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Review Article

Risks in Head and Neck Cysts

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Abstract

The word cyst comes from the Greek "Cistis" which means cistern. This is one of the topics that students and professionals should not stop studying and updating themselves, given its great clinical variety and forms of presentation. Over the years it has been conceptualized by multiple researchers, below we show you some of the most used. Therefore, a literature review on head and neck cysts was carried out.

Keywords: Cysts; Odontogenic Keratocyst; Epithelial; Congenital

Introduction

Killey and Kay (1966): They describe it as a sac lined with epithelium and occupied by a liquid or semi-liquid material. Not all odontogenic or fissure cysts match this description. Killey and Kay (below): Describe it as an abnormal cavity in hard or soft tissues, containing liquid, semi-liquid or gaseous material, not created by collections of pus, and which is often, but not always, lined with epithelium. Kramer (1974) Pathological cavity with a liquid, semi-liquid or gaseous content, not caused by accumulations of pus, and which is usually, although not always, lined with epithelium [1,2].

Other authors have mentioned it as an epithelial connective bag, lined inside by epithelium and covered in its external layer by connective tissue, which contains a liquid or semi-liquid content, they are asymptomatic, and are discovered in routine radiographic studies. It has also been characterized as a structure with a tendency towards rounded formation, consisting of an external wall of dense fibrous connective tissue of concentrically arranged bundles of collagen fibers, which in the part most adjacent to the bone gradually increases its vascularization. The internal wall is formed by an epithelial tapestry of one or more layers that are generally interrupted at several points, containing a liquid or semi-liquid material [1,3].

A cyst is a pathological cavity with content (liquid, cells, air or a combination), almost always surrounded by a wall of connective tissue and/or epithelium, which may derive from the reduced enamel epithelium, epithelial remains of Malassez derived from the sheath. Hertwig's root, of the dental lamina or having been included during the embryonic period. In the field of Stomatology and its related specialties, among the most interesting harmful processes are cystic lesions in the head and neck. Maxillary cysts are epithelial lesions, slow growing, expansive and despite being entities that present a benign biological behavior, they can reach large proportions if they are not diagnosed in a timely manner and treated appropriately [2-4].

There are multiple risks to which patients with these diagnoses are exposed, so it is essential to delve deeper into this topic. They constitute one of the main causes of destruction of the maxillary bones. It was Sculter in 1654 who was the first to discover the existence of maxillary cysts. Fauchard in 1728 indicated the correlation between maxillary cysts and the dental system. In 1839, Dupuytren described the sign of shriveled crepitation characteristic of cysts with great expansion. Virchow in 1864 mentioned cysts of the jaws in his treatise on tumors and related them to impacted teeth. Paget created the term dentigerous cyst in 1872, which is named after him. In 1892, Partsch verified that radicular or periodontal cysts

have their origin in chronic inflammatory states of the tooth apices as a result of pulp necrosis; this inflammatory process would occur in the epithelial remains of Malassez. In this same year he presented at the inaugural session of the German dental association the description of the surgical method of cystotomy, known as Partsch I [3-5].

In 1910 this same author exposed the cystectomy method or Partsch II. Subsequently, various authors (Mikulicz, Schultz, Philipsen, Shear, Gorlin, etc.) describe varieties within odontogenic cysts and associate certain cysts with a predominance of keratin with other general processes or syndromes. Cysts that occur in the head and neck undoubtedly represent a danger to the integrity of the maxillofacial and cervical component; When this occurs, it causes functional, psychological and aesthetic disorders, of varying intensity if they are not diagnosed early and treated appropriately [3-6].

Objective

To describe the main complications and risks of head and neck cysts.

Reference search methods

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

Analysis strategy

The search was based solely on oromaxillofacial complex cysts.

Developing

Embryogenesis

Odontogenesis begins in the sixth week of intrauterine life, from the oral epithelium the dental lamina proliferates. From this structure originate the epithelial remains, called lamina or "Serrés", which remain between the periosteum and the alveolar bone. The lamina sends buds that are introduced into the underlying mesenchyme (tooth buds) that invaginate to form the enamel organ that consists of an external layer, the external epithelium, an invaginated layer, the internal epithelium, which encloses a loose structure, the stellate reticulum (vestiges of these structures may be present in retained teeth) [3-6].

When the formation of the crown has been completed, the root begins, with the union of the external and internal epithelia of the enamel organ (reunited epithelia), giving rise to Hertwing's sheath, which grows in an apical direction, determining the morphology of the root. the root. The epithelial cells of the Sheath but sometimes groups of them persist, constituting the epithelial remains of Malassez, the main source for the appearance of cysts in the jaws. Therefore, it can be said that in general, jaw cysts are derived from the following structures

- Tooth germ
- Reduced enamel epithelium
- Epithelial remains of Malassez, remnants of Hertwing's sheath
- Remnants of the dental lamina
- Basal layer of the oral epithelium.

Etiology

Little is known about the etiology and pathogenesis and there is little experimental evidence, but this mechanism is fundamentally accepted: Presence of epithelial remains associated with the formation of the face, mouth and teeth. These remains are stimulated by inflammation, sometimes, and other times for unknown reasons, and enter into active proliferation, forming an epithelial network or mass. The central cells of this network or mass begin to be located at a distance from their blood substrate. Central necrosis occurs, which causes the presence of a round cavity limited by epithelial tissue [6-8].

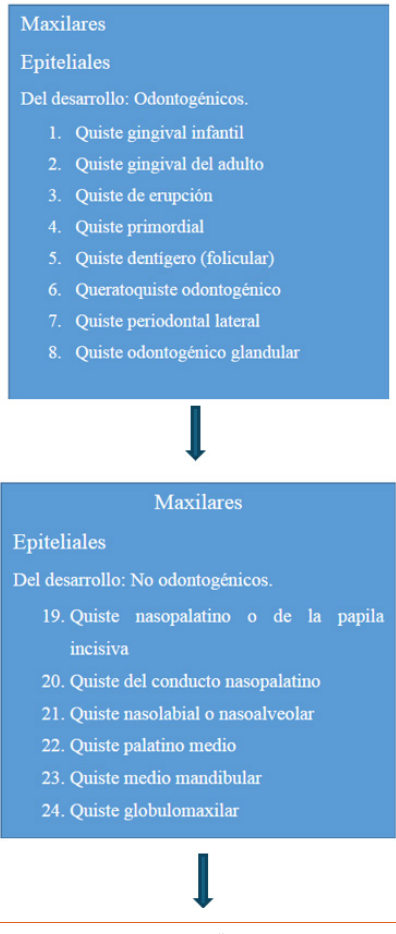
General characteristics

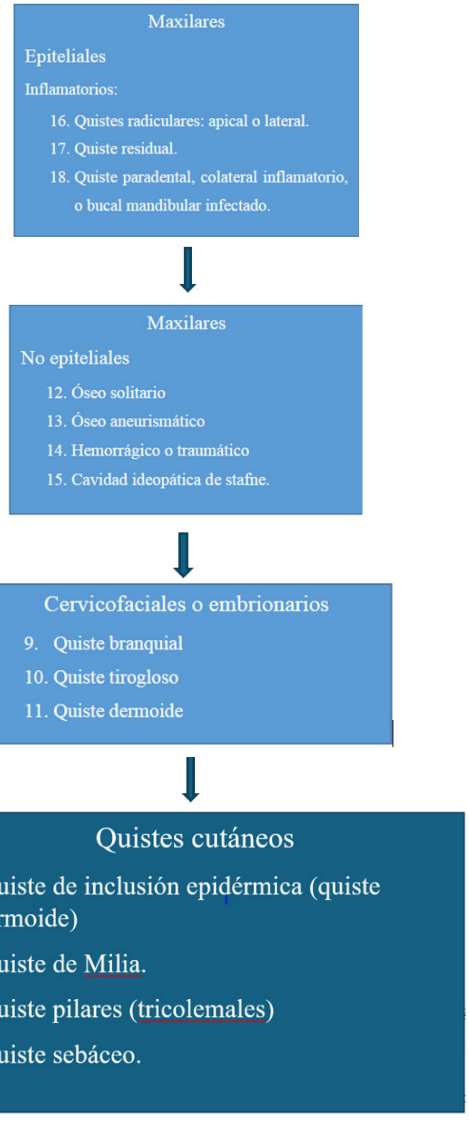
They have an intramaxillary period and another of externalization. Its progress and evolution are slow and generally do not cause painful symptoms. They go unnoticed for years, they can be found on routine x-rays. They develop according to the laws of least resistance, towards the vestibular in the upper jaw, although in the canine they go more towards the palatine. Its growth can displace neighboring structures. In the lower jaw they grow between the two bone tables, and expand towards the ascending ramus where they can reach the condyle and the coronoid process. They settle in both jaws with a predominance of the upper (85%) and the lower (15%) [7-9].

