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Radiological Challenges in Diagnosing a Rare Intraparotid Lipoma: A Case Report

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Abstract **Case Report**

Lipomas are benign tumors of soft tissues, primarily consisting of adipose tissue, and are extremely rare within the parotid gland. They are seldom included in the differential diagnosis of parotid tumors. These tumors grow slowly, are frequently asymptomatic, and are often difficult to diagnose clinically. Nonetheless, magnetic resonance imaging (MRI) remains the most effective diagnostic tool for guiding the diagnosis. The primary treatment for these tumors is complete surgical removal, which minimizes the risk of recurrence and confirms the diagnosis.

Keywords: Lipoma, Benign Tumor, Parotid Gland, MRI, Histology.

INTRODUCTION

Lipomas are the most frequently diagnosed benign mesenchymal tumors in the body. Histologically, they are characterized by a proliferation of adipocytes encapsulated in a fibrous capsule. Their occurrence within the parotid gland is rare, accounting for approximately 1.5% of parotid tumors [1]. Many lipomas are underreported in the literature and receive limited attention due to their insidious growth, tendency to stabilize, and the fact that they typically cause few symptoms other than the presence of a localized mass [2]. Radiological assessment of the parotid region, particularly with magnetic resonance imaging (MRI), remains the gold standard for differentiating various pathological entities of the parotid gland. Due to its high sensitivity and specificity, MRI offers excellent tissue contrast, allowing for precise evaluation and aiding in the diagnostic process. However, a definitive histological diagnosis can only be established following surgical excision. This case report, alongside a review of the literature, aims to provide a comprehensive overview of the clinical, radiological, and histological characteristics associated with this rare presentation.

CASE REPORT

We present the case of a 62-year-old woman with no significant medical history, who sought consultation for a gradually enlarging swelling in the left parotid region, evolving over the past year. Clinical examination revealed a mobile, elastic, and painless mass extending from the ear lobe to the left mandibular angle. There were no signs of facial paralysis, and the rest of the clinical examination was unremarkable.

Initial parotid ultrasound revealed a well-defined, oval-shaped mass located within the superficial lobe of the left parotid gland. The mass was hypoechoic compared to the surrounding glandular parenchyma, containing hyperechoic septa, and did not exhibit color Doppler signal. It measured 38 x 14 mm and showed no evidence of regional lymphadenopathy, with features suggestive of a fatty tumor (Figure 1).

To further characterize the lesion, an MRI of the parotid region was performed (Figure 2). The imaging showed a well-circumscribed, superficial, homogeneous mass with regular contours. It was hyperintense on both T1 and T2-weighted sequences, with no signal suppression after fat saturation. There was no evidence of diffusion restriction, and the mass did not enhance following contrast administration. Measuring 45 mm in its longest axis, the mass appeared well-demarcated, with no signs of capsular breach or involvement of the extra-parotid fat. It was also located away from critical structures, including the facial nerve, external carotid artery, and Stensen's duct.

The patient subsequently underwent complete surgical excision of the mass, and histopathological

analysis confirmed the diagnosis of lipoma (Figure 3).
No signs of recurrence have been noted in follow-up.

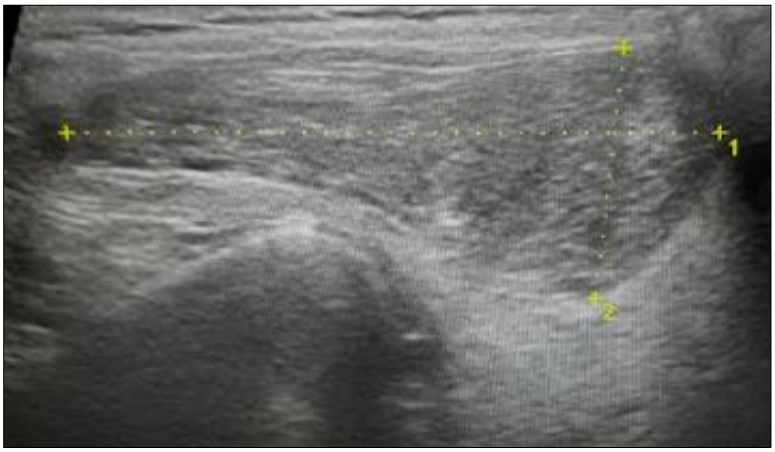

Figure 1 : Parotid ultrasound revealed a well-defined, oval-shaped mass located within the superficial lobe of the left parotid gland, hypoechoic containing hyperechoic septa, and non-enhanced on color Doppler. suggestive of a fatty tumor

