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Review Article

Risks and Complications in Tumors of Odontogenic Origin

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Abstract

Odontogenic tumors are those whose origin and development are directly related to the epithelial and/or mesodermal cells that normally have the capacity to form dental tissue. Taking these elements into account, it could be said that they are closely linked to the stages of tooth formation. They are a group of heterogeneous tumors that can grow excessively and cause significant damage to all levels of the stomatognathic system. Therefore, a literature review on odontogenic tumors was carried out.

Keywords: Odontomas; Odontogenic Tumor; Odontoblasts; Ameloblasts

Introduction

Odontogenic Tumors are those whose origin and development are directly related to the epithelial and/or mesodermal cells that normally have the capacity to form dental tissue. Taking these elements into account, it could be said that they are closely linked to the stages of tooth formation. They are a group of heterogeneous tumors that can grow excessively and cause significant damage to all levels of the stomatognathic system. They are relatively rare lesions, representing between 2.5% and 3.7% of all tumors diagnosed in the oral cavity. Regarding their origin, they can be epithelial, mesenchymal (ectomesenchymal) or mixed, showing various degrees of induction between the different tissue elements that make them up. Among the possible cellular sources of origin are

- The pre-functional dental lamina (primitive odontogenic epithelium from the stage prior to the formation of mineralized dental tissues), which persists in adult life mainly in the portion distal to the third molars.
- The post-functional dental lamina, which includes the epithelial remains of Serres, the epithelial remains of Malassez and the reduced epithelium of the enamel organ.
- The basal layer of the gingival epithelium, in which cell groups that originally gave rise to the development of the dental lamina may remain.
- The dental papilla (primitive dental pulp), with or without the ability to produce dentin or dentinoid material.
- The dental follicle.
- The periodontal ligament, which contains fibrocellular tissue with the capacity to induce the production of cement-bone material.

They can be generally classified as benign and malignant.

Benign

When it has slow and progressive growth.

Malignant

When they have rapid, infiltrative and metastasizing growth. Clinically, they are characterized by being lesions that vary in size and can have many clinical forms of presentation, ranging from small and imperceptible, to growing disproportionately and becoming true deforming tumors, affecting facial symmetry and the functionality of the oral cavity.

Objective

To describe the main complications and risks of odontogenic tumors.

Reference search methods

Scientific information was collected through a search using the following descriptors in English: The Medical Subject Headings (MeSH): "odontogenic tumors, ameoblasts, odontoblasts.

Analysis strategy

The search was based solely on odontogenic tumors.

Developing

They tend to be asymptomatic in their early stages and as their development progresses, they can cause, among other things, tooth displacement, compression of nervous and vascular structures, regional pain, paresthesia, expansion of the bone cortex, loss of the gingival sulcus, among others. If they are present in the maxilla, they can cause expansion of the same, compromising the maxillary sinus, causing epitaxis and epiphora due to involvement of the nasal and orbital cavity and even displacement of the eyeball. In the case of the jaw, they can compromise the floor of the mouth and its adjacent structures, causing direct or indirect damage to the airway, adding to the impossibility of chewing and swallowing, vital functions for the body. All this is summarized in the clinical periods of odontogenic tumors [1,2].

- Initiation or silent period. In which the patient does not present any symptoms, they are generally radiological findings.
- Deformation period. At this stage there is already bone expansion and visibility of it.
- Externalization period at this moment the tumor has already broken the bone barrier and is exposed in the oral cavity, but protected by the gingival mucosa, which acts as its capsule, changing its color as its size increases, making it increasingly weaker. The symptom of shriveled crepitus or Dupuytren's sign is evident.
- Suppuration period It is when the tumor, due to its size or any other factor, begins to drain its contents intraorally or extraorally. Radiographic studies can result in unilocular or multilocular lesions depending on their histological type. For them, conventional radiographs such as periapical, occlusal and panoramic radiographs can be used [1,3].

In addition to other imaging techniques such as computed tomography, magnetic resonance imaging, among others, which will help you reach a more accurate diagnosis, since they will show the location of the lesion, its extension, the edges, the presence of calcifications inside, root resorptions, cystic cavities, the involvement of important structures and countless other elements that will guide your behavior to follow in each special case. Biopsies in this type of tumors are essential for their evaluation. Any of its variants can be used for diagnosis, be it an incisional sample, excisional sample, aspiration in the case of cystic lesions, among others.

The treatment of these injuries is based on their complete removal, on the preservation of healthy tissue as much as possible, for subsequent reconstruction if necessary. The surgical procedure and its extension will depend on the stage of development of the tumor in which it is diagnosed, in addition to its histological type and degree of malignancy, the possibilities of recurrence, the patient's condition, among other elements to take into account. when planning treatment. Always assessing the risks and complications that may arise as a consequence [1,4].

Benign Odontogenic epithelium without odontogenic ectomesenchyme.