This is associated with the fact that in the upper the number of tooth roots is greater, 30 or 32, unlike the lower one, which is 20 or 22. Relative immunity of the lower canines and incisors. Presence of anatomical cavities in the upper part such as: maxillary sinuses and nasal passages, which form a favorable field for the invasion of these processes. The relative number of retained lower third molars extracted or that do not exist due to the reduction of the jaws. In an early stage, the bone bulge appears hard and painless. As the cyst grows more, the central part of the convexity becomes

thinner and can be depressed by pressure (tennis ball). When the bone wall fragments under pressure, the sound it produces has been described as a bone shell breaking (a sign that corresponds to crepitation). Compression due to expansion or inside the bones causes bone destruction (osteolysis). They all have a well-formed capsule that gives them the appearance of a bag. Histologically this capsule is made of epithelial tissue [9-11].

The presumptive diagnosis is made through anamnesis, physical examination, and radiology. Sometimes fine needle aspiration biopsy (FNAB) must be performed. Therefore, the definitive diagnosis is by histopathological study. In the case of other cervical and skin cysts, their embryogenesis, etiology and general characteristics will be explained separately, as each one is mentioned. Classification For better organization, study and understanding, the author divided them into: • Cysts of the jaws • Cervical cysts • Skin cysts • Cysts related to the salivary glands (they will be addressed in the chapter on risks in salivary gland conditions) The importance of classifications is based on the best study of patients, it guides the professional towards the presumptive diagnosis. The treatment plan and possible prognosis of the patient can be established. It will give the doctor an idea of which will be the possible risks to which the patient will be subjected during the course of the planned and prescribed therapeutic procedure(s). See summary table of the general classification of head and neck cysts.





Of course, there are many classifications that have been proposed regarding the different cysts in the head and neck regions. Our fundamental interest, beyond any classification, is that they know the main cysts, their forms of presentation, treatment modalities and analyze and understand the risks to which these patients are exposed. Which will range from the possible damage that the cystic lesion will cause, to the complications of the different therapeutic procedures. Next, we will show you each of the cysts listed, to facilitate your study and understanding of this complex topic. Since it is essential that the student and the professional master these conditions, or at least be oriented on the conduct to follow in each particular case [10-12].

So that, even if they are not the ones who carry out the definitive treatment, they know how to properly indicate their patients, and make a referral with an accurate diagnosis. Developmental epithelial (odontogenic) cysts of the jaws: Infantile gingival cyst.

(Newborn cyst) It is formed by an epithelial inclusion in the connective tissue of the gums that occurs during embryogenesis. The inclusion of these epithelial nodules in the submucosa seems to originate from groups of epithelial cells being trapped by the rapid proliferation of the mesenchyme. It is generally observed in the newborn as yellowish-white nodules, with a firm consistency, 1 to 2 millimeters in diameter [12-14].

They can be single or multiple, located on the gum or hard palate. It is possible to see them less frequently in other sites of the oral mucosa. It affects children of both sexes and is considered not to require treatment because it returns within a few weeks. Its appearance is reminiscent of grains of rice located under the oral mucosa. Some authors classify them by dividing them according to their topographic location. The so-called Epstein pearls are evident along the median raphe, the Bohn nodules, located at the junction of the hard and soft palate, and relate them to the structures of the palatine salivary glands. They appear as focal white nodules, which are rare after three months of age. We agree with researchers who propose that they are the same entity, just with different anatomical positions. Here it should be emphasized with parents that they should simply observe the child's evolution, and not try to eliminate the injuries at home. Because we have had cases where adults try to remove the nodules with wet gauze or with needles, etc. It must be explained well to them so that they do not put the infants at unnecessary risk [13-15].

Radiographic studies are not indicated either since they are soft tissue injuries, so they do not have radiographic manifestations. The few that have been studied histologically are said to form nodules filled with a thick, whitish fluid that turns out to be keratin. Microscopically, they are formed by a cystic membrane of polystratified epithelium, whose cavity contains keratin. They are completely harmless and do not require treatment. They disappear on their own so their prognosis is favorable. Adult gingival cyst It is related to remnants of the dental lamina, the enamel organ, or the epithelial islands of the periodontal membrane. Other authors speak of degenerative changes in an epithelial invagination or a traumatic implantation. Or that it originates from the post-functional remains of the dental lamina and that represents the bony counterpart of the lateral periodontal cyst. And some simply advocate that it is nothing more than a persistence of the newborn gingival cyst in adults. It is considered a rare alteration of odontogenic development [16,17].

It has been observed in free or attached gingiva, mainly in areas of premolars, canines and mandibular and maxillary incisors. It manifests itself as a limited, circumscribed, normal-colored bulge, no more than a centimeter in diameter, soft in consistency, located anywhere on the gum, between the third and fourth decade of life. As it is a soft tissue injury, it is not evident radiographically. Histologically it is reminiscent of the lateral periodontal cyst, a unicystic cavity is observed, although there have been few cases with polycystic cavities. It is characterized by free connective tissue in the gum covered by an epithelium that can vary in thickness, from a few layers of flattened cells to more numerous ones. There may be focal thickenings in the epithelial lining and some glycogen-containing cells. It may or may not present an inflammatory reaction. It has no neoplastic potential. Its differential diagnosis is made with mucocele, and it is only treated if it causes discomfort, which would be excision and biopsy.

It should be explained to the patient and family that the prognosis is favorable. That the conduct to follow to avoid any complication or risk is simply to maintain adequate oral hygiene and observe through oral self-examination if there is any variation in the lesion(s). Rash cyst an abnormal dilation occurs due to the accumulation of a hematic or blood serosity in the normal follicular space, surrounding the crown of a tooth in the process of erupting. That is why many authors do not call it a cyst but rather a rash hematoma. It is characterized by a circumscribed, fluctuating, often translucent increase in volume above the soon-to-erupt tooth. When the lesion contains blood, it appears dark blue or purple. It occurs mainly in the molar area, preventing normal tooth eruption. Its incidence varies greatly from one researcher to another [19-21].

Some claim that this injury occurs in 11% of children during the eruption of primary incisors and in 30% during the eruption of canines and deciduous molars. They can be unilateral or bilateral, single or multiple and it has been the case that it has been diagnosed in newborns. Radiographically, the erupting tooth is detected with a radiolucent area in the upper pole without bone cortex. Unlike the dentigerous cyst, which will be described later, the affected tooth is not completely intraosseous, but rather the upper pole is in contact with the gingival chorion, around which a fibroblastic condensation has originated due to the displacement that prevents the rupture of the gum and with it, the dental bud. Histologically it is covered by a keratinized stratified squamous epithelium. They do not require treatment, they generally open spontaneously, so their prognosis is favorable. The importance of observing and monitoring the child should be emphasized with parents. Explain to them that they should not puncture the lesion with any object (needles, pins, etc.) since they could inoculate any pathogenic microorganism and cause an infection in the child. The

normal age of outbreak and when it is considered that there is a delay in the eruption should be explained so that they know when to go to the professional for action.

Primordial cyst

It is formed by cystic degeneration of the stellate reticulum of the enamel organ, in an incipient stage of odontogenesis, before any type of calcified dental tissue has formed. This is why it appears in the place of a tooth, and not associated with any of them. It can also originate from a supernumerary dental organ and appear in individuals with a complete dental formula, making its correct classification difficult. It is considered a primordial cyst when it develops through the enamel organ. It varies widely in size, can extend into the bone and displace neighboring teeth. 75-80% are located in the jaw. And it has been described that it may be part of a syndrome called Gorlin. Radiographically it does not provide a pathognomonic image; it may present unilocular or multilocular. It does not present a definitive or peculiar histological pattern. But its epithelium may have the characteristics of the odontogenic keratocyst [21-23].

The differential diagnosis should be made with the residual cyst, so it is important to ask the patient or family member if a tooth extraction was carried out in that area. And the other lesion that must be ruled out is ameloblastoma. Treatment is surgical with excision and biopsy. The prognosis is favorable. It must be explained to the affected person and those accompanying them that the possible risks will be related mainly to the evolution of the tumor and the selected treatment. Regarding the evolution of the tumor, although it is not common, it can grow and affect neighboring teeth, important structures such as nerves, etc.

Regarding the procedure, regardless of the patient's own factors, the intervention may bring a risk of injury to nervous structures, to adjacent cavities such as the maxillary sinus, there may be, although the risk of fracture due to osteolysis is very rare.

Dentigerous (follicular) cyst It originates from the enamel organ of a tooth that has already completed its amelogenesis but has not erupted. Impacted teeth are generally surrounded by pericoronary sacs that are linked to the enamel surface, through the reduced epithelium that covers it. Due to phenomena that are not well clarified, fluid accumulates between the calcified upper layer of enamel and the reduced epithelium. The gradual increase in cystic content distends and separates the epithelium, projecting the crown of the tooth into the lumen of the cavity that has formed. It is also called follicular because it is covered by the epithelium of the dental follicle. The moment at which it must be considered that a cyst already exists and not a dilated pericoronary sac when examined radiographically. Severely retained teeth is a problem of interpretation (Figure 1).

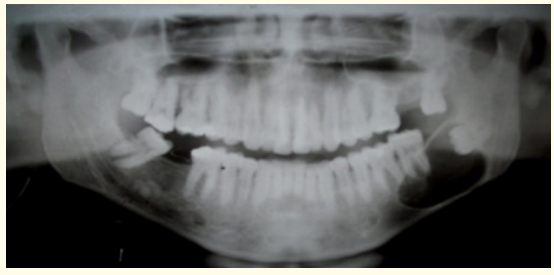


Figure 1: Cystic lesion in the region of the left mandibular angle. Courtesy of Dr. Alejandro Inclán Acosta.

