

## Giant lipoma of the tongue: A case report and review of the literature

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### ABSTRACT

This report presents the case of a 49-year-old man who presented with giant masses that had recently grown on the bilateral sides of the tongue. A clinical examination revealed rubbery yellowish lesions protruding from the tongue. A panoramic radiograph showed an enlarged soft tissue shadow of the tongue. Computed tomography showed well-defined circumscribed mass exhibiting a homogeneous low density on the bilateral sides of the tongue. On magnetic resonance images, the masses showed a high signal intensity on T1-weighted images and iso-signal intensity with partially hyperintense margin on fat-suppressed T2-weighted images. Surgical excision was performed, and a histopathologic examination confirmed the diagnosis of lipoma. The patient recovered well with no sign of recurrence. A giant lipoma is defined as a lipoma larger than 5 cm in diameter. A literature review of giant lipomas of the tongue is also presented herein. (*Imaging Sci Dent* 2022; 52: 117-21)

**KEY WORDS:** Lipoma; Tongue; Magnetic Resonance Imaging; Tomography, X-Ray Computed

Lipomas are benign neoplasms composed of mature white adipocytes; they are among the most common tumors in the body, and can be found wherever fat is present.<sup>1,2</sup> Lipomas are normally painless and slow-growing, and can grow to be quite large, especially when located deeply.<sup>2</sup> According to Cribb et al.,<sup>2</sup> a giant lipoma is defined as a lipoma that is larger than 5 cm in diameter.

Lipomas in the head and neck region account for 20% of cases,<sup>1,3</sup> but only 1%-4% of lipomas are found in the oral region.<sup>1,3</sup> The affected sites in the oral cavity include the buccal mucosa, lips, cheek, floor of the mouth, and tongue.<sup>4</sup> The mean size of lipomas in the oral cavity is nearly 2.0 cm in diameter at diagnosis.<sup>4</sup> Most lipomas in the oral cavity do not grow to be larger than 2.5 cm in diameter.<sup>5</sup> Nonetheless,

although these cases are rare, lipomas can become large enough to cause difficulty in mastication and speech.<sup>6</sup> Lipomas in the oral cavity demonstrate no sex predilection<sup>3,4</sup> and generally occur after 40 years of age.<sup>7</sup> The reported retention period of lipomas in the oral cavity is 75.8 months, with a wide range from 15 days to 30 years.<sup>1</sup> Although the etiology of lipomas is unclear, it is hypothesized that lipoma development is caused by trauma, inflammatory factors, and hormonal disturbances.<sup>8</sup>

This report presents a case of giant lipoma on the bilateral sides of the tongue, along with a literature review of giant lipomas of the tongue that presents information on the mean age of patients, mean size, duration, location, and histological subtypes of these tumors.

### Case Report

A 49-year-old man visited the Department of Oral and Maxillofacial Surgery of Kyungpook National University Hospital with large masses on both lateral borders of the tongue. The patient had difficulty swallowing and breath-

