

Beneath the bite: A rare intramuscular lipoma

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ABSTRACT

Lipomas are known to affect the head-and-neck region, but the involvement of muscle leading to the formation of intramuscular variant is rare and that too in masseter muscle is not reported except of 1 or 2 cases. This case report is of a young male patient aged 24 years which remains one of the very few cases reported for intramuscular lipoma in masseter muscle where the treatment comprised excision of the lesion along with a part of masseter muscle adhered to it under general anesthesia. Histopathological examination confirmed the finding, and the patient was followed up for 3 years postoperatively which had no signs of recurrence.

Key words: Head and neck, Intramuscular, Lipoma, Masseter

Lipomas are considered to be the most common benign mesenchymal neoplasms. Their presence in the head-and-neck region is generally unusual, and particularly intramuscular lipomas are rare. Lipomas are slow-growing, nearly always benign adipose tumors that are most often found in the subcutaneous tissues. Rarely, lipoma is known to infiltrate surrounding structures, especially skeletal muscles, which is commonly referred to as infiltrating lipomas, which mainly is seen to affect middle to late adulthood [1]. The masseter muscle originates on the zygomatic arch and the zygomatic process of the maxilla and is inserted into the lateral aspect of the angle and ramus of the mandible. Intramuscular lipoma noted in the masseter muscle is an extremely rare entity [2].

This report adds to the scarce literature on intramuscular lipomas of the masseter muscle and highlights diagnostic challenges, especially with inconclusive imaging. It outlines the clinical, surgical, and histopathological findings, including partial muscle excision, and reinforces the value of long-term follow-up, aiding clinicians in managing similar rare cases effectively.

CASE REPORT

A 24-year-old male came to the department of oral and maxillofacial surgery with a complaint of swelling noted over the left cheek 1 year ago. There was no underlying history of trauma to the face. The patient had undergone impaction in relation to the

mandibular left third molar 3 weeks ago, before he presented with the above-mentioned complaint.

On general examination, vitals were within normal limits, and the patient underwent preanesthetic evaluation, where all the reports were within normal range. On local examination, there was swelling over the left cheek, which on inspection was an oval mass measuring approximately 20 mm × 10 mm (Fig. 1). Skin overlying the palpable mass was normal in color and texture, as well as there were no signs of cervical lymphadenopathy noted. On palpation, the mass was soft in nature, mobile, non-tender, and non-pulsatile. No signs of trismus or paresthesia were noted.

Ultrasound (USG) imaging was carried out for locating the exact position of the mass. On radiological examination, no evident signs of the mass were noted (Fig. 2). Masseter muscle was clearly visualized in the USG, but a palpable mass was not evident. Provisional clinical diagnosis was described as intramuscular lipoma, which was further needed to be confirmed with the biopsy report. Excisional biopsy was performed under general anesthesia, in which a mass of approximately 12 mm × 4 mm was excised through the intraoral incision. A soft yellowish mass was visualized after dissection of the masseter muscle. The medial side of the muscle could be separated from the mass, whereas the lateral aspect of the muscle was adherent to the mass, and part of the muscle was also excised.

Histological examination of sections of the mass stained with hematoxylin and eosin showed sheets of mature adipocytes abutting and focally infiltrating between the muscle (Fig. 3). The adipocytes showed no cellular atypia or irregularity. No evidence of granuloma or malignancy in the section noted. The

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Figure 1: Clinical evaluation of the patient showed swelling over the left cheek

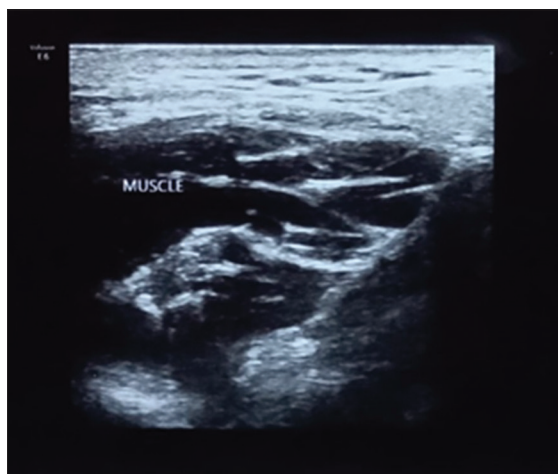


Figure 2: Ultrasonography revealing masseter muscle

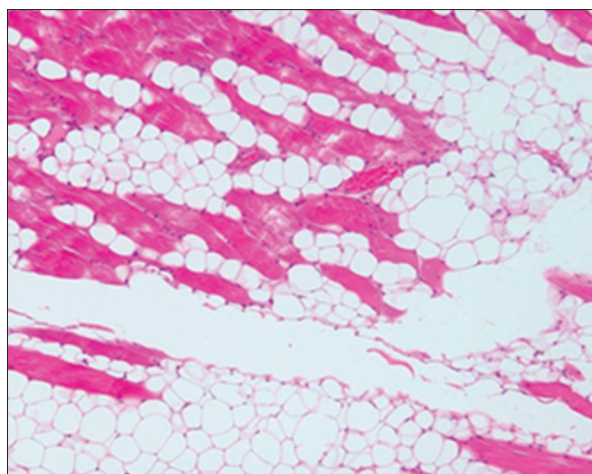


Figure 3: Histopathological sections of the mass showed sheets of mature adipocytes abutting and focally infiltrating between the muscle

histopathological diagnosis correlating with the intraoperative findings was intramuscular lipoma.

