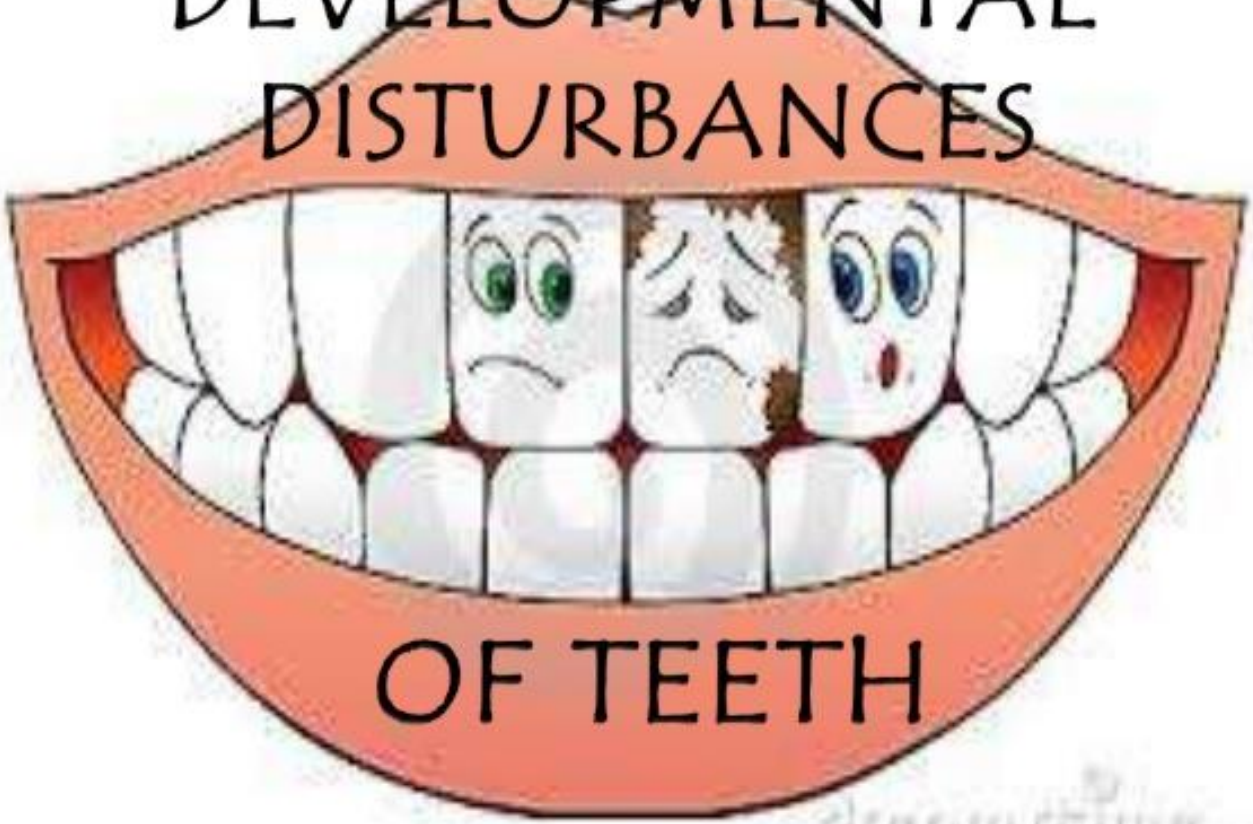
Developmental defects of the oral and maxillofacial regions

DEVELOPMENTAL DISTURBANCES OF TEETH



I-Developmental anomalies of the teeth

1-Developmental anomalies in number of teeth

a. Anodontia

- Total lack of teeth developoment(=agenesis of teeth

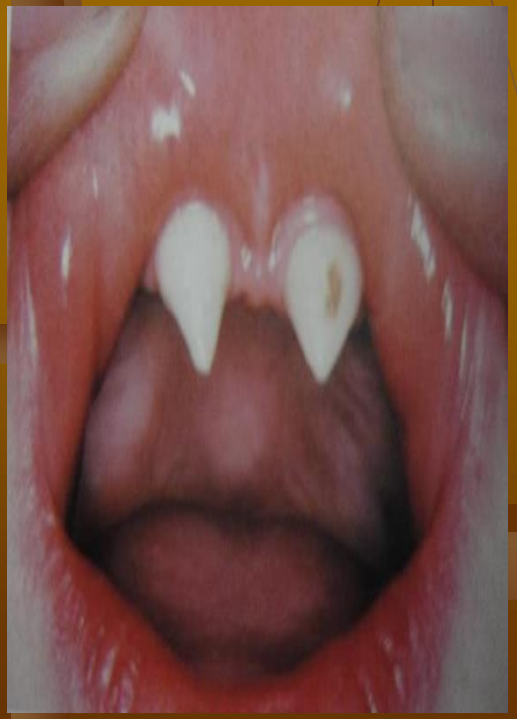
(Total failure of development of complete dentition is rare)

Anodontia ssociated with **Ectodermal Dysplasia** which is an inherited condition that is two or more ectodermaly derived structures fail to develop

(skin , hair, nail, sweat gland)

Hair is fine & spars, skin is smooth, shiny & dry due to absence of sweat glands, therefore heat is poorly tolerated, teeth are usually conical in shap

- It may occur in primary and secondary teeth.



Ectodermal Dysplasia

b. Hypodontia

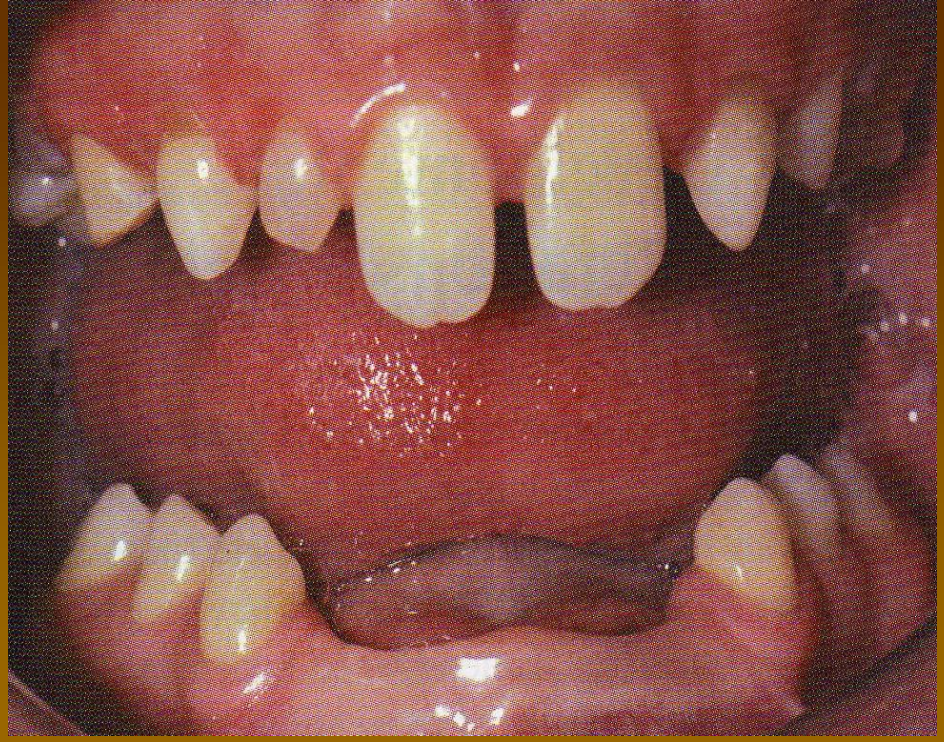
lack of development of one or more teeth

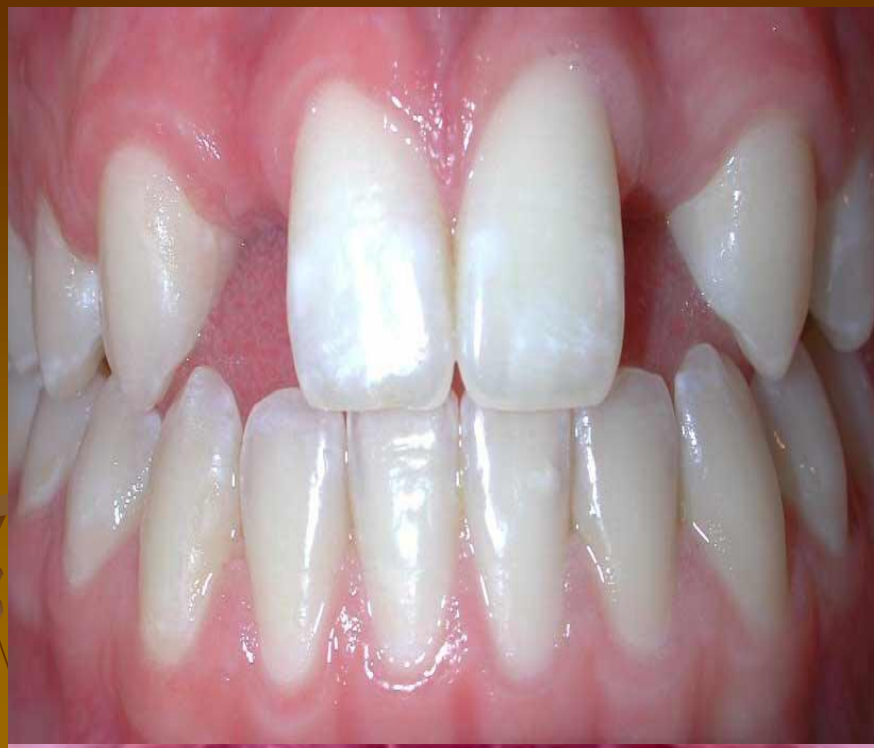
(up to five teeth)

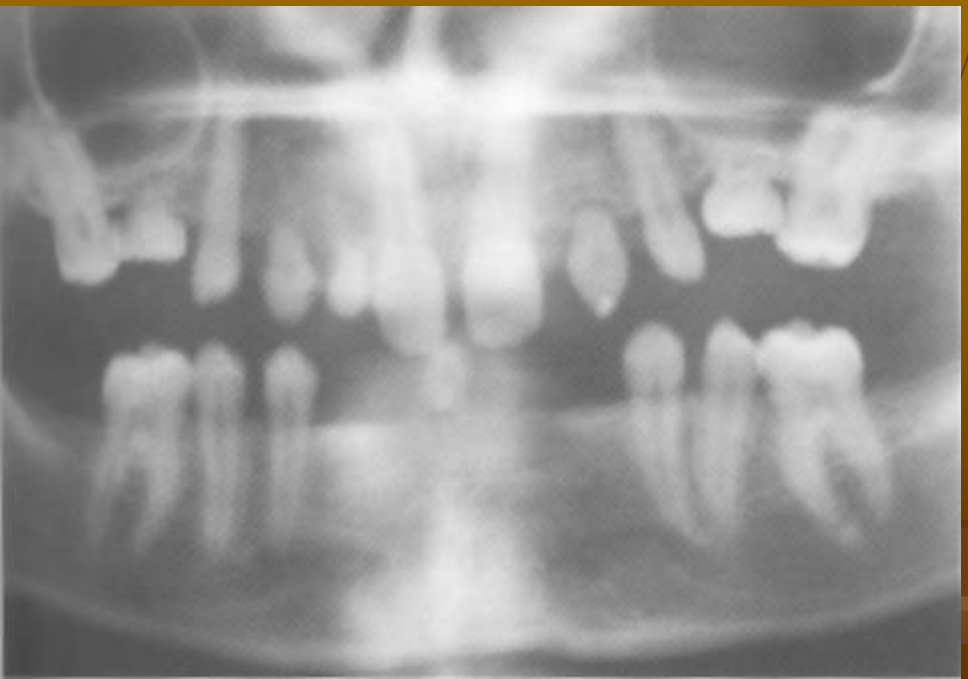
Uncommon in deciduous dentition, common in permanent one, in sequences :

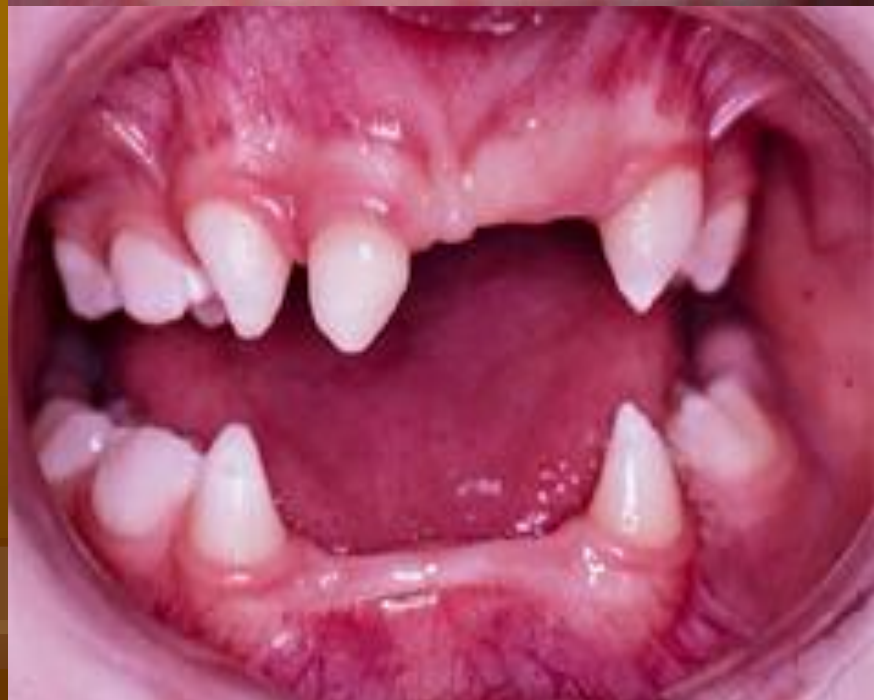
3rd molars, 2nd premolars, & maxillary lateral incisors

Oligodontia= subdivision of hypodontia indicates the lack of development of six or more teeth.