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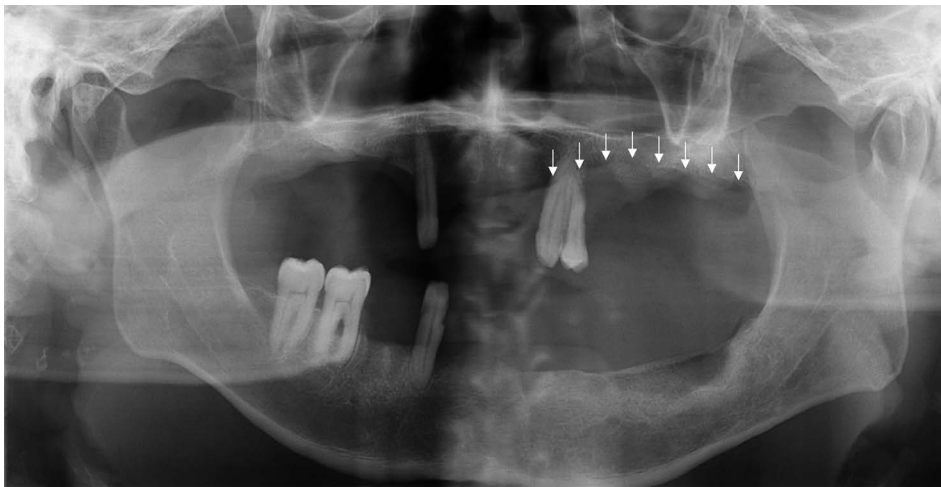
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ing. A clinical examination revealed rubbery, giant masses on the bilateral sides of the tongue (Fig. 1). The patient's pronunciation was unclear and tongue movement was very limited due to the bulkiness of the tumor (Fig. 1). However, there was no sign of ankyloglossia. The patient presented neither pain nor response to palpation. His taste and somatic sensation were normal. The patient could only eat soft foods. The patient stated that the masses had recently grown rapidly. According to his medical records, the patient had been referred to the Department of Otolaryngology of Kyungpook National University Hospital for a further evaluation 10 years ago. The mass had been diagnosed as lipoma on incisional biopsy at that time. Long-term follow-up was recommended, but the patient did not visit the hospital for 10 years. The rest of his medical history was non-contributory.