Ameloblastoma Concept: it is a generally concentric, non-functional tumor, of intermittent growth, histologically benign, clinically persistent, so due to its invasive properties and its tendency to recur it should be considered a locally malignant tumor. Ameloblastoma is a tumor that originates from the enamel organ of dental tissue. It is, as already mentioned, locally invasive and recurrent. It appears most frequently in the mandibular bone, although it can also affect other regions. It is characterized by slow, asymptomatic and deforming growth. It is a benign neoplasm, despite presenting great local aggressiveness and great potential for locoregional recurrence, in some cases it can undergo malignant transformation and cause distant metastasis. It was first described in 1827 by Cusack and in 1885 Malassez introduced the term "adamantinoma". In 1930, Ivey and Churchill proposed the currently accepted term Ameloblastoma. It is thought that they originate from ameloblasts, since due to their epithelial origin they can express amelogenin, a precursor of enamel [4,5].

It represents 11% of odontogenic tumors and 1% of tumors and cysts in the jaws. Epidemiologically, it appears between the second and fifth decade of life, with no predominance of race or gender determined until now. Its etiology is associated with several factors; Among them, it stands out that 25% of these neoplasms are associated with retained teeth, infections, remains of odontogenic cysts, local trauma, among others. It is the most common neoplasm in some areas such as China and Africa, while it is the second most common in the United States and Canada.

Among the clinical characteristics, the loss of teeth, malocclusion, invasion of oral soft tissues, facial deformity, limitation in mouth opening, expansion of the bone cortex, in addition to all of the aforementioned, stand out. According to their radiographic appearance, they can vary from multilocular (soap bubble or honeycomb) to unilocular indistinguishable from cystic lesions, depending on the case. A relationship with dental structures may be evident [5-7].

The World Health Organization in 2005 classified it into the following subtypes (see image): Solid/multicystic ameloblastoma (Conventional ameloblastoma) It is the most common type of presentation. It presents an inherent neoplastic cell proliferation with transmural invasion. Clinically, it is an expansive, slow-growing lesion that can reach large dimensions and cause displacement of the dental organs and oral tissues. (view Figure 1,2)

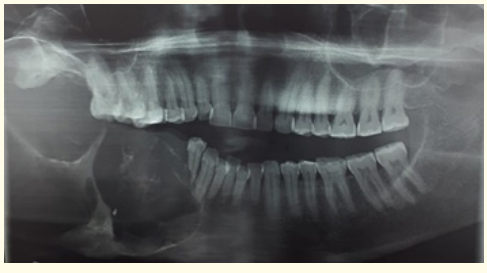

Figure 1: Multilocular panoramic radiography (orthopantomography) of an Ameloblastoma. Courtesy of Dr. Arelis Rabelo Castillo.

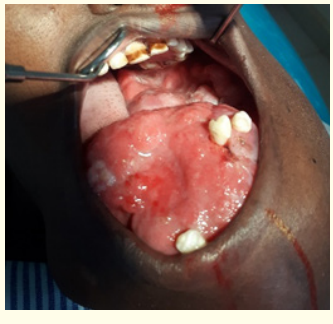

Figure 2: Intraoral clinical appearance of a Conventional Ameloblastoma. Courtesy of Dr. Arelis Rabelo Castillo.

Radiographically, a multilocular radiolucent image can be observed, also called "soap bubble" or "honeycomb". (see Figure 3)

A differential diagnosis can be made with other odontogenic and bone tumors that may affect the jaws. (view Figure 4)

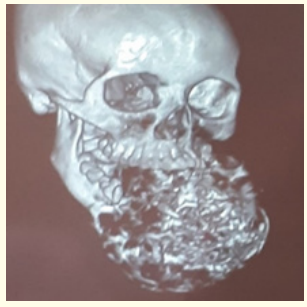

Figure 3: Radiographic appearance of a conventional Ameloblastoma. Courtesy of Dr. Arelis Rabelo Castillo.

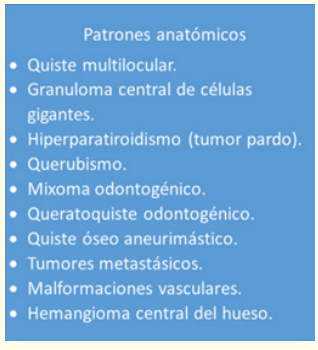

Figure 4: Injuries with which radiographic differential diagnosis must be made. Courtesy of doctor Otto Aleman Miranda.

The theory was compiled from Norman Wood's book Differential Diagnoses. Several histological subtypes have been described: Vickers and Gorlin gave as histological criteria for diagnosis the presence of basal columnar cells with hyperchromatic palisade nuclei, with polarization, hyaline basement membrane and vacualization [5-8].

Follicular This pattern is the most prevalent and represents the early stages of tooth formation. It is made up of an epithelium in the form of islets, filaments and medullary formations against a background of fibrous connective tissue stroma. (view Figure 5)

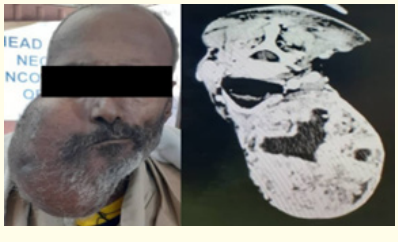

Figure 5: Patient diagnosed with follicular ameloblastoma. Extraoral and radiographic appearance. Courtesy of Dr. Carlos Juan Puig González.

