



PERIPHERAL OSTEOMA OF MANDIBLE- A CASE REPORT AND ANALYSIS OF LITERATURE

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ABSTRACT

Background Osteoma is a benign osteogenic tumor arising from the proliferation of cancellous or compact bone. The osteoma can be central, peripheral or of an extraskeletal type.

Objective: The purpose of our paper is to present a case of peripheral osteoma of the mandible and to evaluate the diagnosis and management of osteoma of the maxillofacial region with an analysis of the literature.

Material and Methods: We present a 68 years old female patient with a hard, well defined swelling on the left side of the mandible in vestibular aspect near to the lower margin and medial to the angle.

Results: Clinical evaluation (extraoral and intraoral) of patient and radiological findings directs for a diagnosis-peripheral osteoma of left side of mandible and the patient was scheduled for surgical treatment.

Conclusion: Peripheral osteoma of the jaw bones is uncommon. The post surgical follow-up should include periodic clinical and radiographic studies. Patients with osteoma associated with impacted or supernumerary teeth should be evaluated for possible Gardner's syndrome.

Key words: neoplasm, osteoma, mandible

INTRODUCTION

Osteoma is a benign osteogenic tumour arising from the proliferation of cancellous or compact bone. Biological behavior includes slow expansive growth. It is a rare encapsulated bone neoplasm located in the bone tissue of the skull and the face [1, 2]. The osteoma can be central, peripheral or of an extraskeletal type. The central osteoma arises from the endosteum, the peripheral osteoma (PO) from the periosteum and the extraskeletal soft tissue osteoma usually develops within muscle [1, 2]. Peripheral osteomas in maxillofacial region are uncommon.

It may occur as a solitary or multiple lesions on a single or numerous sections of the bone. The tumour may arise from cartilage or embryonal periosteum. "It may arise from the endosteal or periosteal surface" [3, 4, 5, 6]. One of the major differences of osteoma from other bony exostoses is the ability of this lesion to continue its growth during adulthood [3, 5, 7]. This is more common in men [1].

Histologically, osteoma may be of two types:

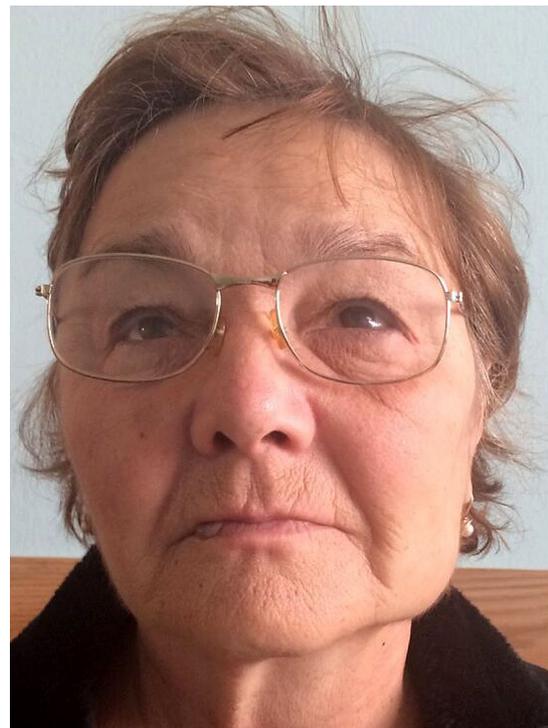
1) Compact or "ivory" and 2) Cancellous, trabecular or spongy [1, 8, 9]. The compact osteoma comprises dense bone with few marrow spaces and only a few osteons. The cancellous osteoma is characterized by bony trabeculae and

fibrofatty marrow enclosing osteoblasts with an architecture resembling mature bone [10, 11] "Recommended treatment is surgery, recurrence is rare and there are no reports of malignant transformation" [10, 12]. Most osteomas are small; however, in rare cases they may become large enough to cause displacement and damage to adjacent structures. Although osteomas may occur at any age, they are most frequently found in people over 40 years of age [1, 10].

Clinically, the PO is usually an asymptomatic slow growing lesion which can produce swelling and asymmetry. The pathogenesis of PO is unclear. Some investigators consider it a true neoplasm, while others classify it as a developmental anomaly [8]. The possibility of a reactive mechanism, triggered by trauma or infection has also been suggested [6]. The association between maxillofacial osteomas, cutaneous sebaceous cysts, multiple supernumerary teeth and colorectal polyposis is known as Gardner's syndrome [8].

The purpose of this paper is to present the clinical and radiographic features of a case of huge osteoma of the mandible, its diagnosis and management.

