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Review Article

Risks in Dental Anomalies

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Abstract

Odontogenesis is a complex process of dental formation and development, it begins in the sixth and eighth week of embryonic development, extending to the first years of life. This chapter begins with a brief account of odontogenic development to understand the nature of the anomalies in order to detect, identify and become familiar with their etiology, in addition to the generalities and basic concepts that favor management for the healthy development of permanent dentition. Therefore, a bibliographic review was carried out with the objective of describing the main dental alterations and malformations that can be detected in dentistry.

Keywords: Odontogenesis; Dental Malformation; Embryogenesis; Dental Pathology

Introduction

This chapter begins with a brief account of odontogenic development to understand the nature of the anomalies in order to detect, identify and become familiar with their etiology, in addition to the generalities and basic concepts that favor management for the healthy development of permanent dentition. Odontogenesis is a complex process of dental formation and development, it begins in the sixth and eighth week of embryonic development, extending to the first years of life. Escobar Tamalá (2020). This process distinguishes two phases: morphogenesis or morphodifferentiation and histogenesis or cytodifferentiation, which involve the primary germinative layers: the ectodermal epithelium, which gives rise to the enamel, and the ectomesenchyme that forms the remaining tissues (dentinopulp complex, cementum, periodontal ligament and alveolar bone). García Rosales, L., *et al*. (2020) [1,2].

When the eighth week of development is reached, the buds or buds which correspond to the appearance of the first teeth and are connected to the odontogenic epithelium by means of a pedicle from which the accessory lamina will form from which the permanent teeth will form. (Orellana and Rodríguez, 2018).

According to the authors, throughout this process there may be mutations that cause anomalies in the teeth. The aforementioned process occurs in six stages: initiation, proliferation, histodifferentiation, morpho differentiation, apposition and calcification. Throughout these stages, the developing tooth is very susceptible to various etiological factors, such as genetic, hereditary, environmental, local, systemic and trauma. The interactions between the aforementioned factors during the dental development process can cause certain dental anomalies of congenital and acquired causes during the stages of morpho differentiation or histodifferentiation. Authors such as Laganà G*., et al*. (2017) assert that both genetic and acquired anomalies cause alterations or complications that involve the loss of biological, anatomical, functional and aesthetic normality of the dental structures and their supporting tissues [3,4].

In the order of ideas, it can be seen that, regarding the genetic factor, several genes that undergo mutation during the formation process come into action and consequently will develop alterations in the tooth. Mazón*., et al*. (2020) describe different phenotypes, including: agenesis, microdontia, ectopic teeth and delayed dental development that result from the aforementioned genetic defects. Barrios (2017), Vélez*., et al*. (2019) state that congenital malformations distinguish anomalies that derive from the formation processes of tooth tissues during embryonic development. The clinical implications of dental anomalies associated with genetic causes are relevant, since the early detection of a single dental anomaly may require the attention of professionals to the possible development of other associated anomalies in the same patient or in the family, allowing a timely orthodontic intervention [3,4].

Inflammatory and traumatic factors highlight physical or bacterial trauma, parotid deficiencies, rickets and exanthemic fever that can be a trigger for alterations of tooth germs in the stages of formation. Environmental factors describe the intake of thalidomide that can cause some embryopathy, alcohol intake, hypervitaminosis "A" in pregnant women, tetracycline intake and radiological exposure. Cross (2018) [5].

The relevance of this topic motivated the development of the following objective

Describe the main dental alterations and malformations that can be detected in dentistry.

Reference Search Methods

The scientific information was compiled through a search using the following descriptors in English: The Medical Subject Headings (MeSH): "dental malformation, embryogenesis, dental pathology.

Analysis strategy

The search was based solely on dental malformations.

Developing.

So by integrating this knowledge, it can be considered that the alterations of the primary dentition provide information about the metabolic or environmental disorders that the teeth have suffered during a period of time that begins in the second trimester of pregnancy and extends until after childbirth.

Likewise, the permanent dentition is a highly accurate record of changes in odontogenesis in the period between birth and 12 years of age. It should be taken into account that both the etiopathogenic actors that are involved in genetic alterations, as well as in environmental alterations, can generally be differentiated more easily in the permanent dentition. The development of the child from conception to the first years of life is marked by many changes. To a certain extent, dental organs may present variations in their size, shape and location, which could be considered within the limits of normality. For the dentist, it is very important to recognize the aforementioned findings in the patient in order to investigate the correct diagnosis [5,6].

However (Gómez, 2018), the regulations regarding tooth formation and eruption are relative, because each individual has a unique shape for each tooth. However, there are specific characteristics that allow the pathological state to be differentiated from the physiological state of a given individual. Consequently, dental anomalies can occur due to purely environmental, systemic, local, hereditary factors and in some cases due to trauma. [5, 6, 7] Other authors (Ceballos, Espinal, 2015) have attributed their etiology to local trauma, as well as other associated factors, among which they mention

- Vascular alterations
- Somatic mutations
- Absence of migration of neural cells
- Use of medications
- Viral infections
- Local traumas

In relation to environmental alterations and genetics, nosological diseases have been described that are related to an excess of fluoride in drinking water; however, recently, there are anomalies related to exposure to dioxins, in connection with molar syndrome, incisor hypoplasia, which usually occurs between 7-12 years of age (Rivas; Barrios, 2012). Various studies carried out today have been able to establish the relationship between the determination of genetic mutations resulting from familial dental agenesis, which are associated with polyposis or neoplasms. Likewise, other researchers have identified the prevalence of dental agenesis and its close relationship with other oral anomalies and other systemic diseases (Milagros, 2016) [7,8].

Nowadays, new horizons related to dental morphogenesis have been opened; various genes with mutations that cause hypodontia have been recognized, such as MSX1, as well as those associated with oligodontia, such as PAX9 and the ectodermal dysplasia gene. (EDA) as part of the hereditary factors (Coarasa, Pérez, and Barbería, 2017). A dramatic reduction in jaw size (mainly of the retromolar area) during human evolution may be related to the development of dental anomalies. (Sella Tunis, T. 2021).

Dental alterations do not contribute to improving the quality of life of patients, since once the patient finds out that they have a dental alteration, problems of a psychological nature form in their personality that often isolate them from their environment. Discacciati, Maria S. (2005). Knowing the normal and pathological changes will be the preamble to identifying the different dental anomalies. Determining the location in the maxilla and assessing the relationship with adjacent, underlying structures will allow for an orderly diagnostic report of the identified anomaly in order to facilitate correct therapy taking into account the definition of the dental anomalies [7-9].

Dental anomalies. Definition

The teeth are derived from two of the primitive germ layers: the ectoderm, the ameloblasts and the mesoderm. The odontogenesis process begins at the sixth week IU, at this stage the dental lamina differentiates from the odontogenic epithelium. Then, at the eighth week, the ten buds that correspond to the primary teeth are observed. The enamel organ will originate from them. Therefore, a dental anomaly is an alteration in the embryological development of the teeth (González, Sánchez, Tarilonte, 2012). Dental anomalies are the result of disorders that can modify the shape, number, size, structure and eruption pattern of teeth. They are identified as one of the most frequent pathologies in pediatric dentistry consultations. They are considered an oral condition that afflicts the deciduous and permanent dentition, therefore, different processes are defined that occur at the time of tooth formation, specifically in odontogenesis; in the stage of morphodifferentiation because that is where the tissues of the teeth develop and it depends on that whether they are modified or not [9,10].

