INTRODUCTION

1.1 General description

Oral lipoma, a benign tumor of mesenchymal origin, is composed of mature adipocytes and is usually separated by a thin fibrous connective tissue capsule.1,2 Roux was the first to describe soft tissue lipoma in 1848 as a yellowish epulis,3 and Cornil and Ranvier presented the first case of intraosseous lipoma (IOL) in 1880.4 Most cases of oral lipoma are soft tissue lesions. About 15%-20% of soft tissue lipomas occur in the head and neck area, of which only 1%-4% are observed intraorally.2 The incidence of IOL is very low, about 0.1% and infrequently seen in the maxillofacial region.5 Oringer reported the first case of mandibular IOL in 1948.2

The incidence of this tumor appears to be related to the amount of adipose tissue due to the widespread area of the lesion. Lipoma is found more often in the buccal mucosa, which is full of adipose tissue owing to adjacency to the buccal fat pad.6,7 Other sites where lipoma is common include the lips, tongue, floor of the mouth, palate, vestibule, mandible, and retromolar pad. On the other hand, the salivary glands, gingivobuccal fold, parotid, masseceteric region and neck, and pharynx/larynx are less frequently involved.8-10 IOL often occurs in the metaphysis of long bones and the medullary bone of the calcaneus, the jaw being considered an uncommon location.11 Mandibular symphysis, body, and ramus are the most common locations for mandibular IOL. Maxillary involvement has also been reported.4,12 Some scholars believe IOL may be associated with osteoporotic bone or ischemic trauma, but others see it as the beginning of a benign neoplasm.5

1.2 Etiology

The etiology of oral lipoma is unclear. Some studies have acknowledged that mechanical factors, endocrine system, inflammation, obesity, chromosomal abnormalities, radiation, trauma, mucosal infections, and chronic irritation can contribute to the development of oral lipoma.13

1.3 Histopathological features

The main findings of the histopathological view of both soft tissue and intraosseous lipomas are arrangements of mature adipocytes that are divided into lobules by the connective tissue septae. Usually, a thin fibrous capsule surrounds the tumor. Several types of soft tissue lipoma are described based on microscopic variations. The most common type is fibrolipoma, which is characterized by the presence of the fibrous components adjacent to the fat cells. Other types such as myxolipoma, angiomyolipoma, and chondromyxoid fibroma may also occur.
as osteolipoma, chondrolipoma, intramuscular or infiltrating lipomas, salivary gland lipomas, pleomorphic lipomas, angiolipomas, myxoid lipomas, spindle cell lipomas, and atypical lipomas are scarce. Three stages of intraosseous lipoma are introduced based on the degree of involution: stage 1, lesions with no secondary necrosis; stage 2, lesions with partial necrosis; and stage 3, lesions with complete secondary necrosis.

1.4 | Clinical presentation

Most lipoma cases are adult patients aged 40-60 years. These tumors are slow-growing, painless, soft, circumscribed, and associated with submucosal nodules with either a sessile or a pedunculated base. The color of oral lipomas varies from yellow to pink depending on the depth of the lesion, most of which are about 10 mm in diameter.

Most cases of IOL are accidentally diagnosed during a radiographic examination. The symptoms of IOL are different depending on its size, position, evolution, and growth rate. This tumor may be associated with pain, swelling, and numbness. Adequate surgical excision without a safe margin, which has a rare recurrence, is the treatment of choice for this tumor.

2 | CASE PRESENTATION

2.1 | Case 1

A 33-year-old woman referred to an orthodontist due to mandibular anterior crowding. While assessing her panoramic radiography, her dentist found a unilocular radiolucent lesion with a well-defined sclerotic lesion that extended from the left mandibular canine to the right canine. She did not have a medical history of the disease. Intraoral and extraoral examinations were normal, and there were no expansion and pain in the palpation region. All mandibular anterior teeth were checked through electrical pulp testing, all of which were vital. The patient was referred to a maxillofacial surgeon for further evaluation. Cone beam computed tomography (CBCT) was requested for the patient. The radiographic examination showed a regular lesion border without any expansion in the buccal and lingual plates, root resorption, or root displacement. The lesion was biopsied. First, bilateral mental nerve block anesthesia was performed. Then, the envelope flap was raised between the first premolars and the bone was removed by a surgical bur. Next, the lesion was curetted and sent to a pathology center. The histopathological assessment showed a mature adipocyte with an area of hemorrhage but no atypical fat cell. Hence, it was found to be an IOL. In the follow-up visits, there were no complications or recurrence, and the defect was healed properly.