- Plexiform It has not been associated with any of the stages of odontogenesis and is formed by an epithelium that has the appearance of fish or mesh. There are areas without reverse polarization and a minor cellular component similar to the stellate reticulum.

- Acanthomatous In this case, the islets of the central cells transform into flat cells that produce keratin or the so-called keratin pearls. That is, squamous metaplasia occurs.

- Desmoplastic The filaments and islets are small, and the epithelial component is completely separated by fibrous scar-like tissue, making its diagnosis difficult due to the possibility of squamous differentiation of its component. Radiographically, it is characterized by being radiolucent and tends to affect the surrounding bone, making its differentiation difficult. Currently there are authors who mention it as a general diagnosis such as conventional and unicystic [9,10].

- Basal cell It is characterized by presenting large basaloid cells of a cuboidal shape, it is rare.

- Of granular cells It presents with abundant eosinophilic granules that correspond to multiple lysosomes.

- Clear cells as its name indicates, it is characterized by showing clear cells, its behavior is aggressive. Unicystic ameloblastoma It represents between 5-15% of cases and is the one that most affects the young population. It is one of the clinical-pathological forms described as a distinct entity because it presents particular morphological pictures. Its most accepted histogenesis is that it originates from an ameloblastic transformation of the squamous epithelium of odontogenic cysts. It has different histological variations. (see Figure 6,7)

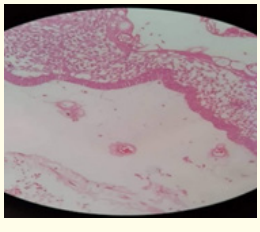

Figure 6: Histology of a Unicystic Ameloblastoma. Courtesy of Dr. Frank Josué Mondelo Tamayo.

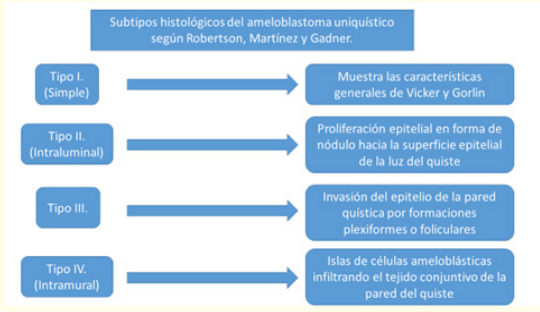

Figure 7: Histopathological patterns of unicystic ameloblastoma. Courtesy of Dr. Otto Alemán Miranda.

The radiographic images show a well-defined unilocular radiolucent area often associated with an unerupted tooth, with the third molar being more common at the mandibular level. The differential diagnosis of this entity can be made mainly with maxillary cysts and their clinical varieties.

Extraosseous/peripheral ameloblastoma It represents only 1% and occurs predominantly between the fifth and seventh decades of life. It is a soft tissue version of conventional Ameloblastoma. It appears as a lesion in the alveolar mucosa, asymptomatic, exophistic, with a granulated or smooth appearance, red, which may even be ulcerated. (view Figure 8)

Figure 8: Patient diagnosed with peripheral ameloblastoma. Courtesy of Dr. Arelis Rabelo Castillo.

This type of tumor is rare. A superficial erosion or a bone depression can be observed radiographically at the site of the injury depending on its evolution. In this particular case, these lesions can be differentiated from gingival fibromas, pyogenic granulomas, giant cell granuloma, among others. The therapeutic management of Ameloblastomas in general will be aimed at excision of the tumor with safety margins (minimum one centimeter on each side of the lesion) due to its metastatic potential. Depending on the histological type and clinical stage, curettage, enucleation, en bloc resections, segmental resections, even maxillary hemisections can be performed if necessary to avoid recurrences [11,12].

Due to its high tendency to invade neighboring structures and the risk of malignancy, histological results, x-ray images and clinical symptoms must go hand in hand in each case, in order to evaluate the best treatment. Long-term follow-up should be performed for more than five years. Squamous Odontogenic Tumor Squamous odontogenic tumor, also called acanthomatous or squamous, is related to the epithelial remains of malassez. Identified in 1975 by Pullon and associates. It can be found in the walls of inflammatory cysts, dentigerous and keratocysts.

Clinically, it is a lesion usually intraosseous, which can affect both jaws and even have multiple foci in them. Associated with toothed areas, with slow growth, asymptomatic, with slight tooth mobility and periodontopathies. No preference by sex or age registered so far. Radiographically they have a cystic appearance, without observing the periodontal ligament characteristic of this type of tumor. In other cases it appears as a semicircular or roughly triangular radiolucent area, associated with the roots of the teeth. (view Figure 9)

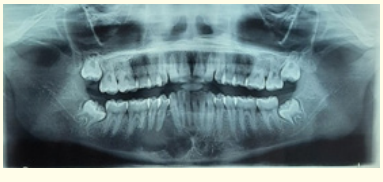

Figure 9: Radiographic appearance of a Squamous Odontogenic Tumor. Courtesy of Dr. Arelis Rabelo Castillo. Histologically it is characterized by an epithelial proliferation arranged in islets and cords, mainly acanthomatous or paved.

