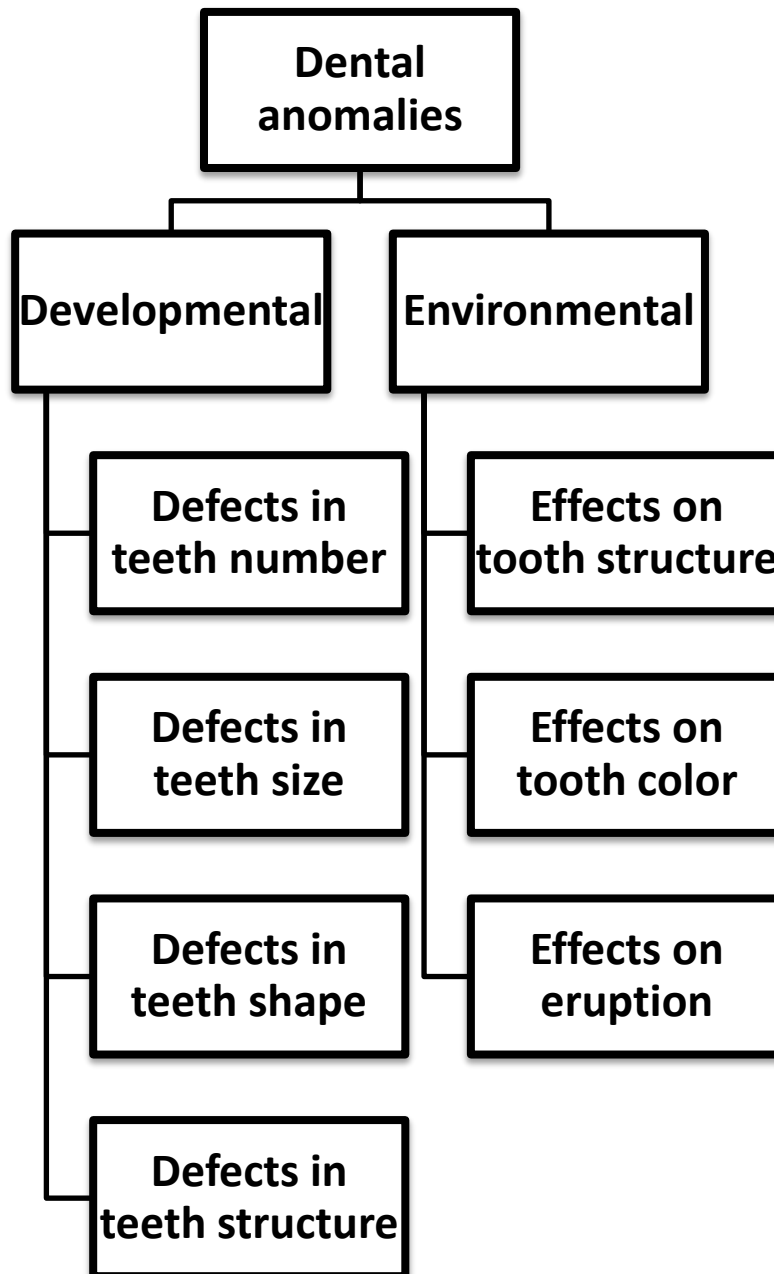
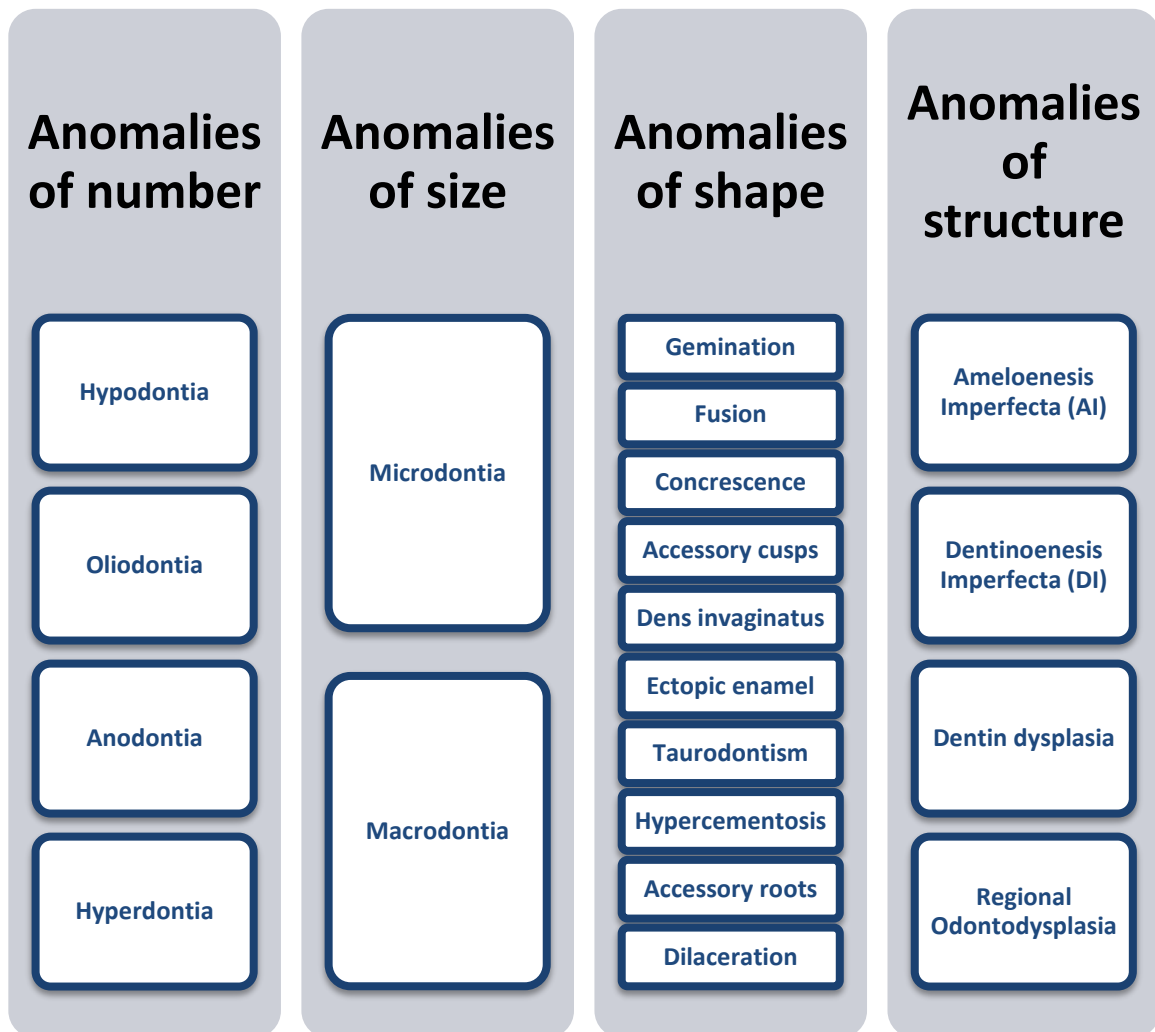


