Surgical Treatment for Complete Removal of peripheral Osteoma of the Maxillofacial Region: a Study of 10 Cases

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Abstract: Peripheral osteoma is a benign neoplasm, with low recurrence rate. Its incidence is rare in the jaws and the mandible is more affected than the maxilla. In most cases it is discovered during routine radiographic examinations. Objective: The aim of this study is to show the author’s experience regarding the treatment of this neoplasm. Methods: A retrospective study from January 2002 to December 2007 including ten cases of peripheral osteoma in the maxillofacial region which were treated surgically by removal of the lesion followed by histological confirmation. None of the cases were correlated with Gardner’s syndrome. Results: In this series the incidence of this neoplasm was higher in females (1.5:1) with a mean age of 39, without age preference. One of the patients had lesion recurrence two years after the first surgery, having been submitted to another intervention, with no signs of relapse after three years and six months of follow-up. Conclusion: Surgical treatment is effective for peripheral osteoma with a low recurrence rate.

Keywords: Bone neoplasms, jaw neoplasms, neoplasms, osteoma.

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I. Introduction

Osteoma is a benign osteogenic lesion characterized by the proliferation of compact bone osseous or spongy mature[1,2]. The pathogenesis of osteoma is unknown. Some authors consider it as a neoplasm in true, while others like hamartoma [3]. Mechanism reaction, trauma or infection are also suggested as possible causes [1]. According to Thoma&Goldman [4], growth starts spontaneously and is credited to traumatic and non-inflammatory origin. Schneider et al. [5] report six cases with a positive history of previous trauma. Osteomas are located usually in regions of muscle insertions, suggesting that muscle traction acts in the development of the injury. Possibly small traumas that do not are remembered by patients may be caused by subperiosteal hematoma that, associated with traction muscle, gives rise to injury [1,6,7]. Varboncoeur et al. [8] considered osteoma as embryonic remains cartilaginous or periosteal.

These lesions are generally small and asymptomatic, being commonly detected as radiographic findings, or when there is tissue expansion, causing facial asymmetry or functional disorder [8,9]. Although they can be found at any age, these tumors are more common in young adults, with no gender predilection [1,5].

Multiple osteomas in the jaws associated with other pathological entities are characteristics found in Gardner's syndrome [7], [10-12], while solitary osteomas of the maxillofacial region are considered rare [7], [11].

Peripheral osteomas of the craniofacial region occur more frequently in the paranasal sinuses. Other locations include the external auditory canal, orbit, temporal bone and pterygoid processes [7], [13], [14]. It is a rare entity in the jaws and, when the maxillary sinuses are excluded, the mandible is more affected than the maxilla, with the angle and mandibular body region being most commonly involved [7], [11], [14-16].

The traditional radiographic image is usually sufficient to diagnose an osteoma. It presents itself as a radiopaque mass and with a density similar to normal bone. Panoramic radiography, Waters radiography or computed tomography usually show the location and benign nature of the lesion [15].
Histologically, osteomas have two distinct variants. One is made up of bone relatively dense compact with scarce medullary tissue, while the other consists of lamellar or spongy bone trabeculae with abundant medullary spaces of fibroadipose tissue. Osteoblastic activity in general is prominent [13], [17].

Osteoma treatment consists of complete surgical removal at the base where the cortical bone is located. There are no reports of malignant transformation of osteomas [1], [6], [17]. Osteomas are believed to be relatively uncommon. Its recurrence is rare [8], [18], with only one case described in the literature [19].

The objective of this work is to carry out a retrospective study of isolated peripheral osteomas cases, located in the maxillofacial region, treated at this service.

II. Methods

From January 2002 to December 2007, Ten patients with peripheral osteoma were operated Department of Oral and Maxillofacial Surgery, Department of Surgery of the Faculty of Medical Sciences of Santa São Paulo House. When reviewing the medical records, the following items were evaluated: gender, age, location, symptomatology, functional impairment, aesthetic compromise and recurrence.

Inclusion criteria were: cases of osteoma peripheral maxillofacial region with diagnosis clinical, imaging and histopathological, with complete medical records and minimal follow-up 12 months. Exclusion criteria were peripheral osteomas associated with Gardner's Syndrome.

The study was approved by the Ethics Committee Research of the Brotherhood of Santa Casa de Misericórdia of São Paulo, under number 295/08, approved on 08/28/2008.

III. Results And Discussion

The medical records of ten patients were evaluated, six being female, with a relationship 1.5: 1 women / men. Age ranged from 11 to 61 years, with an average of 39 years, with no predilection for age. All had a history of trauma in the face and the follow-up time ranged from one to six years. Table 1 shows the distribution of the ten patients according to the location of the lesion, gender, symptomatology, functional impairment, impairment aesthetic and relapse.

Table 1. Maxillofacial peripheral osteomas: location, gender, symptoms, aesthetic involvement and recurrence (n = 10).

