

Chondrolipoma in the head and neck region: literature review and case report

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Abstract:

Chondrolipoma is a rare benign soft tissue neoplasm, being more common in adulthood, approximately 20% occur in the head and neck region and only 1 to 5% in the oral cavity. We present the case of a 62-year-old female patient who presented with an increase in volume in the floor of the mouth, with a five-year evolution. On clinical examination, the patient presented a painless sessile lesion with well-defined borders, located on the right side of the floor of the mouth, measuring approximately 3 cm in diameter. An excisional biopsy was performed, which revealed variable amounts of cartilaginous tissue surrounded by adipocytes arranged in lobules, confirming the diagnosis of chondrolipoma. A literature review was carried out, indicating that the most common location of chondrolipomas in the head and neck region was the tongue (46.4%), followed by the lower lip (14.3%), oropharynx (14.3%), floor of the mouth (10.7%), nasopharynx (7.1%), masseter muscle (3.6%) and sternocleidomastoid muscle (3.6%). Chondrolipomas have an undefined etiology and histogenesis, are more frequently observed in adult patients, and predominantly affect the head and neck region. The most affected areas are the tongue and lower lip, which together account for 60.7% of cases.

Keywords: Lipoma; Chondrolipoma; Benign neoplasm; Coristoma; Head and neck.

INTRODUCTION

Lipomas are benign soft tissue neoplasms more prevalent in adults, originating from mesenchymal tissue and composed mainly of mature adipocytes organized in lobules, separated by fibrous connective tissue septa¹. They are often associated with other mesenchymal components, leading to various subtypes, such as fibrolipomas, angioliipomas, myeloliipomas, spindle cell lipomas, chondroid lipomas, osteoliipomas, and chondrolipomas². Among these, chondrolipomas stand out for their unique composition, which includes mature adipose tissue and cartilaginous elements, but they are notably rare, especially in the head and neck region.

Chondrolipomas are typically found in the superficial and deep soft tissues of the parosteal region and breast, with about 20% of reported cases occurring in the head and neck region^{3,4}. However, this occurrence, although it represents a significant fraction, is considered extremely rare in the medical literature, with few

Statement of Clinical Significance

This case emphasizes the rare occurrence of chondrolipoma on the tongue's lateral border and in the head and neck, underscoring the importance of literature review and accurate diagnosis to distinguish it from similar lesions and ensure proper management.

documented cases over the decades. For example, Berg and Gorsky described a case of chondrolipoma of the tongue as a “rare diagnosis”, highlighting the scarcity of reports and the need for greater clinical awareness². Similarly, Raj et al. emphasized that intraoral chondrolipomas are infrequent variants, with hypotheses about their histogenesis reinforcing the complexity and low prevalence of these lesions³. Other studies, such as those by Szudrowicz and Jakobi-Róz⁴, who reported a case on the lip, and those by Shabbir and Greenwood⁵, who described a nodule on the side of the tongue, reinforce this rarity, as such cases are isolated and do not follow

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common epidemiological patterns⁵. More recently, Nakayama et al. reported a chondrolipoma on the floor of the mouth, again underlining the sporadic nature of these lesions in the head and neck region⁶. This rarity can be attributed to the multipotentiality of mesenchymal stem cells and to genetic or environmental factors that influence the development of cartilaginous components in lipomatous tumors, but the fact is that these tumors are exceptionally uncommon in this anatomical location.

These lesions usually grow slowly and asymptotically and may be sessile or pedunculated⁵. Histologically, chondrolipomas consist of mature adipose tissue interspersed with cartilaginous tissue and chondroid cells⁶. Raj et al. proposed several hypotheses about cartilage histogenesis in these tumors, suggesting possibilities such as metaplastic alterations or hamartomatous/choristomatous proliferation due to the multipotentiality of mesenchymal stem cells, influenced by genetic interactions or environmental factors⁹.

Given the scarcity of cases reported in the literature, with rare examples such as those described by Berg and Gorsky² on the tongue and Nakayama et al.⁶ on the floor of the mouth, this study aims to present a case of chondrolipoma located on the floor of the mouth, highlighting its rarity in the head and neck region. In addition, we conducted a review of the existing literature on these cases, reinforcing the importance of an accurate and early diagnosis for adequate management, given the infrequent and potentially underdiagnosed nature of this pathological entity.

