

## Case Report

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# Intraosseous lipoma of the mandibula: A case report and review of the literature

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**Abstract:** Lipoma is a benign tumour originating from mature adipose tissue. It can occur in any place in the body where adipose tissue is located. Intraosseous lipoma is a very rare bone tumour. The authors present an infrequent case involving intraosseous lipoma of the mandible in a 32-year old man and provide a review of case studies documented earlier in the literature.

**Keywords:** Lipoma; Benign bone tumour; Intraosseous lipoma

## 1 Introduction

Lipoma are benign tumours composed of mature adipose tissue with no features of cellular atypia. They can occur in any place in the human body where adipose tissue is located [1]. They occur most commonly in persons ages 40 to 60. They are usually surrounded by a connective tissue capsule. When there is no capsule, fat cells penetrate into the surrounding tissue. Multiple foci are very rare and they usually co-exist with different syndromes and diseases (Madelung's Disease and Gardner's Syndrome) [2].

In most cases they are soft tissue tumours. They are usually found in subcutaneous tissue, but can also appear

in muscles, the retroperitoneal space and bones [1,3]. In 20% of all cases soft tissue lipomas are located in the head and neck region. However, only 1-4% of lipomas are located in the oral cavity. They can be present in salivary glands, the mucous membrane of the cheek, the lips, the tongue, the palate, the vestibule and the floor of the mouth [2].

Intraosseous lipomas account for around 0.1% of all bone tumours. They most commonly occur in the metaphyses of long bones (the humerus, radius, femur, fibula and tibia) as well as in the calcaneus and vertebrae of the cervical spine [4]. They are slow-growing, benign tumours. In the case of the mandible they usually develop in the posterior section. The diagnosis is based on an histopathological examination and treatment consists in the excision of the lesion. Recurrence of the tumour occurs only rarely and cases of malignancy are sporadic [2,5]. Only 17 cases of this tumour were reported between 1948 and 2009, and the vast majority of them were located in the mandible. Perez et al. described a case involving an intraosseous lipoma located in the condylar process of the mandible [1,2,5,6].

## 2 Case study

Patient A.R., a 32 year old Caucasian male, was referred for consultation to the Dental Surgery Clinic of the Bytom Academic Dental Centre. During the course of restorative treatment, a orthopantomography (OPT) was taken which confirmed the presence of a lesion on the right body of the mandible.

The patient did not mention any history of inflammation in this region. On the other hand, during his childhood the patient had suffered an injury to the mandible precisely where the lesion had emerged.

The general history of the patient did not reveal any systemic diseases.

An extraoral examination revealed no facial asymmetry. Furthermore, the exits of the peripheral branches of the trigeminal nerve were pain free and the lymph nodes impalpable.

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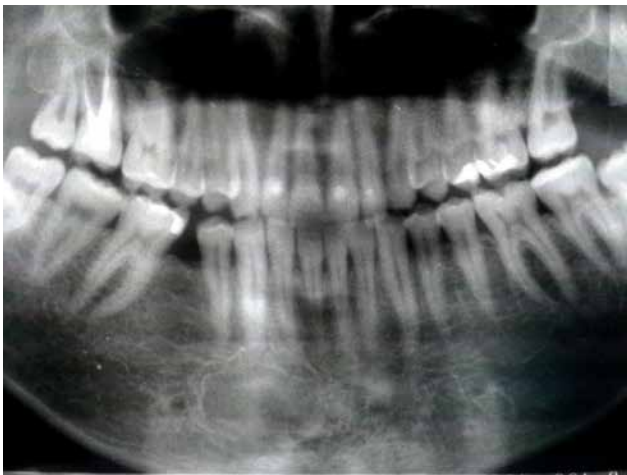
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An intraoral examination revealed no deformation of the mandibular bone. Tooth 45 was missing. According to the patient's own account, none of his permanent teeth had been extracted, which indicates agenesis of the lower right second premolar.

A pantomographic X-ray revealed a spherical translucency with a diameter of approximately 2 cm located below the root apices of teeth 42-44, enclosed by an osteosclerotic layer with irregular, wave-like margins (Fig.1). Teeth 42, 43 and 44 responded positively to pulp vitality tests.

A CBTC examination revealed the presence of a regular bone defect in the body of mandible in the region of teeth 42-44. It was shaped like a sphere flattened in the vestibulodimension,

and had clear osteosclerotic borders. A lesion 12 mm x 8 mm in size was identified below the root apices of



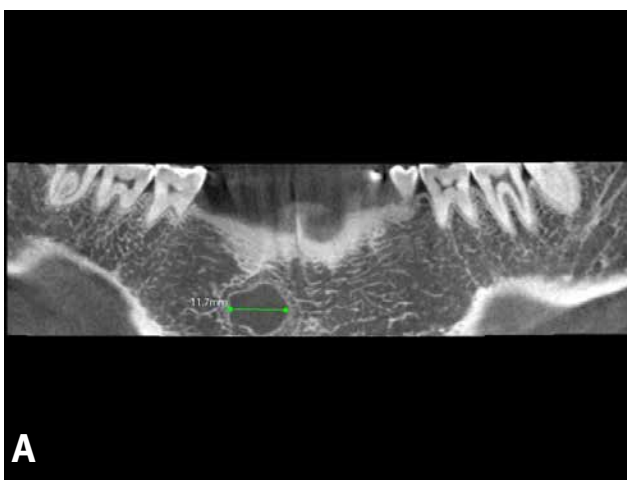
**Figure 1:** Patient A.R., age 32. Panoramic radiograph. Osteolytic focus in body of mandible in the region of teeth 41 – 44. Lesion has osteosclerotic borders with an irregular, wave-like margin.

