

Developmental disturbances of the oral region

These disturbances are discussed under four categories:

1- developmental disturbances affecting teeth

2- developmental disturbances of soft tissue

3- developmental disturbances affecting bone

4- developmental disturbances affecting enamel and dentin.

Lab 8

DEVELOPMENTAL
DISTURBANCES



OF TEETH

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Teeth: a- disturbances in size

1- *Microdontia*: One or more teeth are smaller than normal.

When all teeth in both arches are smaller than normal, the condition is termed *generalized microdontia*. If all teeth are uniformly smaller than normal, which occurs in an uncommon conditions such as pituitary dwarfism, the condition is termed *true generalized microdontia*. When the mandible and maxilla are somewhat larger than normal, but the teeth are of normal size, so they are spaced, this is termed as *relative generalized microdontia*.

Microdontia of one or two teeth is more common than generalized types.

The individual teeth most frequently affected by microdontia are maxillary lateral incisors (peg laterals) and maxillary third molars. They are often conical in shape and may be congenitally absent. Supernumerary teeth are also smaller than normal and conical in shape.



Macrodontia: one or more teeth are larger than normal.

When all teeth in both arches are larger than normal, the condition is termed ***true generalized macrodontia*** and seen in rare conditions such as pituitary gigantism.

When the mandible and maxilla are smaller than normal but the teeth are normal in size, the condition is termed ***relative generalized macrodontia*** (in which the teeth are crowded). Regional or localized macrodontia is seen on the affected side of the mouth in patients with hemifacial hypertrophy.



b- Disturbances In Number :-

Total and partial anodontia

- *Total anodontia* :- congenital absences of all teeth.



- **Partial anodontia** :- (Hypodontia) congenital absence of one or more teeth.

Total anodontia is a rare condition in which there are no deciduous and permanent teeth. It usually occurs in association with generalized disorder such as **hereditary ectodermal dysplasia** which is usually inherited as x-linked recessive trait in males, but an autosomal dominant form occurs in females. All features are basic to defect in the development of structures of ectodermal origin such as hair, sweat glands and teeth. The hair may be absent or of lanugo type and the absence of sweat glands results in the inability to regulate body temperature.



The more common anodontia is partial anodontia (hypodontia or oligodontia). Congenital absence of teeth about 35% of general population, but congenital absence of deciduous teeth is uncommon but the most often congenitally absent deciduous teeth is maxillary lateral incisor. A close correlation exists between congenital absence of deciduous teeth and permanent successor. There is familial tendency of congenitally absent teeth.

2 and 5 teeth are often congenitally absent.



Supernumerary teeth:- excess number of teeth than normal.

These teeth can occur in any location, but they have a predilection for certain sites. They are more common in maxilla (90%) than in the mandible (10%). A supernumerary tooth located between the maxillary central incisors called mesiodense, is the most common, followed by fourth molars (paramolars) and lateral incisors. In the mandible the most common supernumerary teeth are premolars. The S.N tooth may resemble the normal tooth or it may be conically shaped.

S.N deciduous teeth are uncommon.

S.N. teeth may be single or multiple and erupted or impacted



C. Disturbances In Eruption

The eruption time varies for deciduous and permanent teeth in humans. Only when the eruption time is obviously outside of normal range, can be considered as eruption abnormality.

1- Premature Eruption :-

Usually involves only one or two teeth, most commonly the mandibular central incisors, the etiology of this phenomenon is unknown , a familial pattern is observed. Examples on this phenomenon:-

a- Natal teeth:- erupted deciduous teeth present at birth.



b- Neonatal teeth:- deciduous teeth that erupt during the first 30 days of life.

These two types are usually part of normal complement of deciduous teeth, and should be retained if possible.



2- Delayed Eruption:-

Usually refers to the 1st. appearance of deciduous teeth relative to the normal age range. This occurrence is uncommon and idiopathic or associated with certain systemic conditions such as rickets, cleido-cranial dysplasia or cretinism.

