CASE REPORT

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Diagnostic and management challenge of concurrent tongue squamous cell carcinoma with an unknown parapharyngeal mass

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Abstract (J Korean Assoc Oral Maxillofac Surg 2024;50:56-59)

There are very few case reports of the diagnosis and management of concurrent oral cavity and parapharyngeal space tumors. We present a case involving a 49-year-old female who presented with oral cavity squamous cell carcinoma confirmed by biopsy. Initial diagnostic workup revealed a concurrent parapharyngeal mass. Diagnostic studies and surgical therapy were tailored to account for both pathological entities. The patient was treated with a combination of surgery and adjuvant therapy. The surgical strategy was designed to address both lesions simultaneously. One year post-surgery, the patient had good response to therapy with no evidence of persistent or recurrent disease. This report discusses the outcome and treatment of a rare case of concurrent squamous cell carcinoma with a complicating parapharyngeal space tumor. It explores the diagnostic process, comprehensive workup, and the surgical management.

Key words: Parapharyngeal space, Squamous cell carcinoma, Head and neck neoplasms, Mass, Oral cancer

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I. Introduction

Squamous cell carcinoma (SCC) is the most common malignant neoplasm within the oral cavity. There are circumstances when tumor location or extent prohibits curative surgical therapy, including cases of tumor invasion into the masticator and parapharyngeal spaces (PPSs). Typically unrelated to carcinoma, PPS tumors are often found incidentally on imaging but are usually not detected clinically until they have reached 2-3 cm in size. Owing to their deep anatomical location, diagnosis and surgical therapy are often challenging. The proximity to major blood vessels and various cranial nerves can result in severe bleeding and nerve damage during treatment. We report a case of concurrent oral cavity and PPS tumors, which significantly complicated diagnosis and surgical management. Preoperative imaging, presurgical planning, and tailored adjustments to the standard surgical approach were utilized. This report highlights a possible diagnostic and treatment strategy for patients with concurrent tumors that increase the risk of surgical complications.

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II. Case Report

A 49-year-old female with unremarkable past medical and surgical history was referred to the maxillofacial oncology and reconstructive surgery clinic for biopsy-confirmed SCC of the right lateral tongue with a reported depth of invasion of 4 mm. Upon presentation, she reported pain and a non-healing ulcer for two months and no additional symptoms. She had a remote five pack-year history of smoking. On physical exam, the patient had a 2-cm indurated ulcer of her right lateral tongue that was tender to palpation. No palpable lymphadenopathy was noted.

1. Investigations

A contrast-enhanced computed tomography (CT) scan

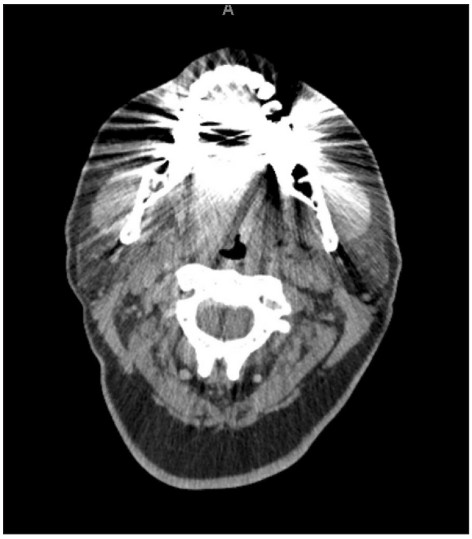

Fig. 1. Computed tomography neck with contrast. Dental amalgam obscuring the concomitant parapharyngeal space tumor.
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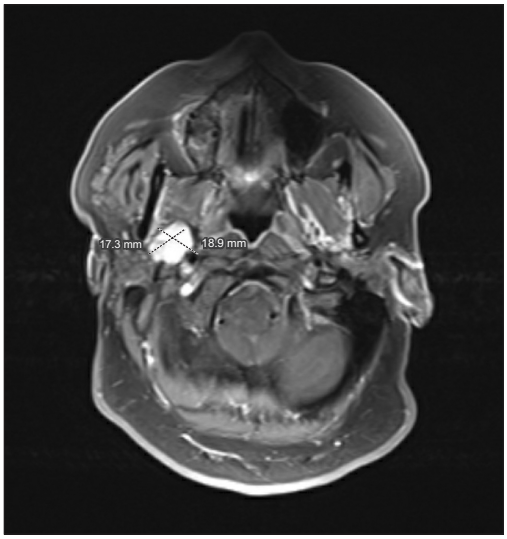

