

## Extension of a Huge Pleomorphic Parotid Adenoma to the Deep Spaces of the Face: Case Report and Literature Review

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### Abstract

### Case Report

The aim of this report is to discuss and highlight the diagnostic algorithm and surgical approach for giant pleomorphic adenomas of the parotid gland arising in the deep lobe and extending into the deep spaces of the face. We present the case of a 58-year-old female with a giant pleomorphic adenoma of the deep lobe of the parotid gland. Diagnosis was based on magnetic resonance imaging (MRI) cytology and histology. The tumor was successfully removed using a cervical-transparotid approach while preserving the facial nerve, assisted by external manual expression. A thorough preoperative diagnostic algorithm is essential before approaching such lesions. Fine needle aspiration cytology or biopsy is, in our opinion, mandatory to avoid unexpected histological findings. The surgical approach should provide excellent visibility and wide exposure to ensure the safety of local neurovascular structures.

**Keywords:** Salivary Glands, Parotid Tumors, Giant Pleomorphic Adenoma, Parapharyngeal Space.

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## INTRODUCTION

Pleomorphic adenoma is a benign tumor, first described by Broca in 1866 as a "mixed tumor" due to its heterogeneous cellular composition, which includes both epithelial and myoepithelial components. These lesions are characterized by imprecise boundaries and a stroma that can be myxoid, hyaline, chondroid, or osteoid [1, 2]. They primarily affect the major salivary glands, with 80% occurring in the parotid gland and 8% in the submandibular gland [2–4]. The minor salivary glands are less commonly involved, representing approximately 6% of cases [2–4]. Tumors of the deep lobe of the parotid gland account for only 10% of all parotid gland tumors [13].

Although rare, these tumors require an adapted surgical approach due to their complex anatomical location and proximity to vital structures. Surgical access may be achieved through external, endobuccal, or combined approaches, depending on the tumor's size and location [14]. This report discusses a rare case, highlighting the clinical presentation, diagnostic

modalities, and surgical technique employed—an external approach combined with endobuccal expression—while comparing it with alternative techniques.

## CASE PRESENTATION

A 58-year-old female with no significant medical history presented with a one-year history of progressive, painless swelling in the left parotid region, associated with soft palate hypertrophy. She had no limitation in mouth opening, facial sensory disturbances, peripheral facial palsy, hypersalivation, otalgia, dyspnea, dysphonia, or dysphagia. Her general health remained unaffected, and she had no fever.

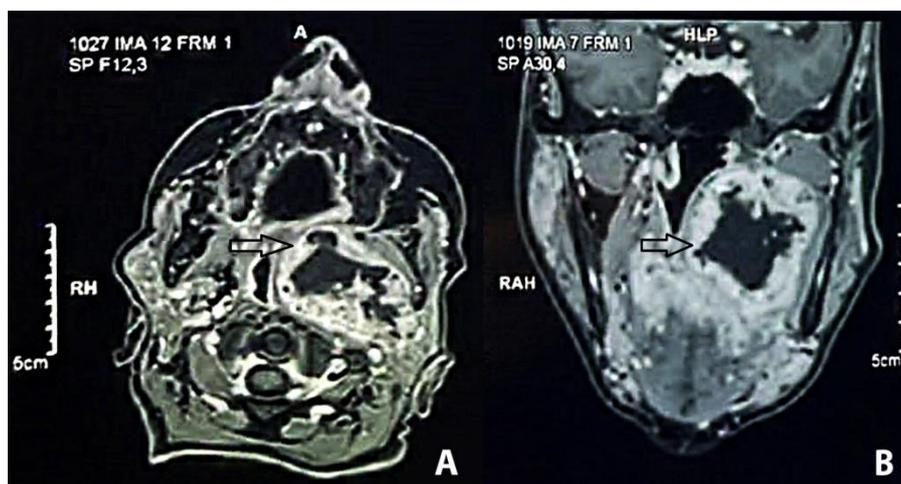
Clinical examination revealed a firm, mobile, homogeneous, non-tender mass in the left parotid region, without skin fistulization or associated lymphadenopathy. Oral cavity examination showed ipsilateral palatal hypertrophy without trismus or intraoral tumor expression (figure 1).



