Case Report

Histological and Immunohistochemical Characterization of an Unusual Hard Palate Chondrolipoma

Prashant Viragi [1]; Manas Bajpai [2]; Trishala Kunkulol [3]; Pranali Kale [3];

[1] Dept. of Public Health Dentistry Rural Dental College, Pravara Institute of Medical Sciences, Loni (Maharashtra), India.
[2] Dept. of Oral Pathology and Microbiology, Rural Dental College, Pravara Institute of Medical Sciences, Loni (Maharashtra), India.
[3] Post Graduate Student, Dept. of Oral Pathology & Microbiology, Rural Dental College, Pravara Institute of Medical Sciences, Loni (Maharashtra) India.

KEY WORDS

Hard palate;
Lipoma;
Soft tissue neoplasm;
Sox9 protein;

Received: 8 August 2026;
Revised: 31 August 2026;
Accepted: 24 October 2026;

Copyright
© Journal of Dentistry, this is an open access article distributed under the terms of the Creative Commons Attribution 4.0 International License, (http://creativecommons.org/licenses/ by/4.0/) which permits reusers to copy and redistribute the material in any medium or format if the original work is properly cited, and attribution is given to the creator. The license also permits for commercial use.

ABSTRACT

Chondrolipoma is an uncommon histological variant of lipoma characterized by the presence of mature adipose tissue intermingled with foci of mature hyaline cartilage. While lipomas are frequent in the head and neck region, their occurrence in the oral cavity- specifically the hard palate- is exceedingly rare. This report documents a case of chondrolipoma in the left hard palate, reviews the literature and highlighting the utility of Sox9 immunohistochemistry in confirming its cartilaginous component. This is the first report of chondrolipoma occurring in the hard palate. Although chondrolipoma is a benign and rare entity in the oral cavity, it should be included in the differential diagnosis of palatal swellings. Pathological confirmation through Sox9 expression verifies the presence of chondrogenesis, and conservative surgical excision provides an excellent long-term outcome.

Corresponding Author: Bajpai M, Dept. of Oral Pathology and Microbiology, Rural Dental College, Pravara Institute of Medical Sciences, Loni (Maharashtra) India. Email: dr.manasbajpai@gmail.com

Cite this article as:

Introduction

Lipomas represent benign mesenchymal neoplasms of adipose tissue. Within the oral cavity, they account for approximately 1% to 4% of all benign tumors [1]. Histologically, lipomas are classified as simple lipoma or variants such as fibrolipoma, spindle cell lipoma, intramuscular or infiltrating lipoma, angiolipoma, osteolipoma, chondrolipoma salivary gland lipoma (sialolipoma), hibernoma, pleomorphic lipoma, myxoid, and atypical lipomas [2-5].

The histopathological variant known as chondrolipoma is particularly rare in the oral soft tissues. Its pathogenesis remains a subject of debate, with primary theories ranging from cartilaginous metaplasia of the stromal cells to abnormal migration of embryonic cartilaginous rests [1, 3]. We present a case of a patient presenting with a firm, painless mass on the hard palate that had been slowly enlarging over 18 months.

Case Presentation

A 44-year-old male presented to the Oral Medicine and Radiology department of our institute with a chief complaint of a "growth" on the left side of the roof of his mouth. The patient reported that the nodule had appeared approximately 18 months prior, initially presenting as a small, asymptomatic elevation. Over the preceding six months, the lesion had gradually increased in size, causing localized discomfort during mastication and mechanical irritation during speech.

The medical history of the patient was noncontributory, with no history of trauma in the area, tobacco use, or alcohol consumption.



Figure 1: Clinical picture of the lesion shows a well circumscribed nodular growth on the left side of the hard palate

Intraoral examination revealed a large solitary, well circumscribed, submucosal nodule located on the left side of the hard palate, approximately 3 cm in diameter. The overlying mucosa appeared normal in color and integrity, without signs of ulceration or inflammation (Figure 1). Upon palpation, the lesion was firm, non-tender, and exhibited minimal mobility, appearing to be fixed to the underlying periosteum. There was no associated lymphadenopathy, and the patient exhibited no neurological deficits.

A cone beam computed tomography (CBCT) scan was obtained to evaluate the extent of the lesion. The imaging demonstrated a well-circumscribed, soft-tissue lesion with multiple calcified foci, with no evidence of bone involvement or cortical erosion of the hard palate (Figure 2). The lesion was provisionally diagnosed as ossifying fibroma.