**“Dental Anomalies”**

Dental anomalies are malformations or defects affecting teeth. They usually result from either disturbances to teeth development or they could be as result of environmental influences on teeth.



## ❖ Developmental anomalies of dentition:



### ➤ Developmental anomalies in the number of teeth:

#### 1- Hypodontia:

It is agenesis of some teeth (fewer than 6 teeth, not including the third molars). It can occur alone (isolated) or it could be associated with syndromes such as Down's syndrome. It is uncommon in primary teeth. However, the permanent teeth are more likely to be affected with the most commonly affected teeth to be the third molars followed by mandibular second premolars, maxillary lateral incisors, maxillary second premolars, and mandibular central incisors.

#### 2- Oligodontia:

It is a term used to describe the developmental absence of more than six permanent teeth. It is also uncommon in primary teeth; and when the permanent

teeth are affected, collapse of the dental arch and drifting of the few present teeth will result due to presence of excess space.

Treatment of both hypodontia and oligodontia involve prosthodontic and orthodontic rehabilitation.

### **3- Anodontia:**

It is a term used to describe the complete failure of teeth to develop. It is a rare condition and could be associated with syndromes such as ectodermal dysplasia, which is a group of inherited disorders involving developmental failure of the ectodermally derived structures such as the hair, teeth, nails, skin, and sweat glands. Treatment usually requires provision of Prosthodontic prosthesis.

### **4- Hyperdontia (supernumerary teeth):**

It is a term used to describe the development of additional teeth in addition to normal dentition. It results as a consequence of continuous proliferation of epithelial cells from the dental lamina. Supernumerary teeth may be present in association with syndromes such as cleidocranial dysplasia. Management usually involves extraction of the supernumerary tooth followed by orthodontic rehabilitation.