Some authors assume that whenever the image of the periodontal space is less than 2.5 mm, it is a normal sac in diameter and that above this figure it is a dentigerous cyst. This criterion is evidently a simplistic approach to the problem, since these radiographic images can often be microscopic variants of dentigerous cysts. This is why, when making clinical-radiographic discussions, it should not be ruled out that radio shadows are possible dentigerous cysts. Always keeping in mind their capacity to undergo some odontogenic neoplastic transformation. This lesion may be evident in relation to an odontoma or a supernumerary tooth. It has been detected in a higher percentage in the jaw after the inflammatory cyst [23-25].

It mainly affects third molars and upper canines. They generally present asymptomatic, until they cause great bone expansion, causing different asymmetries. But between the second and fourth decade of life. Radiographically, it is characterized as a radiolucent area associated with the crown of an unerupted tooth. The crown is usually symmetrically surrounded by radioluscence, although cyst expansion may reject the crown of the tooth from its original position toward the periphery of large cystic cavities. In a few cases, the cyst from its beginning can asymmetrically involve the crown, in the so-called lateral Dentigerous (Figure 2).

It almost always presents unilocular. The roots are usually outside the cyst and sometimes are not formed. The microscopic material shows the classic cystic formation, where unlike periodontal cysts, there is a smaller amount or absence of the inflammatory infiltrate. The fibrous wall can in many cases be made up of a very young fibroblastic component, with a myxoid appearance. The fre-

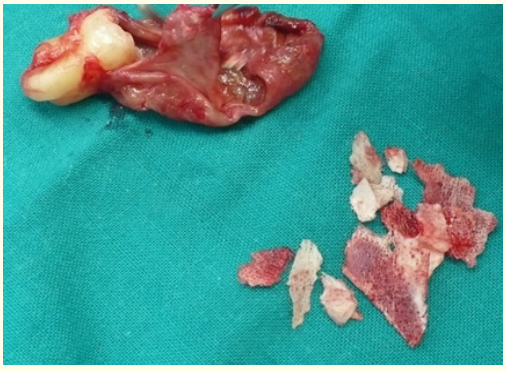


Figure 2: Extracted lesion, attached to the tooth. Courtesy of Dr. Alejandro Inclán Acosta.

quent appearance of ameloblastoma at some point in the epithelial wall requires serial and symptomatic microscopic examination of all lesions, as an essential diagnostic requirement. The cystic lumen contains a serous or serohematic fluid [25-27].

The cyst has a fibrous wall composed of epithelium that is reduced to two or three cell layers and is usually of the non-keratinized stratified squamous type, and may contain ciliated or mucinous cells, and more rarely sebaceous. Sometimes there is keratinization that gives it the appearance of a keratocyst; if secondary infection occurs, an inflammatory infiltrate may be present. It should be explained to patients and family members that the main risk related to the lesion is its transformation into an ameloblastoma and hence what this neoplasm represents. In addition to emphasizing treatment variants, etc. While it is being studied, a differential diagnosis must be made to rule out the presence of keratocyst, pericoronitis and the more dangerous ameloblastoma. Among the possible treatments are

- **Partsh 1:** Marsupialization. (in disuse). It was indicated in large bone destructions, in relation to important anatomical structures. Patients who do not tolerate other treatment. But due to the high risk of recurrence and subsequent malignant transformation, this procedure is no longer recommended.
- **Partsh 2:** It is based on enucleation and subsequent biopsy. Long-term follow-up should be done, minimum 5 years. As long as it is diagnosed and treated appropriately, the prognosis will be favorable.

Odontogenic keratocyst It is a cystic lesion that originates in the dental lamina and its remains, prior to the maturation and calcification of the dental tissues, (prefunctional stage) and possibly in the basal layer of the oral epithelium. It originates from degeneration of the stellate reticulum; the structure enlarges due to active proliferation of the wall. The pseudodentigerous, isolated and interradicular situations only have a topographic connotation and their origin is related to the presence of remains of the dental lamina and the proximity of an included tooth. The primordial variant is related to an unerupted tooth whose follicle apparently formed the cyst. This injury presents multiple forms of presentation, which have been studied and compiled by different authors. Dr. Santana Garay considers four situations

- The primordial variety.
- Pseudodentigerous.
- Isolated.
- Interradicular.

Instead, in the resident manual they are described in two large groups

- Keratocyst located in the ascending ramus of the mandible.
- Keratocyst located in dental areas: ⎪ Primordial ⎪ Dentigerous (follicular), extrafollicular. ⎪ Lateral periodontal. ⎪ Root. ⎪ Residual. ⎪ Recurring. ⎪ Multiple. ⎪

Multiple in association with basal cell nevus syndrome. They are frequently diagnosed between the second and third decade of life, with a slight predilection for the male sex. The mandible is most affected in the areas of third molars and the ascending ramus, and the maxilla in the area of third molars and canines. They generally go unnoticed unless they suffer a secondary infection, or when they cause extensive bone destruction. Causing multiple symptoms such as paresthesia, dental or lip anesthesia, cellulitis, abscesses, limitation of mouth opening, pathological fractures, etc. They can be single or multiple, and sometimes be accompanied by dissimilar alterations if it is linked to basal cell nevus syndrome. In this case, it is accompanied by skin, dental, bone, ophthalmological, neurological, sexual alterations, and more rarely, cleft lip and palate. Radiographically, it may appear as a unilocular or multilocular radioluscence with smooth or scalloped edges (Figure 3).

Courtesy of Dr. Alejandro Inclán Acosta. In many cases they have an identical image to the primordial cyst, the dentigerous cyst, even the lateral periodontal and globulomaxillary cysts, which have occasionally been diagnosed as odontogenic keratocysts. The histology has been described by several authors; those proposed by some of these researchers are mentioned below [30-32].

Santana Garay suggests that the odontogenic keratocyst is characterized by a capsule of collagen fibers, very thin, delicate

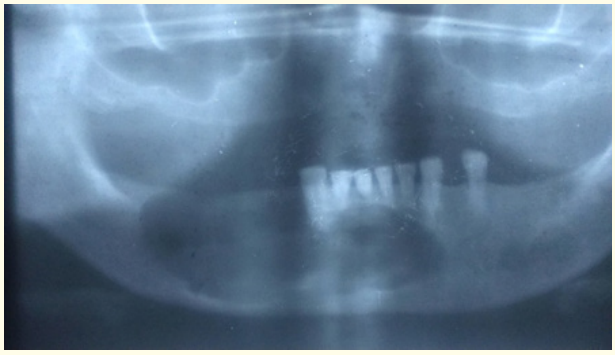


Figure 3: Odontogenic keratocyst.

and sometimes lax, covered by an epithelium of six to eight rows, a basal layer of cuboidal or columnar cells without interpapillary processes. The wavy, parakeratinized surface usually has a curly or corrugated appearance. Marimón states that a usually corrugated parakeratinized surface is evident. With uniformity of epithelial thickness of six to ten cells. A basal layer of palisade cells that appear polarized described in the form of a picket fence or tombstone. In the resident manual, they talk about the presence of a stratified squamous epithelium, with a basal layer of cylindrical or cuboidal cells, in palisades, with hyperchromatic nuclei that tend to polarize [32,33].

Abundant keratinization and absence of inflammatory infiltrate. The differential diagnosis is mainly made with follicular or dentigerous cyst, ameloblastoma, residual cyst, traumatic or solitary bone cysts. There are authors who mention predictive signs of odontogenic keratocyst: • Cystic image in the region of the third molar and/or ascending ramus of the mandible without or with expansion of the bone cortex. • Diameter of more than 30 millimeters. • Multilocular image with well-defined scalloped margin. • Unilocular image with few, but relatively large cavities. • It does not usually affect adjacent teeth. • Characteristic cystic content (clear fluid, which may contain abundant keratin) Within the different treatment modalities we can divide them into conservative and radical. Among the first are: • Decompression • Marsupialization The radicals are: • Decompression, followed by delayed enucleation • Ennucleation and direct closure • Ennucleation and open packaging • Ennucleation and cryosurgery • Ennucleation and chemical fixation (among these substances we can mention Carnoy's solution, which is not masque, a fixative that coagulates proteins and prevents recurrence of the lesion. It is applied to the bone margin for five minutes, after ennucleation, curettage, and cleaning. It is composed of 60% ethanol, 30% chloroform, 10% glacial acetic acid, 1 gram of ferric chloride, dissolved in alcohol.) [34-36].

As long as it is diagnosed and treated appropriately, the prognosis will be favorable. Lateral periodontal cyst Its pathogenesis is analyzed with different possibilities such as: its origin from the epithelial remains of Malassez or the supernumerary tooth germ; its initial origin is also mentioned as a dentigerous cyst that developed along the lateral surface of the root, prior to to its eruption, another highly discussed origin is that it is due to the proliferation and cystic transformation of the dental lamina in its post-functional stage, which would explain its small size. It is considered an alteration of ontogenetic development. It occurs in areas from premolars to mandibular incisors and in the maxillary lateral areas with a preference for the male sex. The most common age is fifty years and older, although others mention a range between 22 and 85 years.