Figure 2: Axial view of CBCT (cone beam computed tomography) reveals a well circumscribed lesion with multiple calcified foci, with no involvement of underlying bone



Figure 3: Post operative view, after two months of surgical excision

Given the progressive growth and resulting discomfort, surgical excision was recommended. Under local anesthesia with sedation, a crevicular incision was made, and a full-thickness mucoperiosteal flap was elevated. The lesion was found to be encapsulated and was easily dissected from the overlying palatal mucosa and the underlying palatal periosteum. The mass was excised in its entirety, and the wound was closed with interrupted 4-0 vicryl sutures. The one year follow up of the patient was uneventful (Figure 3).

The excised specimen was a yellow-tan, firm, rubbery nodule measuring 1.6×1.4×1.0 cm.

Microscopic examination revealed a well-circumscribed lesion composed of mature adipocytes separated by broad fibrous septa (Figure 4a). Interspersed within the adipose tissue were distinct, well-defined areas of mature hyaline cartilage (Figure 4b). The chondrocytes were located within lacunae, and no cellular atypia, mitotic figures, or malignant features were observed (Figure 4c). Immunohistochemical staining was done using Sox9, which showed a strong positivity for the nucleus of chondrocytes (Figure 4d) confirming the diagnosis of chondrolipoma.

Discussion

Chondrolipomas of the oral cavity are frequently misdiagnosed clinically due to their deceptive presentation. While standard lipomas are typically soft and "doughy," the cartilaginous component in a chondrolipoma imparts a clinical firmness that often leads clinicians to suspect a ma [6-9]. An exhaustive literature review using the salivary gland neoplasm, such as a pleomorphic adeno sear-

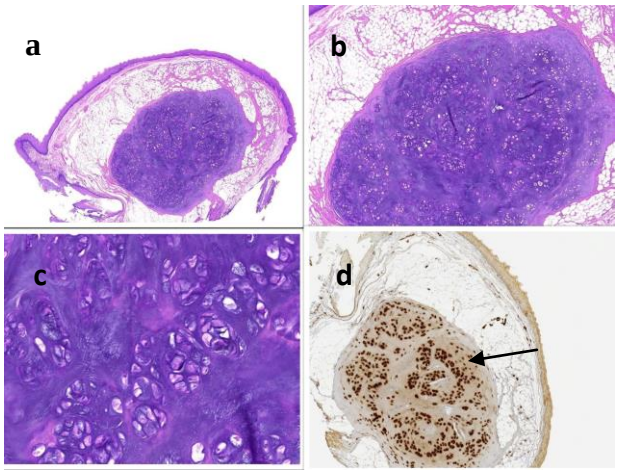


Figure 4: a: Low power view shows a well circumscribed lesion (Hematoxylin and Eosin stain original magnification 4×), **b:** Pictomicrograph reveals well defined area of cartilage production interspersed within the mature adipose tissue. (Hematoxylin and Eosin stain original magnification 10×), **c:** High power view reveals normal chondrocytes located in the lacunae (Hematoxylin and Eosin stain original magnification 40×), **d:** Picture reveals strong nuclear positivity for Sox9 within the chondrocytes (Arrow). (Original magnification 4×)

ch engines PubMed, Scopus, and Web of science revealed that only 23 cases of oral chondrolipoma have been reported in the literature (Table 1). Intraorally, the commonest site includes tongue with 12 reported cases followed by lower lip, floor of the mouth, labial vestibule, alveolar ridge, and gingiva [4, 10-12]. The present case is being the first case of chondrolipoma reported in the palate. Regarding the gender, thirteen cases have been reported in males and ten cases have been reported in females [4]. The mean age of the patients was approximately 51.

The rarity of this entity in the hard palate is notable, as the unique anatomical constraints of palate, a thin layer of mucosa over bone- often make such masses symptomatic earlier than those in the buccal mucosa or tongue. Because clinical symptoms are often limited to mild discomfort or mechanical interference during mastication, the diagnosis is rarely finalized until the lesion is excised [13-14]. Histopathologically, chondrolipomas demonstrate sheets of well differentiated, mature adipocytes that looks identical to subcutaneous fat with well-defined nests of hyaline cartilage and fibrous tissue stroma [15]. The diagnosis of chondrolipoma is usually based on histopathological features; it seldom requires immunohistochemistry [16].