At the same time, the processes of tooth formation and development give rise to variations from what is considered normal with respect to the dental structures in which the shape, number, size, arrangement, color and degree of development of the teeth can be affected.

This can cause functional and aesthetic problems which affect the person's oral health and self-esteem, either from the patient's own perspective or from the dentist's diagnostic considerations. González and Leyva (2020). The above causes alterations or complications that involve the loss of biological, anatomical, functional and aesthetic normality of the dental structures and their supporting tissues, with consequences such as: prolonged retention of the permanent tooth, cyst formation, root resorptions, dental malposition, ectopic eruption, abnormal intermaxillary relationship, enamel hypoplasia, dental caries and periodontal disease, among other findings. García Rosales, L., *et al*. (2020) [9,10].

Any of the anomalies can affect the patient's comprehensive treatment. Consequently, the identification of these anomalies and their prevalence can help guide the most effective way to achieve an adequate treatment plan in order to avoid possible diagnoses. Dr. Reinaldo Alain Rivas de Armas, Dr. Maritza Canto Pérez. (2018). Thus, the early identification of dental anomalies and their prevalence represent a very helpful tool, as they are capable of effectively guiding the necessary treatment plan to avoid errors in the diagnostic pictures. The proportion of people who have dental anomalies is variable as it will depend on the type of alteration and, therefore, the populations being studied. Escobar Tomalá Vanesa Tatiana (2020) [9-11].

Classification There are several systems to classify dental anomalies, although in the end researchers agree that they are classified in different ways; they all correspond to the same pathologies.

Dental anomalies can be classified according to various criteria, among which are dental anomalies related to shape, anomalies related to number, such as supernumerary teeth, as well as dental agenesis, which can be partial or total. In addition, dental anomalies can be mentioned in terms of their size and in terms of anomalies related to chronology. Likewise, the majority of manifestations develop from the first years of life, so their diagnosis can be of vital importance to be able to treat them and obtain a more favorable prognosis (Yerovi, 2019) [12].

Dental anomalies are classified into size anomalies (macrodontia and microdontia), structure, number (agenesis and supernumeraries), eruption (transpositions and teeth retained), development and form. Dental anomalies of shape are in turn classified in: dilaceration, fusion, budding, taurodontism, concrescence, enamel pearl and dens in dente. Marlene, Mazón Baldeón Liliana Patricia, Saltos Viteri. (2020). Starting from the systematization carried out on the various classifications revealed by the authors of the topic presented, common elements and points of agreement are obtained that make it easy to assume that they all respond to the structure, number, shape and size of the tooth, summarized in the following classification (Figure 1).

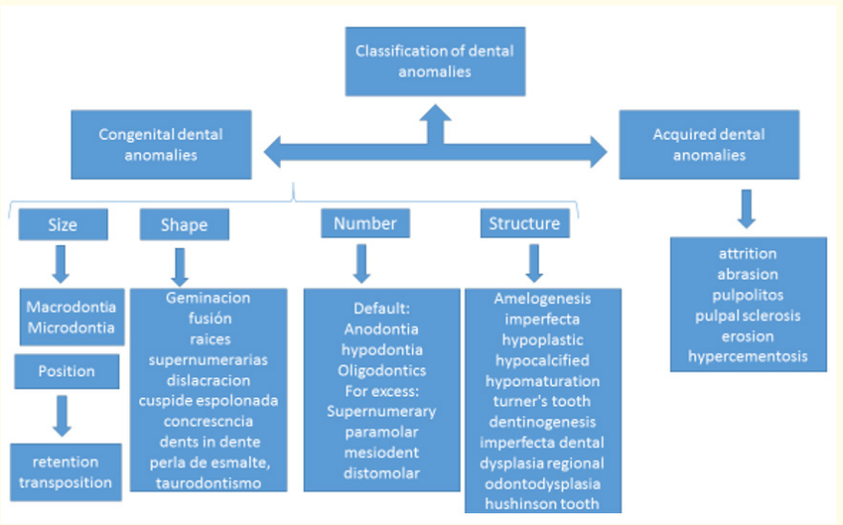


Figure 1: Own production. Courtesy of the authors.

Congenital dental anomalies

Tooth structure anomalies

They occur due to alteration during histological differentiation, apposition and mineralization in dental development. These defects at the enamel level can manifest as hypoplasias, hypocalcifications or hypomaturation that correspond to demarcated and diffuse enamel opacities. They can be classified as alterations of environmental origin or due to hereditary defects or they also depend on the etiological agent that acts. Some trauma that triggers defective formation of the enamel matrix can cause hypoplasia. This type of enamel defects can be due to local, systemic and genetic factors. The clinical characteristics are similar but the difference lies in whether it occurs in a single tooth (local) or if it occurs in all teeth or groups of teeth that coincide. in training time (systemic). They can occur in both temporary and permanent dentition [12].

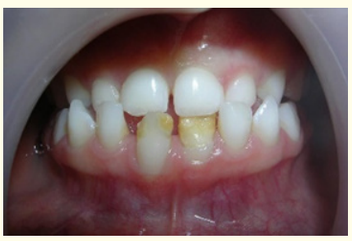


Figure 2: Enamel hypoplasia in primary dentition.

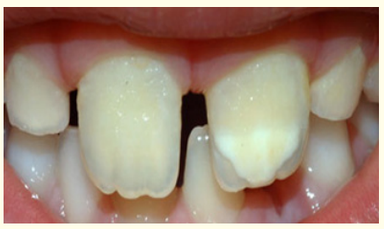


Figure 3: Yellow layer or brown opacity of the enamel in permanent dentition.

The clear abnormalities and discoloration found in children's baby teeth and permanent teeth are a problem for many parents. These defects are not just the unsightly appearance. They can cause oral health problems because affected teeth are more vulnerable to cavities.

Amelogenesis imperfecta Several studies have shown that amelogenesis imperfecta encompasses a heterogeneous group of hereditary disorders, which affect enamel formation in both quantity and quality, in primary and permanent dentition. It can be said that it is a rare disease and affects both sexes. Reports vary greatly, depending on the gene pool. (Rodríguez S, Munayco ER, Ruiz C, Torres G, Blanco D, Chein S. Nov 2020. Hurtado P, Tobar F, Osorio J, Moreno F. 2021). New, increasingly complex classifications have emerged, based on a combination of phenotype, mode of inheritance, and molecular and biochemical defects, with the limitation that these are not always known. Despite all these nosological attempts that try to be increasingly precise, currently the most generally used classification continues to be that of Witkop CJ Jr, revised in 1988 [12,13].

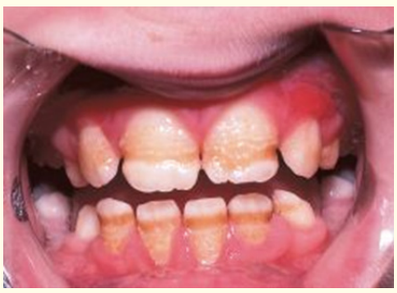


Figure 4: Hypoplastic line in the form of a vertical groove. Differential diagnosis with fluorosis. It is usually observed in severe fluorosis.

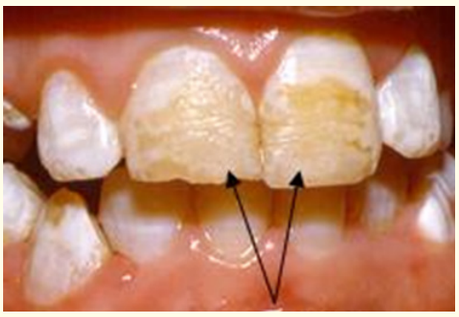


Figure 5: Absence of enamel. Differential diagnosis with fluorosis. It is usually observed in severe fluorosis.

