TUMOURS OF PARAPHARYNGEAL SPACE WITHOUT OROPHARYNGEAL SWELLING: A SERIES OF TWO CASES

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ABSTRACT

The parapharyngeal space is a complex anatomical area. Tumors located in the parapharyngeal space are relatively rare and account for 0.5% of all the head and neck tumors. Pleomorphic adenoma is the most common parapharyngeal space tumor. The clinical features are slow growing swelling of parotid and upper cervical region, bulging on lateral oropharyngeal wall, dysphagia, u/l Eustachian tube dysfunction, pain, trismus, and obstructive sleep apnoea. The pre-styloid tumours displace the lateral pharyngeal wall medially, parotid gland laterally and carotid artery laterally while maintain the fat plane with deep lobe of parotid gland. Post-styloid tumour displace the carotid artery medially and anteriorly with obliteration of fat plane around the vessels and pre-styloid fat anterolaterally.

We report a series of two cases of pleomorphic adenoma, involving the prestyloid parapharyngeal space, and in continuity with the deep lobe of the parotid gland. However no medial bulge was seen on lateral oropharyngeal wall. Complete excision of the lesion was performed using the cervical-transparotid approach preserving the facial nerve.

Main aim of our study is to emphasize that the parapharyngeal tumors are not always presented with oropharyngeal symptoms like lateral pharyngeal wall bulge, dysphagia, dysarthria and trismus.

KEYWORDS

Tumours, Pleomorphic adenoma, Pre-styloid, Parapharyngeal space.

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INTRODUCTION: The parapharyngeal space is a complex anatomical area. Tumors located in the parapharyngeal space are relatively rare and account for 0.5% of all the head and neck tumors.[1] About 80% of these tumours are benign and the other 20% are malignant.[2] The differential diagnosis of the primary parapharyngeal tumor includes salivary gland neoplasm, neurogenic tumor and metastatic deposits from nasal cavity, nasopharynx, palate and maxillary sinus.

The parapharyngeal space is often described to be a deep neck space, shaped as an inverted pyramid. The base of the pyramid is at the skull base (petrous part of temporal bone) and the apex is at the junction of posterior belly of digastric muscle and greater cornu of hyoid bone. Medially parapharyngeal space is lined by pharyngobasilar fascia and pharyngeal wall. This is superiorly formed by the approximation of the fascia from the tensor veli palatini muscle to the medial pterygoid muscle.

Inferiorly the medial boarder is continuous with the fascia over the superior constrictor muscle. The pterygoid muscle fascia, the ramus of the mandible, retromandibular portion of the deep lobe of the parotid gland and posterior belly of the digastric muscle forms the lateral boundaries of this space. The medial pterygoid muscle fascia incorporates spheno-mandibular ligament superiorly to the skull base as a dense fascia. This fascia separates the inferior alveolar nerve, lateral pterygoid muscle and mandibular condyle from the parapharyngeal space. Stylomandibular ligament [Figure 1] extends from the styloid process to the angle of the mandible. The other two boundaries of the stylomandibular tunnel are ascending mandibular ramus and skull base. Primary tumors of the deep lobe of the parotid gland can grow into the parapharyngeal space through this tunnel. The constriction of this tunnel on tumor growth gives a characteristic "dumbbell" shape on the CT scan. Vertebral fascia and paravertebral muscles lies posteriorly and pterygomandibular raphe and medial pterygoid fascia anteriorly to this space.

