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Dynamic Pre- Auricular Region Swelling: A Rare Clinical Presentation

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ABSTRACT
Background:
Mucoepidermoid carcinoma (MEC) is the most common malignant tumor of the salivary glands, frequently involving the parotid gland. It may present with variable clinical features and can mimic benign lesions, especially in young patients.
Case Presentation:
A 20-year-old female presented with a one-month history of a dome-shaped swelling in the left preauricular region, apparent on wide mouth opening. Clinical examination revealed a firm, non-tender, well-defined swelling with no facial nerve involvement or regional lymphadenopathy. Ultrasonography and contrast-enhanced computed tomography suggested a benign salivary gland neoplasm. The lesion was surgically excised with preservation of the facial nerve.
Results:
Histopathological examination revealed nests and sheets of squamoid, mucous, and clear cells with cystic spaces, confirming a diagnosis of intermediate grade mucoepidermoid carcinoma. Surgical margins were free of tumor, and no adverse pathological features were identified.
Conclusion:
Intermediate-grade MEC can present with atypical features and mimic benign parotid lesions clinically and radiologically. Histopathological evaluation is essential for definitive diagnosis. Early surgical management with appropriate follow-up is crucial for favorable prognosis.
Keywords: *Mucoepidermoid carcinoma, Parotid gland, Preauricular swelling, Salivary gland tumor, Case report*

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I. INTRODUCTION

The preauricular region swellings can arise due to dermoid cyst, lymph nodes, lipoma, nerve sheath tumors, parotid swelling, mastoiditis, vascular malformations and arterio-venous fistulas aneurysms/pseudoaneurysms.[1]

Salivary gland tumors account for 3%-4% of all head and neck neoplasms. Of all the salivary gland neoplasms, tumors originating from the parotid gland are the most prevalent, comprising 70% of all salivary gland tumors [2]. Notably, the incidence of parotid tumor is between one and three cases per 100,000 every year, with a majority presenting in patients between the ages of 18 and 75 years [3]. Approximately 75% of parotid tumors are benign; the remaining 25% are malignant [2]. Although most tumors of the parotid gland are benign, mucoepidermoid carcinoma (MEC) is noted to be the most common malignant parotid tumor [4]. Current medical literature supports the idea that prior exposure to ionizing radiation and familial predisposition to parotid cancer can increase the likelihood of a subsequent parotid malignancy [5]. MEC usually presents as a painless, fixed mass below the ears; however, dynamic or fluctuating swellings are uncommon and may lead to initial misdiagnosis. Such atypical presentations can delay appropriate management, especially in younger patients where benign conditions are more frequently suspected.

We present the enigmatic case of a 20-year-old female with a one-month history of a dynamically varying swelling in the left preauricular region, which was subsequently diagnosed as intermediate-grade mucoepidermoid carcinoma on histopathological examination. This case highlights the importance of considering malignant salivary gland tumors in the differential diagnosis of atypical and dynamic preauricular swellings, even in young individuals.

II. CASE REPORT

A 20-year-old female presented to the department with a chief complaint of dome shaped swelling in the left pre-auricular region, noticeable on wide mouth opening, of one month's duration (Figure 1a &1b). The mouth opening was adequate with normal range of mandibular movements. There was no history of any trauma, and no joint sounds were elicited.

The facial nerve function was intact, with no evidence of facial asymmetry or motor deficit on clinical examination. On inspection and palpation, a non-tender, solitary, sessile, firm swelling with well- defined and smooth margins was found in the left pre-auricular region on wide mouth opening. The open mouth diameter was 3.5 cm.

On intraoral examination, the parotid papillae appeared normal, with adequate salivary secretion noted from the duct openings on milking of the gland. No regional lymphadenopathy was evident.

Clinically, the lesion exhibited features suggestive of a benign etiology. However, the possibility of a low- or intermediate-grade malignancy could not be ruled out, as such lesions may closely mimic benign tumors in their early stages. So, a provisional diagnosis of soft tissue over-growth in the left preauricular region was made. The differential diagnosis considered were parotid gland neoplasms, accessory parotid tumors, temporomandibular joint–related cystic lesions, and benign soft tissue tumors.

Investigations

Initial imaging was performed using plain radiography which did not reveal any significant osseous changes in the temporomandibular joint or adjacent structures.

Ultrasonography of the left preauricular region demonstrated a well-defined soft tissue mass measuring 18.5 × 11 mm in the deep subcutaneous plane, adjacent to the mandibular condylar neck and condylar process. The lesion was heterogeneously echogenic with small internal cystic areas and showed internal vascularity on color Doppler. No calcification or necrosis was identified. The adjacent deep musculature was preserved without evidence of invasion, and there was no erosion of the underlying mandibular bone. (Figure 2a,2b).

Further evaluation with contrast-enhanced computed tomography (CECT) demonstrated a heterogeneously enhancing soft tissue lesion measuring approximately 18.8 × 10.9 × 18.7 mm in the left parotid–masseteric region. The lesion was in the subcutaneous plane, abutting the left masseter muscle, and showed post-contrast attenuation values of approximately 140–150 HU. An outward bulge of the overlying soft tissue contour was noted. Inferiorly, the lesion extended beneath the superficial lobe of the parotid gland. No evidence of adjacent bony erosion or deep tissue invasion was identified (Figure 3a, 3b).