This divides amelogenesis imperfecta into four types, mainly based on the phenotype (hypoplastic, hypomadurative, with hypocalcification and hypoplastic-hypomadurative associated with taurodontism). (Rodríguez S, Munayco ER, Ruiz C, Torres G, Blanco D, Chein S. 2020. Hurtado P, Tobar F, Osorio J, Moreno F. López MC, Szwarc E. 2021) [12-14].

Amelogenesis imperfecta affects more or less homogeneously all, or almost all, temporary and permanent teeth, and occasionally, other oral and extraoral tissues. Each of the variants presents peculiar clinical characteristics, which depend, in turn, on the stage of enamel formation that is affected in each patient. From a clinical point of view, the enamel defect can be characterized primarily by hypoplasia, hypomineralization or hypomaturation, although these characteristics often do not coexist in the same patient. Da Silva C, Valdivieso M, Ccorimanya L., *et al*, (2019) [12-15].

Patients with amelogenesis imperfecta are associated with significantly higher levels of social avoidance and distress than sub-

jects without this condition; In adults, a social impact has been evident in education, job satisfaction and family building. In children and adolescents, the concern lies in the implications in terms of social relationships with those of their age, a context in which ridicule and non-acceptance for a certain characteristic can do a lot of damage. For them, the most important goal is to improve the color of their teeth. And the treatment must be aimed at that goal, at restoring aesthetics and functionality, with a view to avoiding long-term consequences. There are various techniques and materials to restore teeth affected by amelogenesis imperfecta, such as all-ceramic crowns, metal-ceramic crowns, porcelain veneers, and direct and indirect composite resin restorations; the latter with good aesthetic results. Da Silva C, Valdivieso M, Ccorimanya L., *et al*, (2019) [14-16].

Dentinogenesis imperfecta

Dentinogenesis imperfecta is a genetic disorder that affects dentin collagen during embryogenesis and particularly during the phase of tissue differentiation and the formation of the organic matrix. It includes a defect of the predentinal matrix, which results in circumpulpal, atubular, amorphous and unorganized dentin; while the peripheral dentin is normal when compared to the circumpulpal dentin already described, rich in organic content, since it includes interglobular calcification. The literature reports Shields' (1976) classification for dentinogenesis imperfecta into three groups: dentinogenesis imperfecta (DI), with types I, II, and III, and dentinal dysplasia (DD), with types I and II. DI-I is the dental manifestation of osteogenesis imperfecta, a bone disease of autosomal dominant inheritance. DI-II, DI-III, DD-I and DD-II occur in an isolated, non-syndromic manner, with different dental phenotypes, the most common inheritance being autosomal dominant [14-16].

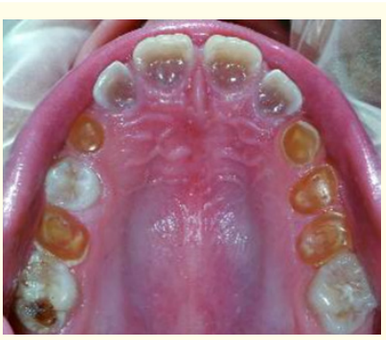


Figure 6: Clinical image of Dentinogenesis Imperfecta, in the upper arch, where you can see great wear of the temporary teeth and the color alteration of all of them. The formation of spherical enamel at the root of a tooth corresponds to a pearl of enamel.

It can generally be observed in the upper molars (second or third). It does not present major complications for its treatment, except in cases of periodontal disease, specifically in the affected root surface where the enamel pearl is located. The defect that occurs in the formation of enamel due to high concentrations of fluoride that can occur from pregnancy and throughout the periods of tooth development is called fluorosis. It is an endemic condition, characteristic of areas where soil and water Consumer products have excessive amounts of fluorides (2 mg or more per liter). The severity will depend on the concentration of fluoride ingested during the period of amelogenesis and the duration of exposure, which appear as opaque whitish to brown spots and enamel defects. In recent years, a greater frequency of dental fluorosis has been recorded, due to excessive fluoride intake [14-16].

The prevalence in endemic areas reaches between 50-90%

In Colombia, Agudelo., *et al*. determined in 2010 that the highest prevalence was for the department of Antioquia (municipality of Yondó) 98% in 12-year-old schoolchildren; In another study in 2003 in the department of Boyacá (Sogamoso) 97% was reported, and they concluded that dental fluorosis has been investigated especially in some areas of the country and its prevalence varies depending on the geographical area studied. 3.1.2 Dental anomalies of shape: Shape anomalies originate when the etiological, systemic or local factor occurs exactly in the morphological differentiation phase of odontogenesis. They are related to which the shape of a tooth is affected. It is one that affects the normal characteristics of said piece, among which are the length, width, thickness and curvature of the root, and can even modify its histological structure. This can affect a single part of the tooth or in some cases, the entire structure, be it the crown or root. (Meneses, 2017) [15-17].

We can classify them in the following way

Gemination or Gemation It is called Gemination when there is a total or partial duplication of a tooth germ in the initial stages of its development. The result of this condition often presents as a crack of variable depth, which divides the crown into two equal or unequal parts, producing an incomplete separation. A complete separation of the two crowns rarely occurs, but in any case it preserves a single root and a single root canal. Ceballos, K. F. J. (2020) [16-18].

It is more common in the temporary dentition, affecting the incisors of the maxillary bone. Studies have been found that describe that this disorder can affect premolars and molars, presenting 0.1% in the permanent dentition. Clinically, the distinction between Gemination and Fusion is made by the count of the dental organs in the arch; in the case of Gemination, the number of dental organs is not affected (Pinkham, 1996). Its etiology is unknown, but it is associated with trauma and a dominant hereditary factor. (Cheesman H. and Corzo D. A., 2011).

For the treatment of Gemination, it will be oriented according to the type of dentition that it affects, in the deciduous dentition no treatment is applied unless there is a carious process. In the permanent dentition, it is recommended to measure the mesio-distal width and when the geminate tooth is very large, it is recommended to perform endodontic treatment and subsequent restorative or prosthetic treatment (Soares and Goldberg, 2002) [16-18].

Dental fusion It is defined as a dental anatomical anomaly that consists of the embryological or pre-eruptive phase union of two or more adjacent dental organs through dentin resulting in a single tooth. Sometimes they can even share the pulp chamber, although generally fused teeth have two pulp chambers. The affected teeth erupt already fused, the fusion taking place along teeth located in the same plane, and may be total or limited to the crown or root. Ceballos, K. F. J. (2020) [17-19].The union of the dental organs can occur in any part of the anatomical structure, and can be found in enamel, dentin and cementum (Loscertales B., 2017). Dental fusion occurs most frequently in the central and lateral incisors, mainly in the primary dentition; When it occurs in the permanent dentition, it is also observed in the anterior area. Given the existence of this anomaly, a decrease in the total number of teeth is a very important clinical fact to confirm its diagnosis. Its etiology is unknown, but it is associated with physical force or pressure between developing teeth. Cheesman H. and Corzo D. A. (2011) [17-19].

The indicated treatment for this anomaly is dental surgery on the union line, since this is a vulnerable area for the development of dental caries (Barrancos, 2007).

Supernumerary roots and accessory canals It is defined as the presence of a root or canal in addition to the number considered normal.