Local factors such as gingival fibromatosis, in which dense fibrous C.T impedes tooth eruption. Treatment of the systemic condition or the local factors may alleviate the problem.

Delayed eruption of permanent teeth may result from the same local and systemic conditions.

3- Impacted Teeth:- Teeth that continue to form within bone but fail to erupt.

Impacted teeth fail to erupt because:-

a- Crowding of dental arch and does not present a path of eruption.

b- Obstruction by some physical barriers that impair tooth eruption result in impaction, include, retained deciduous, supernumerary teeth, odontogenic cysts, and odontogenic tumors.

The most impacted teeth are the mandibular and maxillary 3rd molars, and maxillary cuspids, followed by mandibular 2nd premolars and S.N. teeth.

An impacted tooth that is surrounded by bone is known as completely impacted, whereas one that is partly in bone and partly in the soft tissue considered as partially impacted.

4- Eruption sequestrum:-

A small spicule of calcified tissue that is extruded through the alveolar mucosa that overlies on erupting molar.

It may arise from the small area of slightly thickened cortical bone that occupies the area of the central occlusal fossa of molars. It represents non resorbed island of bone or odontoma that pushed out ahead of the erupting molar. Most of these squestra are spontaneously exfoliated and require no treatment. They may remain in the alveolar mucosa for a few days.

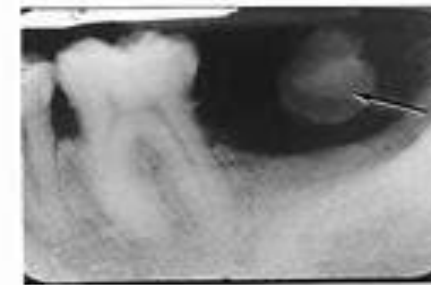


Fig. 13-4
Sequestrum that has floated into the soft tissues. Patient gave a history of a problematic tooth extraction several years ago which resulted in clinical complications.

d- Disturbances in Shape:-

1- **Dilaceration:** A sharp bend or angulation of the root portion of a tooth.

Causes of dilacerations:-

a- trauma during tooth development.

b- continued root formation during a curved or tortuous path of eruption.

c- Idiopathic.

Dilacerations can complicate tooth extraction and endodontic treatment.



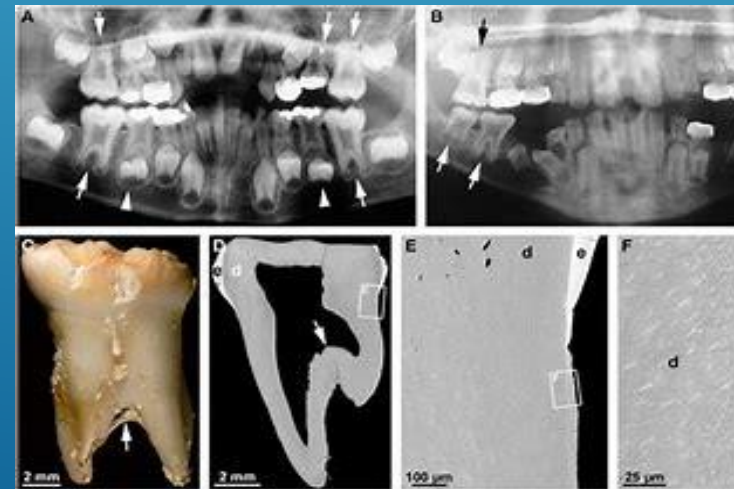
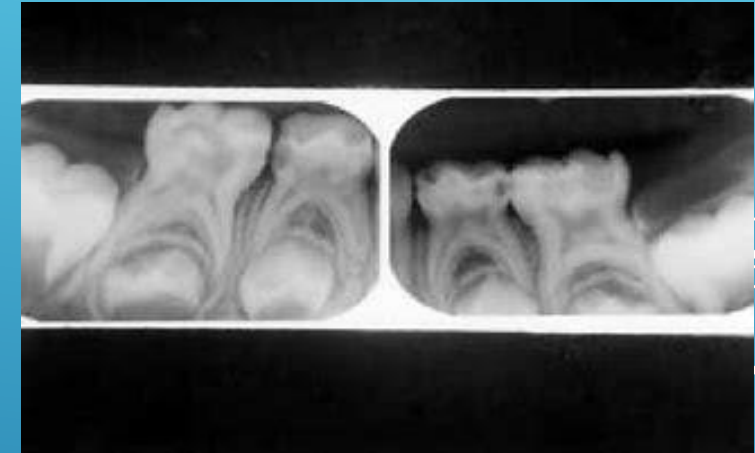
2- Taurodontism: A molar with elongated crown and apically placed furcation of the roots, resulting in an enlarged rectangular coronal pulpal chamber.