Based on the radiological findings, a salivary gland neoplasm was suspected, with features favoring a benign etiology such as Pleomorphic adenoma. However, the possibility of a low-grade malignancy could not be excluded, and histopathological evaluation was advised for definitive diagnosis.

Surgical and Histopathological Findings

An excisional biopsy of the lobulated lesion involving the superficial lobe of the left parotid gland was performed with preservation of the facial nerve, including careful skeletonization of the temporal and zygomatic branches (Figure 4a). The excised specimen was submitted for histopathological examination (Figure 4b).

Microscopic evaluation revealed a well-circumscribed tumor composed of nests and sheets of squamoid, mucous, and clear cells. Multiple cystic spaces lined by mucin-secreting cells were evident. The tumor cells exhibited nuclear pleomorphism, an increased nuclear–cytoplasmic ratio, vesicular chromatin, and prominent nucleoli, along with moderate to abundant eosinophilic cytoplasm. Occasional mitotic figures were observed, with focal areas showing mild pleomorphism. The surgical margins were free of tumor involvement. (Figure 5a, 5b).

Based on these histopathological features, a definitive diagnosis of Mucoepidermoid carcinoma, intermediate grade, involving the left parotid gland was established.

Management and Follow-up

In the absence of high-risk features, including clinical evidence of regional metastasis, advanced TNM stage, or adverse histopathological characteristics, a conservative approach was adopted. The patient was managed with complete surgical excision and careful preservation of the facial nerve, followed by regular clinical and radiological follow-ups.

This approach aligns with recent evidence suggesting that intermediate grade mucoepidermoid carcinomas of the salivary glands, without high-risk features, may not require elective neck dissection and can be safely managed with vigilant surveillance.[6]

III. DISCUSSION

Mucoepidermoid carcinoma (MEC) accounts for approximately 50% of all parotid malignancies, with an incidence of 2.3 per 1,000,000 population [6]. MEC shows a slight female predilection and typically affects adults in the fourth to sixth decades, with peak prevalence in the fifth decade [7]. It is thought to originate from pluripotent cells of the excretory ducts of glandular structures [6]. The diagnosis of MEC requires identification of three cell types—epidermoid, mucous, and intermediate cells—present in varying proportions, which accounts for the wide spectrum of clinical and pathological behaviors.[8]

Histopathologically, MEC is classified into low, intermediate, and high grades. Low-grade tumors, observed in approximately 48% of cases, are more common than high-grade tumors (38.7%), while intermediate-grade tumors are the least frequent, accounting for 13.3% of cases [7]. Grading is based on cytological atypia, the extent of cyst formation, and the relative proportions of epidermoid, mucous, and intermediate cells [9]. High-grade MECs are more aggressive, with a predominance of squamous cells and poorer prognosis, whereas low-grade tumors typically contain abundant cystic spaces lined with mucous cells and demonstrate less aggressive behavior [10].

Clinically, MEC usually presents as a slow-growing, painless mass, often mimicking benign lesions such as pleomorphic adenoma. High-grade tumors may present as rapidly enlarging masses that infiltrate adjacent structures, potentially causing facial nerve palsy, extraoral ulceration, or metastasis to lymph nodes, lungs, or bone. Given the intimate relationship of the facial nerve with the parotid gland—where it gives rise to five branches—preoperative imaging is crucial to assess tumor extent and to facilitate nerve preservation during parotidectomy [9].

In the present case of intermediate-grade MEC of the parotid, the patient underwent complete surgical excision with tumor-free margins. No adverse pathological features were observed, including perineural invasion, lympho-vascular invasion, nodal metastasis, or extracapsular spread. Based on current guidelines and available evidence, adjuvant radiotherapy was not indicated, and careful observation with regular follow-up was deemed appropriate.

This case highlights that variability in size or "dynamic" behavior does not exclude malignancy in parotid lesions. MEC should always be considered in the differential diagnosis of preauricular swellings, and definitive diagnosis relies on histopathological evaluation. Early recognition and complete surgical excision remain key to achieving favorable outcomes.

IV. CONCLUSION

Intermediate-grade MEC of the parotid gland can present in young adults with atypical features, including dynamic preauricular swelling, and may closely mimic benign lesions. Definitive diagnosis relies on histopathology, and complete surgical excision with facial nerve preservation is the mainstay of treatment. Careful risk-based follow-up ensures optimal outcomes while minimizing overtreatment. Early recognition and timely intervention are essential for favorable prognosis.

