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.

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 like
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
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
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 approaches were 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

### Table I: Presenting Symptoms

<table>
<thead>
<tr>
<th>Presenting Symptoms</th>
<th>No. of Patients</th>
<th>n (%)</th>
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<tbody>
<tr>
<td>Neck swelling</td>
<td>32 (61.53%)</td>
<td></td>
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<tr>
<td>Mass in oral cavity</td>
<td>10 (19.32%)</td>
<td></td>
</tr>
<tr>
<td>Dysphagia</td>
<td>6 (11.53%)</td>
<td></td>
</tr>
<tr>
<td>Hypoglossal nerve palsy</td>
<td>2 (3.84%)</td>
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</tr>
<tr>
<td>Glossopharyngeal nerve palsy</td>
<td>2 (3.84%)</td>
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### Table II: Benign Parapharyngeal Space Tumors

<table>
<thead>
<tr>
<th>Tumor Types</th>
<th>No. of Patients</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salivary gland/pleomorphic adenoma</td>
<td>29 (55.76%)</td>
<td></td>
</tr>
<tr>
<td>Neurogenic tumor (Neurofibroma)</td>
<td>6 (11.53%)</td>
<td></td>
</tr>
<tr>
<td>Paraganglioma</td>
<td>2 (3.84%)</td>
<td></td>
</tr>
<tr>
<td>Schwannoma</td>
<td>8 (15.38%)</td>
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### Table III: Malignant Parapharyngeal Space Tumors

<table>
<thead>
<tr>
<th>Tumor Types</th>
<th>No. of Patients</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adenoid cystic carcinoma</td>
<td>1 (1.92%)</td>
<td></td>
</tr>
<tr>
<td>Ex-pleomorphic adenoma</td>
<td>4 (7.62%)</td>
<td></td>
</tr>
<tr>
<td>Lymphoma</td>
<td>2 (3.84%)</td>
<td></td>
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</tbody>
</table>

### Table IV: Surgical Approaches

<table>
<thead>
<tr>
<th>Surgical Approach</th>
<th>No. of Patients</th>
<th>n (%)</th>
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</thead>
<tbody>
<tr>
<td>Transcervical</td>
<td>37 (71.5%)</td>
<td></td>
</tr>
<tr>
<td>Intraoral</td>
<td>6 (11.53%)</td>
<td></td>
</tr>
<tr>
<td>Transcervical plus intraoral</td>
<td>8 (15.38%)</td>
<td></td>
</tr>
<tr>
<td>Trans-mandibular</td>
<td>1 (1.92%)</td>
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</tbody>
</table>
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.

REFERENCES:


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Author’s Contributions:
Hurtamina Khan: Conceived the idea, worked on literature search and data collection.
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.

Conflict of Interest:
The authors declare that they have no conflict of interest.

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