Is a developmental disturbance that affects molars, also premolar are affected, both permanent and deciduous teeth are affected, but permanent more common. The condition is recognized radiographically.

Taurodontism occurs:-

- 1- Late invagination of Hertwig's root sheath.
- 2- Amelogenesis imperfecta.
- 3- In Down syndrome.

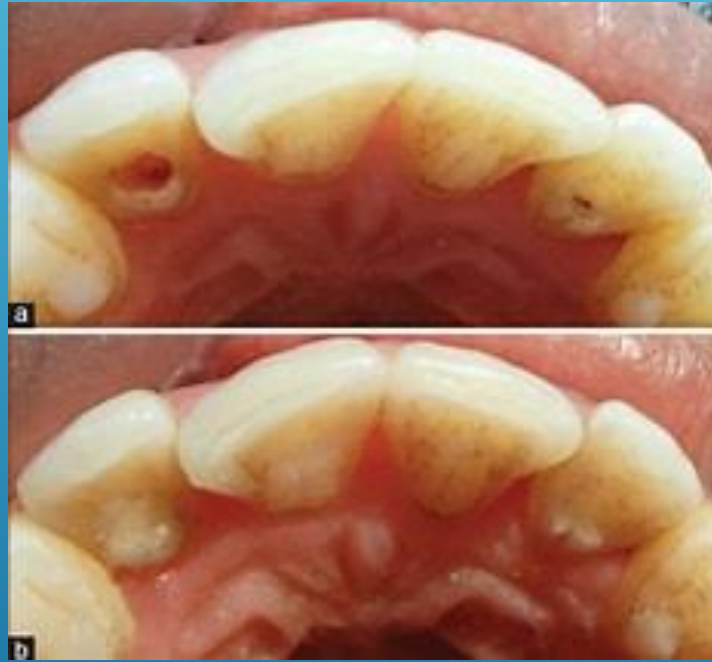
Taurodontism requires no treatment.



4- *Dens Invaginatus*:- Developmental anomaly in which a focal area of the crown of a maxillary lateral incisor is folded inward (invaginated) for various distances, when severe results in a conically shaped tooth with a small surface opening (dens in dente) that quickly becomes subjected to caries, pulpitis, and periapical inflammation. A milder form of it, is relatively common and is characterized by presence of a deeply invaginated lingual pit that extend for varying distances into the substance of tooth which is not always clinically visible a radiograph is helpful in establishing the diagnosis.

When there is deep invagination result in a bulbous expansion of the affected root and this termed " dilated odontoma" the base of pit composed of this defective layer of enamel and dentin, so subjected to carious destruction easily.

Treatment, a restorative treatment in early diagnosis, otherwise endodontic treatment and extraction in more severe from.