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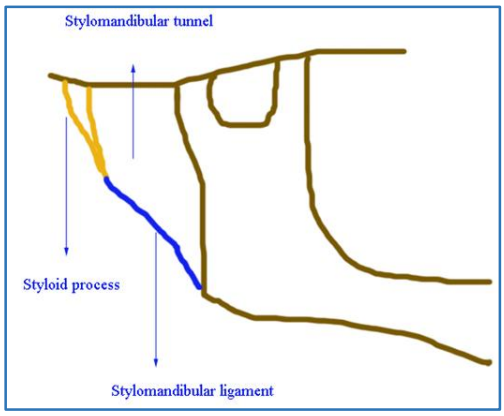

Fig. 1: Stylomandibular ligament extends from the styloid process to the angle of the mandible

Clinically, the parapharyngeal space should be considered in two compartments pre-styloid and post-styloid. It is divided by fascial condensation joining the styloid process to tensor veli palatine called aponeurosis of Zuckerkandl. The pre-styloid space is anterolateral lies lateral to the pharynx and deep to masticator space and ramus of mandible. It contains retromandibular portion of the deep lobe of the parotid gland, minor salivary gland, branch of CN V to the tensor veli palatine muscle, ascending pharyngeal artery and pharyngeal venous plexus. The majority of the pre-styloid space is filled with fat. The post-styloid compartment is posteromedial and contains internal carotid artery, internal jugular vein, CN IX to XII, cervical sympathetic chain, upper deep cervical lymph nodes and glomus bodies.

Pleomorphic adenoma is the most common parapharyngeal space tumor followed by schwannoma, paraganglioma and neurofibroma. Most tumors originate in the superficial lobe but, more rarely, these tumors may involve the deep lobe of the parotid gland.[3] These are generally considered to be a benign tumor with high recurrence rate. The clinical features are slow growing swelling the parotid and upper cervical region, bulging on lateral oropharyngeal wall, dysphagia, u/l Eustachian tube dysfunction, pain, trismus and obstructive sleep apnoea.

The compartment localization done on basis of displacement of fat of pre-styloid and involvement of carotid vessels and IJV. The pre-styloid tumours displace the lateral pharyngeal wall medially, parotid gland laterally and carotid artery laterally while maintain the fat plane with deep lobe of parotid gland. Post-styloid tumour displace the carotid artery medially and anteriorly with obliteration of fat plane around the vessels and pre-styloid fat anterolaterally.

CASE REPORT:

Case 1: A 30-years-old female with presented with a swelling in the left parotid and upper cervical region. The patient did not complain of any associated symptoms like oropharyngeal bulging, trismus etc. The examination revealed a mass of 5cm×6cm in size, located in the left parotid and upper cervical region, hard in consistency, non-tender, non-movable. [Figure 2] On intra-oral examination uvula was midline and no medial bulge was seen on lateral oropharyngeal wall. Neck Ultrasonography (USG) revealed a lobulated mass occupying the left pre-styloid parapharyngeal space connected with deep lobe of the left parotid gland and measuring 25x19x16mm and a second mass located behind the left mandibular angle, measuring 44x51x46mm. Computed Tomography (CT scan) [Figure 3] showed a large expansive oval mass, measuring about 5cm in diameter with apparently regular edges and located medially to the mandibular angle in the pre-styloid parapharyngeal space. The lesion appeared to be in continuity with the deep lobe of the parotid gland. Post-styloid compartment was normal in shape and consistency. Fine Needle Aspiration Cytology (FNAC) was done and showing reactive lymphadenitis in a lymph node within the parotid gland.

After obtaining the patient's informed consent to the surgical procedure, complete excision of the lesion was performed using the cervical-transparotid approach preserving the facial nerve. Per operative tumour was found medial to parotid gland displacing the facial nerve and parotid laterally medially the tumour was in vicinity to spinal accessory nerve. Histological examination revealed a pleomorphic adenoma of the parotid gland. [Figure 4-8].

Case 2: A 22-years-old male came to our hospital with complaint of mass in right parotid region over mandibular angle which had been increasing in size over the last 2 months. On examination, a mass of about 6cm in diameter, firm in consistency, non-mobile, and not painful when palpated, was found in the right parotid and upper cervical region extending up to right submandibular region. On oral examination uvula was found in midline and no oropharyngeal bulging was seen. The patient underwent Computed Tomography (CT scan) of neck, [Figure 9] which showed a large growth arising from deep lobe of parotid gland, extending medially to the pre-styloid compartment of parapharyngeal space, post-styloid compartment was normal. FNAC performed trans-cutaneously was consistent with pleomorphic adenoma. The patient underwent surgery and excision of the lesion was performed via the cervical-transparotid approach; following the facial nerve, the superficial lobe was dissected to reach the deep lobe and parapharyngeal space; a blunt dissection of the deep lobe with the tumor was performed. The histological exam confirmed the diagnosis of pleomorphic adenoma. The patient was discharged, after 7 days, with no signs of facial palsy.