They are generally asymptomatic and are discovered during routine examinations. The mucosa that covers it is normally colored, although sometimes a bulge can be seen. The vitality of the tooth is preserved and it is small in size. Radiographically, a well-limited radiolucent area is evident next to the root surface of a tooth. When the condition is no larger than a centimeter, it may be surrounded by sclerotic bone. Neighboring teeth remain vital. There is a variant of lateral, multilocular periodontal cyst, which is known as botryoid odontogenic cyst. Since the lateral periodontal is unilocular. Histopathology represents a cavity with a wall of fibrous tissue lined by an epithelium that may have one or several layers of cells, some of these cells may be flat, cubic or columnar. In addition, clear cells may occur due to their glycogen content [3,10,15].

Certain cells form focal groupings that project into the lumen of the cyst, especially in those of the botryoid type. The lateral periodontal cyst is a benign lesion without neoplastic complications.

The differential diagnosis is made with radicular cyst, primordial cyst, adult gingival cyst and the botryoid itself. Treatment is excision and biopsy, generally having a favorable prognosis. Odontogenic botryoid cyst Its etiology is unknown, but many authors propose that, in part, its appearance is due to the simultaneous proliferation of separate epithelial islets. It is a rare lesion, which occurs mostly between the fourth and seventh decade of life, with great affinity for the canine and premolar regions. It may be asymptomatic or cause discomfort and expansion of the bone cortex. Radiologically it is evident multilocular. There is nothing that suggests an inflammatory origin from the periodontal structures or the intraradicular neurovascular bundle. Some authors advocate that it is a variant of the lateral periodontal and others of the adult gingival, due to the similarity that has been found in soft tissues [3,4,6].

Radiographically, it is characterized by a well-defined lesion that can be unilocular or multilocular, the latter being the most common. It does not present pathognomonic signs that differentiate it from other cystic lesions. Among the diagnostic criteria are: histological characteristics similar to the lateral periodontal cyst, and demonstration of dissimilar cystic cavities in the affected area. Histological evidence of the multicystic nature of the lesion, together with multilocular radiology, separates this condition from lateral periodontal. The differential diagnosis should be made with the adult gingival and the so-called lateral periodontal. The treatment is sometimes complex due to the multiple pathological cavities divided incompletely by different bone septa. These aspects are important to explain to the patient and family members, to avoid dissatisfaction in case of recurrence. Apart from everything previously stated, if everything established is complied with and the patient cooperates adequately, the prognosis will be favorable [3-6].

Glandular odontogenic cyst (sialodontogenic or odontogenic mucoepidermoid cyst) Its odontogenic origin has been demonstrated but the etiopathogenesis as such is still not well clarified. It is thought that the glandular appearance of its coating is due to the possibility of epithelial tissues to differentiate into dissimilar forms and well within them is the glandular. This condition has a slight preference for males between the fourth and fifth decades of life. It has a variable diameter, which can be from a centimeter to a large size. They are detected most frequently in the jaw, causing an increase in volume that often goes unnoticed, or causes mild pain. In general, this alteration is rare [5,6].

It must be explained to those affected that it is locally aggressive and very recurrent. It provides a radiolucent, well-defined radiographic image that can be unilocular or multilocular. In many cases it is surrounded by a sclerotic halo. Its lining is formed by a stratified non-keratinized epithelium, with variation in thickness. The columnar cells stand out on its surface and among them mucous cells that limit microcysts can be seen, and in other places the papillary projections stand out. It is not considered a preneoplastic condition, but given its local aggressiveness, great care must be taken when removing it. The mucous cells are arranged in a glandular or pseudoglandular pattern appearance with intraepithelial ducts and microcysts [3-6].

This pattern may resemble a central mucoepidermoid carcinoma. The indicated therapy for this cyst is excision and biopsy. Generally the prognosis is favorable. Although they do not appear in the summary table prepared above, two conditions were added that the author considers important for readers to know: calcified odontogenic epithelial cyst and nevoid basal cell carcinoma syndrome. Calcified odontogenic epithelial cyst. (Gorlin's cyst) It is a rare condition, its etiology is unknown.

It is characterized by being asymptomatic, it has no preference for sex. It has a higher incidence in the second decade of life and another peak between sixty and seventy years of age.

The highest percentage occurs in the jaw intraosseous in the area of the third molar. The radiological study shows loss of substance, often of large dimensions and usually, although not always, well circumscribed. They can be unilocular or multilocular, sometimes causing rhizolysis. Root divergence is frequently detected. Inside, a calcified content is observed, radiopaque in fine grain, or sometimes in larger accumulations.

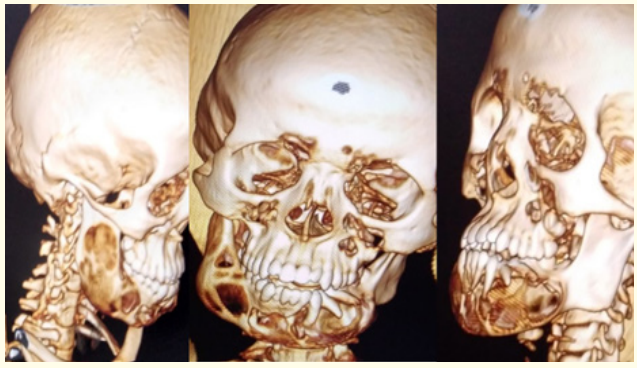


Figure 4: Patient with multiple Gorlin cysts. Courtesy of Dr. Carlos Juan Puig González.

Sometimes the geode empties the central area of the jaw and certain peripheral varieties protrude towards the gum, eroding the outer cortex of the bone a little. Histologically it is well defined, with a basal layer of palisade-shaped low cuboidal or cylindrical cells, which stain more than usual. Above the basal layer, there are irregular masses of swollen cells, many of them without intercellular bridges. Around these cells, eosinophilic and pale variants can be found, scattered with large epithelial cells recognized as ghosts, which seem to have undergone aberrant keratinization and that sometimes proliferate and fill the cystic cavity [39,40].

These ghost cells may be calcified. In addition, dental structures such as enamel and collagenous, atubular, dentinoid substance have been detected, adjacent to the so-called ghost cells, in the connective tissue wall or in the mural epithelium. A melanotic variant has been described that possibly only appears in the black race. Sometimes a true odontoma-type tumor or ameloblastic fibrodon-

toma accompanies the cystic formation. The treatment of choice is surgical removal and histological study. Recurrences are rare. The prognosis is favorable. Nevoid Basal Cell Carcinoma Syndrome (Nevoid Basal Cell Syndrome and Keratocyst of the Jaws, Gorlin Goltz Syndrome) It is considered a genetic imbalance with strong penetrance and variable expressivity, related to a gene on chromosome q22. Patients are affected by multiple basal cell carcinomas of the skin, keratocysts of the jaws, skeletal alterations, among other malformations and neoplasias [3-6].

The most characteristic thing is the presence of several basal cell carcinomas of different presentation forms, which begin to appear in the second decade of life, in either sex. Palmoplantar dimples are common, as is calcification of the falx cerebri and cerebellum. Dissimilar skeletal disorders can be detected such as enlarged skull, bifid rib, vertebral alterations, and in the extremities. There is a higher incidence of neoplasms such as ovarian fibroma and medulloblastoma. In addition, there is a greater occurrence of cleft palate and/or mandibular prognathism. Keratocysts must form in children, but they are detected around the second decade of life, and these are multiple, ranging from one to ten. Radiographically, multiple keratocystic lesions are observed. The histology of these cystic lesions does not vary from the classic odontogenic keratocyst. The treatment of this condition must be carried out in a multidisciplinary team, excision and biopsy are recommended, and in some cases it has been decided to prescribe oncospecific treatment. The prognosis is reserved [3-6].

Cysts of the jaws epithelial (non-odontogenic, fissure or sutural) In this group of cysts, a common characteristic is evident, and that is their anatomical location in the suture lines of the embryological development of the face. Their diagnosis is therefore extremely topographic and implies the obligatory exclusion of periodontal and/or developmental forms. linked in some way to the teeth, since these have their origin in residual epithelial elements trapped when the embryonic processes that give rise to the facial mass are pressed. Its content is generally liquid or semi-liquid. Nasopalatine cyst This cyst derives from the epithelial vestiges of the nasopalatine duct included during the fusion processes. The initial mechanism is unknown, which is why various pathogenic factors are proposed: such as trauma, bacterial infection, shunt of the Jacobson's organ, blockage of the glandular ducts, racial and genetic factors, etc (Figure 5).