The etiology of Supernumerary Roots and accessory canals is not well clarified; it is believed that they may be due to external factors during odontogenesis or to the penetration of an atavistic gene whose exact origin is unknown. Various authors suggest that a correct clinical and radiographic diagnosis, based on knowledge of root anatomy and critical interpretation of radiographs, is necessary for safer and more successful endodontic treatment of these teeth. (Rocha, Ivarra, Hernández, and García. 2019). It can be unilateral or bilateral, presenting as a short and conical root or as a root whose length is equal to that of the other two roots, but narrower. It can manifest itself in the first, second and third molars, with a lower prevalence in the second molars. In studies such as that of Garg., *et al*. (2010) the prevalence of first molars with three roots was determined by obtaining a total of 586 periapical radiographs. The incidence of three roots was 5.97% (35 of 586 patients). The female sex reported a prevalence of 6.88% (22 of 320) while the male sex reported 4.89% (13 of 266). (Rivera 2017) [20-22].

According to the literature, this can be associated with some type of trauma. Dental dilaceration can also occur due to the persistence of a temporary tooth that prevents the permanent tooth from erupting normally. In addition, it can also occur due to fractures in teeth with incomplete apical closure [20-22].

Conical or peg teeth have a greater incidence in the permanent dentition, with the upper lateral incisors being the most affected.

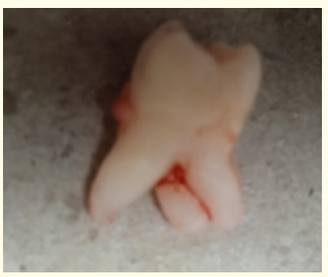


Figure 7: Supernumerary root in permanent third molar, and at the same time with dislaceration. Courtesy of Doctor Otto Alemán Miranda. Dislaceration Dilaceration is a defect that occurs in the root, it consists of a curvature of the root or in the cervical area of the tooth involved. (see image) It is the result of a disorder of Hertwig's epithelial sheath due to an ectopic location around the formed crown.

They can give rise to different alterations in occlusion, arch length, and aesthetic compromises that could affect the patient's self-esteem. Diagnosis of dental dilaceration usually occurs through radiographic examination. This is essential to observe the stage of root formation and the degree of dilaceration, being important to determine the morphology and spatial position of the tooth in the bone. Depending on the degree of root angulation, the treatment and prognosis of teeth with dental dilaceration vary. In mild cases, treatment is not necessary, however, there are cases where the tooth must be surgically exposed and moved orthodontically. and in the most serious cases, due to the impossibility of treatment, surgical removal followed by prosthetic rehabilitation is indicated [20,21,23].

The most difficult treatment to perform on teeth with dental dilaceration is biopulpectomy or endodontics. The endodontic treatment process in all its stages, including diagnosis, access cavity preparation, cleaning and shaping and obturation, can be difficult in these cases. Therefore, its diagnosis and knowledge of its prevalence are important for endodontic treatment and any observation may cause a higher failure rate of endodontic treatment in these teeth. In these cases, accepted basic endodontic techniques must be strictly followed [20,21,24].

Accessory or spur cusps Accessory cusps are complementary cusps that alter the surface anatomy of a tooth, they are generally non-functional and affect any tooth, mainly the maxillary molars (Neville D. A. B., 2002). Within the variations of accessory cusps we have

- Carabelli Peak It is the best known and most frequent. It is found as an elevation of the palatal surface of the mesiolingual cusp of upper molars. It can be found in the deciduous and permanent dentition and when present could be a well-

defined cusp up to a fissure. A high prevalence of 90% has been reported in white-skinned people and rarely occurs in Asians (Neville D. A. B., 2002)

- Cusp Heel Accessory cusp originating from the cingulum of a canine or incisors. The cusp may be so long that it can approach the level of the incisal margin of the tooth. The Cuspid Heel presents a predominance of 55% in the permanent lateral incisor maxillary bone and with 33% in the Central Incisor, however, there have been reports of 6% in mandibular incisors and 4% in maxillary canines, although a frequency is suggested. in the general population from less than 1% to 8% (Neville D. A. B., 2002). Treatment for dental organs that have accessory cusps will be oriented in the same way as that of dens Evaginatus. [25]

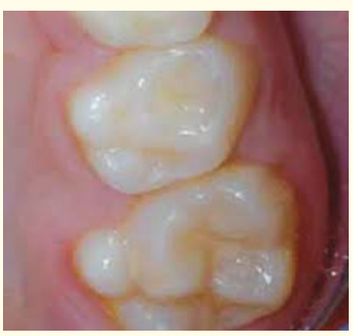
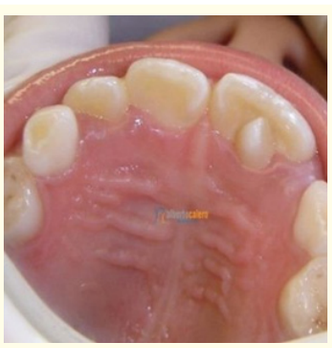


Figure 8: Carabelli tubercle.



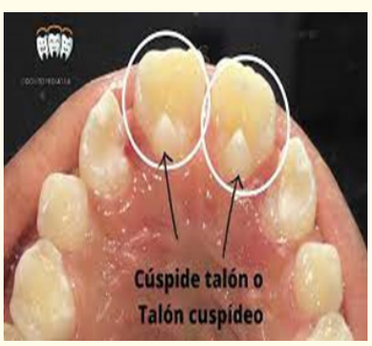


Figure 9: Cusp Heel. Courtesy of Dr. Carmelina de Herrera.

Concrescence: Form of fusion in which the teeth are joined by cement, normally occurs near the apical third and is more common in upper permanent molars. Mursulí Sosa, M. (2012). Dental concrescence is a rare dental abnormality, formed by the union of the cementum of two adjacent teeth, at the root level. Stanford ND., *et al.* (2018). The different authors cite that its prevalence is around 0.8% , and it is of great importance to make a correct diagnosis before performing an extraction, thus avoiding way, the risk of damage to a large part of the alveolar bone, as well as to anatomical structures neighbors. Generally, it appears at the level of the upper molars (second and third molars), where both teeth, completely formed and with separate root canals, fuse at the level of the root cement [20,21,26].

The morphology of the teeth and the position in which the roots join is of great importance in providing adequate treatment. If this union does not reach the apex, an attempt can be made to separate them by lifting a flap and performing a minimal ostectomy in the area and, if this is the case, the union with a third molar; Exodontia would be indicated for that piece. On the contrary, if it extends to the apex; The treatment to follow is the extraction of both teeth as it leads to the loss of gingival architecture, developing infragingival funnels at the same time, which causes a large accumulation of biofilm; destroying periodontal tissue. Invaginated tooth (dens in dente) It is an embryonic anomaly produced by the invagination of the internal epithelium of the enamel organ [20,21,26].

Invagination can occur in any tooth of both arches, although it occurs most frequently in the central incisor, followed by the upper lateral incisor and the supernumerary teeth. (Barbershop Leache., *et al*. 2002). There are three ways:

Figure 10: Union at cement level of a lower 2nd and 3rd molar.

• Mild: there is a slightly pronounced invagination that is difficult to diagnose clinically. Radiographic analysis shows a pyriform radiolucent area of enamel and dentin very close to the pulp. There is food retention which favors bacterial colonization and proliferation and therefore the development of dental caries.

Intermediate or moderate: clinically, a more pronounced conical invagination is observed.

• Pronounced or severe: an invagination is observed that extends to the apex of the tooth root. The best way to diagnose this anomaly is through radiographic study. The affected tooth may present the abnormality only in the crown in superficial cases as well as in the crown and root in more severe cases (Cheesman H. and Corzo D. A., 2011) [26,27].