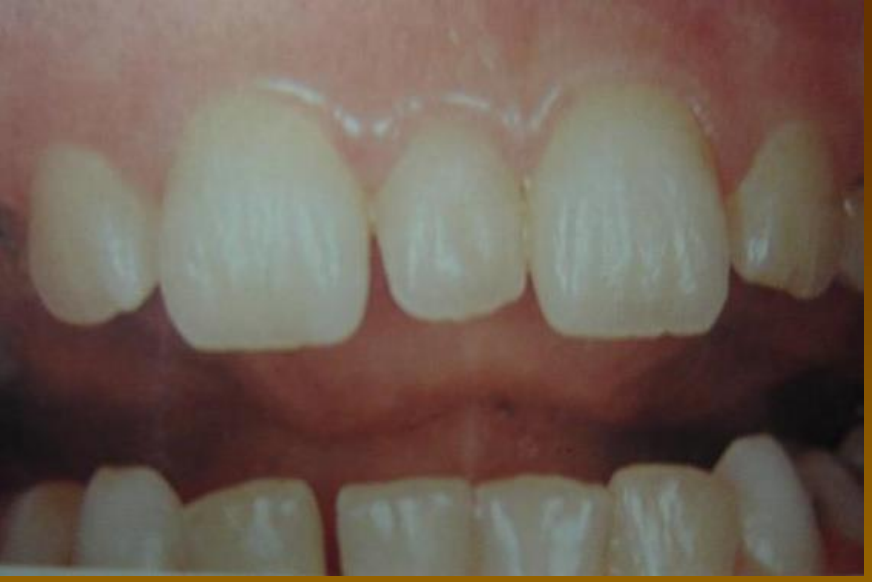


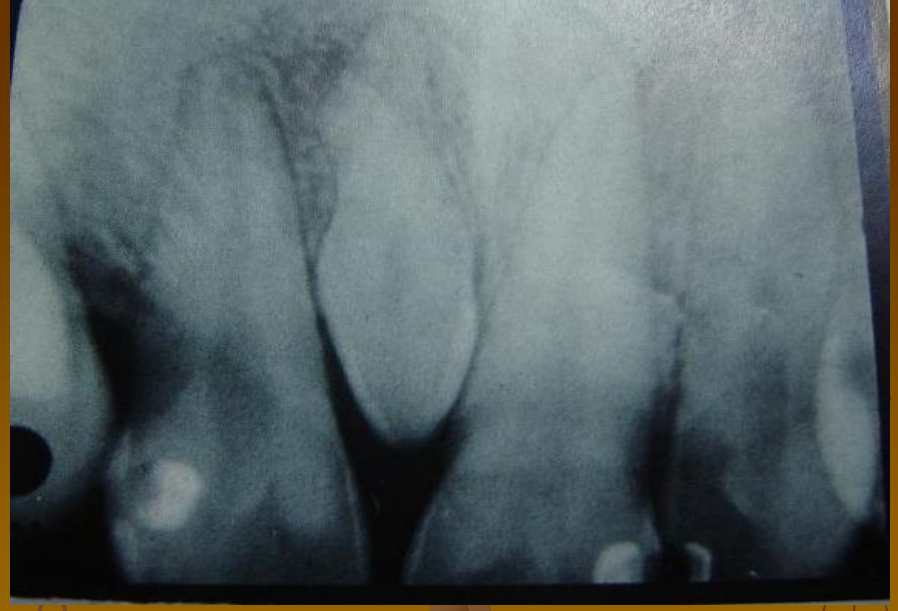
c. Hyperdontia (supernumerary)

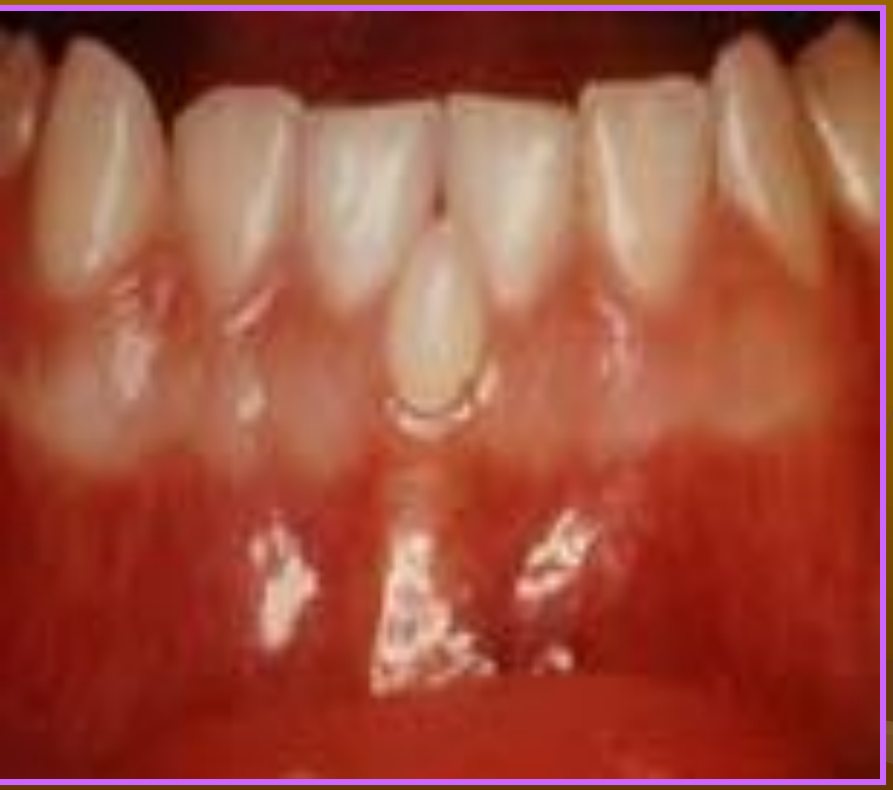
- Excess number of teeth.
- Common in maxilla (90%).
-Common site between central incisors (**Mesiodens**) followed by accessory 4th molar (**Distomolar**)
-Posterior supernumerary tooth, smaller in size, situated lingually or buccally to molar teeth is called (**paramolar**)

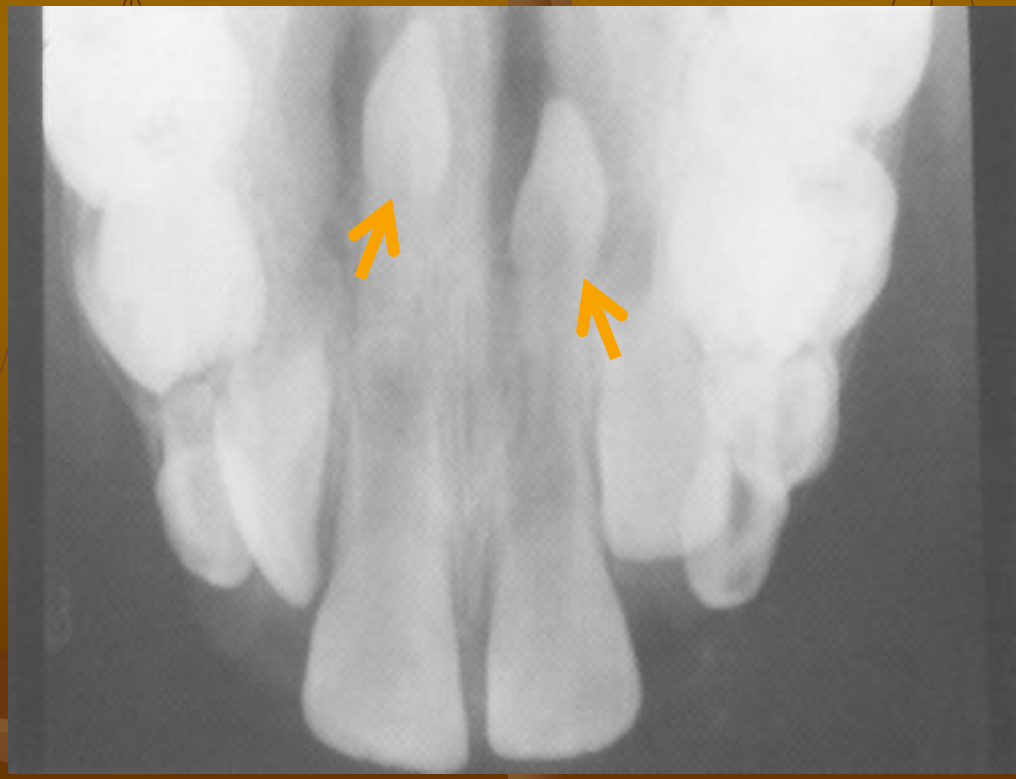
-Supernumerary teeth may be single or multiple, erupted or impacted, resemble corresponding normal tooth or rudimentary and conical in shape

-Multiple impacted supernumerary teeth usually seen in **cleidocranial dysplasia**









d. Natal and neonatal teeth :

Natal teeth :

Erupted deciduous teeth present at birth.

Neonatal teeth:

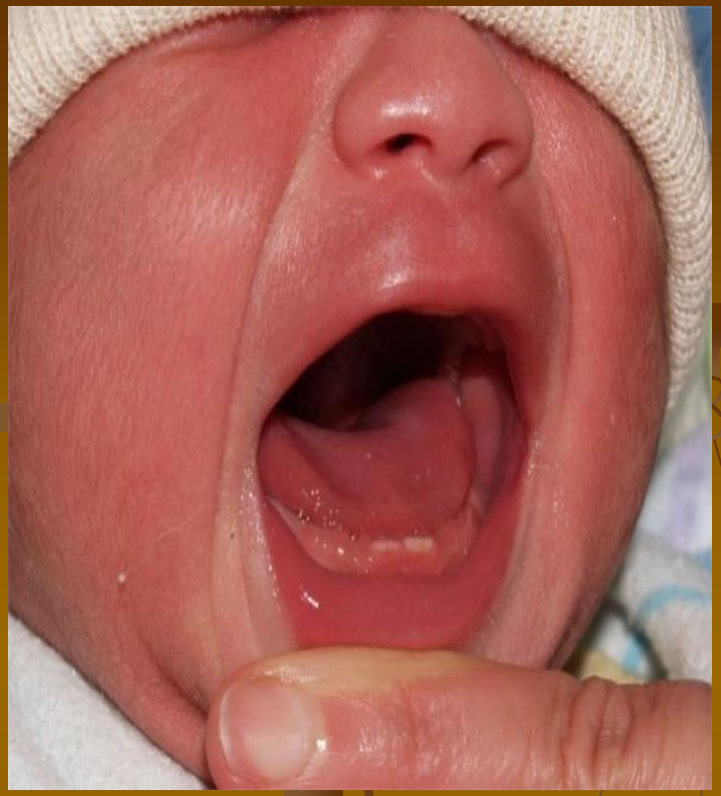
Deciduous teeth erupted during lst 30 days of life.

Mostly mandibular central incisors.

Unknown etiology, familial condition.

They are members of primary dentition, limited root development, mobile teeth.


Juniordentist.com



2-Developmental anomalies in size of teeth

a. Microdontia

-One or more teeth are smaller than normal.

- Associated with hypodontia, female predilection

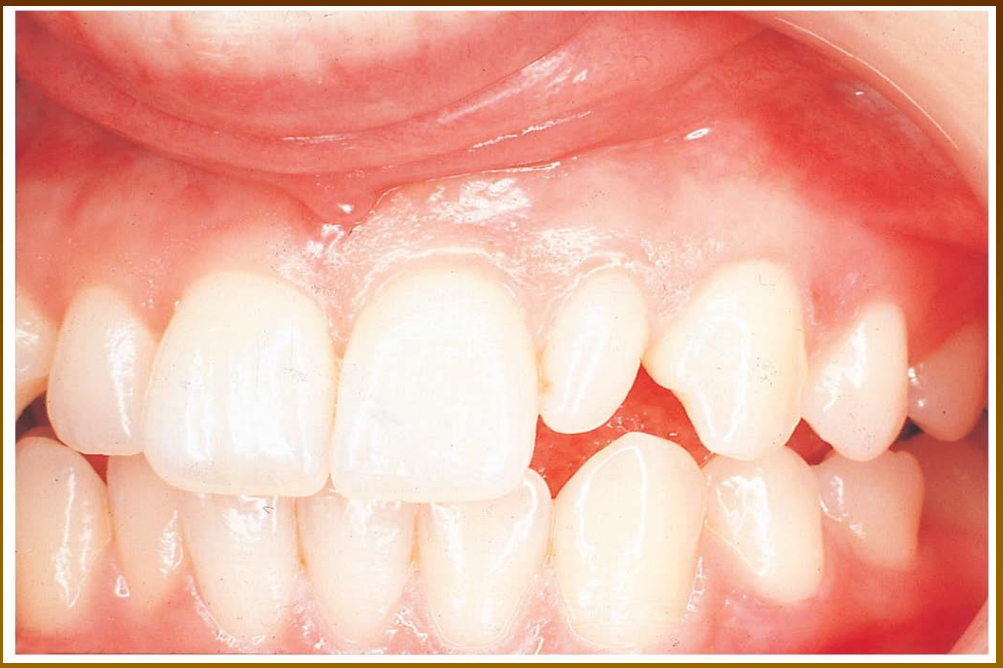
-True generalized microdontia:- seen in **Down's syndrome & pituitary dwarfism,** all teeth are smaller than normal

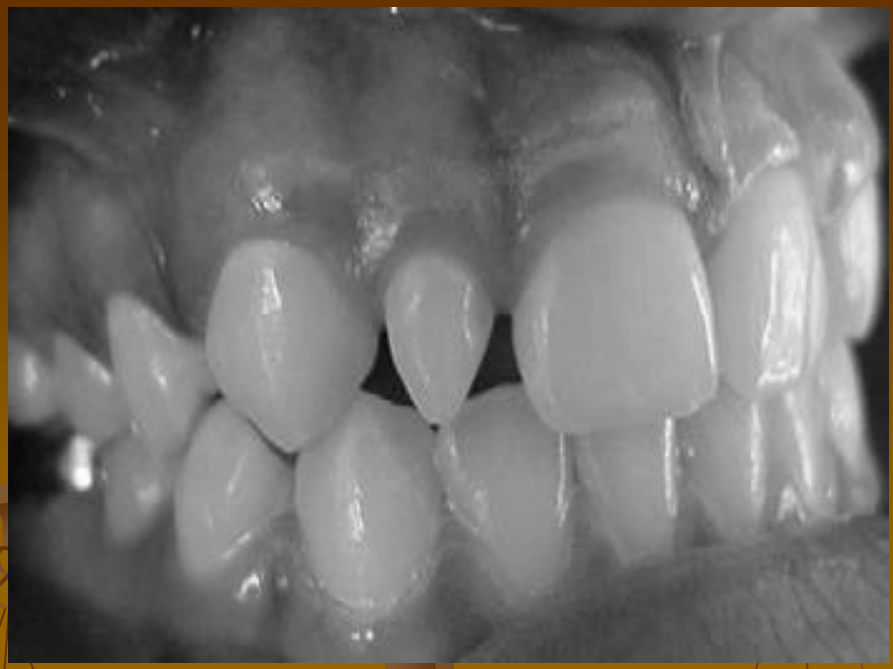
- Relative generalized microdontia:- seen when jaw are larger than normal and teeth of normal size (spacing)