The epithelium is formed by mature connective tissue, rich in collagen fibers and small vessels. In some cases it may present pseudoepitheliomatous proliferation, so the differential diagnosis with an Ameloblastoma and even a squamous cell epithelioma is necessary. The treatment in this case would be excision in its entirety through enucleation, curettage, among others described above. Calcifying Epithelial Odontogenic Tumor (TOEC) This tumor was discovered between 1955-1959 by Dr. Jens. J Pindborg, which was later also called calcifying epithelial odontogenic tumor or Pindborg tumor [13].

As its name indicates, it has a purely epithelial origin. It is a painless tumor that can be present between the third and fifth decade of life. It has been observed less frequently in the maxilla than in the mandible, in which it is preferentially located in molar areas in 75% of cases. It may appear in routine studies, due to its slow and painless growth, or produce bone expansion and be more visible and symptomatic in the oral cavity. (view Figure 10).

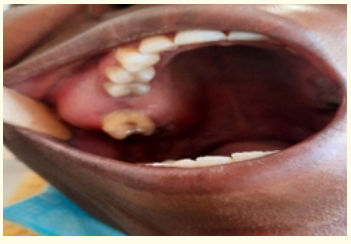

Figure 10: Patient diagnosed with Pindborg Tumor in the jaw. Courtesy of Dr. Arelis Rabelo Castillo.

It can infiltrate soft tissues and in this way it would have an extraosseous version, where it would present as a nodular lesion in the oral mucosa, generally in the anterior region and in some cases it can be seen related to unerupted teeth. One of its main characteristics is its considerable histological variety, that is, it can present degeneration of large parts of the epithelium, forming circular areas full of very acidophilic homogeneous substance, which traps calcium salts in ring shapes.

In some cases it presents variations in its epithelium resembling a certain anaplasia, which could be confused with metastatic carcinomas. Radiographically, it can be described as mixed, radiolucent and/or radiopaque areas with calcifications inside, to a greater or lesser extent, typical of this type of tumor. Therefore, the differential diagnosis should be made with cystic, fibro-osseous and tumor lesions due to their local aggressiveness. In terms of treatment, the behavior will always be aimed at eliminating it.

Adenomatoid odontogenic tumor

The Adenomatoid Odontogenic Tumor (ATO) is a hamartomatous odontogenic lesion that was first identified by Stafne in 1948. It occurs between the second and third decades of life with a predilection for the female sex. Located mostly in the area of the lateral incisor and upper canine. It is often found associated with the crown of an impacted tooth and can cause divergence of the tooth roots.

On other occasions it may occur in an extraosseous location as a gingival tumor. Radiographically, in cases associated with impacted teeth, it appears as a well-defined radiolucent lesion associated with the crown of the impacted dental organ, similar to the image produced by the dentigerous cyst, and fine radiopaque areas dispersed within the lesion can also be observed. which directly indicate the presence of mineralized tissue. (view Figure 11)

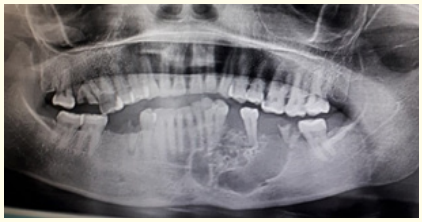

Figure 11: Orthopantomography of a TOA in the mandible. Courtesy of Dr. Arelis Rabelo Castillo.

The TOA is histologically composed of mantles of polyhedral and fusiform cells arranged in a lobular and sometimes reticular pattern. It contains duct-like structures formed by columnar epithelial cells as a characteristic aspect of this lesion. Sometimes small foci of dystrophic calcification can be observed within the lesion, between the epithelial cells [13-15].

Frequently this lesion may contain localized foci that resemble calcifying epithelial odontogenic tumor or Pindborg tumor, with abundant mineralization and globular amyloid material. Furthermore, they can be confused with the dentigerous cyst due to the association of both with the crown of an impacted tooth. However, a radiographic finding that can be useful to differentiate them is the presence of calcified material within the tumor, although not all cases of TOA present this characteristic, so the differential diagnosis with these entities and other similar ones is essential. Because it is a very well encapsulated, benign lesion with a non-aggressive behavior, conservative enucleation is indicated, as long as its dimensions are compatible with this type of treatment.

Odontogenic epithelium with odontogenic ectomesenchyme (with or without formation of dental hard tissues) Ameloblastic fibroma Also known as fibroameloblastoma, it is a neoplasm that is characterized by the proliferation of epithelial and mesenchymal tissue simultaneously, without the formation of hard tissue. Being classified as a mixed tumor that forms in the early stages of dental development. They are generally diagnosed early, without preference for sex, with slow and expansive growth, appearing more frequently in posterior areas of the jaw. Radiographically, it can give an image very similar to primordial cysts, even to unilocular ameloblastomas. In addition to sometimes being associated with retained teeth, it is also necessary to make a differential diagnosis with dentigerous cysts, because it can present a radiopaque and transparent sclerosed halo. very similar to this entity [16]. (see Figure 12).