In some clinical cases the enamel and dentin structure may be absent or defective allowing direct pulp exposure (Pinkham, 1996). The clinical importance of this entity arises from a possible carious condition through the communication of the invaginated portion of the lingual surface of the tooth with the external environment (Pinkham, 1996). Its prevalence ranges between 0.04% and 10% (Reddy., *et al*. 2008) and can occur unilaterally or bilaterally (Swanson and McCarthy, 1947; Canger., *et al*. 2009). This anomaly is more common in permanent maxillary teeth, especially in lateral incisors. It is considered that this developmental anomaly is more common in men than in women, having a 2 in 1 relationship. (Barbería Leache., *et al*. 2002). It has also been observed in pieces such as canines (George., *et al*. 2010), premolars (Er., *et al*. 2007) and mandibular third molars (Bansal et. al., 2010). A case has even been reported in supernumerary teeth (Anegundi, 2008) [27,28].

Clinically, the anomaly is difficult to diagnose; it will be suspected by the presence of a very well marked blind foramen. The anatomical morphology of these teeth is typical and they present accentuated marginal ridges that form a deep groove when the cingulum forms. Treatment is based on your classification; When it is mild and intermediate, restorative treatment and endodontics are recommended in cases where there is pulpal alteration. In cases of pronounced dens in dente, endodontic treatment cannot be performed but rather extraction and closure of spaces with orthodontics, prostheses or implants, depending on the case. (Soares and Goldberg, 2002) [27,28].

Dens Evaginatus It is a developmental anomaly that is characterized by the presence of an abnormal tubercle or accessory cusp on the occlusal surface between the buccal and lingual cusp, mainly of premolars, rarely in molars, and can be found uni or bilateral (Cheesman H. and Corzo D. A., 2011). It is usually an extra cusp in the central sulcus or crest of a posterior tooth and in the cingulum region on the palatal surface of the central and lateral incisors (Pinkham, 1996). It occurs more frequently in premolars of the mandible, and can occur in maxillary premolars (Cheesman H. and Corzo D. A., 2011).

However, it can be found in any dental organ of the maxillary and mandibular bone. (Barbershop Leache., *et al*. 2002). It occurs with a frequency of 1 to 4%. It is considered that its etiology arises from the evagination of the cells of the internal enamel epithelium and precursor cells of the Ameloblasts (Pinkham, 1996). The treatment for dental organs that present this anomaly is based on eliminating it when it presents occlusal interferences and endodontics is performed on those pieces where pulp contact is made when eliminating it (Soares and Goldberg, 2002). Shovel-shaped tooth It is called a spade-shaped tooth because they are teeth that have a marked development of the marginal ridges both distally and mesially, resulting in a deep palatal fossa. It originates in the morphodifferentiation stage, its variation of the shovel-shaped incisors in modern humans has been associated with the presence and absence of the v 370a allele in the edar gene.

It is associated with ethnic-genetic components, most frequently in Eskimos, Mongolians and Native Americans. These observations have been described especially in the anthropological field, using them as ethnological criteria or to establish racial affinities in different population groups. (López, 2013). It prevails to a greater extent in central teeth, lateral teeth and upper canines [27,28].

Enamel beads

Also called enamel nodules, they are small round formations that adhere to the root surface of the dental organs, generally in the molar furcation or nearby. (Barbershop Leache., *et al*. 2002). These nodules may contain dentin and in some cases a soft tissue filament that originates from the pulp chamber (Cheesman H. and Corzo D. A., 2011). There are 3 types of enamel beads according to their location

- Root enamel beads.
- Cervical enamel beads.
- Coronal enamel beads.

Depending on your position it can be

- External or extra dental.
- Internal or intradental.

This anomaly frequently occurs in both upper and lower molars, and can sometimes be found in single-rooted premolars (Cheesman H. and Corzo D. A., 2011). Enamel beads are asymptomatic, but they can affect the periodontal level because they make it difficult to eliminate the subgingival biofilm, favoring the formation and progression of periodontal disease. It is extremely important to diagnose them immediately to avoid loss of the tooth due to periodontal disease. They can be removed through a surgical approach in conjunction with periodontal treatment. Taurodontism It is the alteration in the internal shape of the pulp chamber. (Daniel Velez, Stephanie Quiceno, Ana María Trujillo, Elizabeth Henao, María Camila Londoño, Liliana Ortiz, Sandra González, 2012) [27,29].

Taurodontism, which means "bull teeth," is a developmental disorder that mainly affects the molars, although it can also occur in the premolars. It can affect deciduous and permanent dentition. This developmental anomaly is diagnosed mainly by imaging means and is characterized by clinically presenting teeth with an approximately rectangular shape, minimal cervical constriction

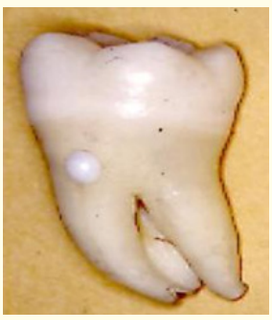


Figure 11: Root Enamel Pearl. Courtesy of Dr. Mursulí Sosa.

and definition, and a bifurcation displaced towards the apex that causes an extremely large pulp cavity. The unusual shape of the root is probably the result of an invagination of the epithelial band of Hertwig, a mechanism through which the shape of the root of the dental organs is determined (Sapp., *et al*. 1998).

Dental organs with Taurodontism present difficulty for endodontic and orthodontic treatment if needed. However, the anomaly as such does not require treatment. 3.1.3 Size anomalies: Size anomalies are alterations in tooth volume or size, either in greater or lesser proportion. In this type of anomaly, the dental morphology is normal and only the size is altered, however, the normal volume of a tooth has a wide spectrum, making it sometimes difficult to know if we are facing an abnormally large or small dental organ. (Barbershop Leache., *et al*. 2002). That is why the average mesiodistal measurements of the crowns of permanent dental organs [27,28,30].

Microdontia Microdontia is a developmental anomaly of genetic origin that is characterized by presenting. teeth with a size smaller than proportional within their dentition (Gabriel Espinal, Hugo Manco, German Aguilar, 2009) (Dra. Ana Sanz Coarasa, 2012). Microdontia affecting one or two teeth is much more common than generalized types. The individual teeth most frequently affected by microdontia are the maxillary lateral incisors (lateral tenons) and the maxillary third molars. In addition to being miniature teeth, they are usually conical in shape and congenitally absent. However, maxillary and mandibular second premolars, which are often congenitally missing, rarely show microdontia. Supernumerary teeth are also smaller than normal and have a conical shape. Espinal, G. Manco (2009). There is a close relationship between Microdontia and hypodontia and it is more common in females (López J., *et al*. s. f.); presenting a prevalence of 0.8 to 8.4% of the general population. (Neville D.A.B., 2002). There are 2 types of Microdontia. (Loscertales B., 2017) [31].

- Localized Microdontia It is the most common, and usually affects the upper permanent lateral incisors, third molars and supernumerary dental organs, however, it can occur in maxillary and mandibular second premolars (Sapp., *et al*. 1998). When conditions occur in the maxillary lateral incisors, the crown often assumes a peg shape (Loscertales B., 2017).
- True Generalized Microdontia True generalized microdontia is relatively rare, with most cases occurring in people with pituitary dwarfism. These individuals lack growth hormone in the pituitary gland or their tissues do not respond to the growth hormone produced (Sapp., *et al*. 1998).
- Relative Generalized Microdontia Relative generalized microdontia is perhaps more common than true microdontia. In this case, the teeth are normal in size, but the maxillary and mandibular bones are larger than normal. Therefore, the teeth look smaller in the context of the jaws. Clinically, dental organs with normal anatomy are observed, but of reduced size, and generalized diastemas are usually found (Sapp., *et al*. 1998) [32].