There are authors who propose a spontaneous development, which explains the absence of inflammatory infiltrate, and the low

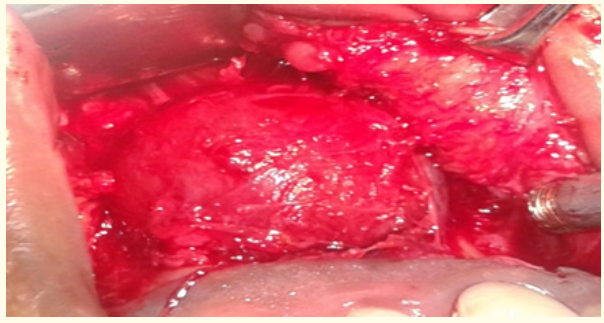


Figure 5: Surgical intervention for a nasopalatine cyst. Courtesy of Dr. Alejandro Inclán Acosta.

incidence of trauma in this area. It is the most common of the non-odontogenic cysts. It is an intraosseous cavity located specifically in the nasopalatine duct. When it occurs below the incisive foramen it is called a palatine papilla cyst. It has received multiple names regarding its location in the canal, whether anterior, middle or posterior. It generally appears between the fourth and sixth decade of life. He has no predilection for sex. The most common symptomatology is swelling in the anterior portion of the palate. It may be the case that a fistula or dental displacements are detected [42,43].

When it occurs in the incisive papilla it is because it is extraosseous, and what is evident is a persistent bulge that does not give a radiographic image. Its size can range between two and four centimeters, although few cases with large extension have been seen. Radiographically, it is detected as a well-defined oval or heart-shaped lesion, due to the anatomy of the duct symmetrically arranged in the midline. It is observed in continuity or superimposed on the roots of the central incisors. A nasopalatine cyst of a large incisive fossa is a complex differential, the average diameter of the fossa is three millimeters, and up to six millimeters is considered normal, above these values it begins to be suspected. Histologically, a stratified squamous, cubic, simple, or respiratory epithelium is found. In the connective tissue of the wall there are in some cases salivary glands, mucous membranes, nervous and adipose tissue. The differential diagnosis is made with inflammatory cysts and dilated incisive canals. The ideal treatment is excision of the lesion while preserving the teeth. The buccal approach is always recommended unless the teeth are not displaced, which is then more favorable through the palatal approach. It may be the case that it is very adherent to the palatine mucosa and the nasal septum. Complete bone regeneration is usually the rule and occurs in the first three years [30,34-36].

Recurrence is rare as long as it is removed properly. In all cases the lesion must be biopsied. The prognosis is usually favorable. Nasolabial or nasoalveolar cyst (Klestadt cyst) It is formed from embryonic epithelial remains of the lacrimonasal duct and not as previously thought, which was believed to come from epithelial remains trapped at the junction of the globular, lateral nasal and maxillary processes. It is a soft tissue injury, so it develops outside the bone and is located in the alveolar process and in the vicinity of the nostril. It can compress the bone table, causing its resorption, which serves as a seat. They are infrequent, appearing mainly between the third and sixth decade of life, mainly in females. It is detected as a bulge in the region of the upper lip at its junction with the wing of the nose, which usually rises, sometimes making it impossible for the patient to breathe. It usually causes effacement of the nasolabial fold [30,34-36].

It does not present a radiographic image, unless contrast material is used, since it is located in soft tissue. In a lateral projection, bone erosion of the maxilla can sometimes be seen. In its histological study, a wall covered by pseudostratified or respiratory epithelium is observed and both may even appear. It is a mistake to confuse it with a globulomaxillary cyst. Therapeutic is based on ennucleation and biopsy. The prognosis is generally favorable. middle palatine cyst This arises from the fusion line of the palatine processes of the maxilla, due to epithelium trapped in said suture. The cause of the epithelial proliferation that causes this injury is unknown. It is very rare, it can grow over an extended period of time until it causes severe and clinically detectable swelling. It is evident on an occlusal radiograph as a well-defined lesion, opposite the premolar and molar regions, surrounded by a thin layer of sclerotic bone tissue [30,34-36].

The histological study shows a generally stratified squamous epithelium, although in some cases pseudostratified ciliated columnar epithelium. The peripheral capsule of relatively dense fibrous connective tissue may show chronic inflammatory infiltration. The treatment of choice is excision and biopsy. It generally has a favorable prognosis. Middle mandibular or mandibular symphysis cyst. It is considered to be due to the proliferation of epithelial remains trapped in the mandibular symphysis during the fusion of the mandibular branchial arches. For several authors, this theory is doubtful, since this bone is formed deep in the mesenchyme, which makes it almost impossible for epithelium to remain trapped within it. There is another theory that advocates that it is a primordial from a supernumerary germ. It is not the objective of this work to decide which is the most accurate. It is a rare condition that occurs in the mandibular symphyseal region. It is generally asymptomatic and is usually associated with vital teeth [30,34-36].

Only occasionally can its expansion cause a tooth to become devitalized, which reinforces the hypothesis of its possible odontogenic origin. The imaging study shows a radiolucent, oval or rounded area that separates the roots of the lower incisors and does not cause cortical expansion. It does not present neoplastic potential. Dr. Santana Garay describes it histologically as presenting a frequently squamous, polystratified epithelium. Other researchers have described it as a pseudostratified columnar epithelium and this is considered to be because a secretory metaplasia occurs that can occur in radicular cysts. The differential diagnosis should be made primarily with the primordial cyst and the lateral periodontal cyst. The treatment is excision and biopsy. The prognosis must be favorable. Globulomaxillary cyst [30,34-36].

It is identified topographically, due to its location, since it is proposed that its appearance is from epithelial remains trapped in the fusion line of the maxillary process, with the middle nasal during the formation of the maxilla (palate). In recent times this criterion has been questioned, since it has been mentioned that there is no such embryological fusion. Explaining that the globular portion of the middle nasal process is primarily united with the maxillary process. For this reason in the summary of the World Health Organization, it is not mentioned, it is considered by many a variant of the lateral periodontal, a primordial and even a lateral root [30,34-36].

It is generally located between the root of the lateral incisor and the canine. Starting in the third decade of life, it is asymptomatic and the teeth generally maintain their vitality. The imaging study revealed a well-defined and characteristic radiolucent area (inverted pear), located between the root of the lateral incisor and the canine, mobilizing said roots. Sometimes it is bilateral. Some compare it to an aerostat. At a microscopic level, a fibrous wall is detected internally lined with stratified or more often cylindrical or pseudostratified squamous epithelium. There may be some degree of chronic inflammatory infiltrate. The differential diagnosis is made with odontogenic keratocyst, ameloblastoma and other cysts of the jaw. The ideal therapy is excision and biopsy, taking care of the vitality of the dental structures. Generally, if treated properly and in time, the prognosis will be favorable. Inflammatory epithelial jaw cysts. Radicular cysts: Periapical cyst. It occurs when an inflammation of the dental pulp reaches the periapical area, causing the formation of a granuloma [35,36,40].

The non-intense but resistant inflammatory stimulus causes the proliferation of Malassez's epithelial remains and their cystic formation. (view image) Fish classifies four zones in this cystic variant. • Infection zone • Pollution zone • Irritation zone • Stimulation zone The etiological causes described include: • Infectious • Mechanical • Thermal • Chemicals Its advance and evolution depends on the triad formed by the number of microorganisms, virulence and immune response. These constitute more than fifty percent of odontogenic cysts, and ninety percent of those in the oromaxillofacial region. It is generally asymptomatic, unless it suffers from some recurrent acute condition that causes cellulitis or the appearance of fistulas. They appear between the third and fourth decade of life, mainly in males, more so in the upper jaw.

They can measure between 0.5 to 1.5 centimeters or more, they are closely related to teeth that have lost their vitality. Radiographically, a rounded, intensely radiolucent area is observed, bordered by a thin margin of condensing osteitis, which ends at approximately right angles to the root.

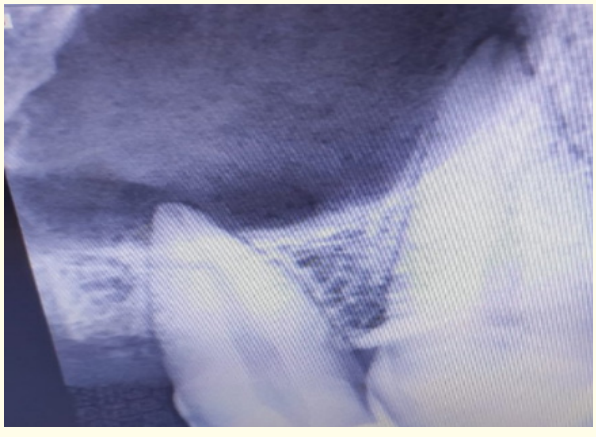


Figure 6: Periapical x-ray showing a periapical cyst. Courtesy of Dr. Alejandro Santana Curi.

Marimon suggests that large radiolucent lesions of more than a centimeter in diameter, associated with a tooth root, are probably cystic. On the other hand, Archer and Kruger consider it from 0.5 centimeters. Histologically it is evident that it is composed of a generally non-keratinized stratified squamous epithelium. Sometimes it can be pseudostratified ciliated cylindrical when the cyst, due to its proximity, involves or derives from the respiratory epithelium, or is transformed by metaplastic phenomena. The epithelium may contain hyaline bodies known as Rushton's, in less than ten percent, derived from the formation of thrombi. In addition, an inflammatory infiltrate of variable intensity is observed, composed of lymphocytes, plasma cells and some polymorphonuclear cells depending on the intensity of the infection. Sometimes multinucleated giant cells and cholesterol crystals, macrophages filled with lipids or even hemosiderin, or hyaline bodies appear. The differential diagnosis should be made with apical granuloma and anatomical accidents of the jaws. Depending on the case, its treatment can be conservative with endodontic treatment or surgical with enucleation and biopsy [40-42].