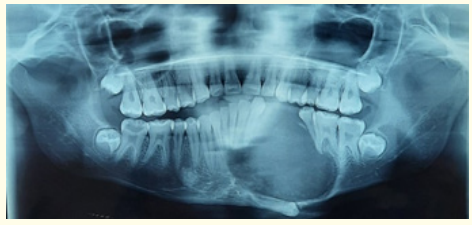

Figure 12: Orthopantomography of an Ameloblastic Fibroma associated with the crown of an impacted tooth. Courtesy of Dr. Arelis Rabelo Castillo.

Histologically, it is characterized by the epithelial component presenting cells in the form of islets or oval and elongated cords, resembling follicles, and the mesoblastic component is reminiscent of embryonic pulp tissue. Treatment focuses on excision of the lesion and the included tooth if present. Although they must be followed up for a long period of time to avoid recurrences or malignant entities such as Ameloblastic fibrosarcoma that may occur due to its recurrence [17].

Primary odontogenic tumor

The primordial odontogenic tumor was recently discovered in 2014. Its name is due to its association with the early stages of odontogenesis. It is characterized by being a radiolucent lesion, well defined and associated with unerupted teeth, generally the lower 3rd molar, causing tooth displacement and root resorption among other local manifestations. Macroscopically, it is characterized by being a solid, pale nodule that tends to become encapsulated. Until now, it has had a predilection for young ages, frequently the male sex. (view Figure 13).

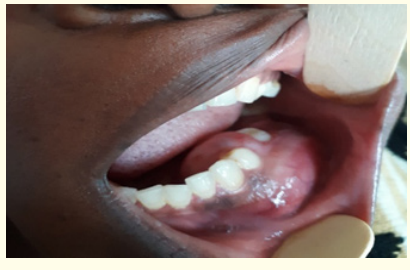

Figure 13: Patient with a diagnosis of Primary Odontogenic Tumor located in the mandible. Courtesy of Dr. Arelis Rabelo Castillo.

Radiographically, in some cases a well-defined, radiolucent unilocular area can be observed, associated with the crown of a retained tooth and in other times as multiloculated areas with root resorptions. Histologically, it is a very rare type of tumor, which presents a cuboidal epithelium covering the periphery of the tumor. The differential diagnosis can be made with any entity whose radiographic appearance matches the case in question. The treatment of this type of tumor is basically excision in its entirety [18].

Dentinogenic ghost cell tumor It is a rare neoplasm, being classified as the counterpart of the calcified odontogenic cyst. It is locally invasive, so it can give multiple oral manifestations, appearing in both the maxilla and the mandible, which are known as intraosseous and when they are located in the alveolar mucosa or in the gingival soft tissues, they are known as peripheral. Or extraosseous. (view Figure 14).

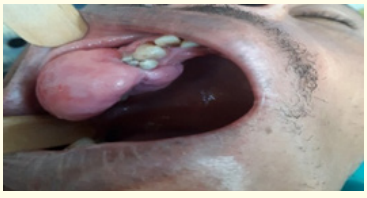

Figure 14: Patient diagnosed with peripheral dentinogenic ghost cell tumor. Courtesy of Dr. Arelis Rabelo Castillo.

It can affect any age group, with a preference for the male sex, reaching large dimensions in some cases. Histologically it is characterized by islands of epithelial cells without nuclei, called ghosts. Radiographically it can be seen combining solid and cystic components, with scalloped edges and bone erosions. The surgical procedure for these cases is complete excision with safety margins and clinical follow-up [19].

Odontoma

Odontoma is classified by the World Health Organization as a benign tumor composed of epithelium and odontogenic ectomesenchyme with formation of dental hard tissue. It is the result of an abnormal proliferation of dental tissues, also called hamartomas, since it occurs during the period of normal dental development and often does not reach an exaggerated size. It is the most common of odontogenic tumors and usually appears in areas related to unerupted teeth, composed of enamel, dentin, pulp and cement, which, If they are correctly distributed and have a dental appearance, they are called compound odontoma; however, they can present as a solid mass with a knobby appearance and are called complex odontoma.

You can even find combinations of both, which would be called complex-compound odontomas or, in another version, with the appearance of a larger tumor and fibroameloblastic histological characteristics, which would give it the name Ameloblastic Fibroodontoma. This tumor occurs following the same stages of tooth development. First there is a radiolucent phase that is associated with bone resorption, then a mixture of images with radiopacity can be observed during tissue calcification and at the end a radiopaque image that is related to the final formation of dental tissues. Its pathogenesis is associated with trauma and infectious or inflammatory processes in the primary dentition, genetic mutations, inheritance, among others. The reason for consultation is generally due to the absence of the permanent tooth germ or remanence of primary teeth. Radiographically, unilocular images can be observed, which contain multiple radiopaque structures with a morphological resemblance to dental tissues, surrounded by a radiolucent area due to the fibrous capsule that surrounds it. In the case of complexes there is an abnormal distribution of the dental tissues, so only a solid mass can be observed [20]. (view Figure 15)

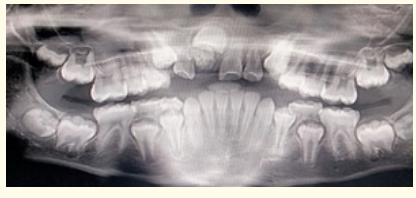

Figure 15: Orthopantomography of a patient with a diagnosis of Compound Odontoma in the anterior region of the maxilla. Courtesy of Dr. Arelis Rabelo Castillo.