Your treatment will be oriented according to the type of microdontia

- Localized microdontia: Treatment is not necessary, unless there are aesthetic reasons. (López J., et al. s. f.). True generalized microdontia: does not need treatment.
- Relative generalized microdontia: orthodontic treatment.

Macrodontics

The term Macrodontia refers to the clinical condition that is characterized by presenting dental organs with mesio-distal and cervical-incisal diameters greater than normal values, that is, dental organs physically longer than normal; It should be noted that the dental organs affected in size by Dental alterations such as fusion and gemination are not classified as Macrodontia (Neville D. A. B., 2002). In patients with Macrodontia, it is common to find dental crowding in different degrees of involvement (Sapp., *et al*. 1998), which produces occlusal trauma and periodontal alterations in the most severe cases.

Three types of Macrodontia are identified

- True Generalized Macrodontia True generalized Macrodontia is unusual, it is related to patients who present Pituitary Gigantism, patients generally present a tumor in the pituitary gland that secretes large amounts of growth hormone. (Cheesman, H. 2011).
- Relative Generalized Macrodontia The term relative generalized macrodontia is used to describe a condition in which the

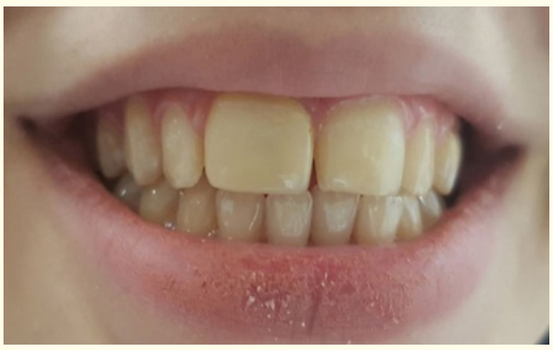


Figure 12: Macrodontia of the upper central incisor in a patient with complete permanent dentition. Taken from Tayefeh Davalloo, R. (2019).

mandible and/or maxilla are somewhat smaller than normal, but the teeth are of normal size. In this disorder, the arches show crowding of the teeth. Cheesman, H. (2011).

- Unidental Macrodontia: mainly affects one dental organ. Its diagnosis is carried out through a detailed clinical examination and by obtaining mesio-distal measurements of the dental organs. Macrodontia treatment will be oriented according to the type: True generalized macrodontia: no treatment is necessary. Relative generalized macrodontia: Orthodontic treatment. Unidental macrodontia: does not need treatment [32,33].

Number alterations

Number anomalies can develop in local disorders due to phenomena related to the differentiation and induction of the dental lamina, during the phases of tooth formation. The function of the agent on the germs of the dental lamina is related to a decrease or increase in the number of teeth (Gómez, 2018). Each of the malformations can be classified into excess anomalies, as well as defect anomalies. When a decrease in teeth occurs, it is called agenesis, while when an increase occurs, it is called hyperodontia (Meneses, 2017). According to the number of missing teeth, it is classified into three types: hypodontia (the lack of one to five teeth, excluding the third molars), oligodontia (the lack of six or more teeth, excluding the third molars) and anodontia (the complete absence of teeth). Within this type of anomalies are anodontia, which are related to a rare disorder, where there are no temporary or permanent teeth. Frequently, these are associated with a generalized disorder, as in the case of hereditary ectoderm dysplasia. However, in some cases, these alterations are hereditary, such as a recessive trait that is linked to the male sex within its x chromosome, although it is also linked to the female sex (Sánchez, 2018). Likewise, this is called oligodontia or hypodontia, and it can affect one or more teeth. In general, there are teeth that can fail from a genetic point of view more frequently than others. However, any of the teeth could develop a defect from a genetic point of view (Sánchez, 2018) [32-34].

Dental agenesis: It is the absence of one or more teeth. They have a family tendency and are usually the last in the series (Lateral Incisors, Second Premolars, Third Molars). Its definitive diagnosis is radiological. (Gonzalo Uribe Restrepo, Dario, cárdena Jaramillo, 2014). There are two main types: total anodontia, which is the total absence of teeth and is usually part of a syndrome grouped under the name of ectodermal dysplasia, and partial anodontia, which can be sectoral (located in a certain sector), isolated (affecting the third molars, second premolars and upper lateral incisor), dispersed (when the anomaly affects several quadrants) or single (if a single germ is missing). It occurs most frequently in the upper lateral incisor, third molar and lower second premolar. It is more common in permanent teeth from 2% to 9% and in temporary teeth from 0.1% to 0.7% . In general, when an alteration associated with syndromes is found, it can be determined that it has a genetic factor and it is important to analyze the family group [35].

For excess

- Supernumerary teeth: They correspond to a dental anomaly that consists of an increase in the number of teeth of the normal formula in the primary or permanent dentition. Jamal D. N, Silva M. R.: (2015). It occurs as a consequence of the proliferation and continuous hyperactivity of the permanent or primary dental lamina to form a third germ. Supernumerary teeth may have a normal shape and size or may be deformed or small in size compared to normal teeth. It can be found stopped or erupted and in any area of the jaw.
- The most common is the Mesiodens (see image), located on the upper midline, followed by the premolars. A Mesiodens can cause an ectopic and/or delayed eruption of the permanent central incisors, thus affecting occlusion, compromising aesthetics and sometimes favoring the formation of dentigerous cysts. Duque Borrero AM., *et al*. (2016).

There are two modifications: supplementary and conoid or aberrantly shaped. Its diagnosis must be definitive with radiological

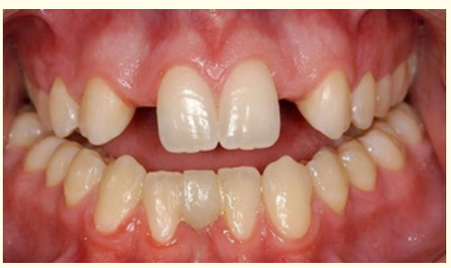


Figure 13: Dental agenesis of upper lateral incisors.

examinations. The majority remain included, only 25% erupt totally or partially. The diagnosis of a supernumerary tooth is very important because it is associated with problems such as dentigerous cysts, malocclusions, root resorptions and delays in the eruption of neighboring teeth. Gutiérrez-Marín, N. (2021). Sometimes the dentist must extract these pieces [35,36].

The conical supernumerary is the most common. (Dr. Reinaldo Alain Rivas de Armas, Dr. Maritza Canto Pérez, 2018). Its early diagnosis is essential, since it could intervene with dental eruption. (Dr. César Guinand, Dr Jorge Salgado, Dra. Mery Redondo. (2015). The prevalence of supernumerary teeth is 0.05% in deciduous dentition. Without distinction of race or sex. They are most frequently found in: Line middle of the upper jaw, palatal sector of the upper incisors, area of the lower premolars and distally of the third molar (Gonzalo Uribe Restrepo, Dario, cárdena Jaramillo, 2014).

The treatment must be decided in each case by analyzing the supernumerary (shape, position, real or potential effect on the neighboring teeth. In addition, it will be necessary to analyze whether there is an absence of any neighboring tooth in which it could replace it. Generally, surgical removal of the supernumerary tooth is performed, since if they erupt they can cause crowding in the normal dentition, and those that remain in the jaws can cause root resorption, interfere with the normal eruption sequence and the tooth follicles. unerupted can degenerate into dentigerous (follicular) cysts [35,36].