the above-mentioned teeth. The apices did not come into contact with the lesion. The compact lamellae of the body of mandible were preserved on both the labial and lingual sides (Fig. 2a, b).

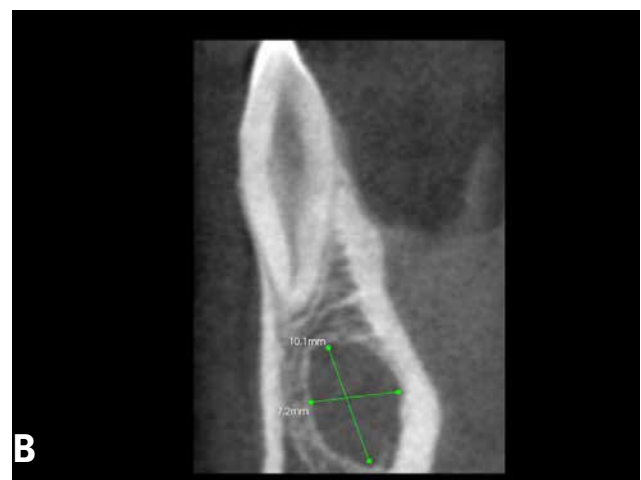
The tumour was enucleated under local anaesthesia (articaine combined with epinephrine). A semilunar incision was then made in the region of teeth 41-44 and the mucoperiosteal flap elevated. A hole was drilled in the external compact lamella in the projection of the lesion along the long axis of tooth 43, and 20 mm below its cervix at a depth of 4 mm, using as guide measurements made on the basis of images from a CBTC scan. Once the opening had been formed contact could be made with the lesion in the mandibular bone. The opening in the vestibular surface of the body of mandible was widened to a diameter of 10 mm (Fig. 3), revealing yellowish tissue similar in appearance to adipose tissue, which had been enucleated (Fig. 4). The tissue specimen was then sent for histopathology. The bone walls of the defect were gently ground until a healthy bone surface was achieved. The



**Figure 3:** Patient A.R., age 32. Intraoperative photo. Visible opening made in body of mandible in region of teeth 42 – 43, providing access to tumour mass.



A



B

**Figure 2a,b:** Patient A.R., age 32. CBCT examination of mandible a. Reconstruction of image in horizontal plane. b. Reconstruction of image in vestibular-lingual cross-section.

bone cavity was filled with haemostatic sponge and the post-operative wound was then sutured. Following the procedure, the patient was instructed to take 600 mg of Clindamycin orally once every 12 hours, as well as analgesics. The patient was also instructed to maintain proper oral hygiene. The postoperative course was uneventful with no complications occurring. The sutures were removed on the 11<sup>th</sup> day post-op. Histopathology revealed the presence of a tumour composed of mature adipose tissue with thin fibrous septa and capillaries. There were some calcifications in the tumour. There were no signs of necrosis, cellular atypia or neoplastic structures in the bone marrow. A microscopic image indicated the presence of a lipoma (Figs 5,6). During a subsequent two-year observation period no recurrence of the tumour occurred.

**Ethical approval:** The research related to human use has been complied with all the relevant national regulations, institutional policies and in accordance the tenets of the Helsinki Declaration, and has been approved by the authors' institutional review board or equivalent committee.

**Informed consent:** Informed consent has been obtained from all individuals included in this study.

### 3 Discussion

A lipoma is a benign tumour that commonly affects the adipose tissue and can appear in any part of the body. The tumour is usually a single, soft, well-defined and slowly growing lesion. Lipomas can be found both in subcutaneous tissues as well as in more deeply located layers. Despite the large amount of fat in bone marrow, intraosseous lipomas in adults are considered to be one of the rarest forms of primary bone tumours. Depending on their