Fig. 1. Facial asymmetry because of osteoma of left side of mandible with no local sensitivity.



A 68-year-old woman came to the department of Oral and Maxillofacial Surgery of Faculty of Dental medicine, Medical University- Sofia for evaluation of a swelling in the left side of mandible which she found by chance a couple of months prior to examination and had grown slowly the last few months. A mild facial asymmetry was observed. (figure 1). Clinical examination revealed a non painful firm well-circumscribed palpable mass in the buccal vestibule aspect of the left side of the mandible near to the lower margin of the angle. The lesion was covered by normal skin. The patient had no paresthesia. The patient was in good health generally and with negative history of trauma in this region prior to the onset.

Fig. 2. Peripheral osteoma affecting the body of the left mandible- panoramic radiograph showing a radiopaque mass attached to the body of the lower margin of the mandible.



On panoramic radiography, a moderately well-defined radiopaque lesion was seen adjacent to the inferior border of the left side of the mandible extending from the lower border of mandible and with some degree of extension to the angle of the mandible. (figure 2).

Fig. 3. Bucco-lingual reconstruction of an axial CBCT scan of the mandible showing a radiopaque mass attached to the lower border of the mandible extending towards the buccal aspect.



CT revealed a 4 × 4.3 cm well-defined, unilateral, pedunculated mushroom-like mass. The radiodense lesion is arising from the left buccal aspect of the inferior border of mandible, (figure 3). A working diagnosis of osteoma was established based on the clinical and radiographic findings. The lesion was scheduled for surgical removal under general anesthesia with extraoral approach.

DISCUSSION

Osteomas, which are benign, slow-growing and well-defined neoplasms, may originate from membranous maxillofacial bones. [1, 12, 19] The tumours are often asymptomatic and are usually detected as an incidental finding on radiographic examinations, “revealed in roughly 1% of routine scans” [13, 14, 15, 16]. “Headache [15], epistaxis [18], visual changes, pain and proptosis” are the most common symptoms of unusual tumours inside the paranasal sinuses [14]. Osteomas are frequently accompanied by chronic inflammation of the adjacent mucous membranes lining the sinuses and by mucoceles [12, 14].

In the frontal sinus, an osteoma can cause erosion of the posterior wall, resulting in spontaneous pneumocephalus and cerebrospinal fluid (CSF) rhinorrhea [18, 20]. Obstruction of the draining ducts can facilitate the development of sinusitis or formation of a mucocele [20]. “Lesions larger than 3 cm in diameter are considered giant tumours” [20].

The mandible is more commonly involved than the maxilla. They usually occur in the posterior region of the mandible on the lingual side of the ramus or on the inferior mandibular border below the molars [1, 19, 13, 17, 21]. Other locations include the condylar and coronoid region. Structurally, osteomas are divided into three types: those composed of compact bone (ivory), those composed of

cancellous bone and those composed of a combination of compact and cancellous bone. Osteomas may have osteoblastoma-like areas and distinguishing it from true osteoblastoma may be challenging. Some believe osteomas with osteoblastoma-like features behave more aggressively. Cortical-type osteomas develop more often in men, while women have the highest incidence of the cancellous type [1].

As noted in previous reports in the literature, PO of the jaw bones is quite rare. These lesions usually appear as unilateral, pedunculated mushroom-like masses. In the mandible, the most common sites are the angle and lower border of the body, locations that are more susceptible to trauma. Also, the location of PO of the jaws is usually in close proximity to areas of muscle attachment, suggesting that muscle traction may play a role in its development [6, 8, 16, 17]. Though the exact etiology and pathogenesis of PO is still unclear, traumatic, congenital, inflammatory and endocrine causes have been considered as possible etiologic factors [21]. There is evidence for some authors to suggest that the peripheral osteoma of the mandible is a traumatically induced reactive lesion and that muscle traction plays a role in its initiation. In view of this possibility, the term “perosteal osseous hyperplasia” may be more appropriate for those lesions in which a positive history of trauma preceded the onset. [6]

Most cases of PO appear to have a very slow growth rate, without significant symptoms. In many cases, the discovery of the PO is an incidental finding. In some of the cases, however, depending on the location, the size of the tumour may cause facial deformity, deviation of the mandible on opening, headache or exophthalmos.

Imaging of PO can be achieved by traditional radiography (i.e.: panoramic radiograph, Water’s view) or by CT scan. The use of CT scanning with 3-D reconstruction makes it possible to achieve a better resolution and more precise localization [6]. Bone scan was not performed routinely in all our patients, but when used, it was able to disclose the physiologic activity of the PO, enabling to determine whether it is a long standing, mature lesion with no further growth, or a relatively young lesion that is actively growing.