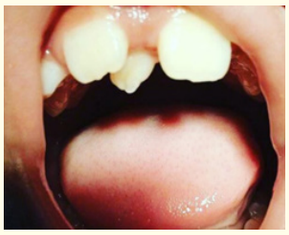


Figure 14: Supernumerary tooth mesiodens. Courtesy of Dr. Otto Alemán Miranda.

There is no agreement on the optimal time to perform the extraction. Some authors prefer to wait until 10-12 years of age to avoid the risk of injury to adjacent teeth, whose apex is forming, unless the tooth is causing a delay in eruption, interferes with symmetrical development or there is evidence of formation of a cyst. Other authors consider that early extraction of supernumerary teeth does not affect root development or the eruptive force of adjacent teeth. The approach to paramolar supernumerary teeth must be multidisciplinary and the treatment is based on the decision to remove the tooth or keep it in the mouth with rigorous clinical and radiographic controls. If the supernumerary tooth has not erupted, but the position in which it is located makes its eruption difficult or if it is causing problems such as resorption of neighboring roots, its extraction is recommended, however, this removal could damage surrounding anatomical structures. Gutiérrez-Marín, N. (2021).

Position anomalies The mineralization of each of the teeth begins from week 14-18 of pregnancy, and the crowns of the temporary teeth are partially mineralized at birth. Consequently, each of the crowns of the permanent teeth begin the mineralization process from the age of six (Aguilar, 2018). In this way, the moment of birth of all the primary teeth and the crypts of the first permanent molars, the same ones that are visible through the x-ray. Subsequently, a clinical examination during the ages of three and four is necessary to diagnose the congenital absence of primary teeth, and during the ages of twelve and fourteen, it can be performed to develop permanent dentition. (Hernández, 2017). At six months of age the crown of the permanent central incisor can be visualized and at twelve months the crowns of the lateral incisor, canine and first molar appear [35,36].

At two and a half years old, the lateral incisors, canines and first molars are completely visible and the second molar begins to be noticed. At four years old, the crown of the second molar is completely visible and the premolars are also visible. At around nine years of age or earlier, the crown of the wisdom teeth can be seen (Alzate, Serrano, Cortés, Torres, and Rodríguez, 2015). Dental eruption is considered advanced or delayed when there is a difference in relation to other generalized eruptions.

However, on some occasions, premature rashes may develop but more often, a delay in healing may occur. age of eruption. Therefore, 1% of the population can erupt the first or subsequent tooth before the age of four months (Ayala, Carralero, and Leyva, 2018).

Among the chronological anomalies are retentions, which can occur when it is not possible to identify a physical barrier or a developmental position, which can explain the reason why it can be interrupted due to the eruption of a germ. dental, the same one that does not appear inside the cavity (Sánchez, 2018). Retained teeth: These are those that, when the time comes for their eruption, remain enclosed within the jaws (see image). What is characteristic is that they maintain the integrity of their physiological pericoronary sac. (Dr. Virginia Pentón, Dr. Zenhia Veliz, Lcda Ledys Mary, 2009). Dental retentions can be caused by various local factors such as mechanical obstructions (teeth, cysts or tumors), insufficient space in the dental arch due to skeletal incongruities (micrognathia), premature loss of deciduous teeth or discrepancies in tooth-arch size and factors systemic such as genetic disorders, endocrine deficiencies and previous irradiation of the jaw (Fardi, A. and Kondylidou-Sidira A. 2011). Rodríguez in 2008 stated that these dental alterations result in a dentoalveolar discrepancy that can lead to localized pathologies. The wisdom teeth and canines are the teeth most frequently found in this situation. The importance of evaluating impaction, retention and inclusion lies in the fact that the tooth maintains its follicular sac, whose epithelium retains the ability to differentiate and which could progress towards tumor lesions (formation of dentigerous cysts, odontogenic keratocyst and ameloblastoma, among others). In addition, the dental structure can present complications such as dental caries and pulp disease. (Navarro Vila C. 2009) [35-37].

The factors that contribute to the inclusion, retention and im-

paction of the dental organs are classified as local: such as the presence of mechanical obstructions, which could be teeth, cysts, tumors, lack of space in the dental arch, premature request of the tooth, alteration in tooth size related to the arch and in systemic factors: where they are found, genetic disorders. (Castro J. 2007). Castañeda in 2015 confirms that the detection of these alterations is difficult through clinical examination, so it is necessary to perform a radiological examination with pantomography, to obtain an adequate evaluation of all the oral and extraoral structures where these abnormalities can be found. The diagnostic information obtained from the radiograph is valuable for the overview and prediction of dental eruption, taking into account that the prognosis and treatment plan of these teeth depends on it (Jung Y, and Liang H. 2012). The majority of patients come to the consultation due to discomfort or pain, in this way many of these retained, impacted or included teeth are detected. On the other hand, regarding dental organs that do not show symptoms, Venta., *et al*. in 2012, stated that subjecting patients to these treatments could mean exposing them to unnecessary risks.

Therefore, Pérez in 2016, reports that dental retention in young patients generally brings complications from the orthodontic side, since it can alter the aesthetic, functional and even the psychological part of the patient due to problems of malposition and/or pseudoanodontia, requiring combination of two specialties such as surgery and orthodontics in order to return functionality and aesthetics to the patient, improving their quality of life through possible predictive models of therapeutic behaviors and their proper treatment depending on the variations presented in each case.

Transpositions Dental

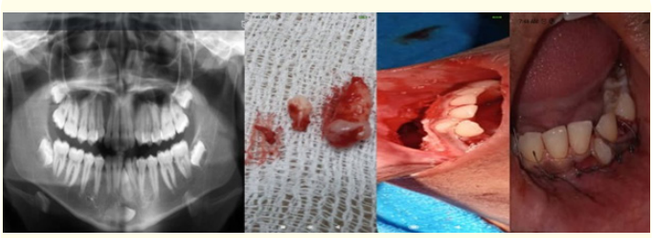


Figure 15: Retained canine in the lower jaw, which underwent surgical excision. Courtesy of Dr. Otto Alemán Miranda.

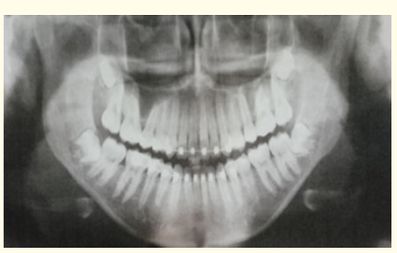


Figure 16: Retained third molars, which have not completed their formation. Courtesy of Dr. Otto Alemán Miranda

Transposition is defined as the alteration of position during eruption. (Jesús Hernández, Judy Vilavicencio, María Arango, 2013).

Dental transposition can be defined as the change in the position of 2 teeth that are adjacent or not, especially in relation to their roots in the same quadrant of the dental arch, which develop and erupt in inverted positions and alter the normal sequence of eruption. Dental transpositions have a relatively low prevalence in the population, approximately 0.1 to 0.4% in both jaws. They are generally unilateral, more frequent in the upper arch between 70 and 80% and between canines and premolars. Dental transpositions are more common in females and the left side is generally the most affected. However, the simultaneous appearance of transposition in both arches, as well as in the deciduous dentition, is rarely observed. (Filho LC, 2007). The etiology of dental transposition is not yet fully clarified, and it may occur in the initial period of formation of the teeth involved or be linked to the migration of the ectopic tooth. Radicular cysts, hereditary factors and other traumas can be considered important factors for the presence of transposition. (Ramos /Daruge, 2005). Diagnosing a dental transposition early is essential for its best treatment and prognosis, since it is possible to make the diagnosis between 6 and 8 years of age through a panoramic x-ray. (Filho LC, 2007). The degree of difficulty in the treatment of dental transpositions is considered high; factors such as facial pattern, age, stage of eruption and the magnitude of the transposition must be taken into account. For these reasons, it becomes a great challenge for the patient. professional [35,36,38].