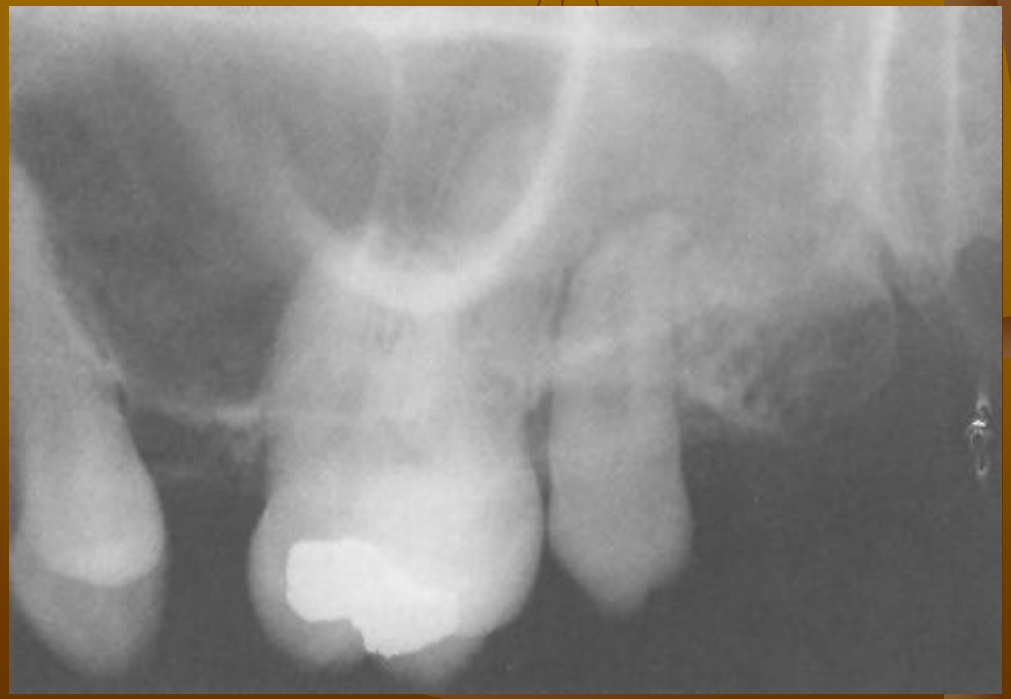
- Isolated microdontia:- involving a single tooth, commonly seen in:

  1- Maxillary lateral incisor---Tooth appears as cone or peg-shaped (peg-lateral)

  2- Maxillary 3rd molar

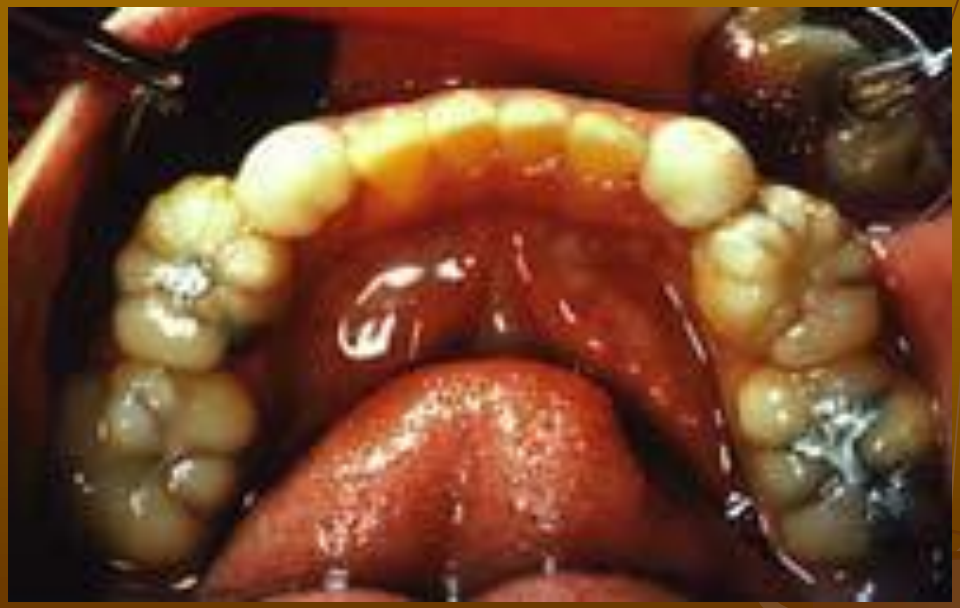


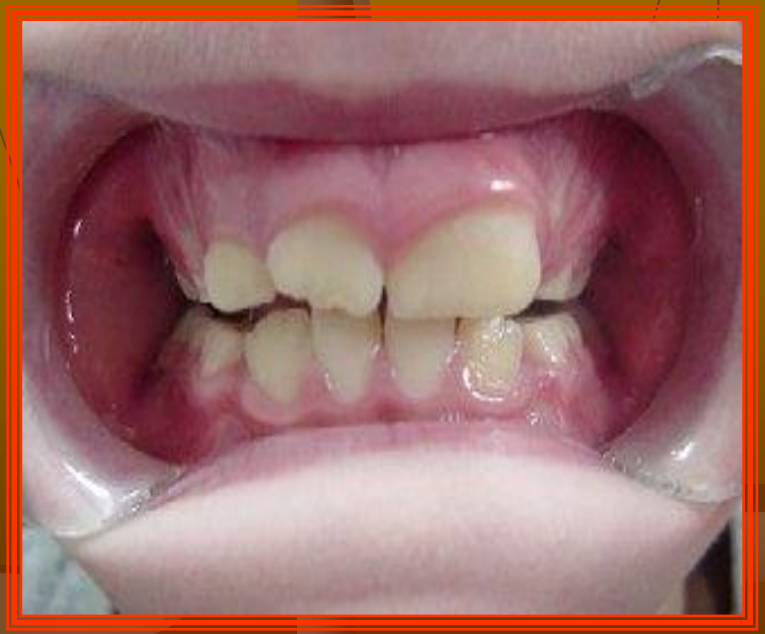




b- Macrodontia

- One or more teeth larger (bulky) than normal
- Associated with hyperdontia, male prediliction
- True generalized macrodontia seen in pituitary Gigantism.

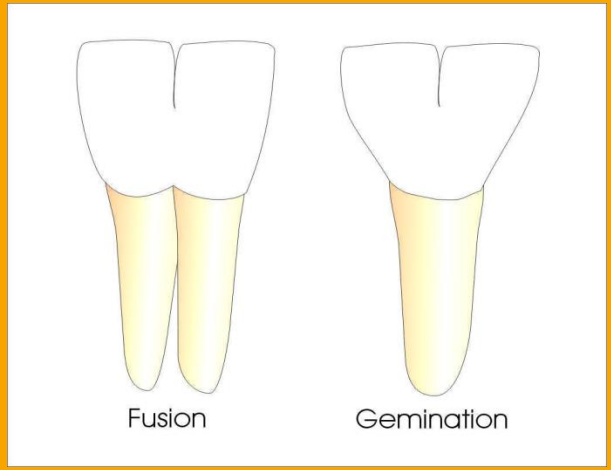




3-Developmental anomalies in shape of teeth

a-Gemination:

Abnormal shaped crown that is extra wide, due to development of two crowns from one tooth germ



b-Fusion:

Abnormal shaped crown, due to union of two adjacent teeth germs by dentin during development

The cause of gemination & fusion is unknown, but truma has been suggested

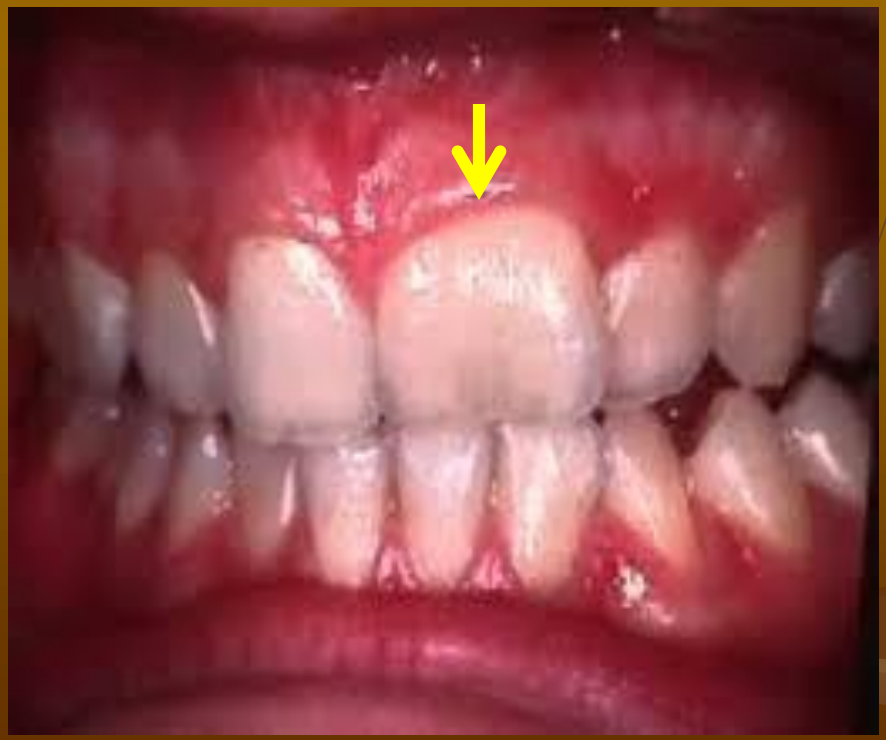
Gemination and fusion appear similar, differentiation by:

1-Assessing number of teeth

If the anomalous tooth is counted as one, with a normal tooth count ------ **Gemination**

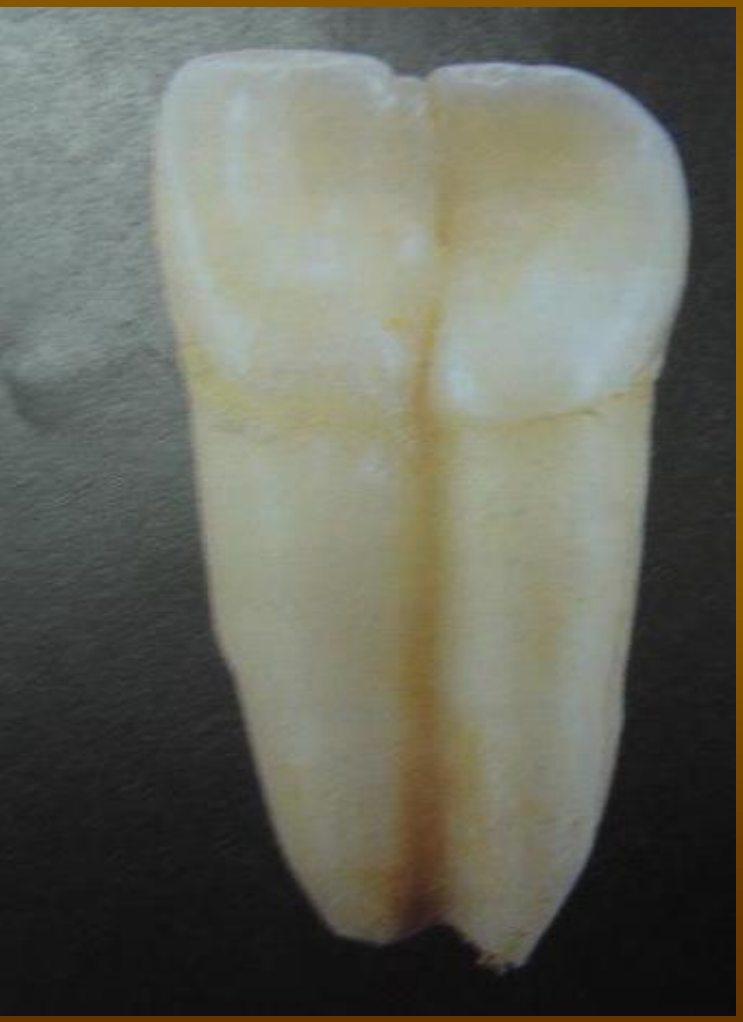
If anomalous tooth is counted as one , & tooth count reveals a missing tooth------**Fusion**

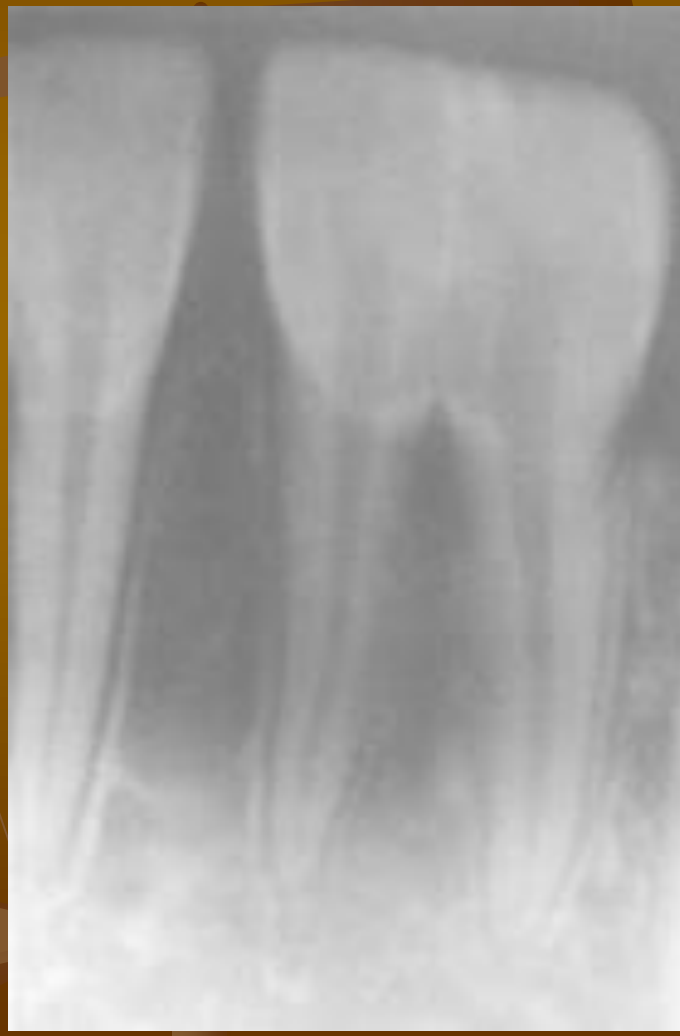
2-Gemination with a single root canal, fusion with separate root canals.