Types of supernumerary teeth	
According to the site	According to the shape
Mesiodens	Conical
Distomolar	Tuberculate
Paramolar	Supplemental
Extralateral	Odontoma associated

## ➤ Developmental anomalies in the size of teeth:

### 1- Microdontia:

A term used to describe one or more teeth that are smaller than normal for that tooth type. It mostly affects only one or two teeth (usually the maxillary lateral incisors (peg-shaped lateral); or third molars). It often affects patients with ectodermal dysplasia.

The generalized occurrence of microdontia is rare. However, it may occur as a **true generalized microdontia** in pituitary dwarfism, or as a **generalized relative microdontia** when the teeth are of normal size but appear relatively small with respect to jaws that are larger than normal.

### 2- Macrodontia:

A term used to describe one or more teeth that are larger than normal for that tooth type. It most commonly affects single tooth (usually the maxillary central incisor).

**True generalized macrodontia** is extremely rare, but when occur, it is usually caused by hormonal imbalance, such as that occurs in patients with pituitary gigantism. On the other hand, **generalized relative macrodontia** occurs when the jaws are small relative to the size of the teeth.

## ➤ Developmental anomalies in the shape of teeth:

### 1- Gemination:

It is an attempt of a developmental division of a single tooth germ to produce two separate teeth. This attempt results in the formation of a bifid crown and a single root.

The crown is usually wider than normal, with a shallow groove extending from the incisal edge to the cervical region. The anomaly is seen in both primary and permanent teeth, however, it appears more frequently in primary teeth.

The treatment of a permanent anterior geminated tooth may involve reduction of the mesiodistal width of the tooth to allow for normal development of the occlusion. Periodic “disking” of the tooth is recommended when the crown is not excessively large. However, if the crown is extremely large, removal of the geminate tooth is recommended followed by combined orthodontic and prosthodontic approach to rehabilitation.

## **2- Fusion:**

It is the union between the dentin and / or enamel of two or more separate developing teeth. The condition is usually limited to the anterior teeth.

The fusion may be total or partial depending upon the stage of tooth development at the time of union. If the contact occurs before the calcification stage, the teeth unite completely and form one large tooth. On the other hand, incomplete fusion may be at root level if the contact and union occurs after formation of crowns. Radiographically, the dentin of fused teeth always appears to be joined in some region with separate pulp chambers and canals.

A frequent finding in fusion of primary teeth is the developmental absence of one of the corresponding permanent teeth.

Management of such patients requires a multidisciplinary approach involving pediatric dentistry, endodontics, surgery, restorative dentistry, and orthodontics.

## **3- Concrescence:**

It is the fusion of teeth by cementum alone without confluence on dentine. It mostly affects maxillary posterior teeth.

Management involved either no treatment for asymptomatic conditions or extraction if interference with eruption of succeeding teeth occurs.

## **4- Accessory cusps:**

There might be some variations in the cuspal morphology of teeth.

### **a- Talon's cusp:**

It is the presence of an accessory cusp-like structure projecting from cingulum area of cemento-enamel junction.

### **b- Cusp of carabelli:**

It is an accessory cusp located on palatal surface of mesiolinual cusp of maxillary permanent molars.

### **c- Dens evaginatus:**

It is cusp-like elevation of enamel in central groove of permanent premolars or molars.

## 5- Dens invaginatus:

It is deep surface invagination of the cingulum pit that is lined by enamel with only a thin layer of hard tissue between the pulp and oral cavity. Therefore, there is a probability of a communication between the cavity of the invagination and the pulp chamber. It mostly affects maxillary lateral incisors, central incisors and lower premolars.

The level of invagination varies with its types:

**Type 1:** Confined to crown.

**Type 2:** extends below cemento-enamel junction.

**Type 3:** Extends till root, so the invagination would be large and resembles a tooth within a tooth so called (Dens in Dente).

Management will depend on the type of dense invaginatus which could be restorative or pulp therapy.

## 6- Ectopic enamel:

Presence of enamel in an unusual location.

### a- Enamel pearls:

They are mainly located on tooth root. It mostly affects maxillary molars and is usually seen in furcation or CEJ area. Radiographically, it appears as a circular well-defined area of radio-density.

### b- Cervical enamel extension:

It is an extension located on the buccal surface of the root, overlying the bifurcation. It mostly affects the mandibular molars.

Because ectopic enamel anomalies are considered as a plaque retentive areas, meticulous hygiene and periodontal prevention is crucial.