His prognosis tends to be favorable. Lateral cyst. This group includes those that are lateral to the tooth root, or that come from deep periodontal pockets. Its etiopathogenesis is the same as that of the periapical. The infection reaches the interdental ridge through a lateral canal with necrotic pulp, something that rarely occurs, because their vascularization is from the periodontium to the pulp. The lateral and accessory ducts tend to retain their vitality. It is a very rare injury. It is observed in the imaging study as an ovoid radiolucent lesion in the interdental ridge that tends to separate the roots of the neighboring teeth (Figure 7).

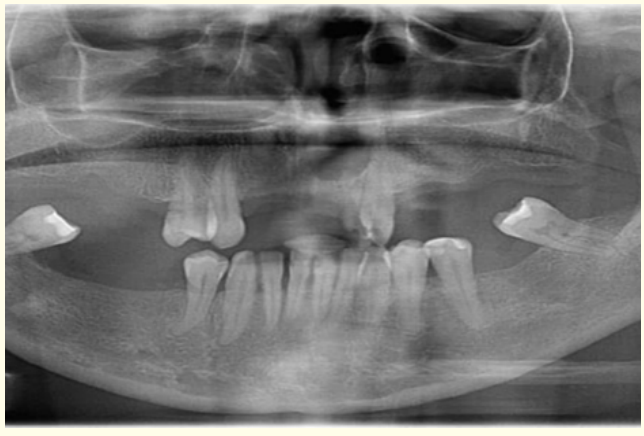


Figure 7: Panoramic x-ray showing a lateral radicular cyst in the upper jaw.

Courtesy of Dr. Alejandro Santana Curi. Its histology is identical to that of the periapical cyst. The differential diagnosis is made with the lateral periodontal cyst. The treatment is the same as periapical treatment and its prognosis is also favorable. Residual cyst. They are those that remain inside the alveolar bone after the excision of a tooth affected by a cyst. This lesion can be due to any of the radicular cysts. It almost always goes unnoticed, it is diagnosed in routine examinations, unless it reaches a large size and causes signs of bone involvement and/or painful symptoms. It is seen as a radiolucent area where a tooth has been previously extracted, with a radiopaque halo around it. Its histology is identical to that of radicular cysts. The differential diagnosis is made with the primor-

dial cyst. Treatment is ennucleation and biopsy. His prognosis is favorable. Paradental cyst (infected inflammatory oral, mandibular collateral) It is related to an inflammatory process of the periodontal ligament, such as pericoronitis, which compromises its surface epithelium. It is assumed that it can also originate from the external part of the pericoronary sac or from the epithelial remains of Malassez.

Three main options are described. • Origin of the epithelium opened by the eruption. • Proliferation of epithelial remains of Malassez, following the gingival extension of inflammation as a result of pericoronitis. • Origin of reduced enamel epithelium. Other authors propose that it is due to a unilateral expansion of the dental follicle. It is an uncommon lesion, usually asymptomatic, and predominates in males. Its size can vary between 1 and 2 centimeters. It has two modalities: • Radiolucent formation well limited distally or buccally of the semi-erupted third molar at the cement-enamel junction. • In children on the buccal aspect of the lower first or second permanent molar. Its diagnosis is not simple, due to the anatomical location and the added pericoronary infection. Its main symptoms are increased volume and pain. The teeth may be vital.

Kruger and Archer suggest that it appears more between the fourth and fifth decades of life. Marimón, on the other hand, defends that they predominate in the third decade of life. In the Resident's Manual they are more comprehensive, distributing it between 20 and 30 years in a general way. But they describe its incidence in more detail, explaining that it affects the first permanent molar between 6 and 9 years, if it affects the second permanent molar between 11 and 15 years, the third molar, from 18 to 35 years. Radiographically, a radiolucent lesion is observed lateral to a tooth. Histologically, Santana Garay describes it as a non-keratinized proliferative epithelium. Adjacent connective tissue, infiltrated by inflammatory cells such as lymphocytes, plasmacytes, macrophages and neutrophils. The nearby bone has periostitis. It is a histology similar to periapical.

Other authors describe it as indistinguishable from radicular cysts. The differential diagnosis is made with the lateral periodontal cyst, the radicular cysts, keratocysts, the primordial cyst, the adult gingival cyst, and the dentigerous cyst. The treatment of choice is extraction and removal of the cyst, with subsequent biopsy. The prognosis is favorable. Non-epithelial cysts of the jaws (Pseudocysts). Solitary bone cyst (traumatic or hemorrhagic) Its etiopathogenesis is not well clarified; some researchers suggest that trauma is the causal or initiating agent of this injury. They are based on the fact that the trauma causes hemorrhage in the damaged area, with the subsequent formation of a clot and when it undergoes lysis with metabolic changes and necrosis, the cavity is created. It is characterized by being a unicameral cavity, it appears in patients between 10 and 12 years old, mainly in males, in the posterior sector of the jaws. It is usually asymptomatic [30,34-36].

The radiological study shows a cavity with regular edges that resemble an odontogenic cyst, with well-scalloped edges that extend between the present teeth that retain their vitality like the fingers of gloves. Its size varies from one centimeter to large dimensions. It can affect long bones. It lacks epithelium and can be covered by a thin vascular connective tissue. Generally, inside there are only bloody exudates and inflammatory cells and occasionally giant cells. In the nearby bone there are lacunar cavities with signs of previous bone resorption. The differential diagnosis should be carried out with idiopathic Stafne's cavity, odontogenic cysts and apical periodontitis [43-45].

The treatment is excision and biopsy. Your prognosis should be favorable. Aneurysmal bone cyst. It is similar to the traumatic cyst, some authors propose that it is a lesion resulting from a pre-existing vascular alteration, in addition that it can develop on a malignant neoplasm such as an osteogenic sarcoma, etc. In short, it can be accepted that there is an aneurysmal bone cyst caused by a local lesion without previous alteration and one that arises together or superimposed on another persistent neoplastic condition. It has been diagnosed in almost all bone tissue in the body.

A large percentage is evident in the spine, collarbones and ribs. It has a certain affinity for the jaws. It has been observed more frequently in young people under twenty years of age. They are symptomatic lesions to the touch or simply painful to function and/or pressure. There is an inflamed area, it behaves like a destructive, expansive and regular lesion, which can be unilocular or sometimes multilocular. Preference for the jaw and the female sex. The teeth remain vital despite the expansion it causes. Radiologically, an expanded bone is detected, with a cystic appearance, described as balloon-shaped, or honeycomb-shaped, or soap bubble-shaped. The cortical bone may be eroded or destroyed [30,34-36].

The histological study is characterized by a finely distended injured bone, like bone sheets, not broken with the presence of the periosteum. Irregular cavities, without epithelium, filled with a material reminiscent of a sponge soaked in blood. Fibroblastic connective tissue predominates with bony spicules and multinucleated gi-

ant cells. Cavities filled with blood and tissues that resemble other entities are usually found. The differential diagnosis is made with central bone hemangioma, arteriovenous fistulas, solitary bone cyst, central giant cell granuloma and ossifying fibroma. The ideal therapy is excision, biopsy and follow-up for five years or more. The prognosis, if diagnosed and treated without complications, should be favorable. Idiopathic Stafne's cavity (mandibular lingual cortical defect) Its etiology is not well clarified, some researchers propose that it is an entrapment of the upper lobe of the submandibular gland in the lower edge of the mandibular cortex during its development, although other locations have been described in the canine and premolar region, which relate it to these. with the sublingual gland, and when it occurs in the neck of the mandibular condyle it is linked to the parotid gland. In addition to these theories, trauma and areas of necrosis have been proposed as possible triggering agents [37-39,41].

It has a predilection for the anterior mandibular portion, it is usually static without many modifications in its evolution. It is generally asymptomatic, in very rare cases it is palpable, in some cases a depression is detected in the lower mandibular ridge. It affects individuals mainly from the fifth decade of life onwards, mainly males. Radiological examination does not reveal a true cyst, but rather a bone defect, and it manifests as a single ovoid radiolucent area of 1 to 3 centimeters in diameter, well defined and sometimes with a more radiopaque border. On many occasions it is observed below the canal of the inferior dental nerve, close to the facial artery, where it makes a concavity in the lower edge of the jaw. At the cellular level, salivary glandular tissue is observed, associated with blood vessels, lymph nodes, and fibromuscular cells. Sometimes the cavities do not have any content inside [30,34-36].

The differential diagnosis is made with epidermoid cyst, aneurysmal bone cyst, solitary or traumatic bone cyst, and a bone tumor. Unless it causes any worrying signs or symptoms, it does not need any treatment. Follow-up should be carried out due to the possibility that a salivary gland neoplasia may develop inside it in the future. Cervicofacial or embryonic cysts.