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FIGURES

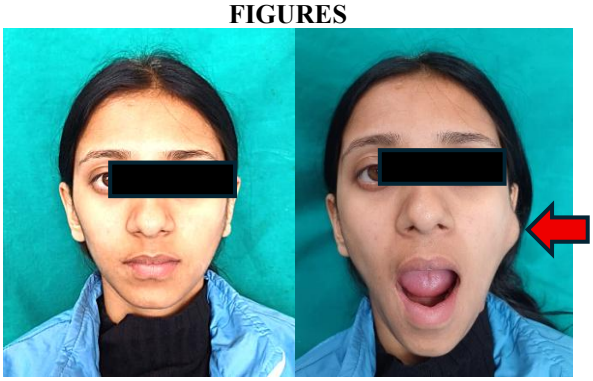

Figure 1a: Preoperative frontal view of the patient showing no obvious swelling in the left preauricular region with the mouth in closed position.

1b: A dome- shaped swelling in the left preauricular region on wide mouth opening.

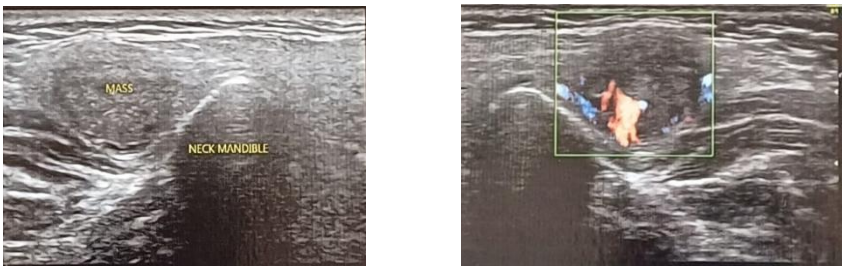

Figure 2a & 2b: Ultrasonographic images of the left preauricular region demonstrating a well-defined lesion with mixed echogenicity, small internal cystic areas, and internal vascularity on Color Doppler.

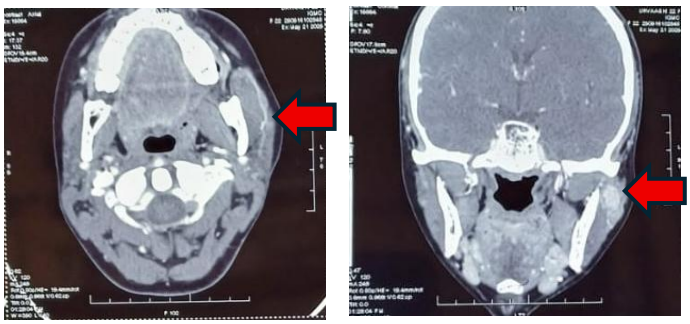

Figure 3a, 3b: Contrast-enhanced computed tomography (CECT) image showing a heterogeneously enhancing soft tissue lesion in the left parotid–masseteric region, abutting the masseter muscle and extending beneath the superficial lobe of the parotid gland.

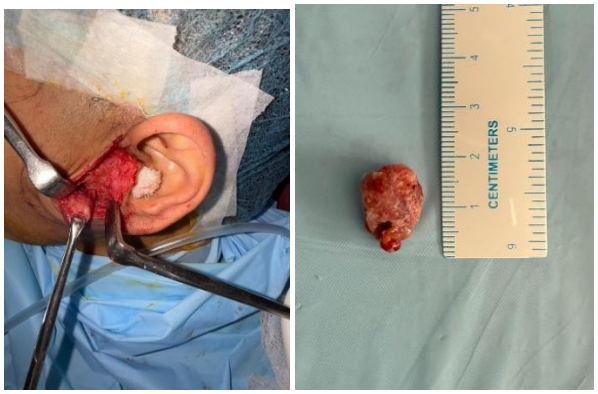

Figure 4a: Intraoperative photograph showing exposure of the lobulated lesion in the left parotid region following skin incision and soft tissue dissection.

4b: Excised specimen showing a well-circumscribed, lobulated soft tissue mass

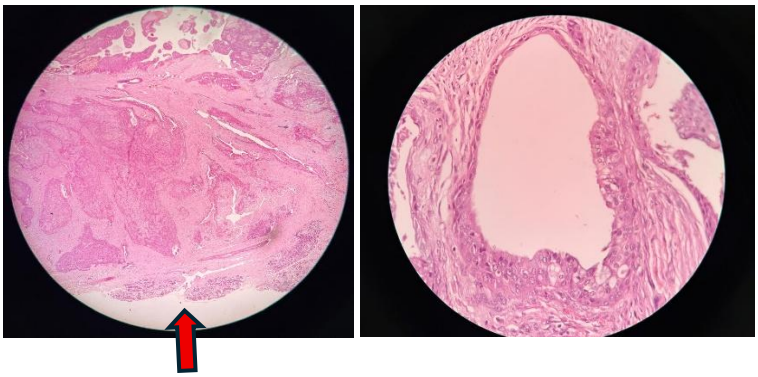

Figure 5a: Photomicrograph (H&E, 10X) showing a neoplasm composed of mixed epithelial cell population arranged in solid and cystic pattern. Residual benign serous acini are noted at the periphery (arrow), representing adjacent uninvolved parotid tissue.

5b: Photomicrograph (H&E, 40X) demonstrating a cystic space lined predominantly by mucin-secreting cells exhibiting abundant pale and vacuolated cytoplasm.