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Transparotid and transcervical approaches for removal of deep lobe parotid gland and parapharyngeal space tumors

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Deep lobe parotid gland and ectopic minor salivary gland tumors are the most common primary lesions found in the parapharyngeal space. Most deep lobe parotid tumors are pleomorphic adenomas; they are usually contained within the parotid gland space but may expand into the prestyloid parapharyngeal space compartment. A transparotid approach is the preferred surgical method of extirpation of deep parotid lobe tumors, though it involves dissecting and transposing branches of the facial nerve to gain adequate access. In most cases of ectopic minor salivary gland tumors contained within the prestyloid parapharyngeal space, a transcervical approach is safe and offers excellent direct visualization of the tumor and all critical neurovascular structures. For large tumors involving the deep parotid lobe and extending into the prestyloid parapharyngeal space, a combined transparotid-transcervical approach is usually warranted, both to gain adequate access and to perform the surgery safely with limited morbidity.

Introduction

Salivary gland tumors occur infrequently and represent only 2%-4% of all head and neck neoplasms.[1,2] Most salivary gland tumors originate from the parotid gland, followed by the submandibular gland and minor salivary glands. Parotid neoplasms are clinically and histopathologically one of the most diverse and complex groups of head and neck tumors. Most tumors are benign and are limited to the parotid space, with the most common primary lesion being pleomorphic adenoma. Pleomorphic adenoma is also the most common benign tumor of the minor salivary glands, but in contrast to tumors arising from the parotid gland, most tumors arising from the minor salivary gland are malignant. Presentation and behavior of salivary gland tumors can be quite variable; hence, the management must be individualized and dictated by histologic type, size, grade, stage, if malignant, and precise location as determined by examination and imaging.[1,2]

Parotid tumors most commonly involve the superficial parotid lobe but can replace the entirety of the gland or sometimes originate from the deep lobe of the parotid gland. For most tumors, surgical resection includes superficial parotidectomy with identification and preservation of the facial nerve and its branches. Tumors originating from the deep lobe of the parotid gland usually occupy the parotid space but may extend into the prestyloid parapharyngeal space. They are usually limited to the prestyloid parapharyngeal space compartment by the narrow stylomandibular tunnel and ligament. Because of this, most tumors arising from the deep lobe of the

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parotid gland are ovoid, although a dumbbell shape may occur occasionally when the tumor grows, expanding through the stylomandibular tunnel.

Ectopic minor salivary gland tissue may also form rare tumors within the prestyloid parapharyngeal space and needs to be included in the differential diagnosis.[3-5] Minor salivary glands can be found medial to the constrictor muscles in the pharynx but do not normally occupy the parapharyngeal space. Minor salivary gland tumors in the parapharyngeal space may arise from ectopic glands or displaced salivary gland tissue tumors and are typically benign pleomorphic adenomas.[3-5] They are strictly contained within the prestyloid parapharyngeal space and separate from the parotid space.

When planning the surgical approach, it is important to differentiate between a deep lobe parotid tumor occupying the parapharyngeal space and tumors originating from ectopic minor salivary gland tissue. The parapharyngeal space is a deep potential neck space medial to the parotid space and is shaped as an inverted pyramid extending from the base of the skull to the hyoid bone. The differentiation of a prestyloid lesion from a poststyloid lesion is critical for guiding the surgeon in both the differential diagnosis as well as the potential surgical approach to these tumors.

Hence, magnetic resonance imaging (MRI) with gadolinium is critical in the preoperative evaluation and planning.[6] MRI can help distinguish a minor salivary gland mass and other tumors in the parapharyngeal space from masses within the deep lobe of the parotid gland. Additionally, computed tomography–guided biopsy may aid in the diagnosis but may be challenging given the anatomical location and the histopathologic complexity of these tumors and may only differentiate between benign and malignant processes.[7] Incisional or core needle biopsy should not be performed for salivary gland tumors because of the risk of seeding of a tumor and the subsequent potential catastrophic multinodular recurrence within the parapharyngeal space and beyond.

