Giant Parotid Carcinosarcoma Arising in a Pleomorphic Adenoma: Facial Nerve Preservation by Retrograde Dissection

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True mixed malignant tumors (carcinosarcomas) account for an extremely small proportion of salivary malignancies and are marked by aggressive growth rates, frequent local recurrence, and distant metastases. We report a case of 1 such tumor arising from a biopsy-proven pleomorphic adenoma, which was treated with surgical resection, free flap reconstruction, and adjuvant radiation therapy.

Case Report
An 83-year-old Caucasian woman first presented with a small right-sided preauricular mass 19 years ago. The tumor was consistent with a pleomorphic adenoma on needle aspiration biopsy at that time. However, she decided not to proceed with surgical resection despite the slow continued growth of the tumor.

The patient’s current presentation was brought on after she noticed increasingly rapid growth of the tumor over the past year, with ulceration through the skin and bleeding. On examination, the patient had a large, exophytic, firm, multilobulated mass arising from the region of the right parotid, with some oozing visible (Figure 1A). Cranial nerve VII was completely intact. Computed tomography (CT) scans demonstrated a heterogeneous mass (9.0 × 8.4 cm) with multiple necrotic components and foci of calcification. It involved the right sternocleidomastoid muscle posteriorly, abutting the inferior aspect of the external auditory canal superiorly, possibly invading the right masseter muscle anteriorly, and extending through the skin surface laterally. No pathologic lymph node involvement was observed. Preliminary fine-needle aspiration biopsy was suggestive of carcinoma ex pleomorphic adenoma.

The patient underwent a right total parotidectomy, right selective neck dissection (levels I-III), infratemporal fossa and parapharyngeal space resection, and anterolateral thigh free flap reconstruction. The facial nerve was preserved with retrograde dissection of the branches (Figure 1B). The buccal branch was sacrificed, as it was encased in tumor. The tumor was resected en bloc without any gross spillage. Although temporal bone resection with facial nerve grafting was considered, retrograde dissection allowed for complete tumor removal while avoiding tumor penetration at the stylomastoid foramen. On pathology, the parotid mass was 10.5 cm in diameter and had extensive necrosis. It was found to be a true malignant mixed tumor. The carcinomatous component consisted of poorly differentiated adenocarcinoma, and the sarcomatous component consisted of chondrosarcoma (Figure 2). No remnants of the original pleomorphic adenoma were identified. Resection margins and all lymph nodes were free of tumor. The patient received adjuvant volumetric modulated arc radiation therapy to 60 Gy. Her facial nerve function returned to normal in spite of the buccal branch sacrifice. Nearly 3 years after her initial resection, the patient was found to have lung and liver nodules on surveillance positron emission tomography and CT that had not yet been biopsied, although there had been no evidence of locoregional recurrence.

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Discussion

True mixed malignant tumors, or carcinosarcomas, are highly aggressive tumors, often leading to recurrence and distant metastasis. The current consensus for treatment is surgical resection with or without neck dissection, followed by radiotherapy, of which certain types have been shown to have a survival benefit in salivary malignancies.\(^1\) The outcomes for surgery with adjuvant radiotherapy have been demonstrated in retrospective studies to be superior to surgery alone.\(^2\) Adjuvant chemotherapy has not been shown to reduce disease recurrence or improve survival for salivary malignancies.\(^3\) Following treatment, it is critical to follow patients with serial imaging, including positron emission tomography or CT and magnetic resonance imaging, as nearly half develop locoregional or metastatic disease at 5 years of follow-up.\(^4\)

The antegrade approach is preferred by most surgeons for parotid tumors, whereby the facial nerve is first identified as it exits the stylomastoid foramen. While use of either antegrade or retrograde dissection varies by type of tumor and other patient factors, studies have demonstrated no significant differences in surgical outcomes and postoperative complications between the techniques.\(^5\) Retrograde dissection is recognized as an acceptable method for resection of malignant tumors if they obscure the main trunk. Limited data exist, however, on the use and outcomes of either approach in large malignant tumors of the parotid.

This case illustrates the successful surgical management of a large parotid carcinosarcoma. In such cases of extremely large preauricular neoplasms, it is important to consider retrograde dissection of the facial nerve to ensure its preservation, as well as to avoid unnecessary temporal bone resection.

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Author Contributions

Tiffany Ng Chao, data acquisition, drafting, revision, accountability for all aspects of work; Christopher H. Rassekh, substantial contribution to conception of work, data analysis, final approval, accountability for all aspects of work; Steven B. Cannady, substantial contribution to design of work, revision, final approval, accountability for all aspects of work; Virginia A. Livolsi, data analysis, revision, final approval, accountability for all aspects of work.

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