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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 lesioncharacterized by the proliferation of compact bone orspongy mature[1],[2].The pathogenesis of osteoma is unknown.Some authors consider it as a neoplasmtrue, while others like hamartoma [3]. Mechanismreaction, trauma or infection are alsosuggested as possible causes [1]. According to Thoma&Goldman [4], growth starts spontaneouslyand is credited to traumatic and non-inflammatory origin. Schneider et al [5] report six cases with a positive historyprevious trauma. Osteomas are locatedusually in regions of muscle insertions, suggestingthat muscle traction acts in the developmentof the injury. Possibly small traumas that do notare remembered by patients may have causeda subperiosteal hematoma that, associated with tractionmuscle, gives rise to injury [1],[6],[7]. Varboncoeuret al.8considered osteoma as embryonic remainscartilaginous 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]. Osteomasare believed to be relatively uncommon3. 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 61years, with an average of 39 years, with no predilection forage. All had a history of trauma in the face and thefollow-up time ranged from one to six years.Table 1 shows the distribution of the ten patientsaccording to the location of the lesion, gender,
symptomatology, functional impairment, impairmentesthetic and relapse.

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

Localização		Pacientes	Gênero		Sintomas dolorosos	Envolvimento funcional	Envolvimento estético	Recidiva
			M	F				
Mandíbula	Condilo	3	1	2	3	3	3	-
	Ângulo	2	-	2	-	-	2	1
	Parassinfise	2	2	-	-	-	2	-
	Corpo	1	-	1	-	-	1	-
Zigoma		2	1	1	-	-	2	-

All patients underwent biopsyexcisional. In one case, reconstruction was necessaryof the temporomandibular joint with a graftcostochondral.There was a case of recurrence, two years aftersurgical procedure (Figures 1, 2and 3). A new surgical intervention was performed andsigns of relapse were observed after three years and sixmonths of follow-up.

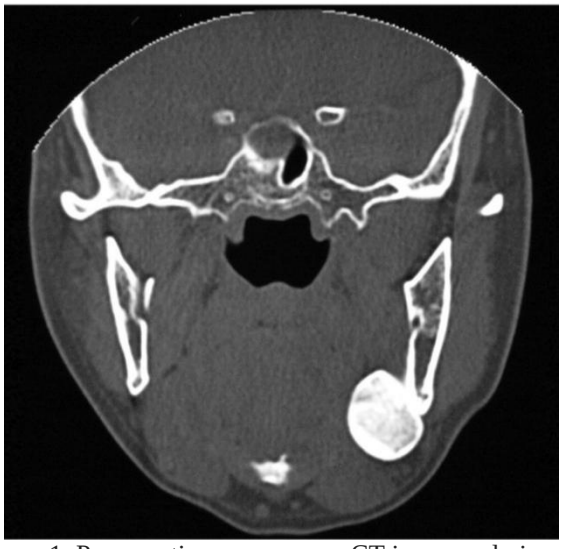

Figure 1. Preoperative appearance: CT in coronal view showing peripheral osteoma at left mandibular angle.

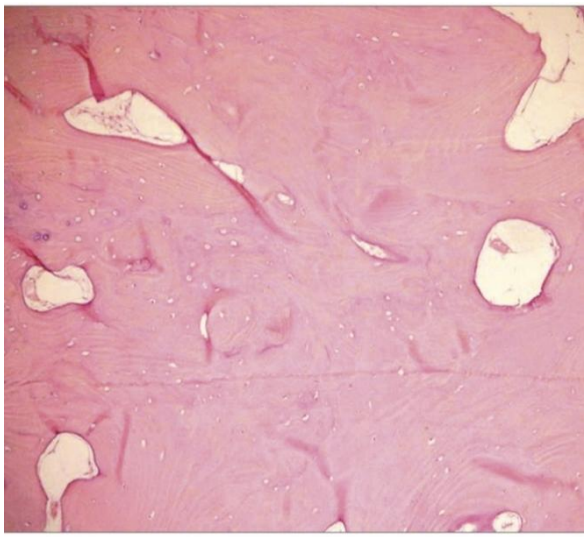

Figure 2. Histological aspect: dense compact bone.

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 andconsequent functional deficit (Figures 4 and 5).