Fig. 2. T2-weighted magnetic resonance imaging demonstrating a right sided parapharyngeal space tumor.
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the patient's neck to clinically stage her oral cavity cancer revealed a significant streak artifact obscuring the primary tumor.(Fig. 1) No cervical lymphadenopathy or distant metastasis was observed. Further imaging was performed to determine the extent of the tumor. Contrast- and non-contrast-enhanced magnetic resonance imaging (MRI) scans of the neck revealed a 2.4 cm×1 cm lesion of the right lateral tongue consistent with the known primary tumor. However, MRI also revealed a 1.9 cm×1.7 cm T2 hyperintense lesion in the right PPS that was not evident in the initial CT scan.(Fig. 2)

2. Differential diagnosis

The patient was seen in clinic following imaging for staging purposes and to discuss the additional PPS lesion. The patient's oral tongue SCC was staged as cT2N0M0. The differential diagnosis of her PPS tumor included a salivary gland neoplasm arising from the deep lobe of the parotid gland, neurogenic tumor, and regional metastatic disease. This differential diagnosis was discussed with the patient, who was referred to interventional radiology for a potential fine needle aspiration (FNA) of the lesion. However, due to the tumor's proximity to adjacent vital structures, it was infeasible to safely perform FNA in the interventional radiology suite. The decision was made to proceed to the operating room for three-dimensional (3D) CT navigation-guided FNA of the lesion with immediate cytological interpretation to guide her subsequent surgical therapy.

3. Treatment

In the operating room, CT-navigated FNA of the right parapharyngeal mass was performed utilizing 3D navigation (Stryker Navigation). FNA was favored over incisional biopsy due to concerns that the latter could violate margins and result in tumor spillage. The procedure was performed by uploading preoperative CT data to the navigation software and using a facemask registration device to guide the FNA needle to the mass. The FNA was performed via an intraoral approach due to the proximity to the mass. General anesthesia was chosen due to the location of the mass and the inability to sample it in the outpatient interventional radiology suite under local anesthesia. Immediate intraoperative cytological examination favored a benign salivary gland tumor origin rather than regional metastasis. Therefore, the decision was made to proceed with standard surgical treatment of her oral cavity cancer with concomitant excision of her parapharyngeal mass. Due to the concurrent nature of her tongue SCC and PPS mass, a lip-split mandibulotomy was performed to gain access to both regions.(Fig. 3) The approach to the PPS following lip split mandibulotomy allowed adequate access to perform extracapsular excision of the mass with cautious dissection. The parapharyngeal mass was excised first, followed by the standard approach to excise the tongue carcino-

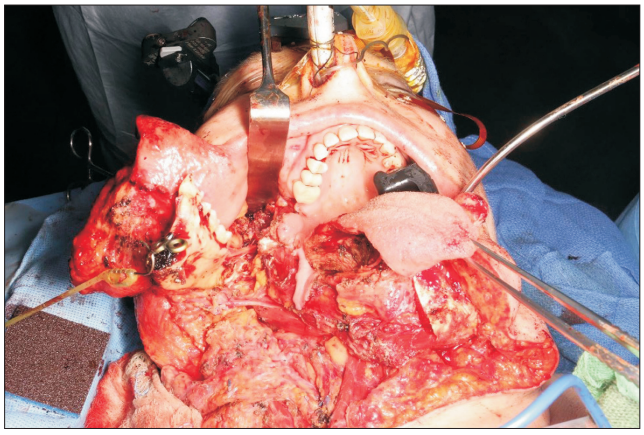

Fig. 3. Intraoperative view of the lip-split mandibulotomy and access to the right parapharyngeal space following resection of both primary lesions.
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ma. During the approach, the incisions and lip split were designed to avoid compromising lesion margins and seeding of the wound bed with tumor cells. Manipulation of the tongue carcinoma was avoided during the approach to the PPS. The tongue SCC was treated with excision based on standard margins (1-1.5 cm) after removal of the parapharyngeal mass. A right modified radical neck dissection and reconstruction with a left radial forearm free flap were completed following ablation of the primary tumors. All specimens were sent for pathologist review.

4. Outcome and follow-up

The patient experienced an uneventful post-operative course and was discharged. The patient's final pathology showed moderately differentiated SCC of the tongue with negative margins. Additional findings included the absence of perineural invasion and only one of 22 lymph nodes testing positive for metastatic disease, without extranodal extension. The stage was pT2N1M0 for the tongue carcinoma. Analysis of the parapharyngeal mass specimen indicated that it was a completely excised pleomorphic adenoma arising from the deep lobe of the parotid gland. After discussion and review by a multidisciplinary tumor board, the decision was made to proceed with adjuvant chemoradiation therapy. The patient underwent treatment with 6,600 cGy intensity-modulated radiation therapy (IMRT), delivered in 33 fractions with concurrent cisplatin therapy. The patient attended frequent surveillance visits and positron emission tomography (PET) imaging one year following her treatment and showed no evidence of local or distant disease.