2.2 | Case 2

A 25-year-old woman referred to a maxillofacial department. Her chief complaint was painless swelling in the buccal mucosa for about 2 years, which interfered with her dental occlusion. The lesion was about 1.5 cm and mainly soft on palpation. Excisional biopsy was done under local anesthesia. The incision was about 2 cm and was inferior and parallel to the Stensen’s duct. The lesion was capsulated and completely dissected. The laboratory examination revealed an adipose tissue and a thin capsule surrounding the lesion and pathologic diagnosis showed an intraoral fibrolipoma. There were no complications during and after the surgery and no sign of recurrence after 12 months.

3 | MATERIALS AND METHODS

The present study reviewed the literature of the past 10 years on oral and intraosseous lipomas in the PubMed database. The selection criteria included literature reviews, case series, and case reports in human in English language. The articles that did not contain useful information were eliminated. The papers contained information about sex, age, location, and histopathological pattern.

In the present review, the authors presented two cases of oral lipoma.

4 | RESULTS

A large number of articles were found, from which 77 articles were selected after applying the selection criteria. Among the 120 cases, 58 cases were found in men (48.33%) and 62 cases (51.66%) in women. The average age was found to be 47.69 years, indicating that most lesions occurred in the 4th and 5th decades of life. Buccal mucosa was the most common region for the occurrence of oral soft tissue lipoma, and mandibular body was
the most common site for oral intraosseous lipoma. Simple lipoma was the most common histopathological pattern in oral soft tissue lipoma. Most authors considered surgical technique as a definitive treatment.

5 | DISCUSSION

Lipoma is a benign tumor that can occur in any part of the body. Lipoma can be found in both soft and bony tissues.
The clinical features of intraoral lipoma can be related to the location of the lesion. They often refer to slow-growing tumors associated with fatty tissue and vary in diameter, which contributes to the possibility of misdiagnosis.20

There are different reports about the relationship between lipoma and sex. The incidence of oral lipoma has been reported to be identical in the males and females, or male prevalence has been emphasized or vice versa.21

Bone lesions are often discovered by accident. Radiographic images show unilocular or multilocular radiolucent lesions with a honeycomb or soap bubble appearance and often an osteosclerotic border.22,23 A definitive IOL cannot be diagnosed by a radiographic image. Computed tomography (CT) and magnetic resonance imaging (MRI) can detect these tumors easily. Despite the availability of all these techniques, histopathology remains the gold standard for diagnosis of lipomas.24

The differential diagnosis of IOL includes simple cyst, post-traumatic cyst, aneurysmal bone cyst, giant cell granuloma, ameloblastoma, osteoblastoma, arteriovenous malformations, hemangiomas, infarcted bone, chondrosarcoma, and liposarcoma.25 The differential diagnosis of intraoral lipoma consists of oral dermoid and epidermoid cysts, oral lymphoepithelial cyst, benign salivary gland tumor, mucocele, benign mesenchymal neoplasm, ranula, ectopic thyroid tissue, and lymphoma. Lesions appearing as swelling on the dorsum of the tongue usually mimic hemangioma, lymphangioma, rhabdomyoma, neuroma, and neurofibroma.26

Complete surgical excision is the main treatment of lipoma. There is no recurrence after adequate excision. Injectable steroids are used to manage soft tissue lipoma, which can cause the atrophy of the adipose tissue and reduce the size of the tumor. Monthly injection of 1:1 mixture of...
### TABLE 1  
Classification of intraoral lipoma based on the year of publication