Gemination

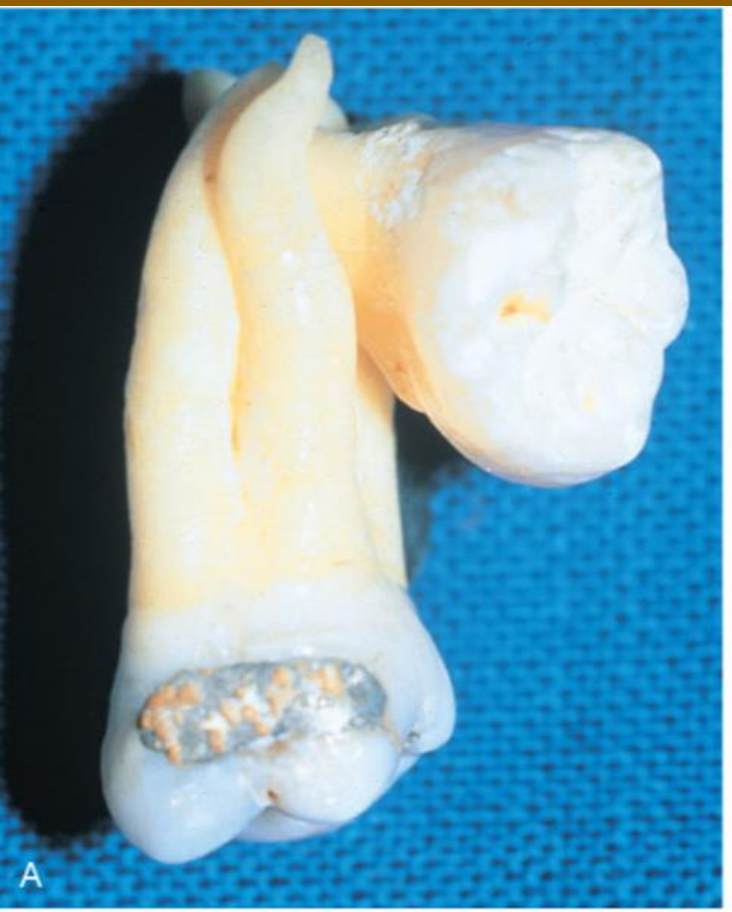
Fusion

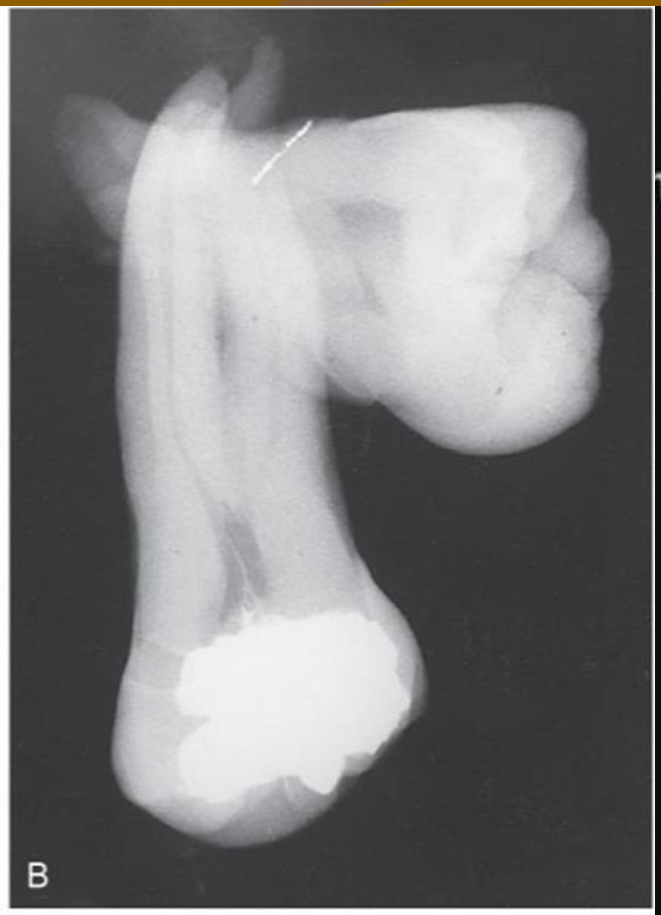




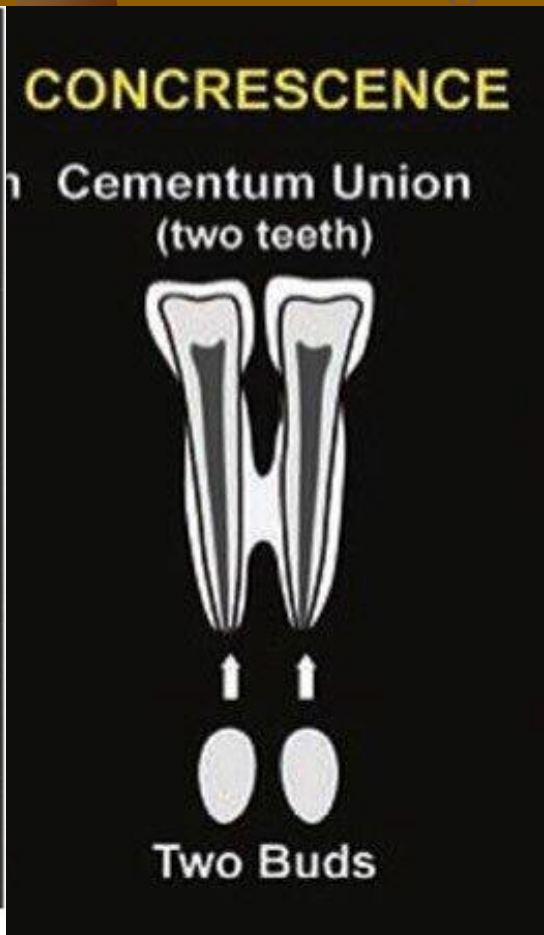
c-Concrescence:-

- Union of roots of two or more teeth by cementum alone
- Developmental or post inflammatory in origin
- Difficult to extraction





(Courtesy Dr. George Blozis.)



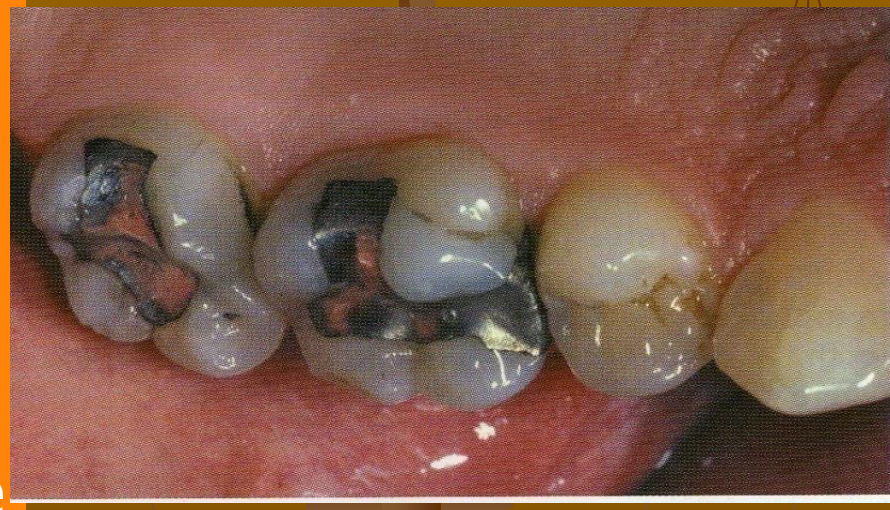
d-Accessory cusp

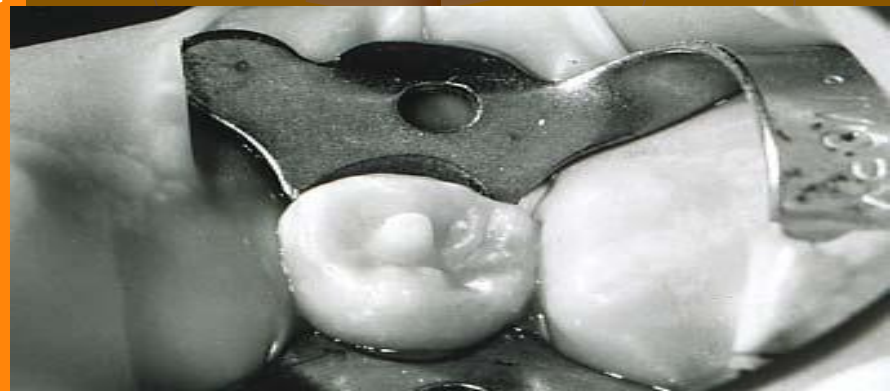
1-Talon cusp : on lingual aspect of maxillary incisors extend half distance from CEJ to incisal edge.

2- Cusp of carabelli : on palatal surface of mesiolingual cusp of maxillary permanent molars (**1st molar**).

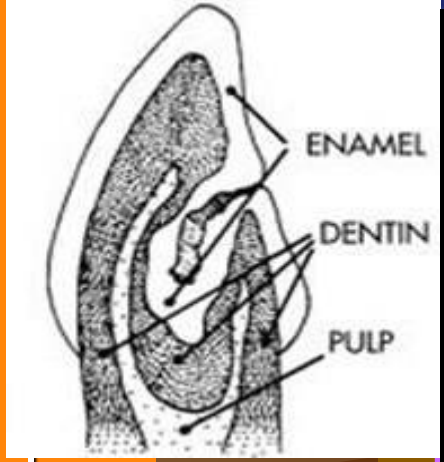
3- Dense evagenatus: A cusp –like elevation of enamel, located in the central groove or lingual ridge of buccal cusp of permanent mandibular premolars

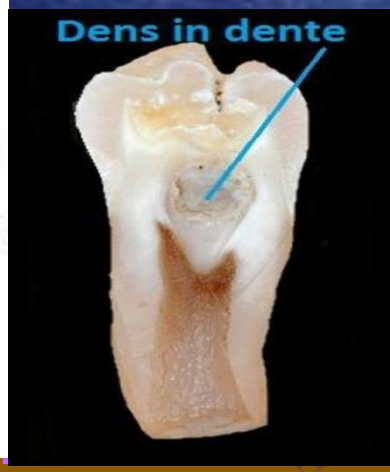
(Truma or attrition--- pulp necrosis--- periapical inflammation)





e-Dens invaginatus (Dense in Dente)





-Deep surface invagination of the crown or root that is lined by enamel.

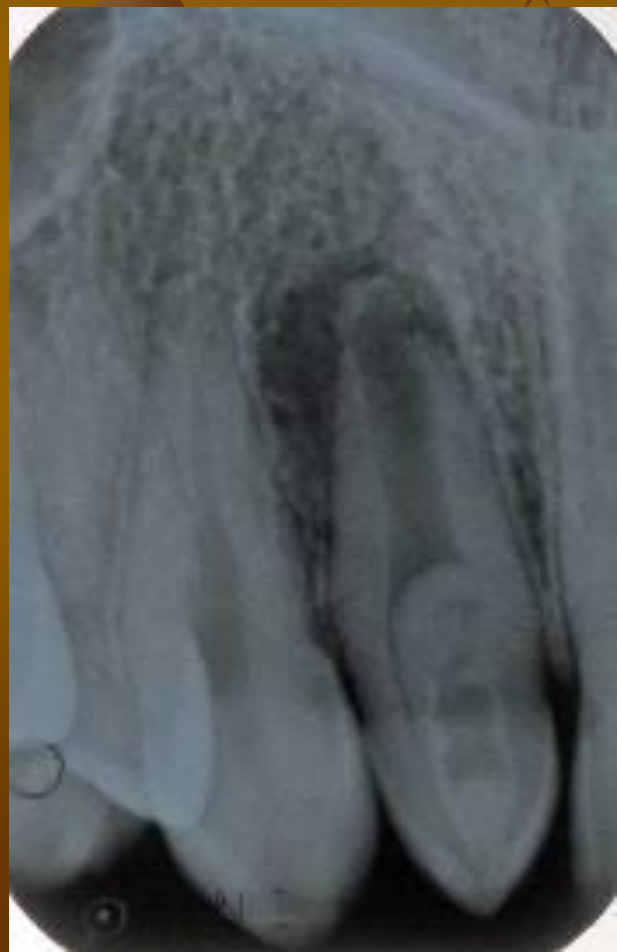
-Mostly in maxillary laterals ,centrals, premolars.

-Represents an accentuated lingual pit

-Some times a larger invagination resemble **(a tooth inside a tooth)**

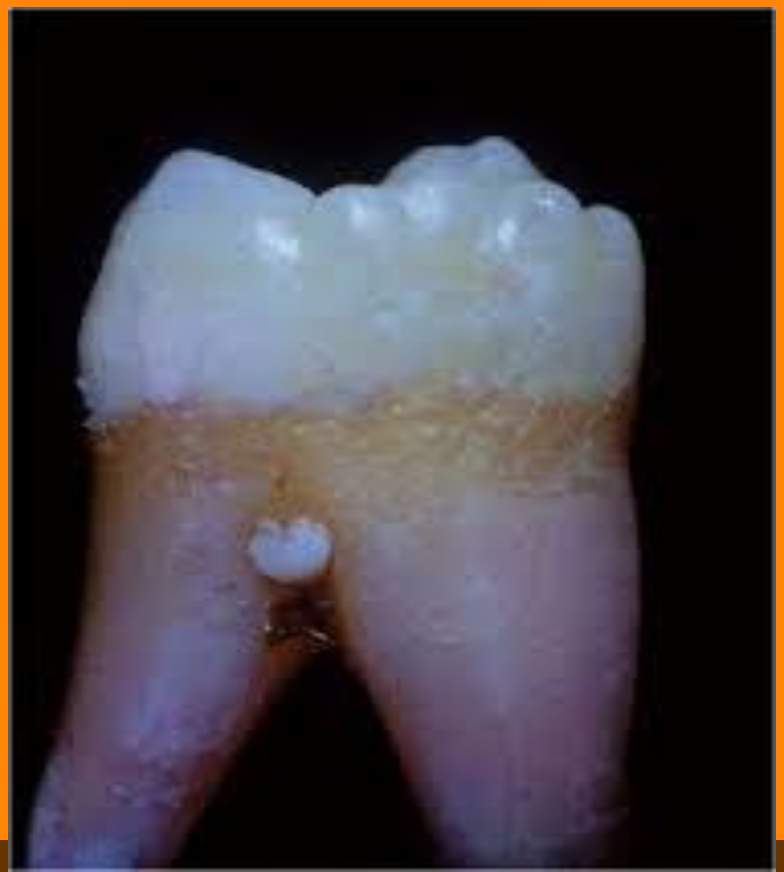
-Some times appear as a deep fissure in ligual pit of upper lateral which close to pulp,& may lead to focal food impaction induce caries which may progress to pulpitis.

(x-ray appear as a pear shaped enamel invagination)



f- Ectopic enamel

- Presence of enamel in unusual location, on tooth root (= enamel pearls)
- Mainly affect maxillary & mandibular molars (on bifurcation),but may be seen on single-root premolar

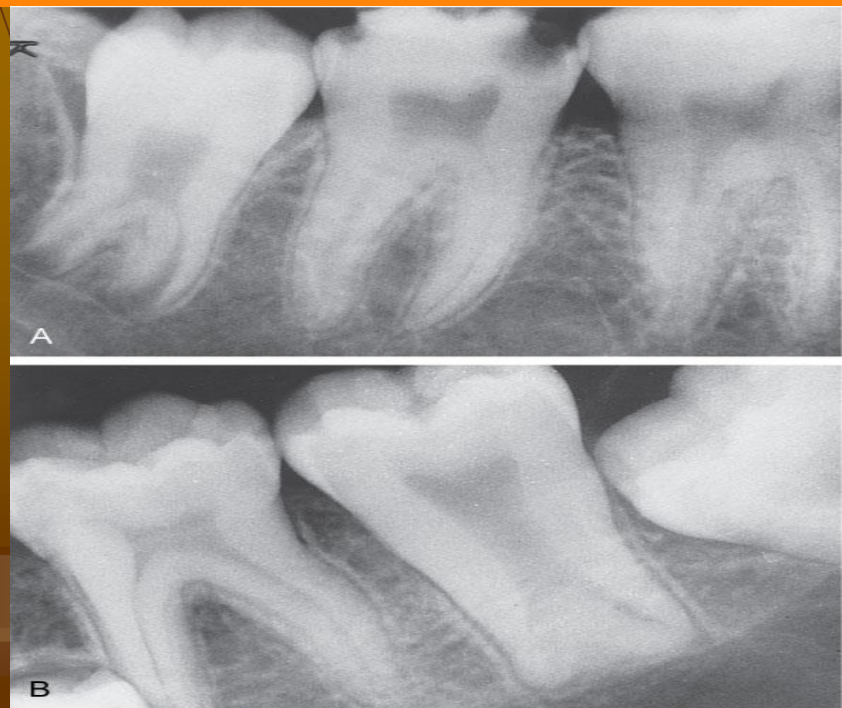


g-Taurodontism

-Mainly seen in molars The teeth have elongated crown & apically displaced furcation of the roots leading to enlarged ,rectangular pulp chamber

(increased apico-occlusal height of pulp-chamber)

- Diagnosis is made by radiograghic appearance
- It can occurs as an isolated condition, or in association with **Down's syndrome & Klinefilter syndrome**



h-Hypercementosis:

Non-neoplastic deposition of excessive cementum, which is continuous with normal radicular cementim

Causes:

1-Local:

a- Abnormal occlusal trauma.

