mean age of the patients in our study was 42 ± 6.48 years. This is similar to a study conducted in Taiwan over a period of 13 years.[8] Slight male preponderance (55.8%) was noted. This is in consistence with previous studies.[8,9] Majority of

Table I: Presenting Symptoms	
Presenting Symptoms	**No. of Patients n (%)**
Neck swelling	32 (61.53%)
Mass in oral cavity	10 (19.32%)
Dysphagia	6 (11.53%)
Hypoglossal nerve palsy	2 (3.84%)
Glossopharyngeal nerve palsy	2 (3.84%)

Table II: Benign Parapharyngeal Space Tumors	
Tumor Types	**No. of Patients n (%)**
Salivary gland/pleomorphic adenoma	29 (55.76%)
Neurogenic tumor (Neurofibroma)	6 (11.53%)
Paraganglioma	2 (3.84%)
Schwannoma	8 (15.38%)

Table III: Malignant Parapharyngeal Space Tumors	
Tumor Types	**No. of Patients (n %)**
Adenoid cystic carcinoma	1 (1.92%)
Ex-pleomorphic adenoma	4 (7.62%)
Lymphoma	2 (3.84%)

Table IV: Surgical Approaches	
Surgical Approach	**No. of Patients (n %)**
Transcervical	37 (71.15%)
Intraoral	6 (11.53%)
Transcervical plus intraoral	8 (15.38%)
Trans-mandibular	1 (1.92%)

parapharyngeal space tumors (80%) are benign while 20% tend to be malignant.[10-12] In our study about 86 % were benign tumors. Out of this pleomorphic adenoma was the most commonly encountered tumor. The largest systemic review till date showed similar finding.[13] Paragangliomas constituted only 3.84% of all PPS tumors in our study. This finding is much lower from the reported frequency 10%-40% in literature.[14-16]

In this study, 2/3rd of patients presented with neck swelling. This is in concordance with previous studies. Imaging modalities provide valuable aid in making the diagnosis.[8,13,17] We performed CT and MRI on every patient of PPS tumor to assess the tumor extent and involvement of neurovascular structures. Surgical approaches used in our study were transcervical, intraoral, trans-mandibular and combined transcervical and transoral. Selection of a surgical approach was based upon location and size of tumor. The trans-oral approach and the combined transoral-transcervical approach are found unsafe and should be avoided as these result in number of postoperative complications.[18] In our study, trans-cervical approach was chosen for in 71% cases and trans-oral approaches in 11.53% where the tumor was of small size. Combined transcervical/ transoral approach was employed in 15.38% when the parapharyngeal space tumors were found to be large with extension into surrounding structures. In few malignant cases surgical resection was difficult due to large size of tumor and in one case trans-mandibular approach was used. Hemorrhage and later wound infection was encountered in one patient. Facial nerve palsy is a common complication faced by the surgeons in PPS tumor management.[19] The only complication occurred in our study was marginal mandibular nerve palsy in transcervical and trans-mandibular approach. Other postoperative complications were infrequent in index study.

CONCLUSIONS:

Benign tumors were commonly encountered in this

series. Imaging techniques like CT Scan and MRI should be performed in all cases to assess tumor characteristics and extent. Surgical approach can be tailored accordingly. Transcervical approach was used in most of the patients in this study.

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S. M. Tariq Rafi: Worked on literature search and contributed to the manuscript writing.
Sameer Qureshi: Reviewed the literature, worked on introduction and discussion.
Razzaq Dogar: Worked on literature search and reviewed the article.
Jawed Jamali: Reviewed the article and literature.

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