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All patients underwent biopsy excisional. In one case, reconstruction was necessary of the temporomandibular joint with a graft costochondral. There was a case of recurrence, two years after surgical procedure (Figures 1, 2 and 3). A new surgical intervention was performed and signs of relapse were observed after three years and six months of follow-up.
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Figure 1. Preoperative appearance: CT in coronal view showing peripheral osteoma at left mandibular angle.

Figure 2. Histological aspect: dense compact bone.

Figure 3. 2-year postoperative period: CT in coronal view showing recurrence in the left mandibular angle.

The three cases that were located in the condylecaused facial asymmetry, dental malocclusion and consequent functional deficit (Figures 4 and 5).

The results of this study agree with the opinion of Ogbureke et al.[2] that osteomas of the maxillofacial region are frequently detected in routine examinations, except in those cases where injuries are large enough to cause facial asymmetry or some functional deficit.
According to Bosshardt et al. [19] and Bessho et al. [20], peripheral osteomas occur more frequently frontal, ethmoid and maxillary sinuses. However, Bodner et al. [7], Sayan et al. [13] and Johann et al. [14] state that other topographies in the maxillofacial region can be affected, including the external auditory canal, orbit, temporal bone, pterygoid process and rarely in jaws. Schneider et al. [5] reported 12 cases between 1939 and 1979, with only one occurring in the maxilla. Another ten cases were added in the 1985 to 1991 by Kaplan et al. [6].

Cutilli & Quinn [1] and Bodner et al. [7] reported that osteoma has no gender predilection. However, Bosshardt et al. [19], Kaplan et al. [6] and Sayan et al. [13] report that men are more frequently affected than women in a 2:1 ratio. Already Remagen et al. [21] and Schneider et al. [5], state that this ratio is reversed, in the proportion of 3:1. In the present work, a higher prevalence was found than female gender, which was 1.5:1. For Bodner et al. [7], Longo et al. [15], Sugiyma et al. [16] and Sayan et al. [13], there is no predilection for age. However, according to Longo et al. [15], peripheral osteomas are most often found in patients between the third and fifth decades of life. Kashima et al. [11], mean that the occurrence of osteomas is in the sixth decade of life. The result of this study shows that there was no predilection for age, being the same found from the second to the sixth decade of life. According to Bosshardt et al. [19], Bodner et al. [7], Longo et al. [15] and Sayan et al. [13], peripheral osteomas are generally asymptomatic, however, may be associated with asymmetry or producing malocclusion, interfering with masticatory function. In this study, the patients who had the affected condyle had mandibular midline deviation, bite and joint pain, with difficulty to chew. In imaging exams, they are usually described as an oval or round mass, limited to a great base. A large solitary osteoma can resemble a parosteal osteogenic sarcoma [15]. Bessho et al. [20] also include, as a diagnosis differential, osteochondroma and active hyperplasia of mandibular condyle.

According to Wolford et al. [22], due to the great similarity of radiographic findings in benign condyle tumors, a conclusive diagnosis can only be established with the exam microscopically. Computed tomography is the best method imaging tests for diagnosis of peripheral osteoma [7], as it shows more details of the relationship between the tumor and the adjacent structures, when compared with conventional radiographs [11].

In our cases, peripheral osteomas were diagnosed by radiographic examinations, however, the imaging investigation was complemented with computed tomography, with the objective of performing a surgical planning most appropriate, showing the relationship between the tumor and the adjacent structures, according to the proposal by Kashima et al. [11].

Surgery is the treatment of choice and may involve intraoral or extroral accesses may be used for jaw. Intraoral access is always preferable when possible, as it prevents damage to the facial nerve. However, we agree with Longo et al. [15] that, in larger tumors located in the posterior region of jaw, extraoral access is necessary, because it provides better exposure and visibility, avoiding injury to important structures in the region. Following these principles in our service, we cases located in parasymphysis region and body mandibular, we opted for intraoral access. We already cases located at an angle and mandibular condyle, as well as in cases involving zygomatic bone, extraoral access was used. In cases that occur in the mandible, despite immediate postoperative improvement and opening almost normal oral care, the patient will need follow-up long-term and physical.
therapy for chewing muscles. In this work, in all patients with condylar involvement, forced physiotherapy with wooden spatulas after two weeks after the surgery, in order to restore mouth opening observed preoperatively.

Recurrence after osteoma surgery is rare [8], [17], [18], however Bosshardt et al. 19 described a case of recurrence nine years after surgical excision. This is indicative of the need for follow-up prolonged clinical and radiographic after surgery [13]. Of the ten patients treated at our service, there were recurrence in one of them, two years after surgery. The patient underwent a new surgical intervention and remains without signs of recurrence after three years and six months of follow-up.

IV. Conclusion

Peripheral osteoma is a rare neoplasm in the maxillofacial region and affects more frequently the mandible, the mandibular condyle being the highest incidence. The female gender presented higher incidence, with no predilection for age group. Despite the conventional radiography offering insufficient subsidies for diagnosis, currently tomography computerized examination is the exam of choice for surgical planning. Surgery with complete lesion removal is the appropriate treatment, with low recurrence rates.

References