**Figure 1: clinical representation of tumor**

Magnetic resonance imaging (Figures 2) demonstrated a left parotid tumor infiltrating the deep facial spaces and the base of the tongue, with bony erosion of the pterygoid process and extension to the left

foramen ovale. The lesion measured 12.1 x 8.6 x 8.5 cm, exhibiting lobulated contours with heterogeneous T1 hypointensity and T2 hyperintensity.



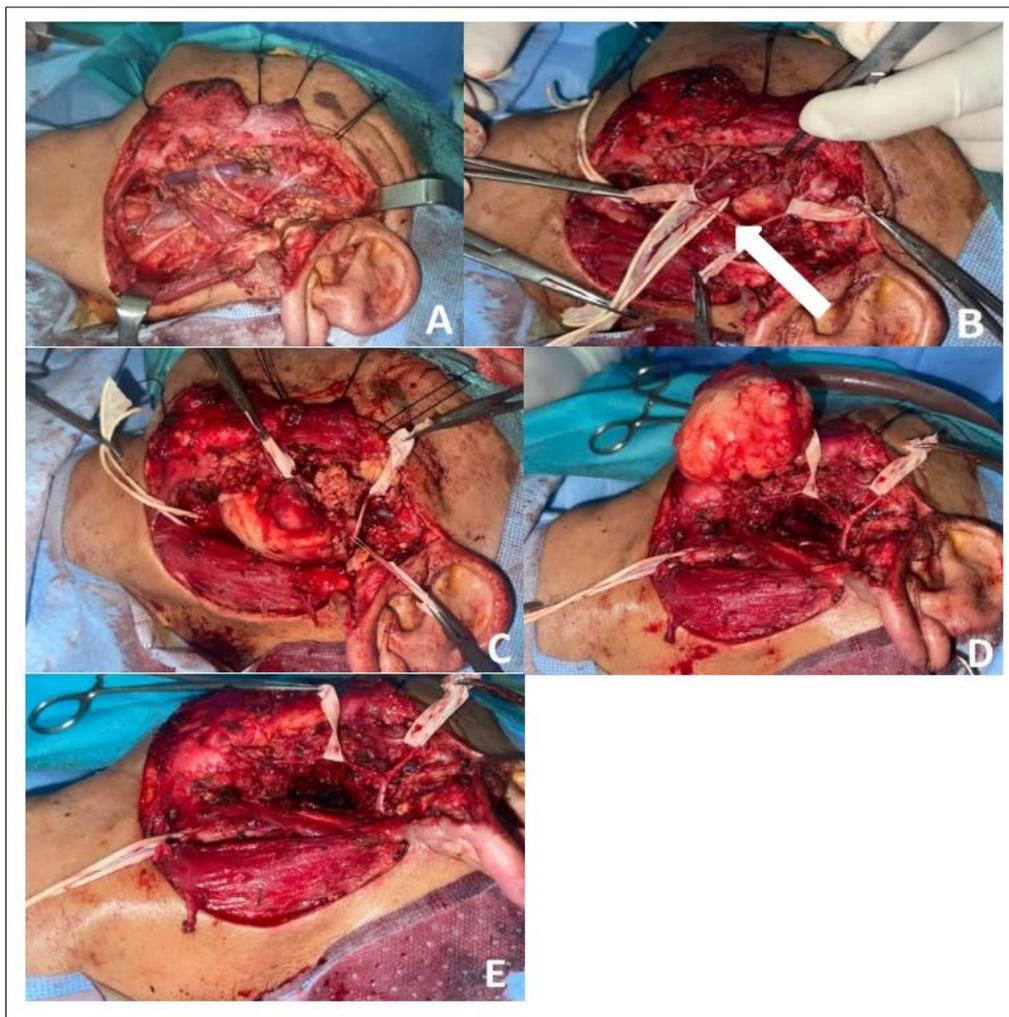
**Figure 2: Magnetic resonance imaging in T1 weighted sequences showcasing the tumor location and extents (A: axial cuts passing through the level of the soft palate, B: coronal cuts passing through the level of the ramus)**

Fine needle aspiration cytology revealed no malignant cells. An endobuccal biopsy confirmed the diagnosis of pleomorphic adenoma. Due to the risk of difficult intubation caused by tumor size, a preoperative tracheostomy was performed.