## 7- Taurodontism:

Enlargement of body and pulp chamber of multi-rooted teeth with apical displacement of pulpal floor. It mostly affects molars. Diagnosis usually made on radiographs. Degree of taurodontism can be classified into mild, moderate, and severe according to the degree of apical displacement of the pulpal floor.

Taurodontism can occur as an isolated finding or it could be associated with ectodermal dysplasia or amelogenesis imperfecta.

## **8- Hypercementosis:**

It is non-neoplastic deposition of excessive cementum that is continuous with the normal radicular cementum. It results in thickening of the root.

It could be of local or systemic causes:

- **Local causes:** such as abnormal occlusal trauma or inflammation of adjacent teeth.
- **Systemic causes:** such as Paget's disease of bone or Acromegaly.

## **9- Dilaceration:**

Abnormal angulation of root or crown of the tooth. It is caused by injury to the calcified portion of tooth germ during development. The most commonly affected teeth are maxillary incisors. These teeth may have altered path of eruption, associated with periapical lesion or may be impacted.

## **10- Accessory roots:**

Development of increased number of roots compared to normal. It mainly affects third molars, premolars and canines.

### **➤ Developmental anomalies in the structure of teeth:**

#### **1- Amelogenesis Imperfecta (AI):**

It describes the hereditary enamel defects resulting from single gene mutation. It demonstrates developmental alterations in structure of enamel in the absence of systemic disease. They follow autosomal dominant, autosomal recessive, or X-linked pattern of inheritance.

There are **three main types**:

1. Hypoplastic.
2. Hypomineralised: hypocalcified or hypomature.
3. Mixed.

In most, but not all, types of AI, teeth in both the primary and the permanent dentitions are affected.

- **Hypoplastic AI:** There is deficient matrix production but the enamel that is present is normally mineralised. Clinical variants range from the autosomal dominant thin and smooth type of AI to the pitting and grooving of X-linked dominant AI.

- **Hypocalcified AI:** Enamel matrix is laid down but mineralization does not occur. On eruption, enamel is lustreless, opaque or honey coloured and is gradually discoloured. Teeth usually erupt as a normal shape but tend to fracture as they are soft. The cervical regions of the crowns often have normal enamel.

- **Hypomaturation AI:** Enamel matrix is laid down normally and begins mineralization but fails to mature. Affected teeth are normal in shape, but exhibit a mottled, opaque white-brown-yellow discolouration. Enamel may be softer than normal and easily chipped from underlying dentin.

## **2- Dentinogenesis Imperfecta (DI):**

It is an inherited disorder characterized by defective dentin formation in the absence of any systemic disease. There are three types:

**Type I:** It occurs in patients affected with osteogenesis imperfecta

**Type II:** It is not associated with osteogenesis imperfecta.

**Type III:** Called Brandy Wine type. It is rare. Clinically, the patient have multiple pulpal exposures of primary teeth.

### **Clinical features:**

- 1- Normal appearance of enamel, but is easily chipped away from the dentin.
- 2- Opalescent colour teeth.
- 3- Radiographically, obliterated pulp chambers and stunted roots.



### 3- Dentine dysplasia:

Autosomal dominant inherited disorder, characterized by abnormal dentine formation and abnormal pulp morphology. This disorder is classified into:

- **Type I (Radicular dentin dysplasia):**

In this type, crown colour ranges from normal to bluish or brownish tinge. Radiographs show normal crown morphology but excessively short or blunt roots. Pulp chambers may be small and root canals absent. Primary and permanent dentitions are affected and inheritance is probably autosomal dominant. It is rare.

- **Type II (Coronal dentine dysplasia):**

Primary teeth in dentine dysplasia type II resemble those in dentinogenesis imperfecta type II, but permanent teeth are clinically normal and radiographs show thistle- or flame-shaped pulp chambers partially occluded by pulp stones and narrowing root canals. It is rare and probably autosomal dominant.

### 4- Regional odontodysplasia (Ghost teeth):

It is a hereditary developmental condition representing a localized arrest in tooth development thought to result from a regional vascular developmental anomaly. It can occur in both dentitions and might be associated with syndromes.

Affected teeth have thin layers of poorly calcified enamel and dentin with large, diffusely calcified pulp chambers and shortened, poorly defined roots. These teeth fail to erupt or erupt with yellow to brown discolouration and other enamel defects.

Radiographically, teeth have shortened roots and shell-like crowns with thin enamel and dentin and large pulp thereby giving it a floating appearance called “ghost tooth”.

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