CASE REPORT

A 62-year-old female patient presented to the Oral Pathology Service of the João de Barros Barreto University Hospital (HUJBB) complaining of increased volume in the floor of the mouth, which developed over approximately five years. He reported a 50-year history of smoking and frequent alcohol consumption, but denied any previous trauma in the area.

On clinical examination, the patient presented a painless sessile lesion with striated borders, located on the right side of the floor of the mouth, measuring approximately 3 cm in diameter. Based on clinical analysis and patient history, differential diagnoses included lipoma and bone choristoma. Following the standard protocol, excisional biopsy was performed for histopathological analysis. After collection, the sample floated in formaldehyde, further suggesting a lipoma. Macroscopic examination showed a smooth surface, rounded shape, fibrous consistency, and whitish color, measuring 1.5 x 1.6 x 1.0 cm (Figure 1)

Microscopic analysis revealed histological sections of a mucosal fragment characterized by bundles of collagen fibers arranged in various directions, produced by mature fibroblasts associated with variable amounts of cartilaginous tissue interspersed with adipocytes organized in lobules, without cytological signs of malignancy (Figure 2). The patient is still being monitored, having been free of the lesion for a year, with no signs of recurrence.



Figure 1. Intraoral clinical examination revealed a painless, hardened, yellowish sessile lesion located on the floor of the mouth, on the right, approximately 3 cm in diameter.