The postoperative recovery was uneventful, with no signs of recurrence observed 3 years following the procedure. The patient exhibited no discomfort or swelling and demonstrated normal masticatory function.

DISCUSSION

A histopathologically confirmed diagnosis of intramuscular lipoma, particularly when aligned with the clinical features outlined above, warrants careful consideration of concurrent muscle hypertrophy as a contributing factor. In instances where the nature of the enlargement remains indeterminate despite comprehensive evaluation, surgical exploration may represent the most definitive modality for establishing an accurate diagnosis [3].

In the present case, ultrasonography findings didn't show any traces of lipoma similar to the point put forward by McTighe and Chernev, in which they described that USG features of intramuscular lipomas have been noted in occasional case reports or grouped together with superficial lipomas of the surrounding region. Furthermore, they mentioned that careful examination of the entire mass with sufficient numbers of histological samples will provide the correct pathological diagnosis and prevent mislabeling other fat-containing lesions, which may require a different treatment approach [3]. In a study by Schranz *et al.*, they retrospectively analyzed around 138 lipomas in the head-and-neck region, in which USG remained the choice for imaging in most of the cases. They suggested a multidisciplinary team discussion and also concluded that there appears to be a lack of widespread familiarity with established radiology referral guidelines, which, when combined with a cautious approach toward lipomatous lesions, contributes to a pattern of excessive and often unwarranted imaging investigations [4].

According to El-Monem *et al.*, lipomas may sometimes be isoechoic or even hypoechoic relative to adjacent muscle, and therefore, sonography features will generally show normal musculature [5]. Emerging magnetic resonance imaging techniques hold potential for enhancing the characterization of soft tissue tumors, potentially broadening the diagnostic and clinical management roles of radiologists in addressing this type of lesion [6]. Furlong *et al.*, in their massive case series of 125 patients with lipomas in the oral and maxillofacial region, concluded that intramuscular lipomas were rare, although if present, were most commonly seen in the tongue, whereas the masseter muscle was not seen involved in any of the cases [7]. Priya *et al.*, in their series of cases, described unusual sites of lipomas including involvement of lesion in sternocleidomastoid muscle, soft palate, lateral pharyngeal wall, and tonsillar fossa where treatment of choice was excision with capsule in toto can be correlated with our existing case report as masseter is also considered as uncommon site for lipomas [8]. The temporalis muscle, on the other hand, is also a site where these tumors are usually not seen. In a case report by Scolozzi *et al.*, temporal muscle was the site of involvement, in which they performed molecular cytogenetic analysis using fluorescence *in situ* hybridization to confirm the benign nature [9]. While lipomas and fibrolipomas constitute the majority of diagnosed cases, the emergence of newly characterized histopathological variants like sialolipomas and the recognition of histological subtypes such as low-fat and fat-free spindle cell lipomas underscore the necessity for thorough histopathological assessment. In certain instances,

this evaluation may be supplemented by immunohistochemical analysis to ensure accurate diagnosis [10].

Although intramuscular lipomas are generally associated with a higher recurrence rate, the literature documents only two reported cases. Of these, one involved a 5-year-old child who experienced two recurrences within a 3-year period. In the second case, no recurrence was observed during a postoperative follow-up period of 2 years and 6 months [1,11]. Addante in their study on masseter muscle hypertrophy, stated that histopathological diagnosis should be considered as a final diagnosis for differentiating muscle hypertrophy from other causes [12].

Histologically, simple lipomas are composed of mature adipocytes characterized by uniform nuclei and minimal connective tissue stroma [13]. In contrast, fibrolipomas exhibit adipose tissue interspersed with prominent bands of dense fibrous connective tissue. Among the rarer subtypes, angioliipomas are distinguished by a proliferation of vascular components, while myoliipomas occurring in the oral cavity, often referred to as infiltrating lipomas – represent the rarest variant due to their invasive growth pattern [14]. Only intramuscular hemangioma can be mistaken for intramuscular lipoma at any frequency. All forms of intramuscular hemorrhages frequently exhibit a noticeable percentage of adipose tissue in place of nearby muscle. But in the small vessel, capillary type, the vasoformative component is typically so noticeable that the diagnosis is straightforward [15].

The proliferating cell nuclear antigen and ki-67 expression indexes are immunohistochemistry studies usually found to be higher in spindle cell lipoma, intramuscular lipomas, and fibrolipomas as compared to common lipomas [16]. It is essential for surgical pathologists to explicitly report any involvement of muscle tissue in diagnosed lipomas, with particular emphasis on the pattern of infiltration and the status of resection margins. Such detailed pathological assessment enables surgeons to implement appropriate measures aimed at minimizing the risk of local recurrence, which is not uncommon or, at the very least, to remain cognizant of its potential, thereby avoiding undue concern in the event of its occurrence [15].

The key differential diagnosis that should be taken into account while diagnosing might range from simple cystic swelling or muscle hypertrophy to complex conditions such as intramuscular hemangioma, neurofibroma, fibrolipoma, parotid gland tumor, or soft-tissue sarcoma.

CONCLUSION

This case contributes meaningful data to the limited literature on intramuscular lipomas of the masseter muscle. It highlights the indispensable role of meticulous clinical assessment, intraoperative findings, and definitive histopathological evaluation in establishing a conclusive diagnosis and provides

a valuable reference point for maxillofacial surgeons and pathologists in diagnosing and managing similarly rare presentations.

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