They are lesions derived from defective development of structures caused by failures during embryological development. These conditions cause fusion of the branchial arches or other causes and affect adjacent oral or soft tissue structures. Branchial cyst (cervical lymphoepithelial) In the embryogenesis of the pharynx, the first gill slit remains open to the outside and the second, third and fourth open into the cervical sinus. Afterwards, the cervical sinus, which is separated from the surface, sinks and obliterates. The branchial cyst is formed by proliferation of the epithelial remains of the sunken sinus. When, due to lack of closure of a gill slit, communication is established between the pharynx and the skin, a gill fistula occurs. Other authors speak of a persistence of the thymic duct. It is characterized by being a smooth or lobulated soft malformation located in the neck, in front of the sternocleidomastoid muscle at the level of the hyoid bone. It appears at any age, but is more common between the second and third decades of life. It affects both sexes, sometimes presenting as a painless swelling, covering skin that is normally colored and mobile. It can also be detected in the lateral portion of the neck, near the mastoid process or in the clavicular area. In a lower percentage it can be located in the preauricular and parotid region (Figure 8).

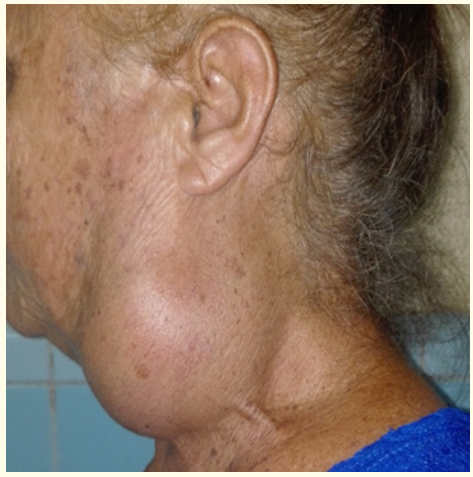


Figure 8: Patient on his side, with a diagnosis of branchial cyst. Courtesy of Dr. Otto Alemán Miranda.

If it becomes infected, it can cause painful symptoms, suppurate, and attach to the skin and deep planes. It can remain deep without moving during swallowing. It has slow growth, and can present fistulas up to the sternal fork. It can be located above, below or in close relationship with the vascular bundle (Figure 9).

Its histology according to Santana Garay, shows a smooth and rounded or lobed wall. A cavity with yellowish fluid or a thick, grayish, semi-liquid substance. The wall is usually thick and partitioned. Stratified squamous or stratified cylindrical epithelium or combination of both, below the epithelium there is abundant lymphoid tissue with germinal centers. According to Marimón, the epithelium is stratified squamous or pseudostratified columnar, capsuled with lymphoid tissue reminiscent of a lymph node, and may have mucoid and gelatinous aqueous liquid [30,34-36].

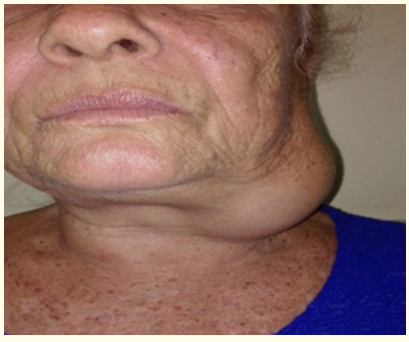


Figure 9: Patient in front with diagnosis of branchial cyst. Courtesy of Dr. Otto Alemán Miranda.

According to other researchers, the epithelium has the potential to develop branchiogenic carcinoma. The differential diagnosis is carried out mainly with the following conditions: thyroglossal cysts, dermoid, cystic hygroma, hemangioma, pharyngocele, benign lymphadenopathy, lymphomas, carotid corpuscle tumors, lipomas, neurofibromas, etc. The treatment is surgical, with subsequent histological study. The prognosis tends to be favorable. The ideal is to perform its complete excision without spilling its contents (Figure 10).

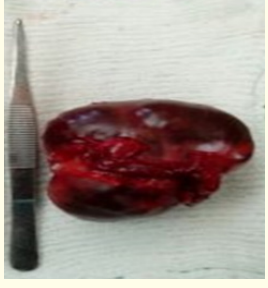


Figure 10: Gill cyst removed in its entirety. Courtesy of Dr. Otto Alemán Miranda.

Thyroid cyst. This is formed from the foramen cecum at the base of the tongue, to the middle part of the neck at the level of the hyoid bone. A fistulous tract may persist as a vestige of the tubular development of the thyroid gland. This tube can be partially obliterated and, on other occasions, form rounded or fusiform cavities that constitute true cysts. It can also persist as a simple and annoying fistula. Clinically, it is detected as a rounded increase in volume in the anterior midline of the neck or more laterally, from the floor of the mouth above to the hyoid bone, or the thyroid isthmus below. More rarely they have been seen close to the sternal fork. On palpation it is soft, rounded, generally asymptomatic. It appears in any sex and skin color. Its diameter is variable, it can range between 2 and 5 centimeters.

When palpated, it is noted that it moves easily, allowing itself to move. A diagnostic characteristic is that the patient is instructed to swallow with the neck distended and we observe how it moves accompanying the swallowing movements, then he is asked to stick out his tongue, with this movement it is evident how the cystic lesion ascends, this maneuver is known as Hamilton Bailey. They are common in children, sometimes they form fistulas to the skin or mucous membranes, they can cause dysphagia, appear in the floor of the mouth. The skin that covers them is normal colored. From a histological point of view, one of the most important details of this lesion is its relationship with the hyoid bone, to which, in order not to be absolute, they are almost always attached.

This means that when ennucleation is performed, a fragment of bone tissue is always included, in its central part to avoid any recurrence. Microscopically, those close to the base of the tongue are covered by a stratified squamous epithelium. Those closest to the thyroid are covered by an epithelium that impresses an acinous thyroid. The differential diagnosis is made with dermoid cyst, cervical lymphadenopathy, lymphomas, hemangiomas, hygromas, thyroid nodules. It is necessary to perform a scintigraphy to rule out an aberrant thyroid in which case excision is contraindicated.

Dermoid cyst

It is considered by many to be a cystic teratoma, which is why it is a congenital formation, although it is diagnosed at any age. Its origin and evolution is considered from epithelial remains in the midline at the time of closure of the hyoid and/or mandibular branchial arches.

This is classified according to its topography and its internal content, see the box for better study and understanding. The author decided not to delve into the different surgical techniques since it is not the objective of the work, but at the end of the chapter a summary table is presented with all the possible risks that may arise, both those caused by the conditions and by the therapeutic procedures. (See box on risks in head and neck cysts)

Summary box of the classification of the dermoid cyst by its topography and content. Prepared by the author. It develops in the neck in relation to the floor of the mouth, as a harder swelling than the thyroglossal cyst. As described in the box, it can be located in the suprahyoid region, above or below the mylohyoid muscle. When it is located above, it grows into the oral cavity, causing an increase in volume in the area, elevating the tongue, thus affecting swallowing, phonation and even breathing. If placed below, it

According to its topography	According to its content
Adgenian cysts: they are related to the mandibular arches, presenting two variants, one above the mylohyoid muscle (known as a Genioglossal cyst) and one below said muscle (Geniohyoid cyst).	Simple epidermoid: lined internally with epithelium.
Adhioid cysts: are located below the hyoid bone.	Dermoid of the floor of the mouth or compound cyst: internally lined with epithelium plus skin annexes in the connective tissue (hair, hair follicles, sebaceous and sweat glands, etc.)
Parasternal dermoid cysts.	Floor of mouth teratoid or complex cyst: all of the above plus keratin, bone, muscle, blood vessels, etc.

Table a

increases the suprahyoid region below the shawl. It can reach several centimeters in diameter and does not move when swallowed. It is the least common of the teratological cysts of the neck. [44, 45, 46] It is not diagnosed at an early age, it has no predilection for sex or skin color. It is observed with a yellowish color, positioned in the midline, rounded and painless. When palpating this lesion it gives the impression of bread dough, it can fistulize the floor of the mouth or chin. At the cellular level, a stratified squamous epithelium is evident that is usually keratinized, so the cavity is usually filled with keratin. Sebaceous glands, sweat glands and hair follicles can be detected. In addition, muscle, bone, and gastrointestinal derivatives are sometimes found, making it more accurate to use the term cystic dermoid teratoma.

Patients must be monitored since for some researchers they may suffer malignant degeneration. The differential diagnosis is made with ranula, sialadenitis, cystic hygroma, branchial cleft cysts, submandibular cellulitis, benign and malignant neoplasms, uni or bilateral wharton duct block. Treatment is excision and biopsy with a generally favorable prognosis.

Quistes cutáneos

Los quistes cutáneos son lesiones que ocupan el primer lugar de la patología quística/tumoral benigna del cuerpo.

A pesar de que estas lesiones se podían haber descrito en el capítulo de lesiones dermatológicas, el autor decidió añadirlo a este apartado, por las características de estas lesiones, y para que el lector no tenga que variar tanto el contenido, y le sea más fácil memorizar los diferentes aspectos.

In this chapter, the main characteristics and risks of head and neck cysts are compiled in a general and specific way, with the exception of salivary retention cysts, which, due to their different characteristics, it was decided to leave them together with the other conditions of salivary gland. Subcutaneous and dermal lesions are very common in clinical practice. They usually manifest as palpable lesions, and the vast majority (99%) are benign. In many cases the clinician's inspection and palpation are sufficient.