Fig. 2: Showing left parapharyngeal tumor as upper cervical swelling

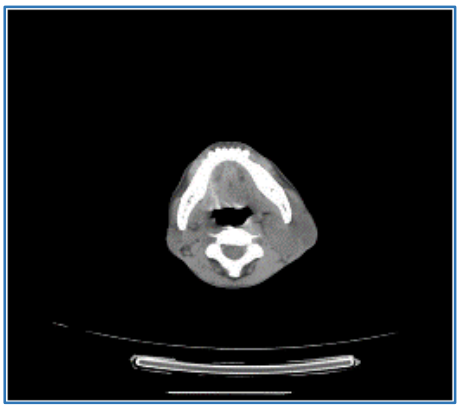

Fig. 3: CT neck axial section showing tumor occupying left pre-styloid parapharyngeal space

Fig. 4: The tumor after exposure

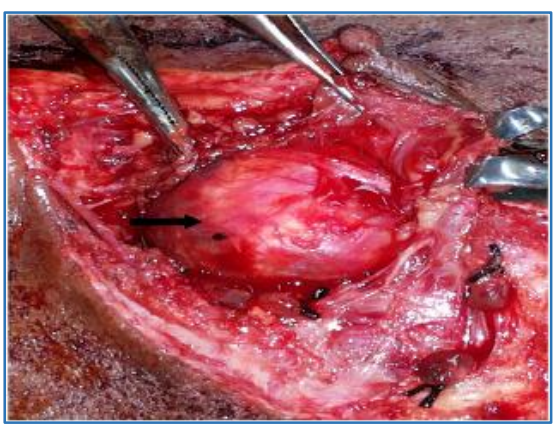

Fig. 5: Tumour deep to branches of facial nerve, involving the deep lobe

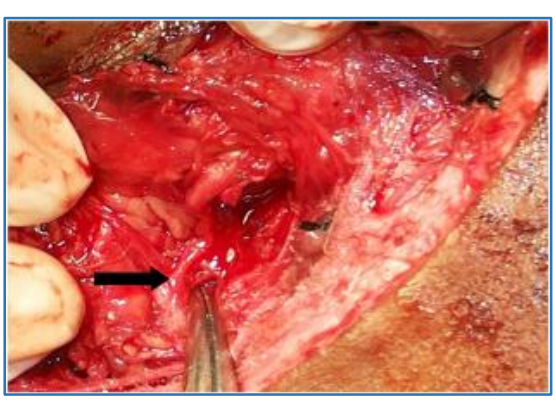

Fig. 6: The branches of facial nerve after removing the superficial lobe of parotid

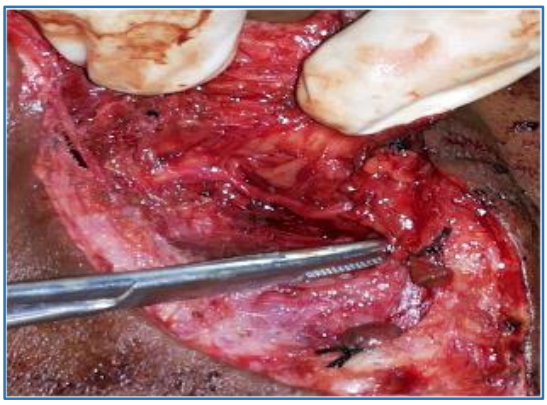

Fig. 7: Branches of facial nerve after removal of tumour

Fig. 8: Showing spinal accessory nerve

Fig. 9: CT neck axial section showing mass occupying parotid region and pre-styloid parapharyngeal space