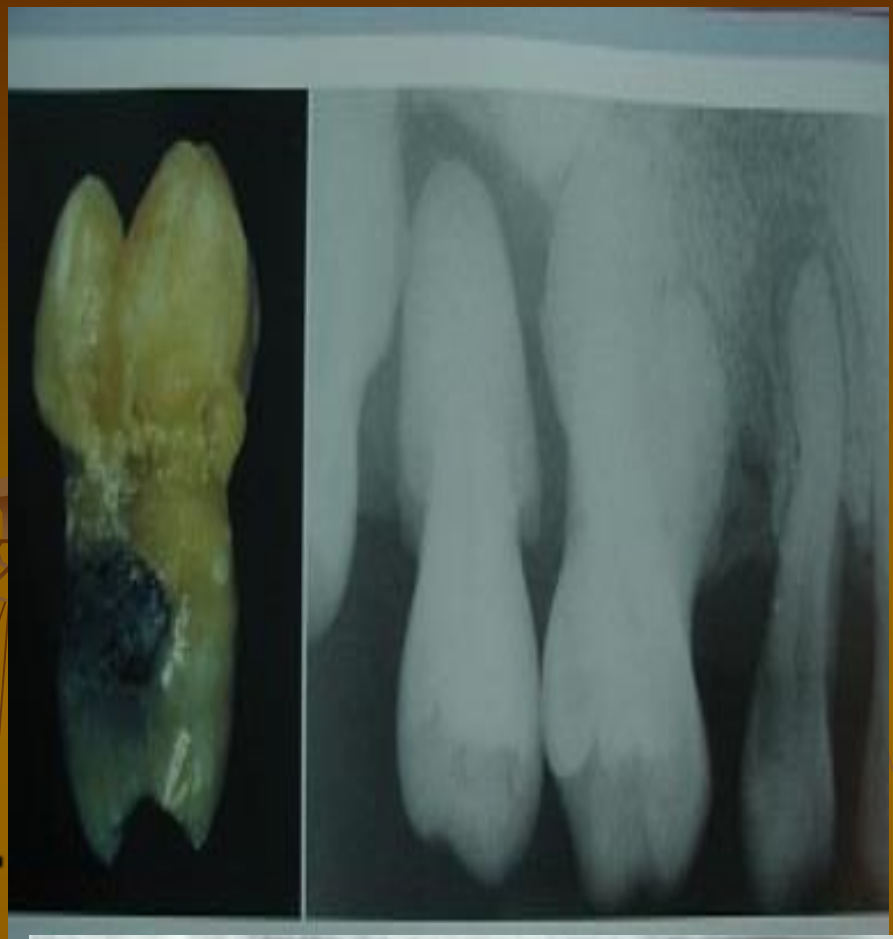
b- Adjacent inflammation.

2-Systemic:

a- Paget's disease.

b- Acromegaly.

c- Gigantism and arithritis.

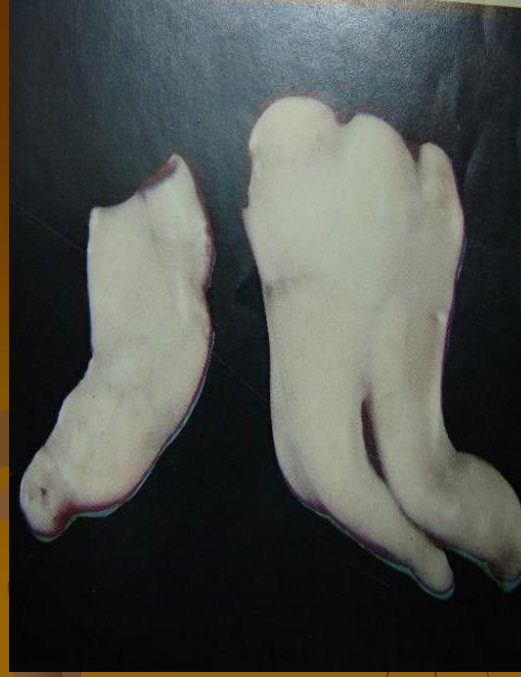


i-Dilaceration:-

-Sharp bend or angulations of root due to trauma during tooth development.

-Mostly found with maxillary anterior teeth which prevent its eruption.

- It lead to difficult extraction



j-Supernumerary roots:-

-Increase number of roots on a tooth (compared with classical anatomy).

-Mostly found with mandibular canine, premolars & molars (especially 3rd molars)

4- Developmental anomalies in structure of teeth:

Amelogenesis imperfecta

Enamel development divided into 3 stages:

1- Elaboration of organic matrix= (hypoplastic)

2- Mineralization of organic matrix=(hypopcalcified)

3- Maturation of enamel (hypomaturation)

(↑mineralization)

Amelogenesis imperfecta (A.I):

-A spectrum of hereditary defect in ameloblast function, enamel maturation & mineralization leading to a generalized enamel abnormality. It affects both dentition

-It is of ectodermal disturbance.

Types:-

a-Hypoplastic Amelogenesis imperfecta:-

-Teeth erupt with inadequate deposition of enamel matrix. (The enamel is not formed to full normal thickness)

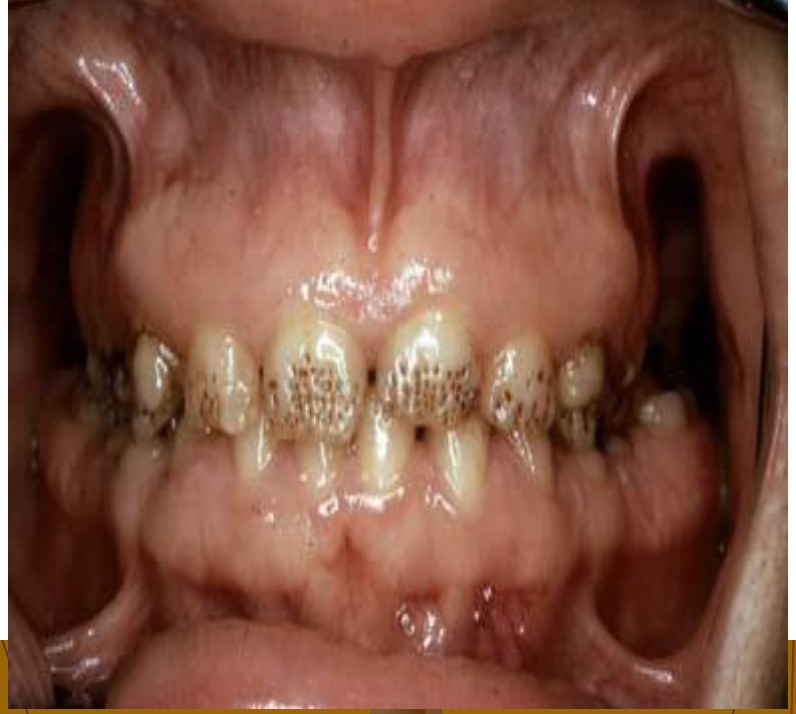
- It may be:

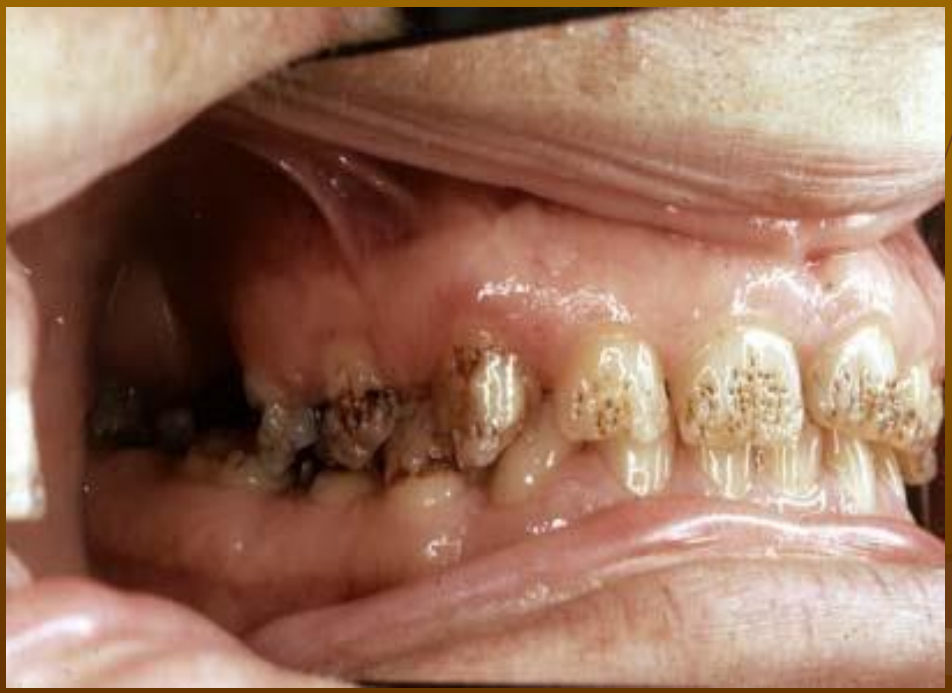
Generalized

Characterized by pinpoint- to- pinhead -sized pits, scattered across buccal surface of teeth

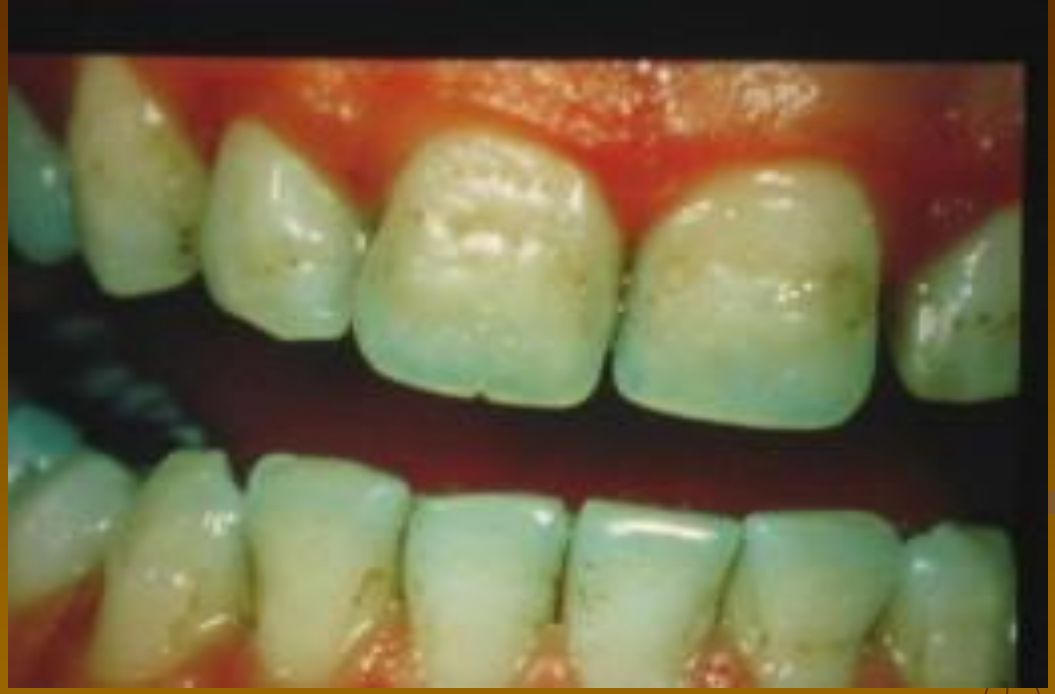
Localized

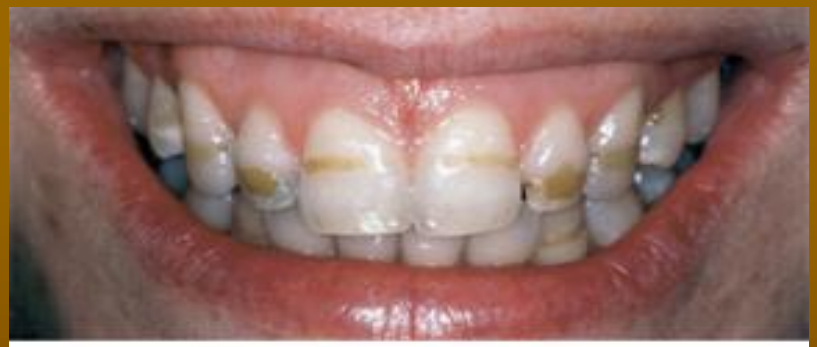
Horizontal rows of pits or a linear depression in the middle third of buccal surface of teeth. Incisal edge or occlusal surface is unaffected.