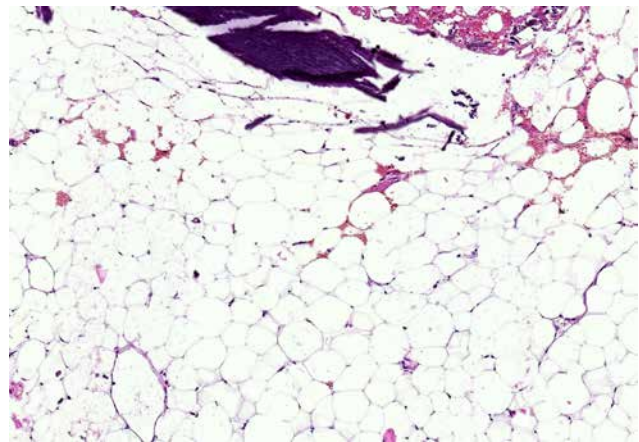


**Figure 4:** Patient A.R., age 32. Tumour enucleated from body of mandible in region of teeth 41 – 44.

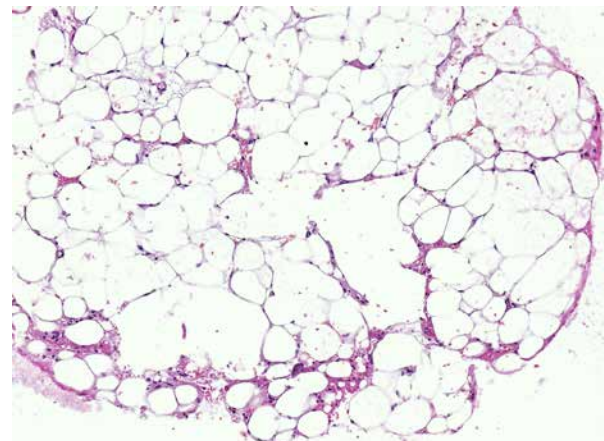
origin, they are divided into intramedullary and intraosseous forms [7]. The authors of the present study conducted a review of the literature, taking into account articles from the last 20 years describing intraosseous lipomas located in the head and neck region. They made use of the literature available on the PUBMED database of the US Library of Medicine Institutes of Health as well as in the Polish Medical Bibliography 1991-2016 GBL.

In the case of the skull, the presence of intraosseous lipomas were reported in the frontal bone (3 cases), the sphenoid bone (1 case), the maxilla (2 cases), the sphenoidal sinus and the frontal-sphenoidal sinus [8-4].

In the case of the mandible, they are most commonly located in the posterior segment, in the region of the body, angle and branch. There have been only four cases of this type of lesion occurring in the anterior section of the mandible described in the literature since 1948 [1,3,5,6]. In the case study described in the present article the tumour was



**Figure 5:** Structure of lipoma, consisting of mature yellow adipose; tissue with calcification. Hematoxylin-eosin staining. Magnification 300x



**Figure 6:** Structure of lipoma, consisting of mature yellow adipose; tissue with numerous capillaries. Hematoxylin-eosin staining. Magnification 300x

observed in the anterior section of the mandible, in the region of teeth 42-44.

The aetiology of intraosseous lipomas is unclear. According to Hart, infarctions in bone-nourishing vessels result in the ischaemia of the latter. The adipocytes that create lipoma-like substances accumulate in such areas [15]. According to Barker & Sloane, a lipoma may be the result of a trauma, including as a result of tooth extraction [16]. In the present case study, the patient reported having experienced such a trauma in the area where the lesion appeared.

Milgram, who has reported the most cases of intraosseous lipomas, described three forms of this lesion based on an histopathological examination. In stage one there are no signs of secondary necrosis. In stage two, partial secondary necrosis occurs. Stage three is characterised by complete secondary necrosis. The lipoma that is the subject of the present case study may be classified as a stage one tumour [17].

Intraosseous lipomas grow slowly with no complications and are only detected by accident. In radiological X-rays they appear as clearly defined osteolytic lesions often with an osteosclerotic border. The central part of the tumour may appear cloudy owing to the occurrence of fat necrosis or calcifications [1,3,5,17]. A radiological image of the lipoma is not distinctive and requires a differential diagnosis, especially when we are dealing with an osteolytic defect with an irregular shape and borders CT and MR scans ensure a more accurate analysis and make it possible to detect the specific adipose tissue. However, the final test confirming the character of the lesion is the result of a histopathological examination [18]. In the present case, the tumour was also detected by accident. During restorative treatment carried out on the patient's teeth a pantomographic X-ray revealed a translucent spherical area, located below the apices of roots 42-44. A subsequently performed CBTC examination did not reveal any damage to the compact lamellae of the mandibular body in the vestibular or lingual aspects. On the other hand, the material collected during the procedure for histopathological testing revealed the presence of calcifications.

The histopathological assessment helps us distinguish between three different types of lipoma: lipoma, fibrolipoma, angliolipoma. A lipoma formed from mature adipose cells has a sparse vasculature. Fibrolipoma is a tumour containing adipocytes and connective tissue. Angliolipoma contains, besides mature adipose cells, numerous blood vessels. The most common form of intraosseous lipoma of the mandible described in the literature is the lipoma.

There were also four cases of angliopomas and two of fibrolipomas [2]. The histopathological image of the tumour removed in our case corresponded to a lipoma.

The treatment of choice for intraosseous lipomas is surgical enucleation of the lesion: curettage or partial resection of the bone in the case of extensive tumours. Tumour recurrence is very rare. The literature includes four cases of patients whose mandibular lipomas underwent malignant neoplastic transformation [1,3,5,16]. In the present case study, no recurrence of the tumour occurred during a two-year observation period. Furthermore, radiography revealed that the post-operative defect had filled up with bone tissue.

**Conflict of interest statement:** Authors state no conflict of interest.

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