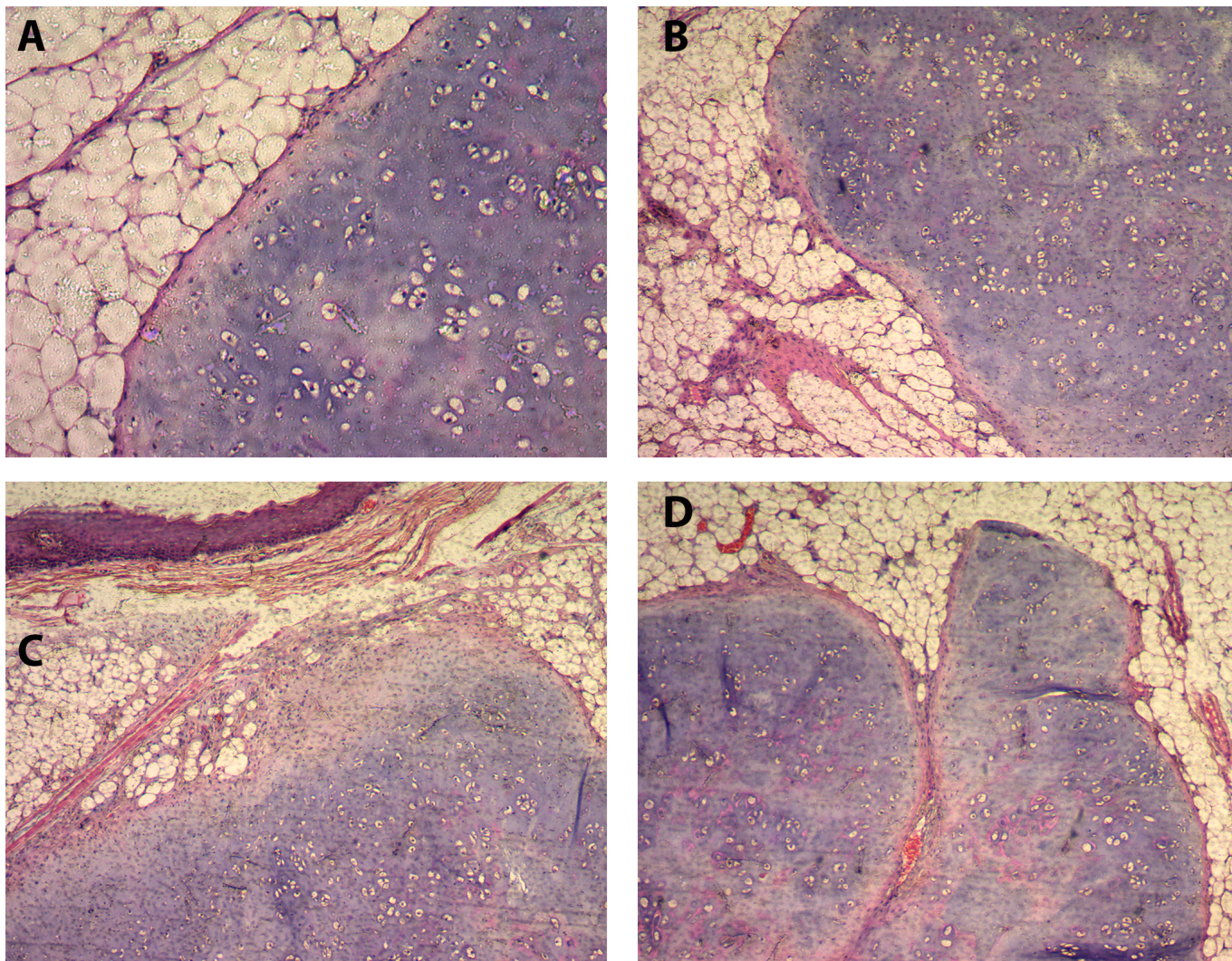


Figure 2. Microscopy revealed a mucosal fragment characterized by bundles of collagen fibers arranged in various directions produced by mature fibroblasts associated with variable amounts of cartilaginous tissue, delimited by adipocytes arranged in lobules. Ectatic blood vessels and discrete inflammatory infiltrate.

DISCUSSION

The first case of chondrolipoma in the head and neck region was reported by McAndrew and Greenspan in 1976, involving a 72-year-old man with a lesion located on the lower lip⁷. Since then, only a limited number of cases have been documented in the literature. This report presents a case of chondrolipoma found on the floor of the mouth, together with a literature review carried out in the PubMed and Science Direct databases, between the years 1976 and 2024, focusing on cases reported in the head and neck region. According to data collected in several studies, the primary location of chondrolipomas was identified as the tongue, corresponding to 44.9% of cases. Other locations included the lower lip (13.8%), oropharynx

(13.8%), and floor of the mouth (10.4%). The tumors were predominantly diagnosed in adult individuals, with a mean age of 50.3 years and a slight predominance of males, with a ratio of approximately 2:1.6 (Table 1).

It is a benign mesenchymal lesion, representing 1 to 5% of the documented cases in the oral cavity, and the third reported case is located on the floor of the mouth. (Table 1)¹⁻²⁷. Clinically, these lesions present with a lobulated, normotensive, or yellowish surface and may be sessile or pedunculated. Although they may resemble conventional lipomas, their hardened consistency distinguishes them from typical lipomas⁴. The literature indicates that these lesions are predominantly diagnosed in adult men, a finding that is in accordance with our study²⁸.

Table 1. Distribution of cases of head and neck chondrolipoma reported in the literature.