However, Sox9 is considered master regulator of chondrogenesis which can confirm the production of hyaline cartilage in the lesion [17]. The differential diagnoses of chondrolipomas include chondroid lipomas, chondrosarcomas, and extra skeletal chondromas [18]. Chondroid lipomas are exceedingly rare in oral cavity and microscopically characterized by and admix of mature adipocytes and multivacuolated lipoblasts like cells in cartilaginous matrix [19-20]. The true chondrolipomas are comprised completely of mature adipocytes without multivacuolated lipoblasts like cells [19, 21]. Chondrosarcomas show clinically aggressive pattern and histologically atypical cells in a myxoid or fibrous tissue stroma and lacks adipocytic component. On the other hand, chondrolipoma lacks atypical cells [19-22]. Extra-skeletal chondromas of oral cavity may sometimes mimic chondrolipomas. However, the cartilage production in chondromas is of much greater proportion and shows lobular pattern of cartilaginous tissue [23].

The treatment of choice remains simple surgical excision. Recurrence is extremely rare, as the lesion is typically well-encapsulated [21-24].

Consent

A signed consent of the patient was obtained to use the pictures for publication.

Conclusion

This case highlights the importance of including rare mesenchymal tumors in the differential diagnosis of palatal nodules. While a firm consistency usually directs the clinician toward salivary gland pathology, the possibility of cartilaginous metaplasia within a lipomatous tumor should be considered. Complete surgical excision remains curative, and long-term prognosis is excellent.

Table 1: Clinical features of 23 cases of chondrolipoma reported in the oral cavity

Authors	Year	Age of the patient	Gender	Location	Size of the lesion	Treatment
Mcandrew, Greenspans [6]	1976	72	Male	Lower lip	2.5×1.5cm	Surgical excision.
Allard *et al*. [7]	1982	69	Female	Lower lip		
Maes, Eulderink [9]	1989	47	Male	Tongue	Less than 1cm.	Surgical excision.
Fujimura, Enomoto [16]	1992	56	Male	Tongue	1.5×1cm	Surgical excision.
Szudrowicz, Jakobi-Roz [8]	1995	52	Male	Lower lip	1.7×1.7×1.3cm	Surgical excision.
Hietanen, Makinen [15]	1997	68	Female	Tongue	1.4 × 1 cm	Surgical excision.
Goel *et al.*[18]	2008	36	Female	Tongue	3 × 2 ×1 cm	Surgical excision.
Nonaka *et al.*[19]	2009	30	Male	Tongue	1.4 × 1 cm	Surgical excision.
Kuyama *et al.* (2 cases) [21]	2009	28 and 59	Female and Male	Tongue and labial vestibule	1.6×1.5×1.2cm and 0.9×0.5×0.5cm	Surgical excision.
Bezerre *et al.* [24]	2010	68	Female	Tongue	NA	Surgical excision.
Berg, Gosky [23]	2010	69	Male	Tonge	1 cm	Surgical excision
Shabbir, Greenwood[20]	2011	71	Male	Tongue	NA	Surgical excision.
Batcharova *et al.*[13]	2012	14	Male	Tongue	NA	Surgical excision.
Vineet Raj *et al.*[4]	2014	35	Male	Tongue	1×1cm	Surgical excision.
Nagamani Narayana *et al.*[10]	2014	56	Male	Floor of the mouth	1.5×1.3×1cm	Surgical excision.
Kamakshi G, Yaranal P[11]	2014	6	Female	Lower lip	1.5×1cm	Surgical excision.
Viana KF, *et al.* [17]	2020	68	Female	Upper alveolar ridge	1cm	Excisional Biopsy
Mani S., *et al.* [22]	2024	44	Male	Gingiva	3×2cm	Surgical excision.
Nakyama N, *et al.* [21]	2024	66	Female	Floor of the mouth.	2cm	Surgical excision.
Baba T *et al.* (2 cases) [12]	2026	62 and 74	Female and Female	Tongue	2.2×1cm 1.2×1.2cm	Surgical excision.
Present case	2026	44	Male	Hard palate	2cm	Surgical excision.

Conflict of Interests

The authors declare they have no conflicts of interest in the matter of the study.

References

[1] Fregnani ER, Pires FR, Falzoni R, Lopes MA, Vargas PA. Lipomas of the oral cavity: Clinical findings, histological classification and proliferative activity of 46 cases. Int J Oral Maxillofac Surg 2003; 32: 49-53.

[2] Bajpai M, Pardhe N, Kumar M. Immunohistochemical differentiation between spindle cell lipoma and neurofibroma of oral cavity using CD34 and SOX10. Indian J Pathol Microbiol. 2018; 61: 561-563.