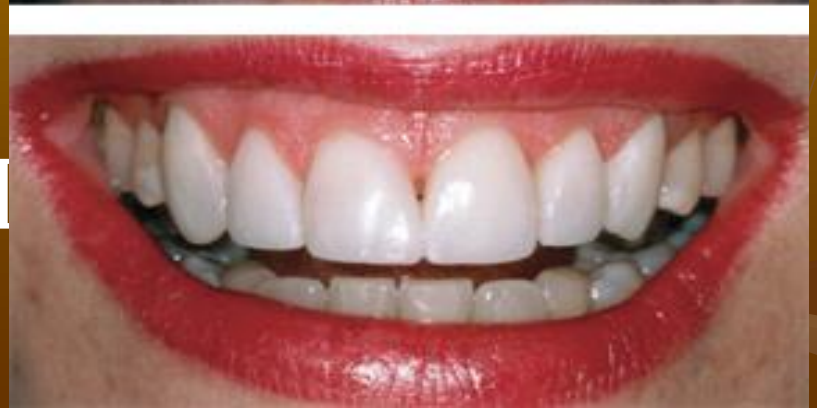


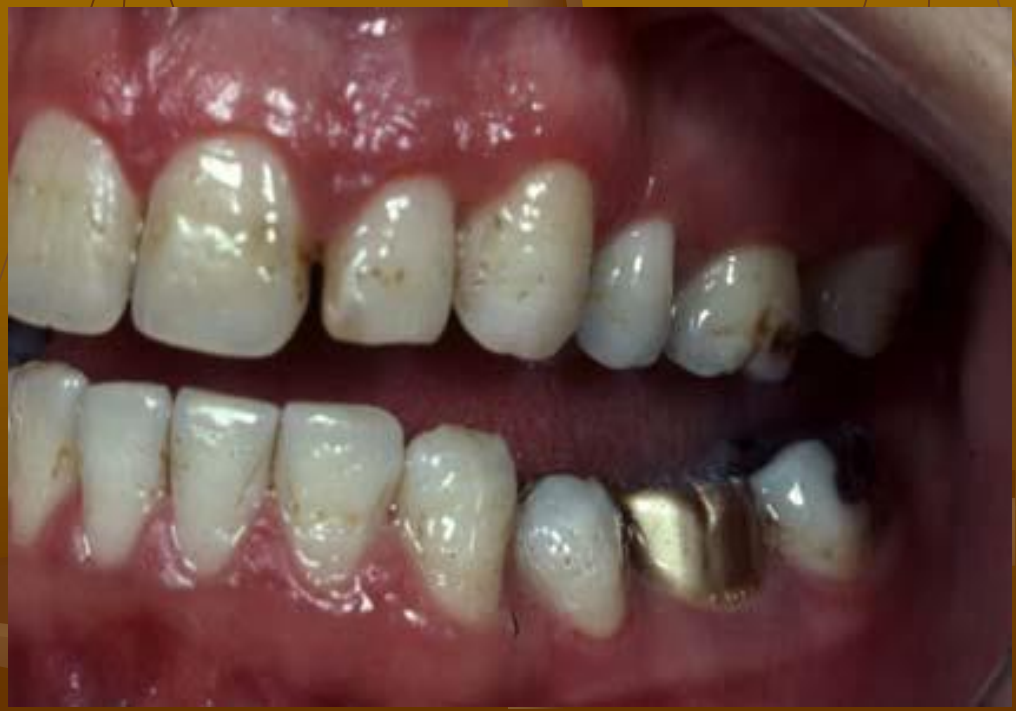


Generalized pitted









b-Hypocalcification A.I :-

- Enamel matrix is of a normal quantity, but no significant mineralization occurs.
- Enamel is very soft, friable, so it is fracture & wear easily except for cervical portion.
- The color varies from white- opaque to yellow- brown.
- It exhibits rapid calculus apposition.

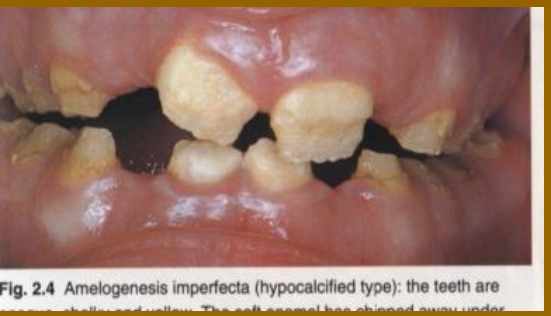
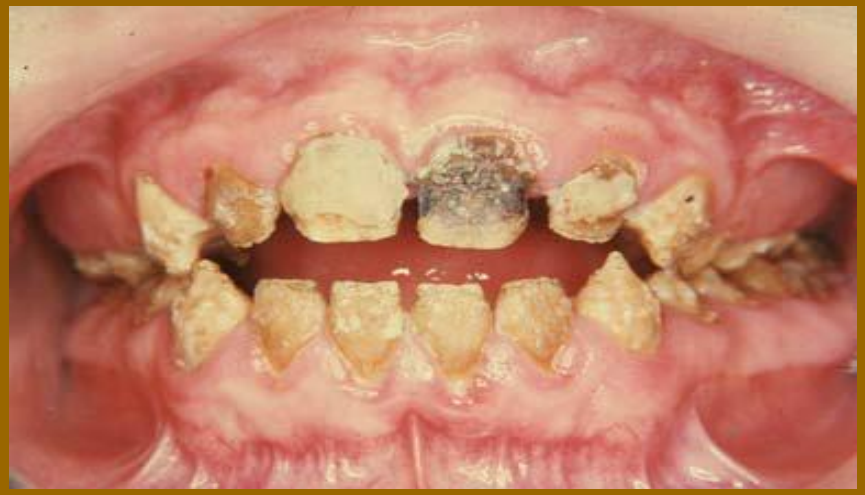
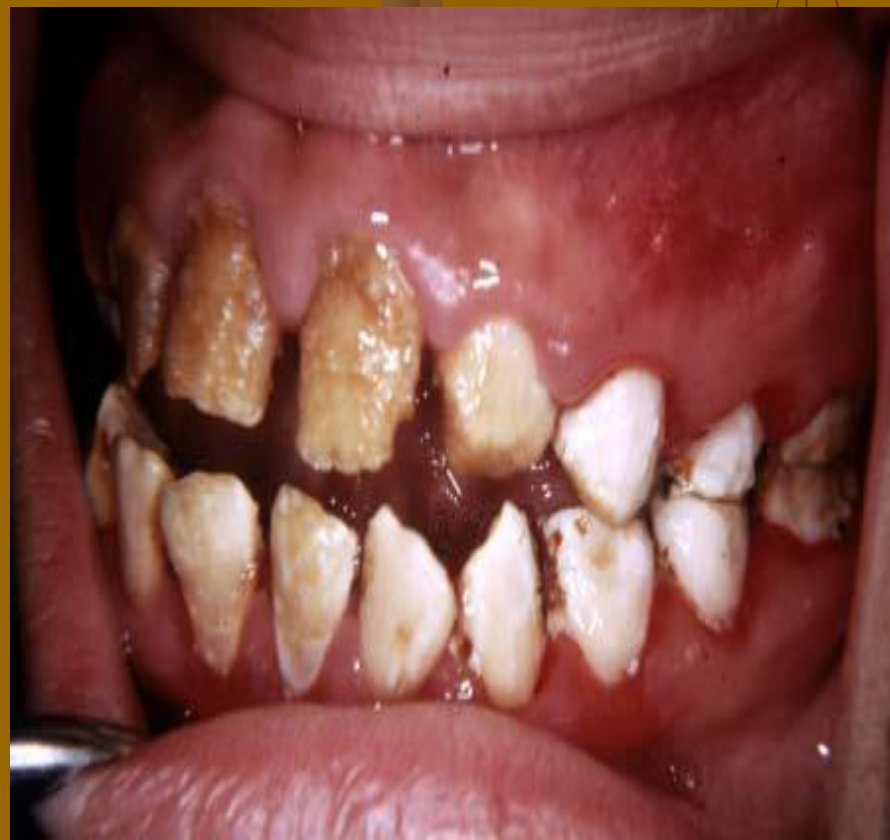


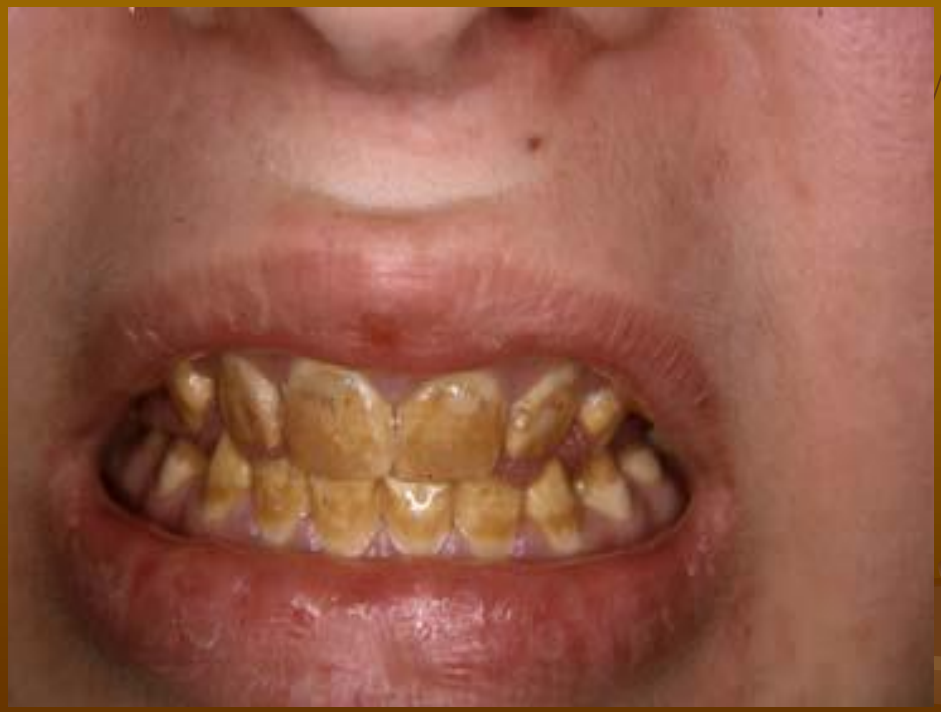
Fig. 2.4 Amelogenesis imperfecta (hypocalcified type): the teeth are

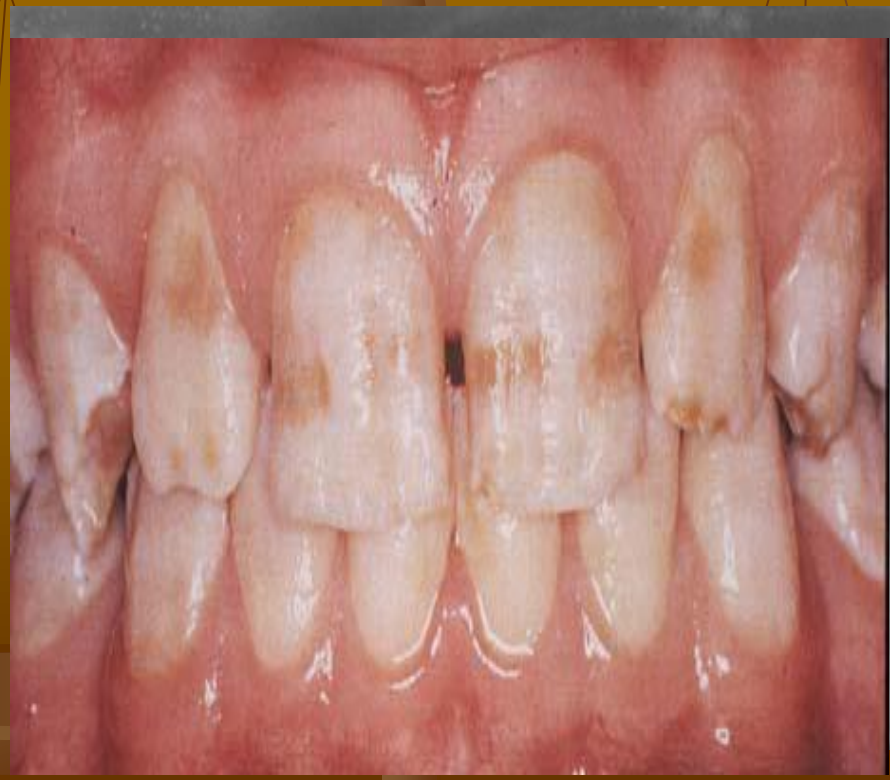




c-Hypomaturation A.I :-

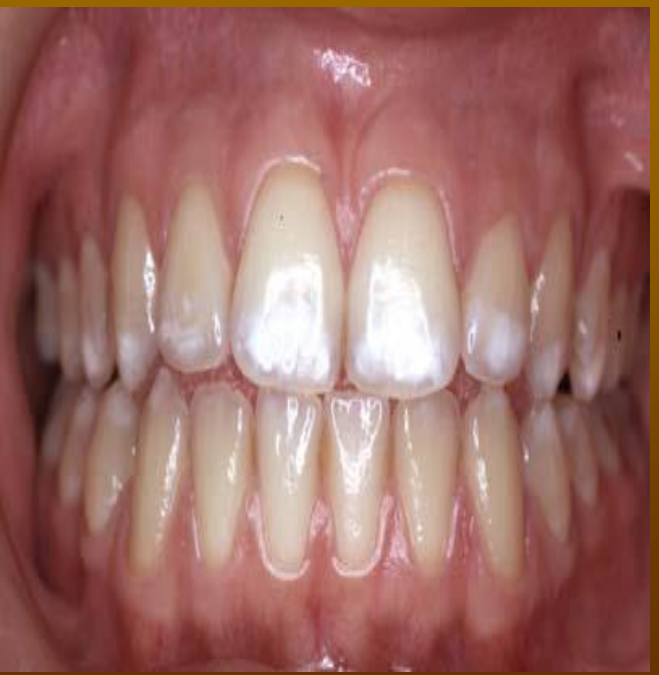
- Enamel matrix is normal , but the defect in maturation of enamel crystals structure.
- Normal shaped teeth, but with a mottled, opaque- white to brown-yellow discoloration.
-Enamel softer than normal, easily chipped off from the underlying dentin.

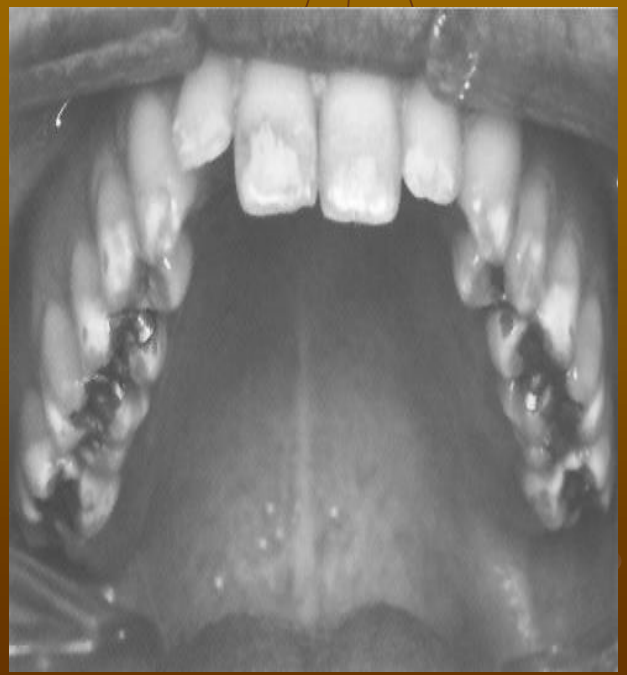


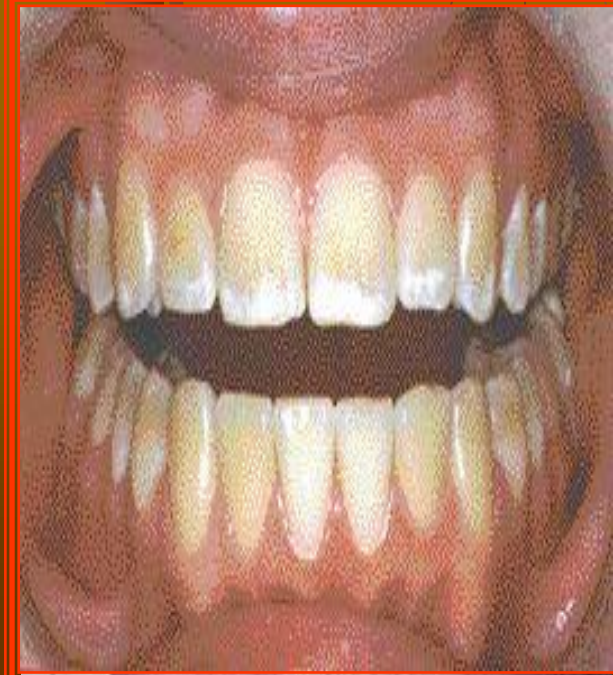


Snow-capped Teeth

- It is a type of hypomaturation amelogenesis imperfecta
- Characterized by a zone of white opaque enamel on incisal and occlusal surface (1/4 to 1/3 of the surface)
- Looks like fluorosis
- Affects both dentitions







Dentinogenesis Imperfecta

Dentinogenesis imperfecta (D.I)

- Inherited disorder of dentin formation.
- Affect both dentition.
- Irregular formed & undermineralized dentin which obliterated the coronal & root pulpal chamber.
- It is of a mesodermal deformity.