| Authors                      | Age | Sex   | Site                        | Histopathological diagnosis | Treatment            |
|------------------------------|-----|-------|-----------------------------|----------------------------|----------------------|
| Saghafi et al (2008)         | 68  | M     | Right mandibular alveolar mucosa | Osteolipoma                | Surgical excision    |
| Adoga AA et al (2008)        | 35  | F     | Left cheek                  | Lipoma                     | Surgical excision    |
| Imai et al (2008)            | 72  | M     | Tongue                      | Spindle cell lipoma        | Surgical excision    |
| Altug HA et al (2009)        | 22  | M     | Cheek                       | Angiolipomas               | Surgical excision    |
| Kumaraswamy et al (2009)     | 30-60 | Avg: 45.8 | Three in buccal mucosa, one in vestibule | Three lipomas, one fibrolipoma | Surgical excision    |
| Cakarer S et al (2009)       | 45  | F     | Mandible                    | Intraosseous lipoma        | Surgical excision    |
| Jang YW et al (2009)         | 62  | F     | Submandibular gland         | Sialolipoma                | Surgical excision    |
| Pusiol T et al (2009)        | 73  | M     | Submandibular gland         | Sialolipoma                | Surgical excision    |
| Vecchio et al (2009)         | 52  | M     | Buccal mucosa               | Spindle cell lipoma        | Surgical excision    |
| Nonaka et al (2009)          | 30  | M     | Tongue                      | Chondrolipoma              | Surgical excision    |
| De freitas et al (2009)      | 29-91 | Avg: 54.6 | Nine in buccal mucosa, seven in tongue, four in the lower lip, three in the floor of the mouth, two in retromolar area, one in vestibule | Fifteen lipomas, seven fibrolipomas, two intramuscular lipomas, one spindle cell lipoma, one sialolipoma | Surgical excision    |
| Okada H et al (2009)         | 66  | F     | Hard palate                 | Sialolipoma                | Surgical excision    |
| De Moraes M et al (2010)     | 72  | F     | Hard palate                 | Sialolipoma                | Surgical excision    |
| Brkic et al (2010)           | 59  | F     | Buccal mucosa               | Angiofibrolipoma           | Surgical excision    |
| De Castro et al (2010)       | 47  | F     | Left cheek                  | Osteolipoma                | Surgical excision    |
| SY et al (2010)              | 47  | F     | Soft palate                 | Lipoma                     | Surgical excision    |
| Manjunatha et al (2010)      | 55-75 | Avg: 66.6 | Buccal mucosa               | Fibrolipoma                | Surgical excision    |
| Diom es et al (2010)         | 21  | F     | Parotid region              | Osteolipoma                | Surgical excision    |
| Gonzalez-Perez et al (2010)  | 61  | F     | Left mandibular ramus       | Intraosseous lipoma        | Surgical excision    |
| Studart-Soares et al (2010)  | 21-73 | Avg: 53.4 | Five in buccal mucosa, three in vestibule one in gingiva, one in retromolar area | Four lipomas, four fibrolipoma, one angiolipoma, one myxolipoma | Surgical excision    |
| Hoseini et al (2010)         | 50-63 | 2 M   | One in tongue, one in palate | Lipoma                     | Surgical excision    |
| Venkateswarlu et al (2011)   | 6   | M     | Retromolar region           | Lipoma                     | Surgical excision    |
| Morais (2011)                | 45  | F     | Mandible                    | Intraosseous lipoma        | Resection            |
| Brucoli et al (2011)         | 43  | M     | Right cheek                 | Lipoma                     | Surgical excision    |
| Ono S et al (2011)           | 52  | M     | Tongue                      | Myxolipoma                 | Surgical excision    |
| Martinez-Mata G et al (2011) | 12  | F     | Right cheek                 | Angiomyxolipoma            | Surgical excision    |
| Taia et al (2011)            | 65  | F     | Right mandibular gingiva    | Lipoma                     | Surgical excision    |
| Akrish S et al (2011)        | 52  | M     | Submandibular gland         | Sialolipoma                | Surgical excision    |
| Akrish S et al (2011)        | 67  | F     | Palate                      | Sialolipoma                | Surgical excision    |
| Nonaka et al (2011)          | 27-73 | Avg: 58.3 | One in tongue, one in buccal mucosa, one in the floor of the mouth, one in retromolar area | Sialolipoma               | Surgical excision    |
| Santos et al (2011)          | 58  | M     | Buccal mucosa               | Lipoma                     | Surgical excision    |
| Adebiyi KE et al (2011)      | 37  | F     | Palate                      | Osteolipoma                | Surgical excision    |
| Motagi et al (2012)          | 36  | M     | Right buccal mucosa         | Lipoma                     | Surgical excision    |
| Binmadi et al (2012)         | 54  | F     | Lower lip                   | Sialolipoma                | Surgical excision    |