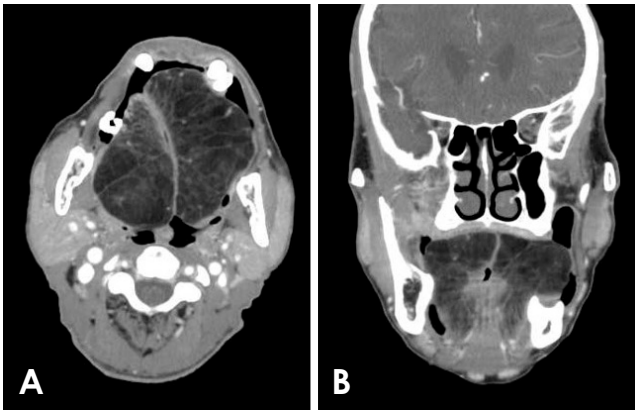


**Fig. 1.** Clinical examination reveals large, smooth, and rubbery masses on both lateral borders of the tongue.

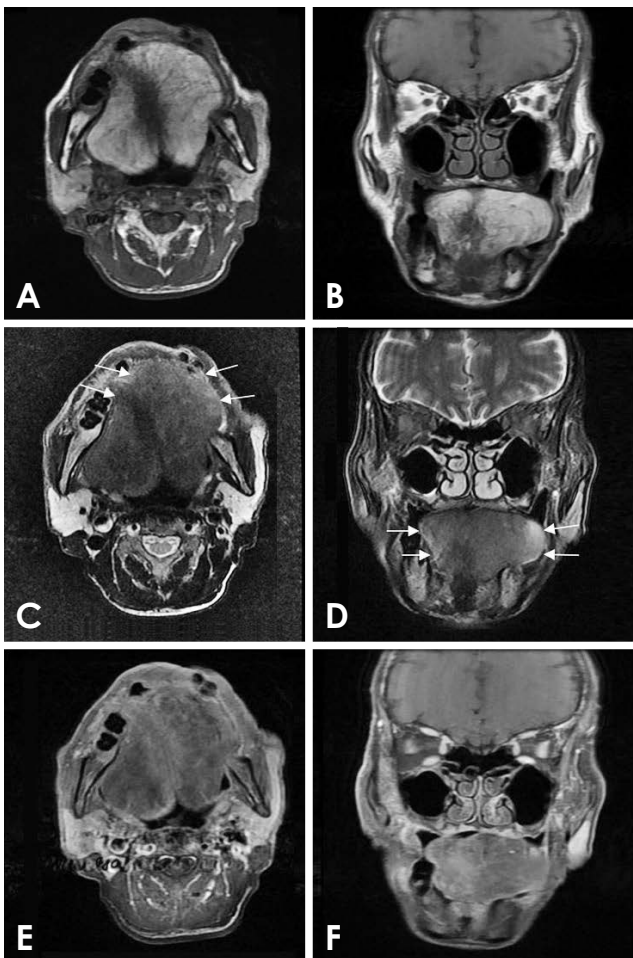
Panoramic radiography (Orthopantomograph OP 100D, Instrumentarium Imaging Co., Tuusula, Finland) showed an enlarged soft tissue shadow on both sides of the tongue (Fig. 2). Although the patient's history and clinical examination indicated a high likelihood of a diagnosis of lipoma, enhanced computed tomography (CT) was performed to differentiate it from other diseases and check for the presence of inflammatory conditions. The enhanced CT scan (GE Light Speed 16, GE Healthcare Co., Milwaukee, WI, USA) revealed well-circumscribed bilateral masses of the tongue with homogeneous low density equal to that of the subcutaneous fat (Fig. 3). The masses had a thin capsule at the margins and multiple thin septations internally, and occupied most of the tongue and extended over the left edentulous ridge area. The airway was partially compressed by the bulkiness of the masses. A T1-weighted magnetic resonance (MR) image showed a homogeneous hyperintense lesion of the tongue consistent with fat (Fig. 4). It revealed a well-defined margin with a clear plane of cleavage between the masses and the adjacent structures, and the masses had hypointense internal septations. The masses demonstrated iso-signal intensity with a partially hyperintense margin on the fat-suppressed (FS) T2-weighted MR image. There was no sign of enhancement in the gadolinium-administrated FS T1-weighted sequences. Radiologically, these signals were clear characteristics of lipomatous tissue, and thus the diagnosis of lipoma was proposed. Surgical excision of the lipoma was performed under general anesthesia. The excised masses were rubbery and lobulated with a maximum antero-posterior diameter of approximately 7 cm and 10 cm each on the bilateral sides of the tongue (Fig. 5). The masses were well-separated from the adjacent tissues. The masses were fatty-yellow and well-encapsulated. A histological examination revealed mature adipose tissue consistent with lipoma



**Fig. 2.** Panoramic radiograph shows a large tongue shadow (arrows).



**Fig. 3.** Enhanced computed tomography images show well-defined bilateral large masses of the tongue with homogeneous low density on axial (A) and coronal (B) scans.



**Fig. 4.** Axial (A) and coronal (B) T1-weighted magnetic resonance (MR) images demonstrate well-defined homogeneous hyperintense masses of the tongue. Axial (C) and coronal (D) fat-suppressed T2-weighted MR images show tumors with iso-signal intensity and a partially hyperintense margin (arrows). Axial (E) and coronal (F) fat-suppressed enhanced T1-weighted MR images reveal no enhancement within the masses.



**Fig. 5.** The surgical specimens, measuring 7 cm (left) and 10 cm (right) in the maximum anteroposterior diameter.

(Fig. 6). The patient regained normal pronunciation and feeding capacity with no loss of sensory or motor function. His tongue fit comfortably in his mouth. Postoperative follow-up at 6 months was uneventful (Fig. 7).