Clinical features:-

1- Normal enamel thickness (appearance) but weakly attached and easily chipped away from dentin

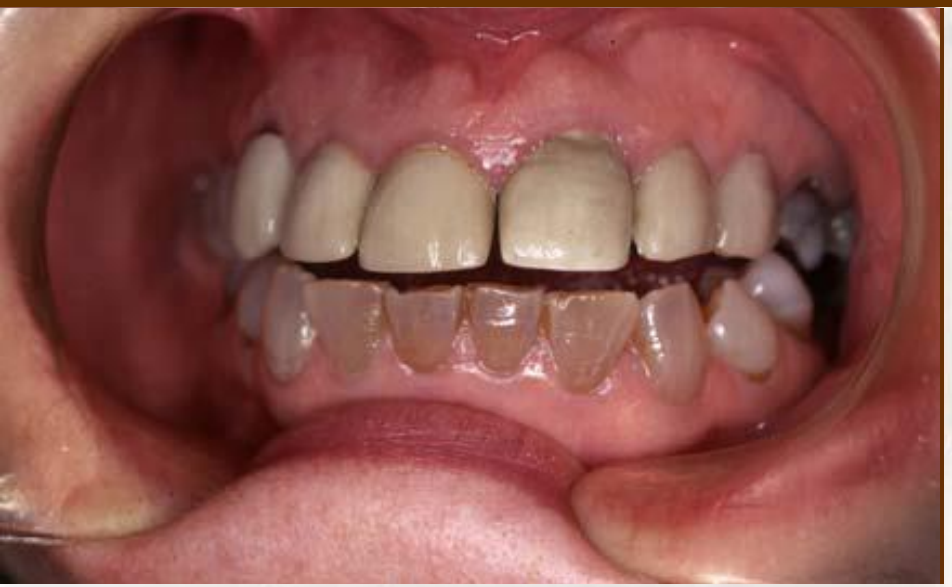
(exposed soft dentin undergo rapid & severe attrition)

2- Normal tooth form, crowns of molar are bulbous with short roots.

3-Tooth uniformly brownish-yellow, bluish-grey or purplish and abnormally translucent (opaque).

(so it is called opalescent dentin)

4-Radiographically: obliterated pulp chamber by dentin, bulbous crown, and stunted roots.



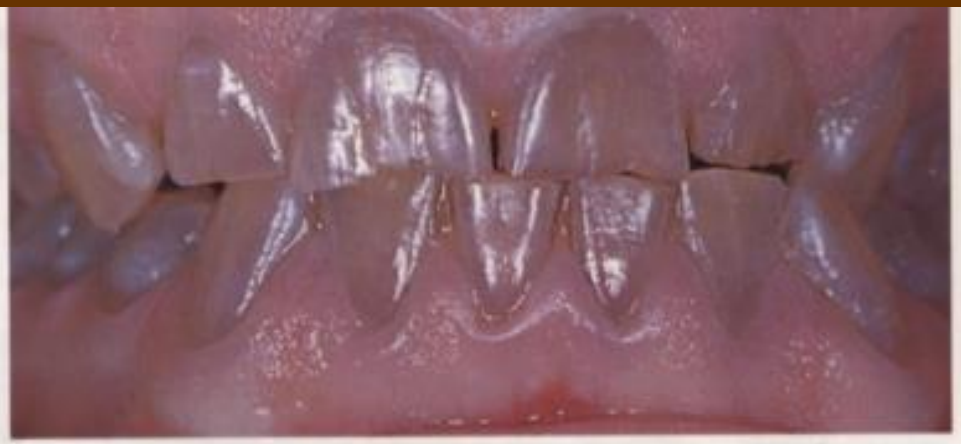


Fig. 2.5 Dentinogenesis imperfecta: the teeth are greyish in colour but, unlike the tetracycline-stained teeth in Fig. 2.29, are abnormally translucent.

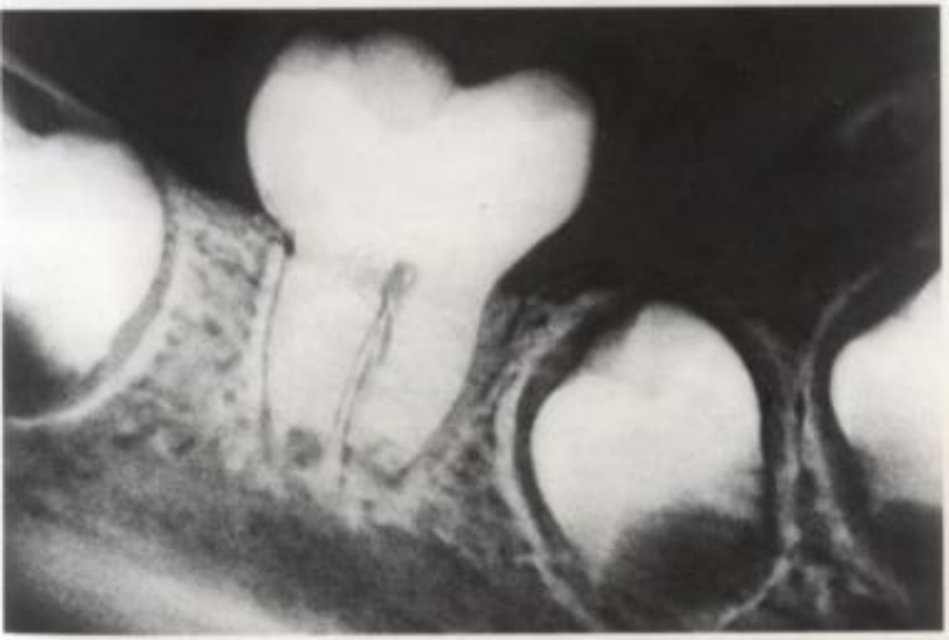


Fig. 2.6 Dentinogenesis imperfecta: this radiograph shows the characteristic short roots and relatively bulbous crown.

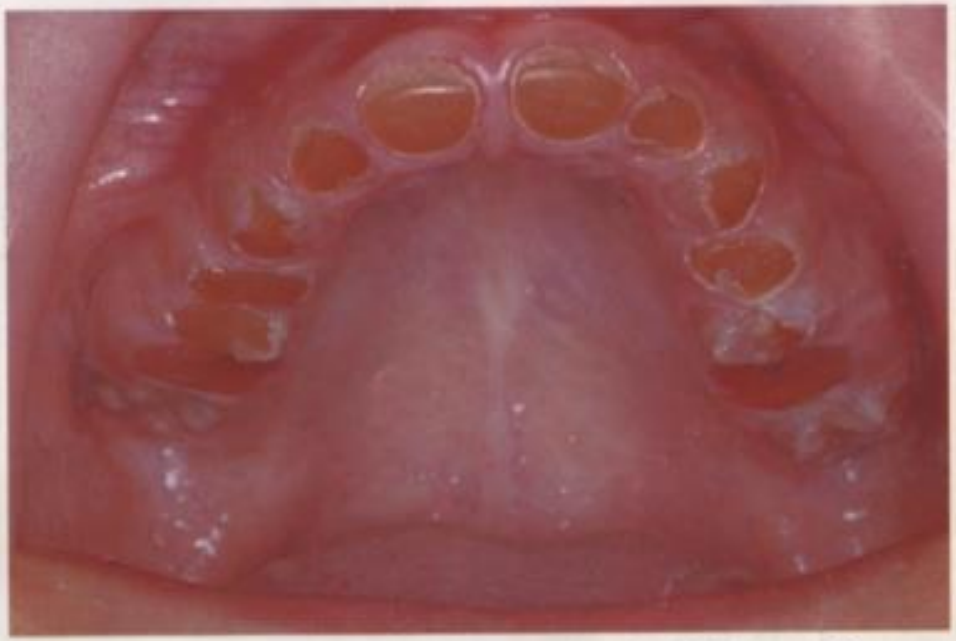
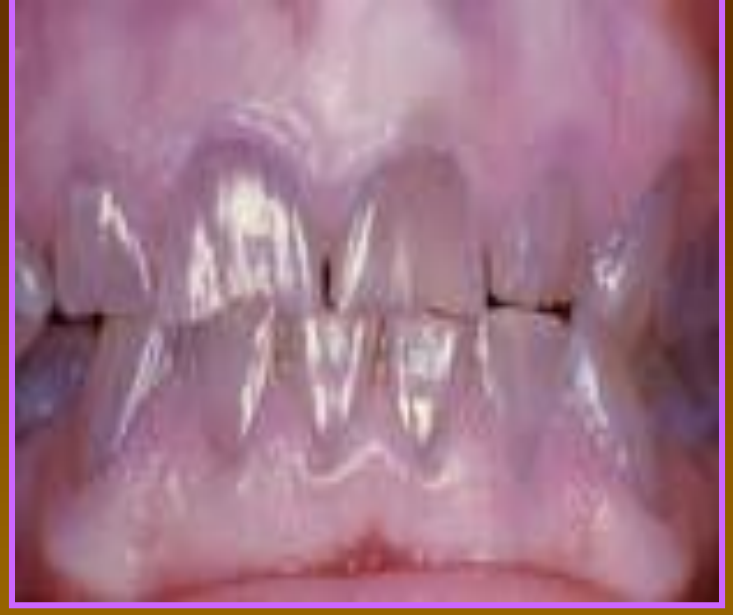
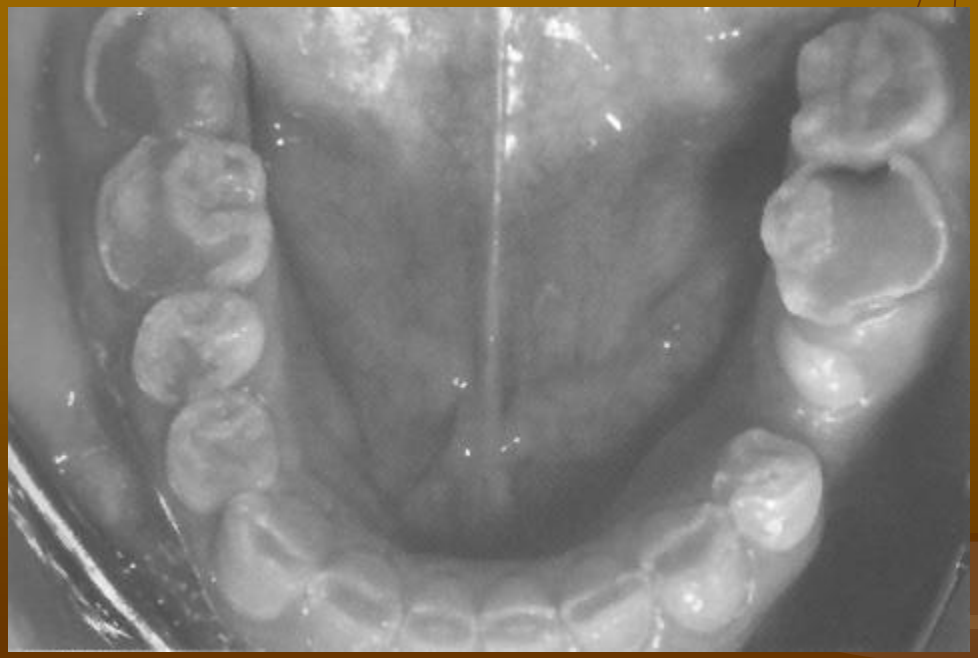


Fig. 2.7 Dentinogenesis imperfecta: in this 14-year-old, the teeth have worn down to gum level but the pulp chambers have become obliterated as part of the disease process. Some enamel remains around the necks of the posterior teeth.






1x
Imagen tomada de: http://www.usc.edu/hsc/dental/PTHL312abc/index.html

Types of dentinogensis imperfecta :-

a- Type I:-

Associated with osteogenesis imperfecta.

Patient has opalescent color teeth and blue sclera.

b- Type II:

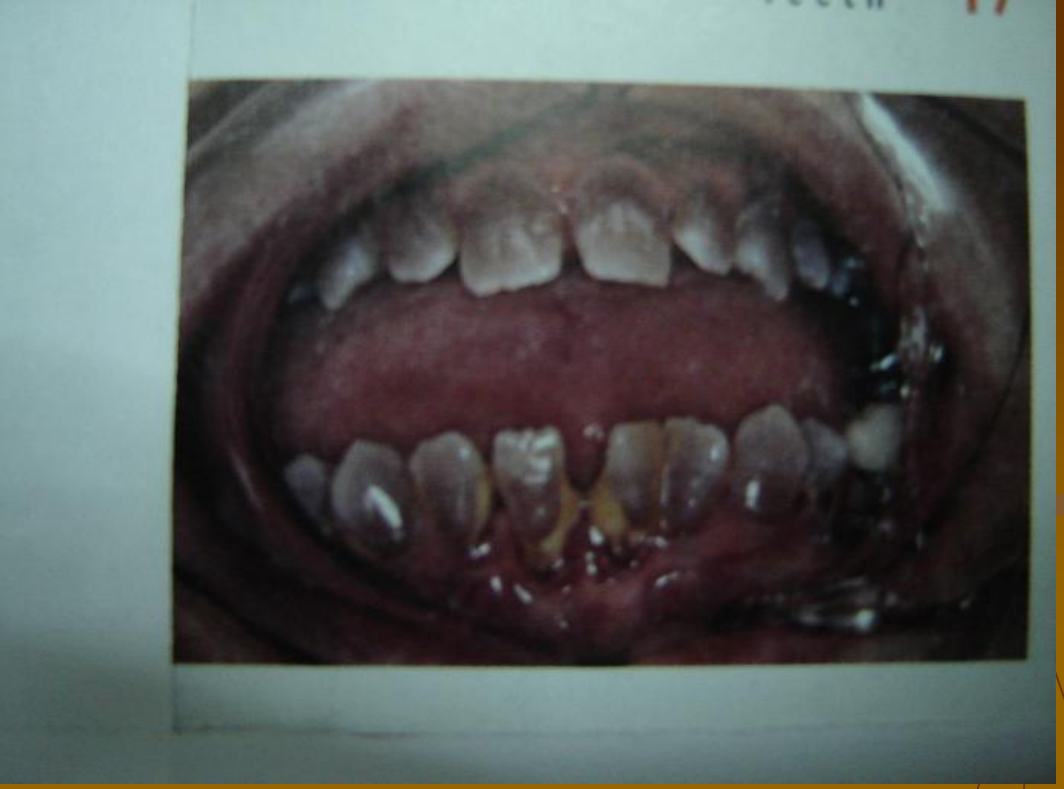
Not associated with osteogenesis imperfecta.