[3] Dave K, Sabnis SL, Bajpai M. Sialolipoma of Hard Palate: A Case Report with an Emphasis on its Cytopathological Features. Curr Res Dent Sci.2026; 36: 178-180.

[4] Raj V, Dwivedi N, Sah K, Chandra S. Chondrolipoma: Report of a rare intra oral variant with review of histiogenetic concepts. J Oral Maxillofac Pathol. 2014; 18: 276-280.

[5] Bajpai M, Kumar M, Agarwal D, Agrawal S, Gupta S, Kumar M. Osteolipoma of the palate- An unusual presentation. Natl J Maxillofac Surg. 2014; 5: 250-251.

[6] McAndrew PG, Greenspan JS. Lipoma of lip with cartilage formation. Br Dent J. 1976; 140: 239-240.

[7] Allard RH, Blok P, van der Kwast WA, van der Waal I. Oral lipomas with osseous and chondrous metaplasia; report of two cases. J Oral Pathol. 1982; 11: 18-25.

[8] Szudrowicz Z, Jakobi-Roz H. Chondrolipoma of the lip. A case report. Pol J Pathol. 1995; 46: 55-56.

[9] Maes A, Eulderink F. Chondrolipoma of the tongue. Histopathology. 1989; 14: 660-662.

[10] Narayana N, Henriksen B, Casey J. Chondrolipoma that arises on the floor of the mouth and review of the literature true: a case report. J Med Cases. 2014; 5: 341-343.

[11] Kamakshi G, Yaranal P. Chondrolipoma of the lower lip: a case report. J Clin Diagn Res. 2014; 8: FD07-FDo8.

[12] Baba T, Yamaguma Y, Fukui T, Kaneuji T, Kashima K, Yamashita Y. Chondrolipoma arising in the tongue and

related literature review: a report of two cases. J Oral Maxillofac Surg Med Pathol. 2025; 37: 391-395.

[13] Batchvarova Z, Kadlub N, Coulomb-L'Hermine A, Picard A, Galliani E. Giant chondrolipoma of the tongue in a 14-year-old child with mandibular hypertrophy. Isolated lesion or regional overgrowth syndrome. Int J Oral Maxillofac Surg. 2012; 41: 261-264.

[14] Bajpai M, Arora M, Chandolia B. Prevalence of oral lipomas in Indian population: An institutional retrospective study of 12 years and analysis of 49 published cases from 1976- 2017 reported in Indian patients. Eur J Gen Med 2016; 13: 42-46.

[15] Hietanen J, Mäkinen J. Chondrolipoma of the tongue. A case report. Int J Oral Maxillofac Surg. 1997; 26: 127-128.

[16] Fujimura N, Enomoto S. Lipoma of the tongue with cartilaginous change: a case report and review of the literature. J Oral Maxillofac Surg. 1992; 50: 1015-1017.

[17] Viana KF, Marinho EB, Feitosa SG, Cavalcante RB, Turatti E, Sousa FB, et al. Chondrolipoma in an uncommon location: case report. Oral Surg Oral Med Oral Pathol Oral Radiol. 2020; 129: e104.

[18] Goel G, Khadilkar U, Kumar S. Chondrolipoma of tongue. Kathmandu Univ Med J. 2008; 6: 505-507.

[19] Nonaka CFW, Miguel MCC, Souza LB, Pinto LP. Chondrolipoma of the tongue: a case report. J Oral Sci. 2009; 51: 313-316.

[20] Shabbir F, Greenwood M. Chondrolipoma presenting as a lump on the lateral tongue. Dent Update. 2011; 38: 188-190.

[21] Nakayama N, Ushikubo K, Sawada K, Iijima Y, Hino S, Kaneko T, et al. Chondrolipoma of floor of the mouth: a case report. J Oral Maxillofac Surg Med Pathol. 2024; 36: 429-32.

[22] Mani S, Bajpai M, Sabnis SL. Oral Chondrolipoma: A Rare Case Report. Tr-ENT. 2024; 34: 145-148.

[23] Berg T, Gorsky M. Chondrolipoma of the tongue: a case report of a rare diagnosis. Int J Dermatol. 2010; 49: 441-442.

[24] Bezerra MF, Costa FWG, Pereira KMA, Cavalcante RB, Pouchain EC. Chondrolipoma of the posterior tongue. J Craniofac Surg. 2010; 21: 1982-1984.