III. Discussion

In this report, we review a case of concurrent parapharyngeal tumor and oral SCC presenting in a middle-aged woman. PPS masses or tumors are usually incidental findings on imaging as they are generally unnoticed until they reach 2-3 cm size[1]. They are mostly benign (80%), and the benign lesions can be broadly divided into salivary gland tumors (50%) or neurogenic tumors (20%-41%)[1-3]. In our case, the PPS tumor measured 1.7 cm×1.9 cm and was found incidentally on MRI. Although not routine, MRI imaging provides additional data when staging and surgical planning for oral cavity malignancies.

Thus, MRI imaging is the method of choice for diagnosing PPS tumors[1-3]. The present PPS tumor exhibited a strong signal on T2-weighted imaging, consistent with a salivary gland tumor. However, confirmation was required prior to surgical therapy. Due to the location and proximity of the tumor to the internal and external carotid artery, interventional radiology declined fine needle sampling. We utilized CT navigation to approach the PPS tumor with immediate cytological examination. Open transoral biopsy of PPS masses generally is not recommended due to bleeding risk, tumor seeding, neurovascular damage, and incomplete tumor excision due to limited access and visualization[3]. In this case, 3D-navigated transoral FNA under general anesthesia provided a safe avenue for biopsy.

In a study involving 120 subjects with PPS lesions, 63 underwent FNA and had adequate specimens for proper diagnosis. The correct diagnostic rate was 95.2% (60 of 63), with a sensitivity of 66.7% (6 of 9 patients) and specificity of 100% (54 of 54 patients). In another study involving 29 subjects, ultrasound-guided FNA yielded a diagnostic rate of 89.5%, with 8 nondiagnostic cases[3]. Based on the two studies, the diagnostic rate ranged from 89.5% to 95.2%, which is similar to the diagnostic rate of FNA for other head and neck lesions (91%-94.5%)[4]. Therefore, FNA should be performed if applicable, although it is limited by difficulty in diagnosing neurogenic tumors due to strong intercellular binding, the large size of spindle cells, and case selection[4].

For this patient, a combined transcervical and split mandibulotomy approach was employed to simultaneously gain access to both tongue SCC and PPS tumor. The PPS tumor was excised in an extracapsular fashion to maintain oncological safety and avoid tumor spillage and poor outcomes. Typical-

ly, PPS tumors are treated with surgery, as radiation generally only inhibits growth[1]. In one study, only 31% of PPS tumors decreased in size and 67% remained stable following adjuvant radiation[5]. In general, radiotherapy is reserved for elderly or medically frail patients who are not eligible for surgery[1]. After receiving the final pathology report, a multidisciplinary team recommended standard adjuvant chemoradiation based on the pathologic features.

This case highlights the challenges of concurrent head and neck tumors. Additional imaging in the form of an MRI can help better characterize concurrent lesions. FNA is the preferred method of tissue sampling. When safe and feasible, traditional methods (ultrasound guidance) are employed. Due to the sensitive anatomical location, additional methods may be necessary to accurately sample PPS lesions. In our case, CT-navigated biopsy offered a safe and effective route for FNA prior to resection. A lip-split mandibulotomy can serve as a safe and effective approach to simultaneously excise concurrent oral cavity and PPS tumors, while limiting the morbidity of multiple approaches. As always, oncological principles should be maintained and patients should be treated in a multidisciplinary fashion.

In conclusion, concurrent oral cavity and PPS tumors are exceedingly rare and present unique diagnostic and surgical challenges. Given the deep anatomic location, direct tissue biopsy may not be possible. Therefore, MRI imaging provides a crucial tool to characterize head and neck lesions. CT-navigated FNA with rapid on-site evaluation can also provide critical information prior to resection. Lastly, concurrent PPS and oral cavity malignancies can be managed by a combined transcervical/lip-split mandibulotomy approach with adequate access.

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Authors' Contributions

R.S., R.K., and J.H.H. drafted, wrote, and reviewed the manuscript. All authors read and approved the final manuscript.

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Consent for Publishing Photographs

Written informed consent was obtained from the patient for publication of this article and accompanying images.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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