CT, particularly three-dimensional CT scans, is so useful in defining the exact extension of the tumour and to determine the position of the lesion in relation with adjacent anatomical structures, when removal of the lesion is considered [14, 16, 17, 18]. CT scans, particularly CT scan in bone window and magnetic resonance imaging (MRI) give very good diagnostic possibilities, but plain radiography is also sufficient for the purpose of post operative follow-up. “Scan should be performed at least in six-month intervals during the first few years after surgery” [22]. Recurrence after surgical procedure is rare.

The differential diagnosis includes exostoses—bony excrescences considered as hamartomas that stop growing after puberty, while osteomas may continue growth after puberty; peripheral ossifying fibroma – a reactive focal lesion; periosteal osteoblastoma; osteoid osteoma – those occur in young patients and are rare in the maxillofacial

region and parosteal osteosarcoma—that present as painful destructive masses with rapid growth [1]. The appearance and homogeneity of osteoma is not difficult to characterize and diagnose.

Osteomas involving the condylar head may be difficult to differentiate from osteochondromas, osteophytes or condylar hyperplasia and those involving the coronoid process may be similar to osteochondromas.

A person who manifests with multiple intraoral or head and neck osteomas requires further radiographic work up to rule out Gardner’s syndrome. This syndrome, consisting of multiple epidermoid or sebaceous cysts, supernumerary teeth, retinal pigmentation and intestinal polyposis, necessitates a gastrointestinal radiographic evaluation because the polyps involved are premalignant [20]. The treatment for osteoma is surgical excision, particularly if there is a painful or active lesion growth [22, 23].

Removal of PO is not generally necessary. Surgery is indicated only when the lesion is symptomatic or actively growing. The surgical approach should be case specific. For the mandible there are intraoral or extraoral approaches. The intraoral approach is preferable when possible, mainly for cosmetic reasons. For the maxillary antrum, the sub-labial gingivo-buccal (Caldwell-Luc) approach is convenient. Endoscopic techniques have been advocated in selected cases [24]. For the temporal, frontal and fronto-orbito-ethmoidal lesions the coronal or bi-coronal approaches have been classically used. However, these require an extensive amount of dissection, and carry the potential for significant morbidity, especially considering that the lesion to be resected is benign. There have been recent reports of use of the endoscopic nasal approach for the resection of ethmoidal and frontal osteomas [12, 14, 18, 24, 25].

Recurrence of PO after surgical excision is extremely rare. There are no reports of malignant transformation of PO in the literature. There is very little understanding about the nature of PO, and three theories have been proposed: developmental, neoplastic and reactive [26]. It is unlikely that PO is a developmental anomaly, as most cases occur in adults and not during childhood or adolescence. It is also unlikely that PO is of a neoplastic nature, because of its very slow growth rate. The possibility that PO may be a reactive lesion, possibly to local trauma, is based on the history of trauma prior to the development of the lesion in some cases. However, this can be considered only in sites that are more susceptible to trauma, such as the angle or lower border of the mandible, but not in most of the cases. As many of the PO lesions are located in close proximity to muscle attachment (i.e.: masseter, medial pterygoid, temporalis), it is possible that muscle traction may play a role in the development of the PO. The combination of trauma and muscle traction was also suggested as a possible mechanism of the pathogenesis of PO. Patients with PO and supernumerary or impacted teeth should undergo a work-up for Gardner’s syndrome [27, 28, 29, 30]. The triad of colorectal polyposis, skeletal abnormalities and multiple impacted or supernumerary teeth is consistent with this syndrome. The skeletal involvement includes peripheral and

endosteal osteomas, which are found more frequently in the skull, ethmoid sinuses, mandible and maxilla.[26] Because the osteomas often develop before the colorectal polyposis, early recognition of the syndrome may be in some cases, a life saving event. Mandibular osteomas may be a genetic marker for the development of colorectal carcinoma [27, 28, 29, 30]. Therefore the patient with a diagnosis of mandibular osteoma, suspected to have Gardner's syndrome, should be further examined to rule out colorectal carcinoma.

CONCLUSION

The peripheral type of osteoma is most common in the lower jaw, occurs at the surface of the cortical bone and is sessile or pedicled. The treatment for osteoma is surgical excision, particularly if there is painful or active lesion growth, or in order to correct asymmetry or other secondary problems, such as blockage of cavities, nerve foramina and vital organ compression. Recurrence after surgical procedure is rare.

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