Treatment is based on enucleation, since they are normally encapsulated, presenting a favorable prognosis. Odontogenic ectomesenchyme with or without inclusion of odontogenic epithelium Odontogenic fibroma It is a rare benign neoplasm, generally characterized by presenting an odontogenic epithelium, which is inactive within a mature fibrous stroma. Histologically it is divided into two variables, the simple type that contains little odontogenic epithelium and the complex type that is characterized by the presence of epithelial cords with calcifications of dentinal material. Depending on their location, they can be central (intraosseous) or peripheral (extraosseous) [21,22].

It does not have a preference by age, but it has been seen to affect the female sex more frequently. It can appear in both the maxilla and the mandible, affecting the anterior or posterior area of the same. At the same time, increases in tooth volume and mobil-

ity among others can be observed clinically. In the case of the peripheral it can be seen as a slowly growing gingival mass that can appear between the teeth and cause their displacement. In their radiographic image they can be identified as a circumscribed, radiolucent and unilocular image when they are small or multilocular and scalloped edges when they are larger. (view Figure 16).

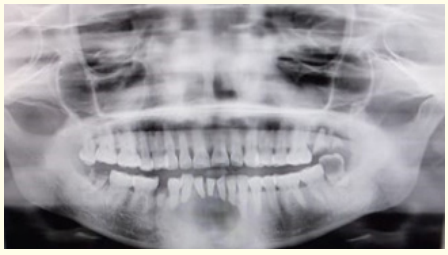

Figure 16: Orthopantomography of a patient with a diagnosis of intraosseous Odontogenic Fibroma. Courtesy of Dr. Arelis Rabelo Castillo.

The type of surgical procedure will depend on the extent of the lesion, ranging from enucleations to resections if necessary. Odontogenic myxoma Odontogenic myxoma was described by Thomas and Goldman in 1947 as a benign neoplasm, of mesenchymal origin, but locally invasive, which can appear at any age, mainly affects the mandibular bone and can even be associated with impacted teeth. Clinically it can be subdivided into central and peripheral, being asymptomatic in its early stages, but as it develops, other symptoms appear such as dental mobility, increases in volume, tooth and bone displacements, among others [21-23].

Since it is not an encapsulated tumor, it tends to infiltrate surrounding tissues. Histologically, its tumor invasion may be related to the expression of metalloproteinase and components of the extracellular matrix, particularly hyaluronic acid, which is associated with the ability to promote tumor invasion. X-ray images are of the ostelitic type and are of great interest for diagnosis, since they show us the degree of bone destruction, the size of the lesion and even if there is participation of the surrounding soft tissues, generally radiolucent images with radiopaque trabeculate inside. very poorly delimited, so its differential diagnosis with other odontogenic tumors and even with other entities such as fibrous dysplasia is necessary. (view Figure 17).

The surgical procedure will always be aimed at removing the tumor in its entirety, with safety margins to avoid recurrences. Cementoblastoma They constitute a heterogeneous group of lesions, which were first described by Dewey in 1927, of ectomesenchymal

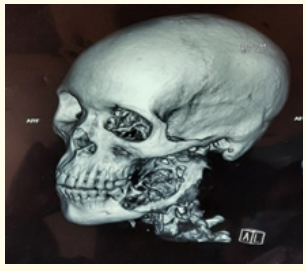

Figure 17: Computed axial tomography with 3D reconstruction, of a patient with a diagnosis of Odontogenic Myxoma in the left mandibular posterior region. Courtesy of Dr. Arelis Rabelo Castillo.

origin. After that, they were classified as benign tumors formed by mineralized cement-like tissue, which fused to the root of the tooth. Clinically, it presents as an increase in volume, with a hard-stone consistency, that deforms the bone cortices, adhered to the root of one or more teeth, preserving its vitality, but can cause pain due to nerve compression. Common in the jaw, in the posterior area of it [23,24].

Radiographically, a radiopaque or mixed density mass can be observed fused entirely with the root of one or several teeth, surrounded by a thin space of radiolucency that completely surrounds the lesion. (view Figure 18).

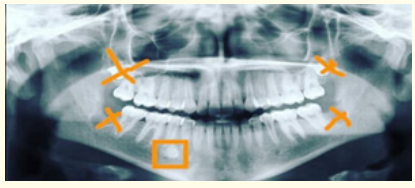

Figure 18: Ortopantomografía de un paciente con diagnóstico de Cementoblastoma. Cortesía del Dr Otto Alemán Miranda.