The results of this study agree with theopinion of Ogbureke et al.[2] that osteomas of themaxillofacial region are frequently detected inroutine examinations, except in those cases whereinjuries are large enough to cause afacial asymmetry or some functional deficit.

Figure 4. Occlusal changes: deviation from midline and the mandibular
condyleright.
bitecrossed by osteoma in the right mandibular condyle

Figure 5. CT coronal view: peripheral ostema in

According to Bosshardt et al.[19] and Bessho et al. [20],peripheral osteomas occur more frequentlyfrontal, ethmoid and maxillary sinuses. However, Bodneret al.[7], Sayan et al.[13] and Johann et al.[14] state thatother topographies in the maxillofacial region can beaffected, including the external auditory canal, orbit,temporal bone, pterygoid process and rarely injaws. Schneider et al.[5] reported 12 cases between 1939and 1979, with only one occurring in the maxilla.Another ten cases were added in the1985 to 1991 by Kaplan et al.[6].

Cutilli& Quinn1 and Bodner et al. [7] reported thatosteoma has no gender predilection.However, Bosshardt et al.19, Kaplan et al.6 and Sayanet al.[13] report that men are more frequentlyaffected than women in a 2: 1 ratio. AlreadyRemagen et al. [21] and Schneider et al.[5], state that thisratio is reversed, in the proportion of 3: 1. In the presentwork, a higher prevalence was found thanfemale gender, which was 1.5: 1.For Bodner et al.[7], Longo et al.[15], Sugiyama etal.[16] and Sayan et al.[13], there is no predilection forage. However, according to Longo et al.[15],peripheral osteomas are most often foundin patients between the third and fifth decades

of life. Kashima et al.[11], mean that the occurrencemost common of osteomas is in the sixth decade oflife. The result of this study shows that there was nopredilection for age, being the same foundfrom the second to the sixth decade of life.According to Bosshardt et al.19, Bodner et al.[7], Longoet al.[15] and Sayan et al.[13], peripheral osteomas aregenerally asymptomatic, however, may beassociated with asymmetry or producing malocclusion,interfering with masticatory function. In this study,the patients who had the affected condyle hadmandibular midline deviation, biteand reported joint pain, with difficultiesto chew.In imaging exams, they are usually describedas an oval or round mass, limited to agreat base. A large solitary osteoma can developresemble a parostealosteogenic sarcoma [15].Bessho et al.[20] also include, as a diagnosisdifferential, osteochondroma and active hyperplasia of mandibular condyle.

According to Wolford et al.[22], due tothe great similarity of radiographic findings inbenign condyle tumors, a conclusive diagnosiscan only be established with the exammicroscopic.Computed tomography is the best methodimaging tests for diagnosisperipheral osteoma7, as it shows more detailsof the relationship between the tumor and the adjacent structures,
when compared with conventional radiographs [11].

In our cases, peripheral osteomas werediagnosed by radiographic examinationsroutine, however the imaging investigation wascomplemented with computed tomography,with the objective of performing a surgical planningmost appropriate, showing the relationship betweenthe tumor and the adjacent structures, according to theproposed by Kashima et al.[11].

Surgery is the treatment of choice and mayintra or extraoral accesses may be used forjaw. Intra-oral access is always preferablewhen possible, as it prevents damage to the facial nerve.However, we agree with Longo et al.[15] that, inlarger tumors located in the posterior regionjaw, 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, wecases located in parasymphysis region and bodymandibular, we opted for intraoral access. We alreadycases 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, despiteimmediate postoperative improvement and openingalmost normal oral care, the patient will need follow-uplong-term and physical

therapy forhewing muscles7. In this work, in allpatients with condylar involvement, aforced physiotherapy with wooden spatulas aftertwo weeks after the surgery, in order to restoremouth opening observed preoperatively.

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

IV. Conclusion

Peripheral osteoma is a rare neoplasm in themaxillofacial region and affects more frequently the mandible, the mandibular condyle being thehighest incidence. The female gender presentedhigher incidence, with no predilection for age group.Despite the conventional radiography offering subsidiessufficient for diagnosis, currently tomographycomputerized examination is the exam of choice forsurgical planning. Surgery with completelesion removal is the appropriate treatment, withlow recurrence rates.

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