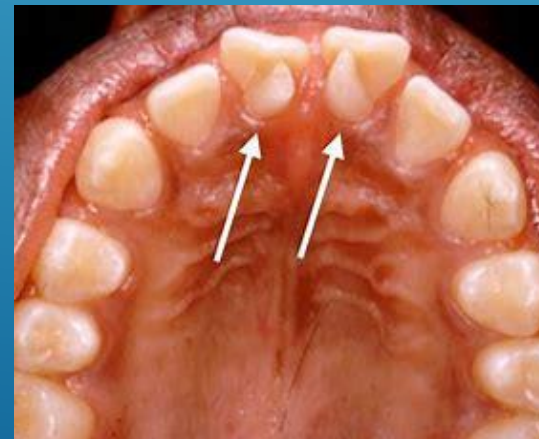
4- Supernumerary cusp :-

Occasionally teeth exhibit supernumerary cusps e.g. cusp of carabelli on the mesiolingual surface of 6 this type present no clinical problems and is considered as a normal variation. However certain teeth develop S.N. cusps that result in clinical problems and need treatment e.g. dens evaginatus and talon cusps.

a- Dens evaginatus:-

a developmental anomaly in which a focal area of the crown projects outward and produces an extra cusp or abnormal shape to existing cuspal arrangements.

It primarily affects premolars and any tooth may be involved. It is characterized by development of abnormal globe- shaped projection between buccal and lingual cusps of premolars.



5- Supernumerary Roots:- (Additional roots)

This is a common developmental phenomenon that is most often seen in mandibular premolars, cuspids and maxillary and mandibular 3rd molars. It is important to detect radiographically before tooth extraction or to plan endodontic treatment.



6- Gemination

Abnormally shaped crown that is extra wide due to the development of two crowns from one tooth germ.

It primarily affects anterior teeth (deciduous and permanent) and resemble another anomaly called fusion they are similar clinically and histologically.

Gemination characterized by partial division or twining of a single tooth germ, resulting in a tooth exhibits two separated or partly separated crowns and a single root and root canal.



Dental Gemination in a Permanent Mandibular Central Incisor

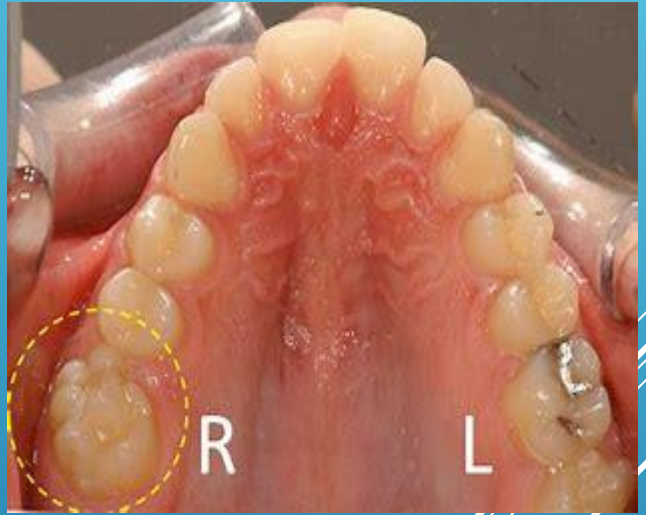
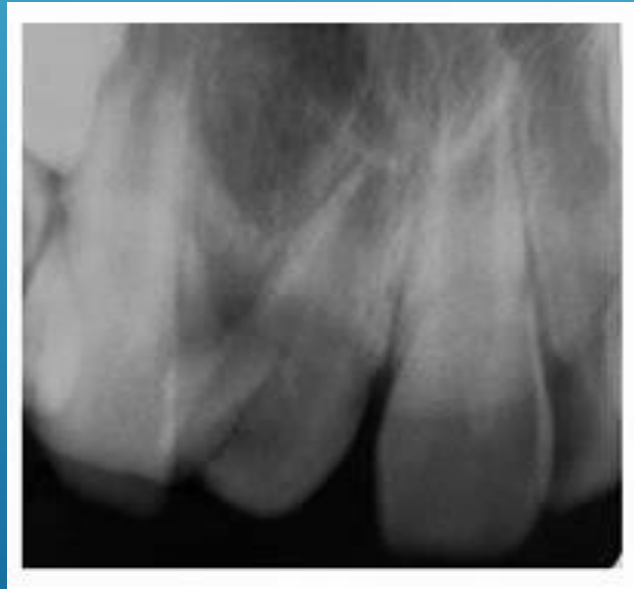


Fig. 1. Tooth 4.1 with a symmetric division of crown caused by incomplete bifurcation on incisal zone. Due to large size of crown, it is observe dental rotation and crowding. In addition, the gingival anatomy is altered.