Histologically, they are dense masses of cement-like material within a stroma of loosely vascularized connective tissue where multinucleated cementoblasts and cementoclasts are distinguished. Differential diagnosis can be made with lesions that produce radiopacity such as osteoblastoma, cement-bone dysplasia, complex odontoma, among others. The treatment in this case would be the removal of it and the causative tooth.

Cemento-ossifying fibroma Ossifying cement fibroma (OCF) is classified as a benign neoplasm formed by mesenchymal tissue, without odontogenic epithelium and related to fibro-osseous type lesions, differentiated mainly by the presence of mineralized

cement-type tissue within its structure. Its origin is related to multipotential cells of the periodontal ligament and bone tissue. Clinically, it presents as a well-defined tumor, with a firm consistency, which may have a capsule or pseudocapsule and slow but progressive growth, being capable of producing large deformations with alteration of bone, vascular and nervous structures. (view Figure 19).

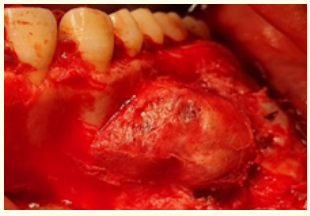

Figure 19: Surgical intervention of a patient diagnosed with cementum-ossifying fibroma. Courtesy of Dr. Arelis Rabelo Castillo.

Its etiopathogenesis is not very clear, however, various reports associate it with a history of trauma, inflammatory or infectious processes, among others. Radiographic images can have variable characteristics, that is, well-defined uni-or multilocular radiolucent areas or even radiopaque areas can be observed inside. (view Figure 20).

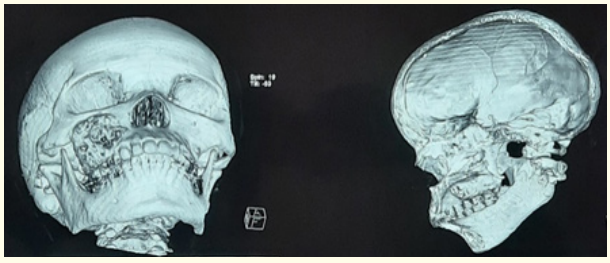

Figure 20: Computed axial tomography with 3D reconstruction of a patient with a diagnosis of Cemento-ossifying fibroma in the maxilla.

Courtesy of Dr. Arelis Rabelo Castillo. Histologically, it presents a fibrous stroma with spindle cells, cement-like calcified tissue and a pseudocapsule with dense collagenous tissue. The differential diagnosis of this entity can be made with a fibrous dysplasia, a focal cement-bone dysplasia, osteoid osteoma, osteoblastoma, Cementoblastoma, ameloblastic fibroma among others. Treatment will depend on the size of the lesion, the presence of characteristics that suggest bone destruction such as large areas of radiolucency, meaning that everything from curettage to resection can be performed if necessary [24-26].

Malignant Odontogenic Tumors

The malignancy of odontogenic tumors is an element to consider in this study. Basically they are characterized by an increase in symptoms, a rapid advance in their development, infiltration to neighboring structures and organs, pain, paresthesias, regional and distant metastases, destructive ostelitic processes among others, so their main differentiation will be histologically, giving them This entire group of tumors has a reserved prognosis.

Odontogenic carcinomas

- **Ameloblastic Carcinoma:** It is an entity that is characterized by the malignancy of an Ameloblastoma, associated with a structural and biological alteration of the same. It can generally be associated with recurrences of benign processes, history of previous treatments among other causes. Clinically, bone destruction is evident both intraorally and extraorally. As for radiographic studies, they can be indicated from magnetic resonance imaging, conventional tomography, scintigraphy, all necessary in order to show its extent and effects at a distance. (view Figure 21).

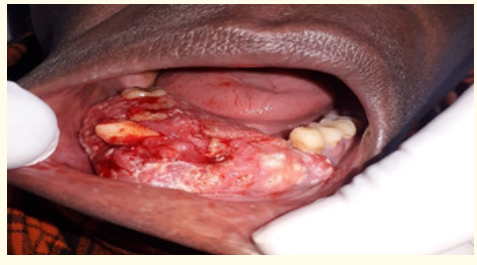

Figure 21: Patient diagnosed with Ameloblastic Carcinoma. Courtesy of Dr. Arelis Rabelo Castillo.

Primary intraosseous carcinoma

It is a malignant neoplasm that is formed from the odontogenic epithelium, with a type of basal cells that form alveoli, observing keratinization and sometimes squamous metaplasia. Most frequently affecting the jaw and showing clinical manifestations typical of a malignant process. It is generally associated with odontogenic cysts such as residual and radicular cysts, and even rarely with dentigerous cysts [24-26]. (see Figure 22).