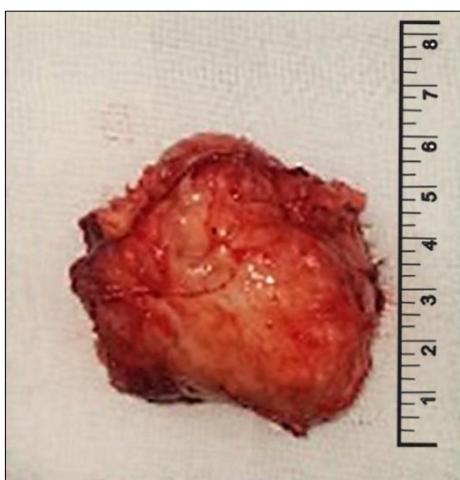
Surgical excision was carried out via an external cervical approach using a left Redon incision, with continuous facial nerve monitoring. The facial nerve trunk and its branches were carefully identified and preserved. Superficial parotidectomy was performed, followed by identification and ligation of the external carotid artery. Deep parotidectomy was then conducted

(Figure 4). The parapharyngeal extension was dissected with the assistance of an intraoral maneuver by an assistant, facilitating tumor mobilization. Hemostasis

was secured with Surgicel placement in the residual cavity (figure 3). The final exeresis piece measures approximately 12.2 X 9.2X10.8 cm (figure 4)



**Figure 3: surgical steps (A: terminal branches of the facial nerve after a superficial parotidectomy, B: spotting the external carotid artery “white arrow”, C: view of the tumor after scraping the external carotid artery D: extraction of the masse, E: the tumor and the remaining cavity)**



**Figure 4: The final exeresis piece**

The immediate and short-term postoperative period were simple, with no facial nerve palsy. Histopathological examination confirmed pleomorphic adenoma.

## DISCUSSION

Pleomorphic adenoma is the most common tumor of the parotid gland, with a high recurrence rate despite its benign nature. Due to minimal symptoms and the possibility of deep extension into the parapharyngeal space, these tumors can grow undiagnosed for long periods, increasing the risk of malignant transformation (1–7%) over time [2].

Sergi *et al.*, described three cases of giant deep-lobe parotid pleomorphic adenomas extending into the parapharyngeal space. These cases underscore the importance of early diagnosis and proper surgical planning [1].

Clinically, pleomorphic adenomas often present as asymptomatic masses discovered incidentally during routine examination. Slow tumor growth allows them to remain silent, even when displacing vital structures in the parapharyngeal space, such as vessels or nerves. MRI is the imaging modality of choice, providing precise delineation of tumor margins and their relationship with adjacent structures.

The role of FNAC in diagnosing deep-lobe pleomorphic adenomas remains debated. While some authors consider it useful in guiding surgical planning, others caution against potential complications due to the proximity of vascular and neural structures [3]. In our case, intraoral FNAC provided reliable diagnostic results. Open-neck or transoral biopsies should be avoided, as breaching the tumor capsule increases the risk of recurrence.

Surgery is the treatment of choice for parapharyngeal space tumors. Various surgical approaches have been described, each tailored to tumor location and size [4]. The cervical-transparotid approach is widely preferred as it allows adequate exposure for complete tumor removal while protecting vital structures. Alternative techniques, such as transmandibular and transpalatal approaches, have been proposed for deep-seated tumors [5–10].

Delayed surgical intervention increases the risk of malignant transformation. Carcinoma ex pleomorphic adenoma is an aggressive entity with a high recurrence rate and metastatic potential. Genetic studies indicate that HMGIC and MDM2 gene amplification may contribute to malignant transformation [11]. When malignancy is suspected, postoperative radiotherapy should be considered as an adjunct to surgery [12].

## CONCLUSION

A comprehensive preoperative diagnostic workup is essential before addressing these tumors. MRI plays a critical role in assessing tumor extent and guiding surgical planning. FNAC should be performed to prevent histological surprises. The surgical approach should ensure excellent visibility and exposure for the preservation of neurovascular structures. In our experience, a transparotid approach is suitable for higher and lateral lesions, whereas combined transparotid and transmandibular approaches are preferred for tumors with lower and medial extensions.

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### Ethical Statement:

**Compliance with Ethical Standards:** The study was conducted in compliance with ethical standards.

**Funding:** This research received no external funding.

**Conflict of Interest:** There are no conflicts of interest to declare related to this research.

**Ethical Approval:** While formal ethical approval was not obtained for this study, we ensured that all aspects of the research were conducted ethically and with respect for the rights and well-being of the participants.

**Informed Consent:** Informed consent was obtained from all participants involved in the study, and this information has been appropriately included in the manuscript.

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