Tumors arising from within the deep lobe are in continuity with the parotid gland within the parotid space. MR images do not show any intervening fat along the tumor and the parotid interface. The stylomandibular tunnel may be also be widened by the tumor, and extension into the prestyloid parapharyngeal space is common (Figure 1).[6] To gain access and resect these tumors under direct visualization, a transparotid or a combined transparotid-transcervical approach may be undertaken for tumors in this location. Ectopic minor salivary gland tumors can usually be distinguished from tumors arising from the deep lobe of the parotid gland, as an intact fat plane is seen in between on MRI with gadolinium.[6] The transcervical surgical approach is safe and offers excellent direct visualization of these tumors and critical neurovascular structures in the surrounding poststyloid parapharyngeal space. This article explores the transparotid or the transcervical or the combined approach for these prestyloid parapharyngeal space and deep lobe parotid gland tumors.

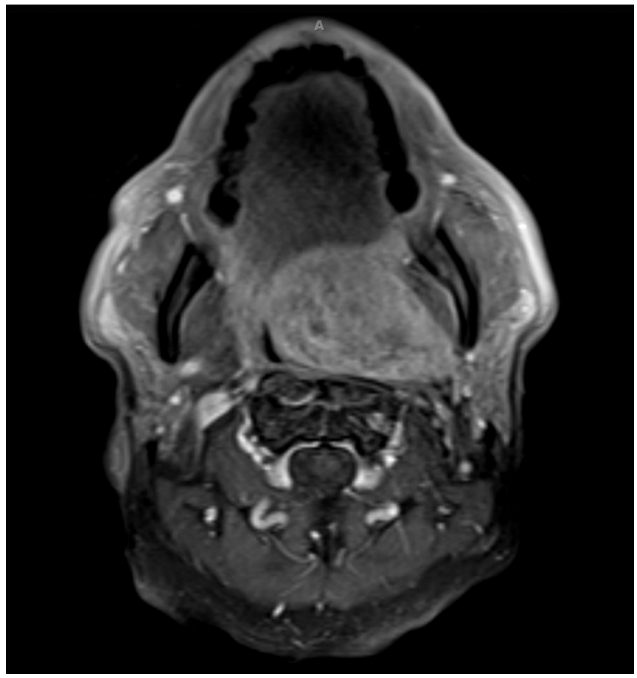

Figure 1 The typical MRI appearance of a deep parotid lobe tumor extending into the prestyloid parapharyngeal space. An axial T1-weighted image showing the tumor is arising from the deep lobe of the parotid gland, as there is no distinguishable fat plane between the parotid and the parapharyngeal space.

Clinical presentation

Tumors arising from the deep lobe of the parotid gland are limited in tumor growth because of the physical space constraints of the parotid and the parapharyngeal space and their relation to the mandible laterally and skull base superiorly. Despite the mandible being located laterally, the most common clinical presentation of deep lobe parotid tumors is still painless preauricular fullness.[2,8] Because of the propensity of these tumors to spread medially within the parapharyngeal space, swelling of the tonsil or the palate or a mass within the oropharynx is also common. These are usually associated with a globus sensation in the throat as well as with some discomfort, pain, and, at times, trismus, if there is mass effect on the pterygoid muscles. Infrequently, patients can present a neck mass with otalgia and odynophagia owing to referred pain. Cranial nerve palsy is rare, but the glossopharyngeal, vagus, and spinal accessory nerves may be affected by large tumors. Conductive hearing loss may also be present but is rare.[2,9,10] Tumors confined strictly within the parapharyngeal space are uncommon, except for the rare presentation of ectopic minor salivary gland tumors.[3-5,11]

Neurogenic parapharyngeal lesions usually displace the posterior part of the pharynx, whereas parotid and ectopic minor salivary gland tumors mostly displace the tonsil and, at times, the soft palate. In most cases, the mass is firm and mobile. When dumbbell-shaped parotid tumors occur, they are best palpated bimanually behind and inferior to the angle of the mandible and through the lateral pharyngeal wall.[3-5,11] For most parotid and minor salivary gland tumors,