DISCUSSION: Pleomorphic adenoma is the most common pre-styloid parapharyngeal space tumor. It arises from the parotid salivary gland. Due to the few symptoms complained by the patient they can grow for a long time before being diagnosed, and the potential risk of malignant transformation increases over the years with an incidence of 1-7%.[4] They are generally discovered, during routine physical examination, as an asymptomatic mass in upper part on neck or bulge in lateral oropharyngeal wall or both. They remain silent for a long time and the slow growth does not lead to symptoms even if the tumor is in contact or displaces, vital structures located in the parapharyngeal space, such as vessels or nerves. Diagnostic imaging, such

as computed tomography CT or MRI, are mandatory. CT scan is done to differentiate the pre-styloid compartment to post-styloid compartment. CT scan with contrast helps to differentiate benign tumors from vascular tumors. MRI is preferred, when possibility of post-styloid compartment involvement is more on account of its better definition of soft tissue, and provides precise information concerning tumor margins as well as the relationship with the vital structures like vessels and nerves. In our both the cases parapharyngeal tumor involve only pre-styloid compartment, so patient have no complain of cranial nerve involvement like dysphagia, dysarthria and trismus, and also patient have no oropharyngeal mass.

Much controversy exists regarding the use of FNAC in the diagnostic procedures due to localization of these tumors and their relationship with the vascular and nervous structures that can be damaged by this kind of examination. In our opinion, FNAC is a reliable procedure that can guide the surgeon and be useful in choosing the right surgical approach,[5,6] even though it would not be the first choice diagnostic tool, but it should be performed following diagnostic imaging in order to exclude a vascular lesion. Depending upon the location of the lesion, it is performed transorally, transcervically or guided by CT or US and can predict the nature of the lesion which will assist surgeon-patient planning. US- or CT-guided FNAC, according to the literature, is accurate in 90-95% of cases.[7] Open neck or trans-oral biopsies should be avoided, since opening the tumor capsule increases the risk of recurrence.

The elective treatment of para-pharyngeal space tumors is surgery. The histological variety of this tumor along with the particular location, increase the difficulty in selecting the best surgical approach[2,8] to maximize visibility, ensure complete removal of the tumor, and reduce morbidity. Out of many approaches described in the literature, those involving lateral neck dissection are indicated for large tumors involving the para-pharyngeal space without reaching the deep parotid lobe, but full surgical exposure is impeded by the presence of the mandible. The most frequent is the cervical-trans-parotid approach that allows exercise of the benign lesion with good control on the vascular and nervous structures following dissection of the superficial parotid lobe. In both cases, this kind of surgical technique was used, given the characteristics of the lesion; in fact, the dimensions and position in the deep parotid lobe allowed a trans-parotid approach to be performed.[9,10]

The incidence of malignant transformation increases with time elapsing prior to surgery. Carcinoma ex-pleomorphic adenoma is usually an aggressive tumor. Almost one-half of the patients develop recurrences, and approximately one-third of the patients with parotid tumors develop metastases. The target gene in adenomas with rearrangements of genotype is the high mobility group protein gene (HMGIC).[11] and MDM2 (murine double minute 2). Immuno-staining revealed that the HMGIC protein was highly over-expressed particularly in the large polymorphic cells within the carcinomatous part of the tumor. These findings suggest that amplification and over-expression of HMGIC and possibly MDM2 might be important genetic events possibly contributing to malignant transformation of benign pleomorphic adenoma. In summary, an exhaustive pre-operative diagnostic work-up is required before approaching this lesion.

CONCLUSION: Main aim of our study is to emphasize that the parapharyngeal tumor are not always presented with oropharyngeal symptoms like lateral pharyngeal wall bulge, dysphagia, dysarthria and trismus. Tumor occupying pre-styloid compartment does not have these kinds of symptoms and presented with asymptomatic mass in parotid and upper cervical region over angle of mandible.

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