Article	Sex	Age	Size	Location	Time of progression	Treatment	Recurrence
McAndrew et al. ⁷	Male	72	2,5 cm x 1,5 cm	Lower lip	06 months	Surgical excision	NA
Allard et al. ⁹	Female	81	1 cm x 1 cm	Lower lip	2 years	Surgical excision	NA
Maes e Eulderink ¹⁰	Male	47	1 cm	Tongue	Several months	Surgical excision	NA
Fujimura et al. ¹¹	Male	56	1,5 mm x 1,0 cm	Tongue	2 months	Surgical excision	No recurrence
Szudrowicz and Jakobi-Róz ⁴	Male	52	1,7 x 1,7 x 1,3 cm	Lower lip	Several months	Surgical excision	NA
Hietanen et al. ¹²	Female	68	1,4 cm x 1 cm	Tongue	NA	Surgical excision	No recurrence
Hong et al. ¹³	Female	63	5 x 4 and 5 x 1,5 cm	Nasopharynx	NA	Surgical excision	NA
Nwaorgu et al. ¹⁴	Male	25	8 x 5 cm	Oropharynx	1 year	Surgical excision	NA
Halaas et al. ¹⁵	Male	65	6,0 x 2,5 x 2,5 cm	Oropharynx	2 year	Surgical excision	NA
Goel et al. ¹⁶	Female	36	3 x 2 x 1 cm	Tongue	Since childhood	Surgical excision	No recurrence
Nonaka et al. ¹	Male	30	1,4 x 10 cm	Tongue	10 years	Surgical excision	No recurrence
Bezerra et al. ¹⁷	Female	68	0,8 x 0,4 cm	Tongue	20 years	Surgical excision	No recurrence
Berg et al. ²	Male	69	1 cm	Tongue	01 month	Surgical excision	No recurrence
Kinshuck et al. ¹⁸	Male	70	5 x 4 x 2 cm	Nasopharynx	1 year	Surgical excision	NA
Shabbir and Greenwood ⁵	Male	71	1,5 x 1,5 cm	Tongue	05 months	Surgical excision	NA
Pitman and Bell ¹⁹	Female	51	5 x 3.5 cm	Masseter muscle	09 months	Surgical excision	NA
Batchvarova et al. ²⁶	Male	14	NA	Tongue	NA	Surgical excision	No recurrence
Özer and Bal ²⁰	Male	2	0,8 x 0,6 x 0,4 cm	Sternocleidomastoid muscle	2 years	Surgical excision	No recurrence
Raj et al. ³	Male	35	1,0 x 1,0 cm	Tongue	20 years	Surgical excision	No recurrence
Narayana et al. ⁸	Male	56	2,0 x 1,5 cm	Floor of the mouth	06 months	Surgical excision	No recurrence
Kamakshi and Yaranal ²⁷	Female	6	1,5 x 1 cm	Lower lip	1 years	Surgical excision	NA
Al-kind et al. ²¹	Male	13	4 x 2 x 2 cm	Oropharynx	4 days	Surgical excision	No recurrence
Özturk et al. ²²	Male	17	3 x 1 cm	Oropharynx	NA	Surgical excision	No recurrence
Viana et al. ²³	Female	68	1 cm	Alveolar ridge	NA	Surgical excision	No recurrence
Morais et al. ²⁴	Female	59	NA	Tongue	NA	NA	NA
Baba et al. ²⁵	Female	62	2,2 x 1,0 cm	Tongue	4 years	Surgical excision	NA
Baba et al. ²⁵	Female	74	1,2 x 1,2 cm	Tongue	60 years	Surgical excision	NA
Nakayama et al. ⁶	Female	66	2 cm	Floor of the mouth	10 years	Surgical excision	No recurrence
Present case	Female	62	1,5 x 1,6 x 1,0 cm	Floor of the mouth	5 years	Surgical excision	No recurrence

NA: not available.

Histologically, chondromas are characterized by a proliferation of mature adipocytes accompanied by the formation of mature cartilaginous tissue^{1,29}. It is essential to differentiate the mature cartilaginous areas in a chondrolipoma from those in a chondroid lipoma, as the latter is a variant consisting of mature adipocytes mixed with lipoblast-like cells within a hyaline and chondroid matrix. This immature appearance can mimic a pseudosarcomatous condition, potentially leading to confusion with liposarcoma or chondrosarcoma. In contrast, true chondrolipomas contain an adipose component entirely composed of mature tissue, devoid of lipoblastic cells^{9,30}.

Regarding histogenesis, several hypotheses diverge significantly from those of other lipoma variants. The first hypothesis postulates that the tumor is a true mesenchymoma, where both cartilaginous and adipose elements are neoplastic, originating from pluripotent mesenchymal stem cells that differentiate into adipogenic and chondrogenic cells. The second hypothesis suggests that only adipocytes are neoplastic, with cartilaginous cells developing within these adipocytes as a metaplastic reaction due to prolonged or spontaneous irritation. The third theory proposes that neoplastic adipose tissue can evolve from a pre-existing cartilaginous choristoma. Finally, the last hypothesis states that none of the components is neoplastic; instead, the lesion arises from a combination of hamartomatous adipocytes and choristomatous cartilaginous growth^{4,9,30}.

CONCLUSION

This report documents a rare case of chondrolipoma on the floor of the mouth, highlighting its rarity in the head and neck region. Given its status as an infrequent mesenchymal lesion, thorough clinical evaluation combined with histopathological analysis is essential for accurate diagnosis and differentiation of malignant entities. Surgical excision is an effective treatment for chondrolipoma in the oral cavity, and prolonged follow-up is vital to assess the risk of recurrence.

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AUTHORS' CONTRIBUTIONS

LMSS: Data curation, Writing – original draft. IML: Data curation, Writing – review & editing. SCLC: Methodology, Resources. SALCU: Resources. TFF: Methodology, Validation. FSCP: Conceptualization, Supervision.

CONFLICT OF INTEREST STATEMENT

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Ethics approval: This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of the Hospital (no. 5.099.339).

DATA AVAILABILITY STATEMENT

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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