Epidermal inclusion cyst

The epidermal inclusion cyst constitutes a benign, slow-growing encapsulated subepidermal nodule, covered by a stratified squamous epithelium that leads to an accumulation of keratin within the subepidermal layer or dermis, but can implant beyond the dermis. Some authors describe it as an epidermoid cyst, infundibular cyst, or sebaceous cyst. We do not recommend using the latter term in this condition since they are not sebaceous in origin and should not be called that. It is a simple epithelial cyst, with a capsule of cells similar to epidermal cells that keratinize. They can be congenital or acquired [3-6].

They are generally located in the superficial subepidermal plane in contact with the dermis. The vast majority are small and unilocular. When they rupture, they are characterized by being palpable, painful, with erythema and local inflammation. Imaging in the ultrasound study, a solid image is evident despite being cystic, due to its keratin content and mature scales. This solid appearance has been described as a pseudotesticular appearance. They are circumscribed rounded or oval nodules, hypoechogenic or heterogeneous, in many cases with posterior reinforcement and often present a small filiform path towards the surface corresponding to a hair follicle. If they are broken, the image is different from the intact one. They present a lobulated image, with poorly defined margins. It can be confused with aggressive lesions. Histologically they contain keratin, cholesterol and calcifications.

Patients with such cysts often seek help from maxillofacial surgeons and desire excision as they are difficult and prone to infections. Motivations for removing these cysts include: enlargement, unpleasant appearance, foul discharge, inflammation, pain and infection. In addition to traditional elliptical excision or its modified W-shaped excision, the use of minimal linear incision as an excision method has also been designed and analyzed in a few publications. The prognosis is favorable.

Milia cyst

Milium cysts are small (1 to 3 mm in diameter), whitish or yellowish-white, asymptomatic, single or more commonly multiple papules, generally located on the face. They may be an isolated condition or associated with other clinical findings (Figure 11).

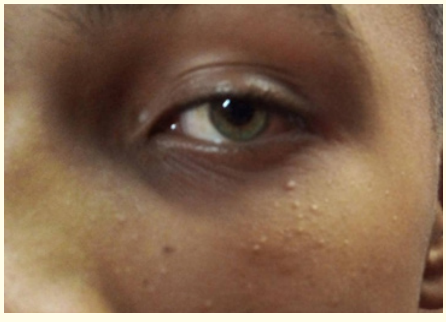


Figure 11: Male patient with multiple Milia cysts in the periorbital region. Courtesy of Dr. Otto Alemán Miranda.

They may appear spontaneously (primary) or as a consequence of inflammatory skin diseases, trauma such as dermabrasion, radiotherapy, burns, prolonged use of topical corticosteroids, 5-fluoracil, or sequelae of blistering diseases and inflammatory skin disorders (secondary). Primary KMs are considered proliferative lesions originating in the infundibulum of the hair follicles, while secondary KMs represent retention cysts and arise more commonly from the duct of the eccrine sweat glands. Miliary plaque cysts consist of 1 or 2 mm whitish papules grouped on an erythematous base, sometimes associated with comedones. They most frequently affect middle-aged women, mainly in the periorbital area [30,34-36].

Although milia cysts are frequently found in daily practice, as is the case with neonatal milia, they can also occur in other conditions, many of them rare, as occurs in certain genodermatoses, an example being Basex syndrome. Dupré and Christol. Histologically, they correspond to epidermal cysts covered by a stratified squamous epithelium with orthokeratotic lamellar keratin inside.

Both the pathogenesis of these cysts and the role played by the inflammatory infiltrate around them remain to be clarified. The expansion of follicles and the formation of cysts may be due to degeneration of connective tissue or elastic fibers. The differential diagnosis must be made with different lesions such as lichen planus tumidus folliculans, follicular mucinosis, xanthelasmas, Favre-Racouchot syndrome, atrophic sebaceous follicles, follicular cysts, comedonian nevus or multiple trichoepitheliomas, etc. There are multiple treatments ranging from medication to surgery, but none is completely effective because in the long term they tend to recur. Pilar cyst (tricholemal) The trichilemmal cyst, also known as tricholemmal, pilar and hairy, affects 5-10% of the population, and generally appears on the scalp (90%) in middle-aged people. It occurs more frequently in older women and approximately 90% are located on the scalp, and can also occur on the face, neck, back, vulva, pubis, wrist, elbow and chest in the remaining 10% [45-47].

The vast majority is a solitary tumor. They are generally small tumors between 2 to 3 cm, and can reach a size of over 20 cm, with exophytic growth and occasionally ulcerated. It is often autosomal dominant (75%) and frequently multiple (70%) inherited. It is a smooth, firm nodule, 0.5 to 5 cm in diameter, it lacks a central point, and the hair that covers it is normal, although it may be affected if the cyst is large.

The development time of the pathology can be prolonged, with periods of up to 50 years being documented. In the histological study it is evident that it is not connected to the epidermis. Its wall is thick and consists of a polystratified squamous epithelium, with an outer palisade layer reminiscent of the outer sheath of the root of the hair follicle. The inner layer is wavy and lacks a granular layer. It contains dense, homogeneous, pinkish or yellowish keratin, it is often calcified and contains traces of cholesterol. If it breaks it can become inflamed and very painful. Malignant transformation is rare. Other researchers describe it as a solid-cystic mass, with well-defined edges, non-infiltrating, of squamous epithelium that presents trichilemmal-type keratinization. At the periphery, a palisade of basaloid cells may stand out [45-47].

Characteristically there is no layer of granule cells. Keratinic deposits can calcify and generate a foreign body giant cell reaction. Occasionally, discrete epithelial atypia and even mitotic figures may be found, but limited to the basal layers. In the tomographic imaging study, they are observed as heterogeneous expansive processes, with solid, cystic areas and calcifications, which can be punctate or consolidated inside; whose solid, poorly defined areas with irregular edges enhance after the administration of contrast The treatment of choice is surgery with negative margins, and other adjuvant therapies may be required in cases of malignancy. Sebaceous cyst. They are small diameter lesions that can occur in any location on the body. They are benign firm nodules, the skin that covers them is normally configured and they are easy to move on palpation, since they are not attached to deep structures. The difficulty is when they are larger and appear in places that are difficult to access. Its cystic formation occurs during embryonic development when there is a sprout of the first layer of skin, epidermis, included in the second layer, called dermis. This condition contains inside

necrotic epithelial material and keratin lamellae that visually have a greasy appearance and a characteristic (rancid) odor [45,46,48].

This causes the bumps to be intertwined with the surface of the skin, which is expressed as a point on its external surface that is sometimes clearly visible and dark in color, and in others, can only be observed with a magnifying glass. It can occur in any location where there is skin, but it has a predilection for the head and neck and back areas. Patients come to consultations concerned for two fundamental reasons: aesthetics when they are in highly visible regions and/or when they suffer from infectious processes. Surgical treatment is the treatment of choice when it is indicated for aesthetic reasons or repeated infectious processes. In this last section, it must be kept in mind that until the infection is controlled, no surgical procedure can be performed. It must be removed in its entirety to avoid recurrences. The prognosis is favorable [45,46,49].

Up to this point, the different clinical behaviors of head and neck cystic lesions have been shown. Next, the author created a summary table with the fundamental risks to which a patient with any of the mentioned cysts is exposed.

Main risks and complications	
Soft tissues	Hard tissues
Facial asymmetries	Facial asymmetries
Deformity	Deformity
Fistulas	Fistulas
Superinfections (abscessation, cellulitis, etc.)	Osteolysis (shrinkly crepitus)
Nerve compression (paresthesia, dysesthesia, pain, vagal reaction, etc.)	Superinfections (abscessation, cellulitis, osteomyelitis.)
Vascular compression (vagal reaction)	Nerve compression (paresthesia, dysesthesia, pain, etc.)
Necrosis zones	Osteitis
Recurrences	vascular compression
Functional limitation	Necrosis zones
Malignant transformation	Recurrences nasal passages
	Rhizolysis
	Dental retentions
	Dental ectopias
	Dental malformation
	Incomplete dental formation
	Pathological mandibular fracture
	Maxillary sinus condition
	Condition of the Temporomandibular joint
	condition Malignant transformation

Table b

Summary box of the main risks and complications that can occur in head and neck acysts, in soft and hard tissues. Own elaboration. We clarify to readers that here we compile several of the risks and complications in a general way, we do not mean that a single entity can cause them all at once. In addition to those mentioned, there are others that will depend on the surgical intervention, such as: • Reaction to anesthesia • Hemorrhage • Fracture due to applied force • Soft tissue loss • Loss of hard tissues in large portions • Injury to nervous structures • Injury to neighboring teeth • Dehiscences • Post-surgical infection • Unsightly wounds • Keloid formation • Recurrences • Incomplete excision • Post-surgical deformities It should also be taken into account that in many cases they are closely related to syndromes, which have other systemic alterations to take into account [45,46,50].

To avoid all the complications and risks mentioned, the patient must be adequately studied, because apart from these, the patient's own risks cannot be forgotten, which we address in other chapters.

Conclusion

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

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