(Continues)
| Authors                          | Age | Sex | Site                      | Histopathological diagnosis       | Treatment        |
|---------------------------------|-----|-----|---------------------------|-----------------------------------|------------------|
| Lee et al (2012)                | 71  | M   | Tongue                    | Lipoma                            | Surgical excision|
| Khubbchandani et al (2012)      | 10  | F   | Buccal mucosa             | Fibrolipoma                        | Surgical excision|
| Qayyum S et al (2013)           | 69  | M   | Parotid                   | Sialolipoma                        | Surgical excision|
| D'Antonio A et al (2013)        | 44  | M   | Parotid gland             | Spindle cell lipoma                | Surgical excision|
| Sun Z et al (2013)              | 48  | M   | Chin                      | Ossifying parosteal lipoma         | Surgical excision|
| Basher (2013)                  | 15  | M   | Anterior area             | Intraosseous lipoma                | Resection        |
| Kiran A et al (2013)            | 53  | F   | Right cheek               | Lipoma                            | Surgical excision|
| Pattipati et al (2013)          | 37  | M   | Palate                    | Lipoma                            | Surgical excision|
| Junior et al (2013)             | 64  | F   | Tongue                    | Spindle cell lipoma                | Surgical excision|
| Chandak et al (2013)            | 75  | M   | Tongue                    | Lipoma                            | Surgical excision|
| Kumar et al (2014)              | 77  | M   | Lower left mental region  | Lipoma                            | Surgical Excision|
| Tsumuraya et al (2014)          | 58  | M   | Cheek                     | Intramuscular lipoma               | Surgical excision|
| Raj AA et al (2014)             | 72  | M   | Floor of the mouth        | Lipoma                            | Surgical excision|
| Raj V et al (2014)              | 35  | M   | Tongue                    | Chondrolipoma                      | Surgical excision|
| Fomete et al (2014)             | 50  | F   | Tongue                    | Neurofibrolipoma                   | Surgical excision|
| Kamakshi et al (2014)           | 6   | F   | Lower lip                 | Chondrolipoma                      | Surgical excision|
| Amaral et al (2015)             | 51  | M   | Left cheek                | Osteolipoma                        | Surgical excision|
| Raghunath et al (2015)          | 20  | F   | Floor of the mouth        | Osteolipoma                        | Surgical excision|
| Castellani et al (2015)         | 25  | F   | Right mandibular ramus    | Fibrolipomas                       | Surgical excision|
| Baonerkar et al (2015)          | 63  | M   | Tongue                    | Lipoma                            | Surgical excision|
| Stoopler (2015)                 | 53  | F   | Buccal mucosa             | Fibrolipomas                       | Surgical excision|
| Jaeger et al (2015)             | 56  | M   | Hard palate               | Spindle cell lipoma                | Surgical excision|
| Hancer et al (2015)             | 31  | F   | Hard palate               | Spindle cell lipoma                | Surgical excision|
| Jun choi et al (2016)           | 68  | M   | Nearby mental foramen     | Lipoma                            | Surgical excision|
| Tom (2016)                      | 15  | F   | Cheek                     | Lipoma                            | Surgical excision|
| Baykul T et al (2016)           | 44  | M   | Parotid gland             | Lipoma                            | Parotidectomy    |
| Shin et al (2016)               | 39  | F   | Coronoid process          | Intraosseous lipoma                | Osteotomy        |
| Lu SL et al (2016)              | 78  | M   | Tongue                    | Lipoma                            | Surgical excision|
| Lwase et al (2016)              | 71  | M   | Left buccal mucosa        | Fibrolipomas                       | Surgical excision|
| Raviraj et al (2016)            | 38  | F   | Left cheek                | Osteolipoma                        | Surgical excision|
| Sharma et al (2016)             | 32  | M   | Left mandibular posterior region | Lipoma                            | Surgical excision|
| Mehendirratta et al (2016)      | 60  | M   | Mandibular buccal vestibule | Lipoma                            | Surgical excision|
| Seelam et al (2016)             | 55  | F   | Right retromolar region   | Osteolipoma                        | Surgical excision|
| Waskowska et al (2017)          | 32  | M   | Body of the mandible      | Intraosseous lipoma                | Surgical excision|
| Cooper et al (2017)             | 53  | M   | Right mandibular body     | Intraosseous spindle cell          | Surgical excision|
| Coelho et al (2017)             | 78  | M   | Left buccomasseteric region | Lipoma                            | Surgical excision|
| Ohyama et al (2017)             | 4 mo| M   | Hard palate               | Lipoma                            | Surgical excision|
| Sanjuan et al (2017)            | 50  | F   | Left mandibular ramus and condyle | Intraosseous lipoma                | Surgical excision and curettage|
| Tabakovic et al (2017)          | 43  | F   | Maxillary tuberosity      | Intraosseous lipoma                | Surgical excision|
| Bajpai M et al (2017)           | 51  | M   | Tongue                    | Angiomyxolipoma                    | Surgical excision|
| Arakeri et al (2018)            | 1   | M   | Parotid gland             | Sialolipoma                        | Parotidectomy    |
| Phulari et al (2018)            | 16  | F   | Left retromolar region    | Fibrolipomas                       | Surgical excision|
| Phulari et al (2018)            | 60  | M   | Right first molar         | Fibrolipomas                       | Surgical excision|
lidocaine and triamcinolone acetonide is recommended to be administered to the center of the lesion.²⁶

CONFLICT OF INTEREST
None declared.

AUTHOR CONTRIBUTION
ND, FR, TP and XM: involved in the conception and design of the work, data collection, drafting of the manuscript, critical revision of the manuscript, and final approval of the version to be published.

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How to cite this article: Dehghani N, Razmara F, Padeganeh T, Mahmoudi X. Oral lipoma: Case report and review of literature. Clin Case Rep. 2019;7:809–815. https://doi.org/10.1002/ccr3.2099