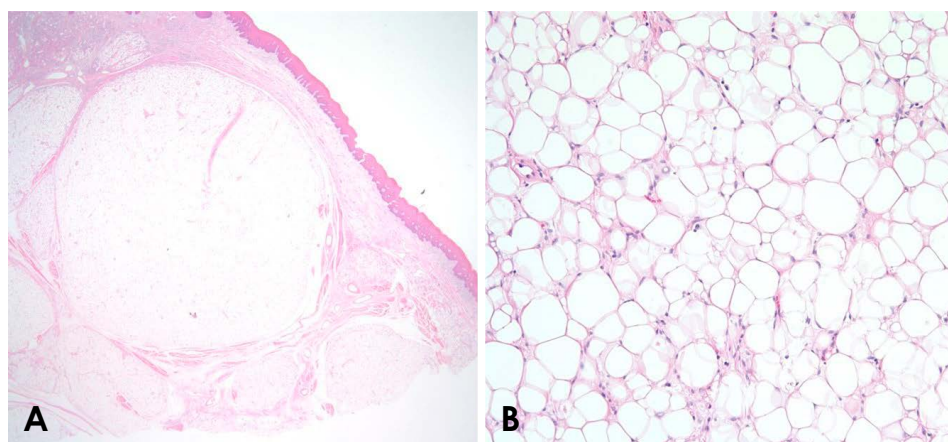
## Discussion

This study reports a case of giant lipoma of the tongue that underwent complete excision. Five cases of giant lipoma on the tongue were identified after an extensive search of the English-language literature (Table 1). In all cases, the mean age of presentation was 60 years (range, 30-70 years). The largest giant lipoma had a maximum diameter of 10 cm. The patients waited 2-20 years (average: 11.64 years) to have their lipomas excised. Furthermore, giant lipomas on the tongue were most commonly found on the lateral border (in 4 out of 5 cases). All patients underwent surgical excision, and no cases of recurrence were reported. Histologically, 4 cases were classic lipomas and 1 case was an infiltrating lipoma. Based on histopathologic features, lipoma can be classified as classic lipoma, infiltrating lipoma, fibrolipoma, angioliipoma, pleomorphic lipoma, spindle-cell lipoma, and myxoid lipoma.<sup>1,7</sup> Classic lipoma, which accounts for the majority of lipomas, is composed of lobules of mature adipocytes.<sup>3</sup>

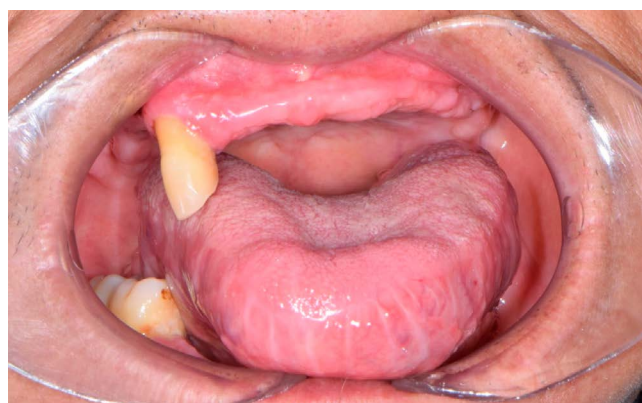
Lipomas have a distinct radiographic appearance.<sup>5,13,14</sup> Surgery must be preceded by an imaging evaluation using non-invasive techniques such as CT and MR imaging to diagnose a deeply seated lingual lipoma.<sup>5,13</sup> If the biopsy sample consists of mature adipose cells, as is the case for classic lipoma, the signal intensity of CT and MR imaging will appear to be similar to that of subcutaneous fat.<sup>14</sup> On

**Table 1.** Literature review of giant lipoma of the tongue measuring more than 5 cm in maximum diameter

Author	Age (years)	Size (cm)	Duration (years)	Chief complaint	Location	Histologic type	Treatment
Chidzonga et al. <sup>6</sup> (2006)	58	8.0 × 8.0 × 5.0	3.2	Difficulties in swallowing, speech, and eating; anterior open bite	Tip	Classic	Surgical excision
Chung et al. <sup>9</sup> (2007)	62	6.0 × 4.0 × 4.0	2.0	Difficulties in swallowing, speech, eating	Left dorsal - lateral surface	Classic	Surgical excision
Colella et al. <sup>10</sup> (2009)	75	10.0	30.0	Difficulties in swallowing and speech	Tip - lingual surface	Intramuscular	Surgical excision
Chandak et al. <sup>11</sup> (2012)	75	9.0 × 8.0 × 6.0	20.0	Difficulties in swallowing, speech, and breathing	Lateral border of anterior third	Classic	Surgical excision
Damghani et al. <sup>12</sup> (2015)	30	8.0	3.0	Difficulties in swallowing and speech	Tip - lingual surface	Classic	Surgical excision