Courtesy of Dr. Arelis Rabelo Castillo. Sclerosing odontogenic carcinoma It is a malignant tumor of which few cases are known, described in 2008, characterized by having a low potential for metastasis, but a high regional infiltrative power, which can affect

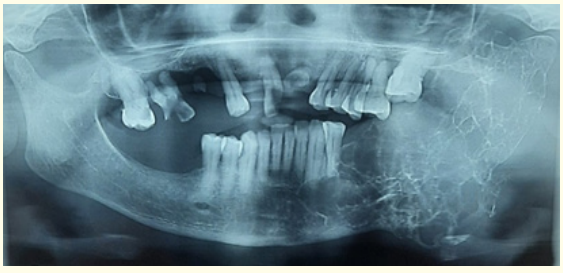

Figure 22: Orthopantomography of a patient diagnosed with primary intraosseous carcinoma.

muscle, nervous and vascular tissue, with preference in areas of premolars and molars. Histologically, it presents cells with marked sclerotic stromas. Odontogenic clear cell carcinoma It is a rare type of carcinoma, of low grade of malignancy, it is characterized histologically by the presence of clear cells in its composition [26,27].

Radiographically, it is characterized by radiolucent areas without visible margins, associated with a deforming and expansive volume increase in the oral cavity, which can cause invasion of soft tissues, root resorptions, among other manifestations. Odontogenic ghost cell carcinoma It is an extremely rare carcinoma, which does not present specific symptoms, however, it can be seen that it has slow growth, sometimes it can ulcerate and invade soft tissues. It has a low degree of malignancy and in radiographic images ostelitic lesions without defined borders can be observed. Odontogenic sarcomas They include a rare group of malignant odontogenic tumors, in which the epithelial component is histologically benign and the mesenchymal component is malignant, presenting a variable degree of mitosis and cellular atypia. The most common type is Ameloblastic Fibrosarcoma, which will change its name depending on the type of tissue it produces, whether dentin or enamel. Their etiology is not clear, but they can be frequently observed in the jaw, causing pain and bone destruction in their wake. Radiographically, large bone defects can be observed, without delimited margins. (view Figure 23).

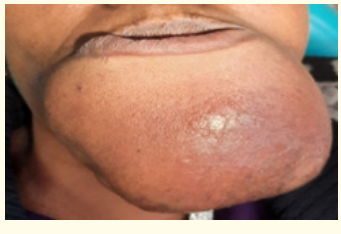

Figure 23: Patient diagnosed with Ameloblastic Fibrosarcoma. Courtesy of Dr. Arelis Rabelo Castillo.

Odontogenic carcinosarcomas They are malignant mixed tumors, of which there are very few records in the literature to date. They can have clinical varieties and in the diagnosed cases they have had a predilection for the jaw, causing all types of effects in its path, unlimited bone destruction, loss of dental structures, regional and distant invasion among the most frequent. Histologically, in this case, both epithelial and mesenchymal components are malignant and stroma composed of fibroblastic and pleomorphic cells can be observed, presenting a combination of the characteristics of carcinomas and sarcomas in general [27,28]. (view Figure 24).

Figure 24: Patient diagnosed with Odontogenic Carcinosarcoma. Courtesy of Dr. Arelis Rabelo Castillo.

That is to say that, in general, for the diagnosis of malignant odontogenic tumors, a complete radiographic study and a histological result are necessary to guide us towards appropriate surgical conduct. Although basically in these cases radiotherapy, chemotherapy and bone resections go hand in hand, all with the aim of avoiding long-term recurrences and large-scale damage. Aesthetic and functional consequences for the stomatognathic system due to a late diagnosis of these entities. The stomatognathic system is a morphologically functional unit, made up of a group of muscular, skeletal, vascular, nervous, glandular and dental structures that interact with each other and in turn allow important physiological functions to be performed such as speaking, eating, chewing, swallowing, breathe, smile even kiss. Its harmony ensures the well-being of the organism. When one of these structures is affected, in this case by the presence of a tumor, the functional mechanism is broken, giving way to facial disharmonies causing serious damage to its stability [24,25,29].

After everything mentioned above, the risks and complications due to Odontogenic Tumors are an important element to evaluate. Its diagnosis in advanced stages of the disease can cause, among other things, bone fractures, resorptions and repeated osteolithic processes, dental mobility, malocclusions, displacement of oral structures such as the tongue, decreasing its mobility and function by more than 50%, obstructions of the airways, invasion and exten-

sion of the tumor process towards the nasal and ocular cavities, infiltration into deep cavities, loss of facial symmetry, repetitive infectious processes, which can have general repercussions.

All patients to a greater or lesser degree who are diagnosed with one of these entities are exposed to all these manifestations, making their treatment a challenge for health professionals who directly care for these areas, since when developing a plan treatment, many elements must be taken into account and most stomatological specialties must be involved [24,25,30].

Basically it is not only about rebuilding the lost aesthetics, but also the functionality of the system in general. Each patient must be treated individually, evaluate each of the results of the complementary examinations, evaluate the histological studies, so that when planning the surgical procedure each of the risks is taken into account and in this way choose the indicated for each case. The oral cavity plays a fundamental role in maintaining facial symmetry, so its constant evaluation and review should become a habit in our population. Health promotion and disease prevention must become the main link in the dentistry career, turning our professionals into true defenders of a healthy lifestyle [31-34].

Conclusion

An exhaustive review of the literature on odontogenic tumors was carried out. Which can affect the aesthetics and functionality of individuals.

Thanks To my wife for all her unconditional professional and personal support.

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