(Praxedes Neto OJ, 2006). The mechanics for correction must be individualized and minimize risks and side effects. (Costa LED, 2010). The treatment options for transpositions located in the maxilla are greater, because the bone anatomy is more favorable to orthodontic movement, while in the mandible there is a bone limitation in the vestibulo-lingual diameter that makes correction difficult. (Costa LED, 2010). In cases of incomplete transposition, it is preferable to move the affected tooth to its normal position in the arch and perform verticalization and gyroversion correction as long as they are necessary procedures and with sufficient space for the normal alignment of these teeth. (Costa LED, 2010) [35-38].

Acquired dental anomalies Dental Abrasion: Pathological wear

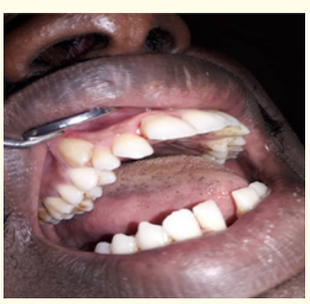


Figure 17: Transposition of the canine, this frequently happens because it is one of the last alveolar pieces to erupt. Courtesy of Dr. Luis Frómeta.

of dental hard tissues as a result of abnormal mechanical action, habit or abnormal use of abrasive substances in the mouth. An easy pattern to identify is the so-called abrasion process due to tooth brushing along the cement-enamel junction, which is caused by incorrect brushing, which, added to episodes of Erosion (Caused by the consumption of acids such as liquors, artificial juices, severe reflux, among others), cause weakening of the enamel. It presents as a "V" (horizontal) or "wedge" shaped lesion with smooth, polished dentin walls that are often hypersensitive. In severe cases, pulp exposures and even fractures of the affected teeth may occur. Like these, other derived activities that cause tissue abrasion. Other less common forms of abrasion are related to the patient's occupation [35,36].

In these cases, the dental injury is caused by the placement of hard, sharp instruments or objects between the teeth during work. Of different etiologies (physiological, psychosomatic, traumatic), they are usually a clear indicator of habits (bruxism, dietary, occupational, cultural customs – chewing tobacco, smoking a pipe, opening bottles with teeth, preparing materials or holding objects while fishing, hunting or work). Likewise, the classic wedge abrasions at the cervical level – excessive brushing - tend to be more marked on the side opposite to individual laterality. Others of physical and chemical origin are produced by habits, such as excessive consumption of citrus, cola drinks, cocaine consumption – due to gingival placement - and even the persistence of chronic vomiting in eating disorders (bulimia and anorexia). (Martínez B. 2006). There is no established prevalence, as it depends to a greater extent on the patient (hygiene and eating habits) rather than on a pattern of genetic determination, so it can occur in any sector and tooth [38].

Dental Attrition

It is the physiological or pathological wear of the coronal hard tissues that occurs as consequence of the chewing process, affecting the occlusal surfaces, edges incisal surfaces, lingual and buccal surfaces and interproximal contact points. It begins as small polished facets on the tooth surfaces and as a slight flattening of the contact points, gradually reducing the cusp height while erasing the occlusal anatomy. Studies support a multifactorial hypothesis, including the participation of agents genetic, environmental and psychosocial such as neuroses, depression, anxiety and stress. Causative agents functional disorders in the catecholaminergic balance of the central nervous system, as well as substances with action on the CNS.7 (soto, Pozos, and Castellanos, 2014). The prevalence depends on the physiological or pathological difficulty that the patient has. Usually there is greater involvement of the Anterior teeth, but there is no 100% real support. Erosion Term used to designate the destruction or loss of tooth structure secondary to a non-bacterial chemical process. Erosion lesions vary in shape, size and frequently affect several teeth, the typical lesion being a shallow, wide, smooth and highly polished depression on the enamel surface, generally affecting the enamel and sometimes the dentin. It is more prevalent in anterior teeth. But all teeth can be affected.

The etiology of erosion: 1. Some authors relate dental erosion to the citrate content of saliva. 2. Furthermore, they suggest that a pH. low in periodontal tissues, as a consequence of periodontal tissue alterations. 3. It is currently believed that it is related to the internal production of acids such as regurgitation of gastric contents (gastric reflux disease, anorexia nervosa or bulimia syndrome), evidenced by a generalized lesion of the upper teeth on the lingual surface and occlusal faces. 4. Carbonated drinks, excessive consumption of citrus fruits (sucking them), and other foods. 5. Polluting factors such as the acidic ambient atmosphere. Octopus They are foci of slightly defined calcifications at the level of the dental pulp or the root canals. It is produced by the deposition of calcium salts, accumulated most frequently in the apical third. Its incidence increases with age [35-38].

They can be rounded or oval, occupying most of the pulp cavity. Its size varies between 2 to 3 mm. It can only be diagnosed radiographically. The edges may or may not be defined. It has a greater incidence in posterior teeth. In animals, they mainly affect the first and second premolars. (Jaramillo Ceballos K. F 2020).

Hypercementosis

Hypercementosis is the adaptive change that occurs from the periodontal ligament due to the increase in thickness of the cementum, either at a limited point or on the surface of the entire root, which results in abnormal thickening due to macroscopic changes in shape. It usually presents as a solitary lesion and in rare cases as a multiple type lesion. The etiopathogenesis of hypercementosis is confusing; although the majority of cases are idiopathic, several local and systemic factors are involved that are also related to this condition [35-38].

In hypercementosis, conditions such as

- Functional Stress (Occlusal Forces)
- Systemic Factors (Atherosclerososis)
- Acromegaly
- Deforming Arthritis
- Hypertrophic Arthritis
- Thyroid Diseases
- Paget's disease

Hypercementosis can be identified through x-rays, but it will not be It is possible to appreciate in the root the amount of additional cement that the affected tooth may present, because the dentin and cement have the same degree of radio density.

Localized Hypercementosis is limited to affecting a single tooth; and it is related to obstruction of the apical foramen as a result of chronic infections, occlusal trauma or tooth loss.

Generalized hypercementosis will involve several teeth, or even the entire dentition will be affected by this anomaly. It has a greater incidence in the premolar and molar region of the mandible, without gender-specific predilection6. Worldwide, the prevalence is approximately in the range of 1.3 to 3.8% , with attenuating predisposing factors associated with this infection (Verdugo, Guaycha, Mendoza, Obando, and Toledo, 2018). Pulp Sclerosis It is defined as diffuse calcification of the pulp chamber and canals of the teeth that reduces the size of the pulp cavity, is related to age, is a radiographic finding since it is not associated with symptoms, It is unimportant, unless desired treat with endodontics. Its cause is unknown, the classification pattern is amorphous and disorganized and it occurs in young patients, but more frequently between 50 and 70 years of age. A specific pattern of prevalence has not been determined, since it can occur in any tooth [35-38].

Conclusion

The main dental malformations were described, emphasizing their classifications, forms of clinical presentation, possible etiologies, comorbidities as well as some of the most used treatments in each of the aforementioned lesions.

Acknowledgements

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