7- Fusion

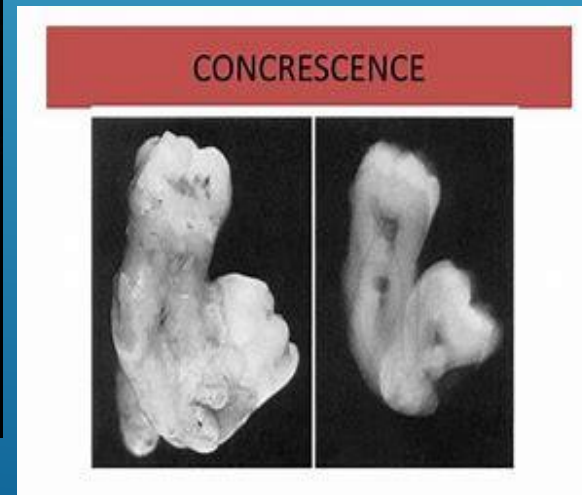
Abnormally shaped tooth results from union of two normally separate tooth germs. Can occur in the deciduous and permanent teeth. fusion can be complete or incomplete and this will vary with the stage of development of tooth, if the fusion begins before calcification the union will involve all components of tooth, enamel, dentin, cementum and pulp. If the union begins at a later stage then the affected teeth may have separate crowns, and fusion may be limited to the roots, the pulp canals may be fused or separated, fusion can be differentiated from gemination by counting the teeth in the area.



8- Concrescence

Union of the roots of two or more normal teeth caused confluence of their cemental surfaces. It is a type of fusion that occurs after root formation is complete. The condition is thought to occur as a result of traumatic injury to the area or crowding where interseptal bone is lost, allows close proximation of roots. Concrescence can occur before or after tooth eruption and involves maxillary permanent molars.

Clinical implication of condition is extraction of two teeth when a single extraction is intended.

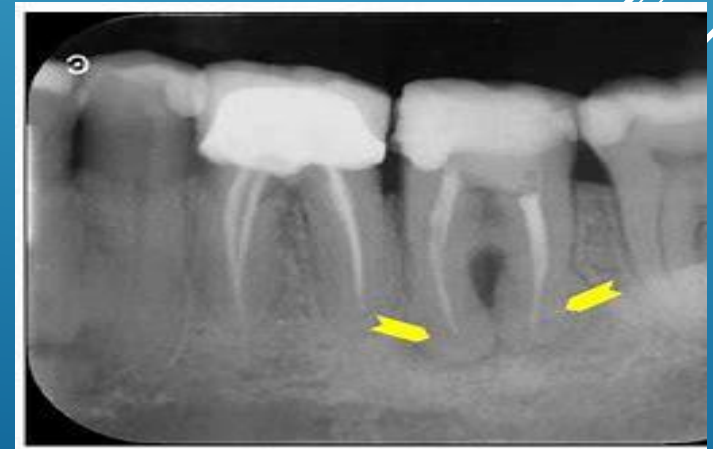


9- Hypercementosis

One or more teeth exhibit excessive deposits of cementum on tooth root. Such deposits resulting in bulbous or pear shape root these teeth are not easily extracted without surgically removing substantial amounts of surrounding bone.

Hypercementosis is common :-

- 1- On teeth that are subjected to both increased or decreased occlusal forces.
- 2- Patients with paget's disease or hyperpituitarism
- 3- On teeth in areas of chronic inflammation.





10- Cervical Enamel projection:-

Focal apical extensions of the coronal enamel beyond the normally smooth cervical margin (cemento-enamel junction) and onto the root of tooth. These projections approximately 1mm wide and 1-3 mm length, and occur on maxillary and mandibular molars, their clinical significance that could contribute to periodontal pocket formation.

Treatment is not recommended because it leads to the development of root caries, external resorption or pulpitis.