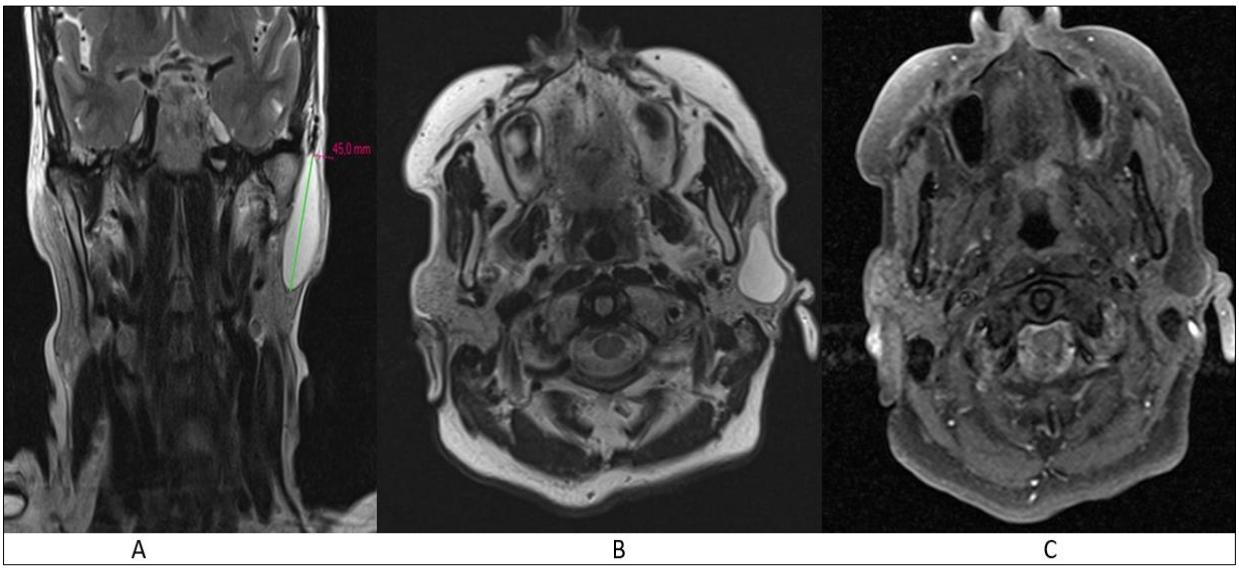

Figure 2: MRI of the parotid region: Well circumscribed, superficial, homogeneous mass with regular contours. Hyperintense on both T1 (B) and T2-weighted sequences (A), with no signal suppression after fat saturation (C)

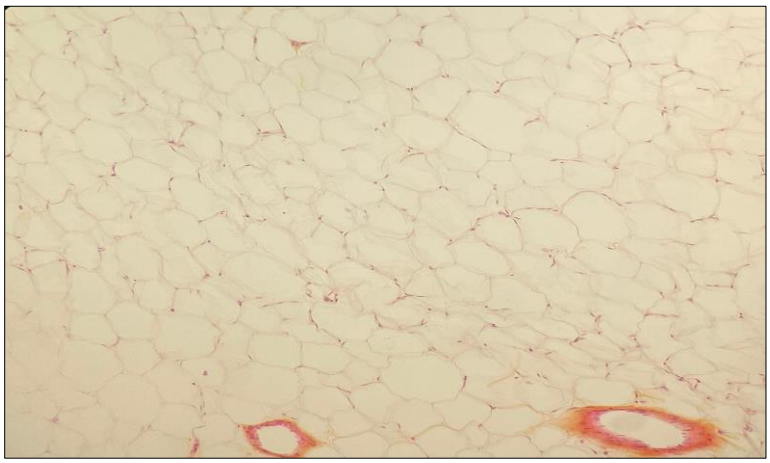

Figure 3: Histopathological analysis confirmed the diagnosis of lipoma

DISCUSSION

Lipomas are the most common benign mesenchymal tumors, characterized histologically by a proliferation of mature adipocytes encapsulated within a fibrous capsule. Their occurrence in the salivary glands, particularly in the parotid gland, is rare, representing less than 5% of all benign parotid tumors [3]. It is essential to distinguish lipomas from lipomatosis, a condition characterized by diffuse fatty infiltration of the salivary gland, typically bilateral and symmetrical, and lacking a fibrous capsule histologically [4-5]. Parotid lipomas are more commonly observed in men, with the highest incidence occurring during the fifth and sixth decades of life [6, 7]. These tumors are slow-growing and often asymptomatic until they reach a significant size, at which point they may compress surrounding structures and potentially cause facial paralysis [8]. The superficial lobe of the parotid gland is frequently involved [9], which is consistent with the presentation in our case.

Preoperative imaging plays a crucial role in distinguishing parotid masses, with ultrasound (US) and magnetic resonance imaging (MRI) being the primary modalities. Ultrasound is typically the first imaging technique used, revealing a well-defined, ovoid, slightly hypoechoic mass with hyperechoic strands parallel to the skin surface [10]. MRI is considered the gold standard for evaluating parotid gland pathology, as it provides accurate localization, detailed information on the lesion's nature, extension, and its relationship to surrounding tissues [11]. It is also preferred for suspected malignant lesions and for assessing the relationship of the mass with the facial nerve [12]. On MRI, lipomas present as high-signal intensity on both T1- and T2-weighted images. A definitive diagnosis can be supported by advanced imaging techniques, such as IDEAL (Iterative Decomposition of Water and Fat with Echo Asymmetry and Least Squares Estimation), which reconstructs separate images for fat and water content. However, the definitive diagnosis is only confirmed by histopathological examination of the excised specimen, showing a proliferation of adipocytes encapsulated by a fibrous capsule [13]. Identification of the capsule is important for distinguishing lipomas from non-encapsulated lesions, such as pseudolipomas, lobular lipomatous atrophy, or lipomatosis [14]. In some cases, the capsule may be less distinct [15].

Surgical excision remains the mainstay of treatment for parotid lipomas, although there is no universal consensus on the optimal surgical approach [16]. Various surgical techniques are discussed in the literature, including total parotidectomy with facial nerve preservation, enucleation, or tumor excision with a margin of healthy tissue [17, 18]. The recurrence rate for intra-parotid lipomas following surgical resection is generally low, at approximately 5% [1].

CONCLUSION

Intraparotid lipomas are rare, and preoperative diagnosis remains challenging. MRI is the imaging modality of choice due to its high spatial resolution and multiplanar capabilities, which allow for accurate characterization of parotid lesions and their relationship with surrounding structures. However, a definitive histological diagnosis can only be achieved through surgical excision. Despite the varied approaches to surgery, the mainstay of treatment remains complete excision to ensure diagnosis and minimize the risk of recurrence.

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