**Fig. 6.** A. A histopathologic examination shows a mixed-pattern circumscribed, multinodular mass with mature adipose tissue (H&E stain, original magnification × 12.5). B. High-power photomicrography reveals that the mature adipocytes vary in size and shape with small eccentric nuclei in random arrangement (H&E stain; original magnification × 200).



**Fig. 7.** The tongue fits comfortably in the mouth without obstructing the airway at a 6-month follow-up.

CT images, classic lipoma presents with values of -83 to -134 Hounsfield units, which is the same as fat density.<sup>5,13</sup> MR imaging has a significantly higher sensitivity and accuracy for distinguishing the boundaries of soft tissues

and highly-vascularized tissues.<sup>5</sup> This characteristic of MR imaging is particularly helpful in diagnosing tumors on the lingual border,<sup>5</sup> as it enables a more accurate assessment of soft tissues due to its high contrast and resolution.<sup>15</sup> On MR images, lipoma consistently shows a high-intensity signal equal to that of subcutaneous adipose tissue on both T1- and T2-weighted settings.<sup>9,13</sup> The signal of the fat tissues can be suppressed using technology called fat suppression pulses.<sup>15</sup>

Although most lipomatous masses do not present any particular diagnostic problem, some may be difficult to distinguish from liposarcomas.<sup>16</sup> Classic lipoma has a characteristic appearance, such as a homogeneous signal intensity throughout the lesion and displacement and compression of adjacent structures without infiltration.<sup>15</sup> However, in uncommon cases, a lipoma may exhibit significant mass inhomogeneity, high enhancement, nodular tissue components, or aggressive infiltration of adjacent structures, making it challenging to diagnose.<sup>13</sup> In such cases, the best tech-

nique to distinguish lipoma from liposarcoma is to evaluate FS T2-weighted MR images.<sup>17</sup> On FS T2-weighted MR images, a well-differentiated linear or nodular liposarcoma shows hyperintensity, with a distinctive white appearance on images.<sup>17</sup> The septa of liposarcoma are thick and considerably enhanced on contrast-enhanced FS T1-weighted images. In contrast, those in lipoma are thin and slightly enhanced using the same sequence.<sup>14</sup> Malignant cellularity and infiltration of inflammatory cells may contribute to enhancement of the septa of liposarcoma.<sup>14</sup>

Beyond the radiological diagnosis, the differential diagnosis of giant lipoma on the tongue must include macroglossia, which may commonly appear due to various lesions on the tongue such as schwannoma, cavernous hemangioma, lymphangioma, minor salivary gland tumors, and lingual thyroid.<sup>9</sup> A definitive diagnosis requires a histopathological examination after an incisional or excisional biopsy or fine-needle aspiration biopsy.<sup>12</sup>

Complete excision should be emphasized in order to avoid recurrence.<sup>18</sup> Classic lipoma is well-encapsulated and is easily excised with no damage to the surrounding structures.<sup>1</sup> The prognosis of classic lipoma is always good except in patients under 18 years old.<sup>18</sup> However, infiltrating lipoma permeates the skeletal muscle cells, making it harder to remove completely, especially when it comprises multiple lobules; for this reason, the recurrence rate of infiltrating lipomas is higher.<sup>11,12,15</sup> Therefore, long-term follow-up is crucial in patients with classic lipoma under 18 years or in cases of infiltrating lipoma.<sup>18</sup>

In conclusion, we reported a case of giant lipoma due to a lack of proper initial treatment. CT and MR imaging were useful for diagnosing and detecting the dimensions of the lipoma.

**Conflicts of Interest:** None

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