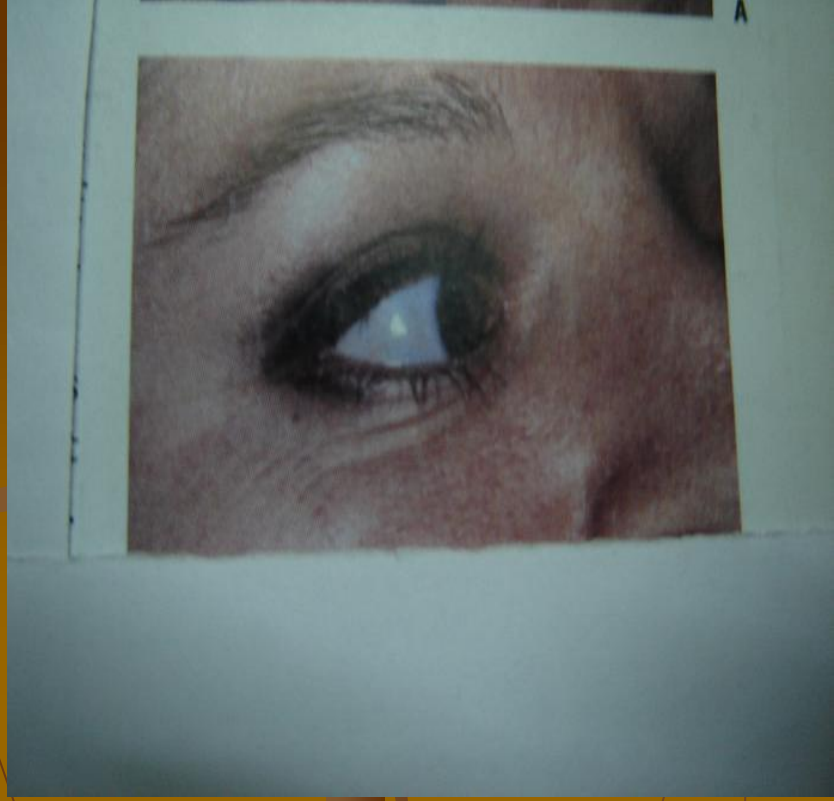
More common type.

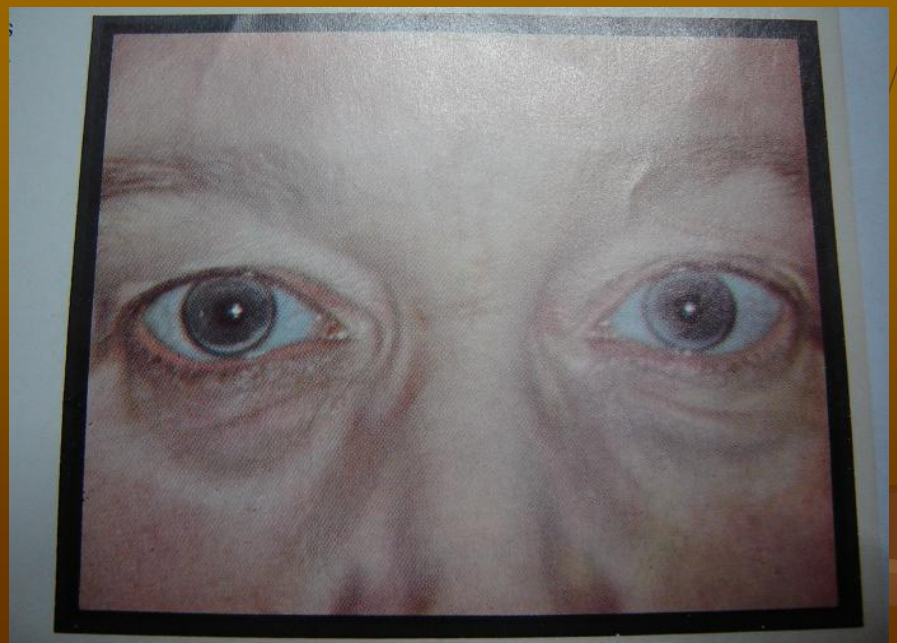
c- Type III:-

Called Brandy wine type.

Rare, clinically have the same picture as in type II, except that the patient with multiple pulpal exposure & periapical lesions of primary teeth.



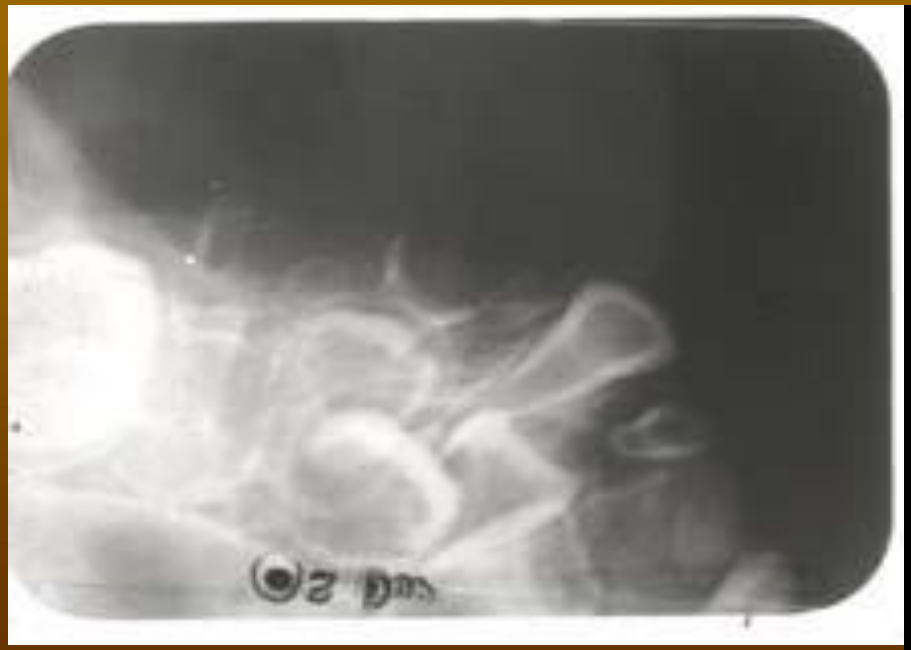




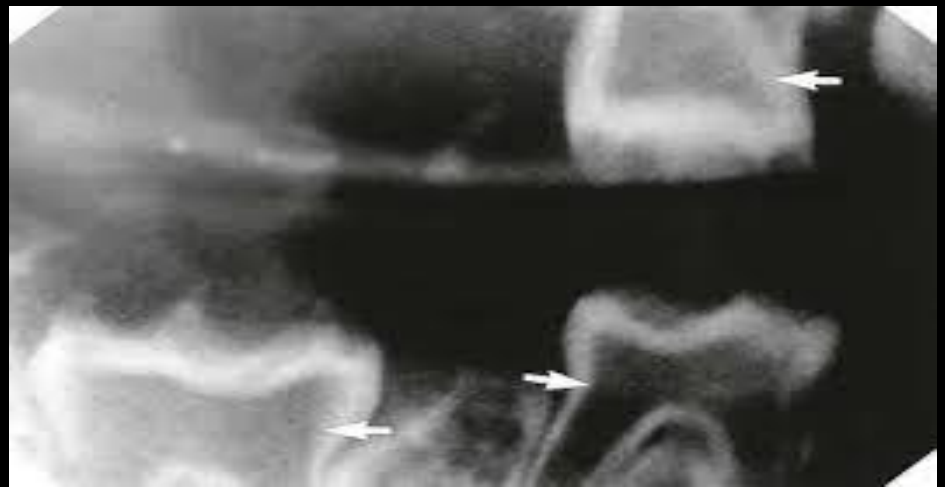
Dentinogenesis imperfecta

Shell teeth

- It is a variant of dentinogenesis imperfecta.
- Rare anomaly, seen most frequently in deciduous teeth.
- Demonstrate a normal thickness of enamel, thin shell of dentin surrounding a large pulpal chamber.



- Shell tooth: appear as wide pulp chamber



Dentin dysplasia:-

Autosomal dominant inherited disorder.

Abnormal dentin formation, and abnormal pulp morphology.

Classified to:-

a- **Type I (radicular dentin dysplasia) (Rootless teeth):-**

More common than type II (both are rare).

Affected teeth appear with mobility & shed prematurely.

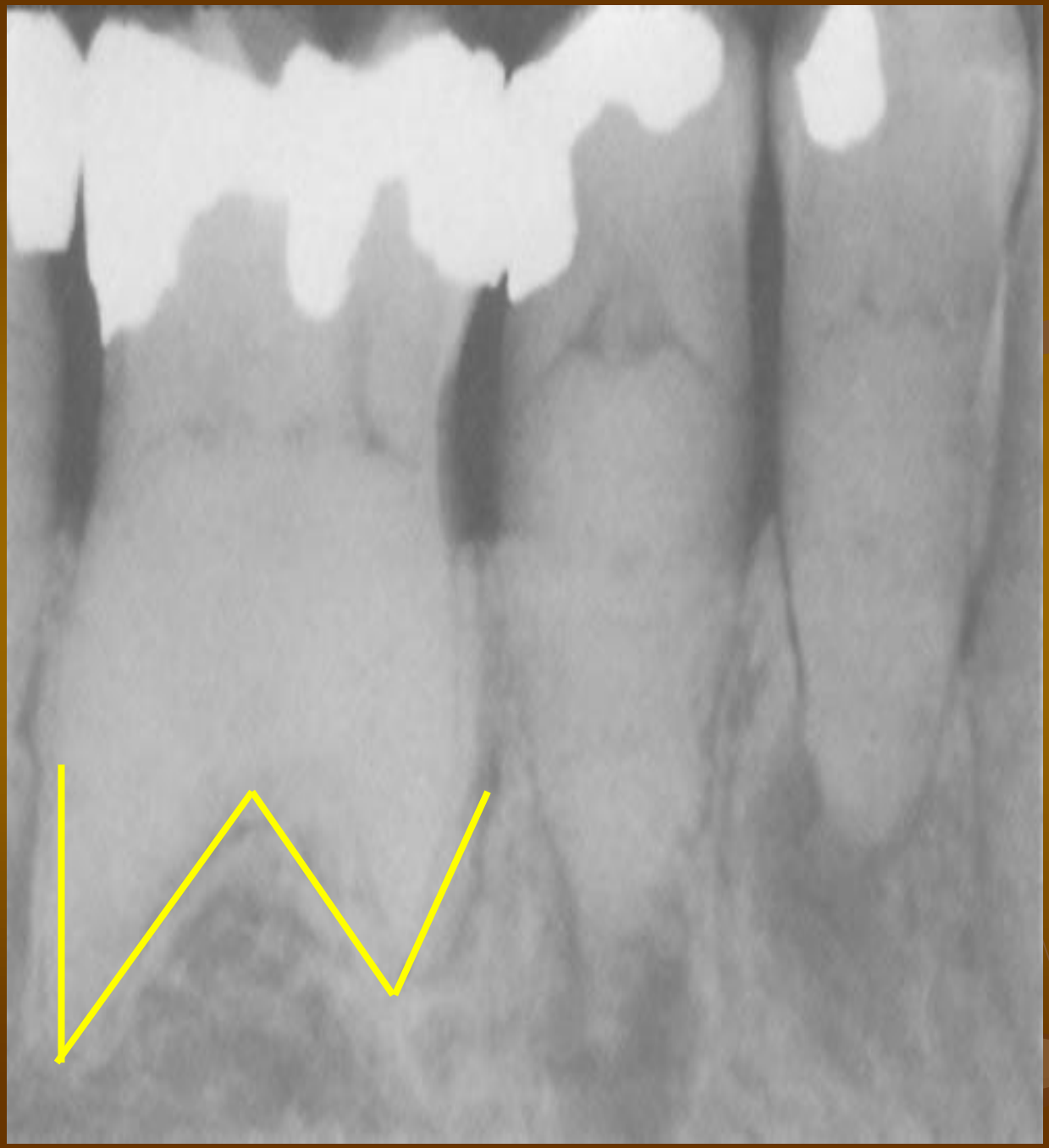
Radiographically: root very short, blunt, bulged and conical or absent.

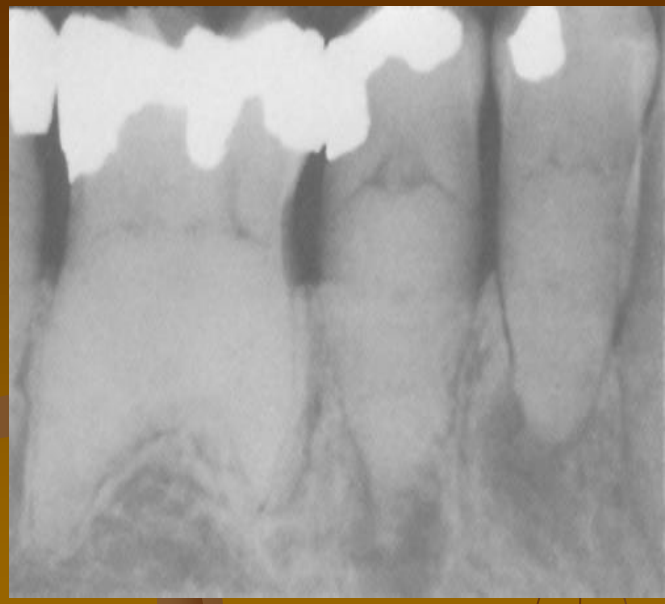
Permanent molars have a characteristic **W-shaped** root with pulpal obliteration.

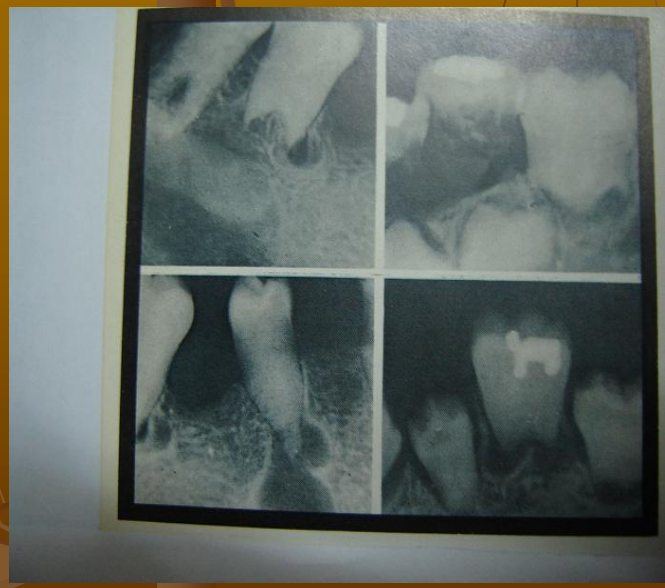
Affected both primary and secondary dentition.

Sectioned teeth reveals tubular dentin arranged in a cascade pattern, result from repetitive attempt to form root structures .

These teeth tend to be lost early in life.







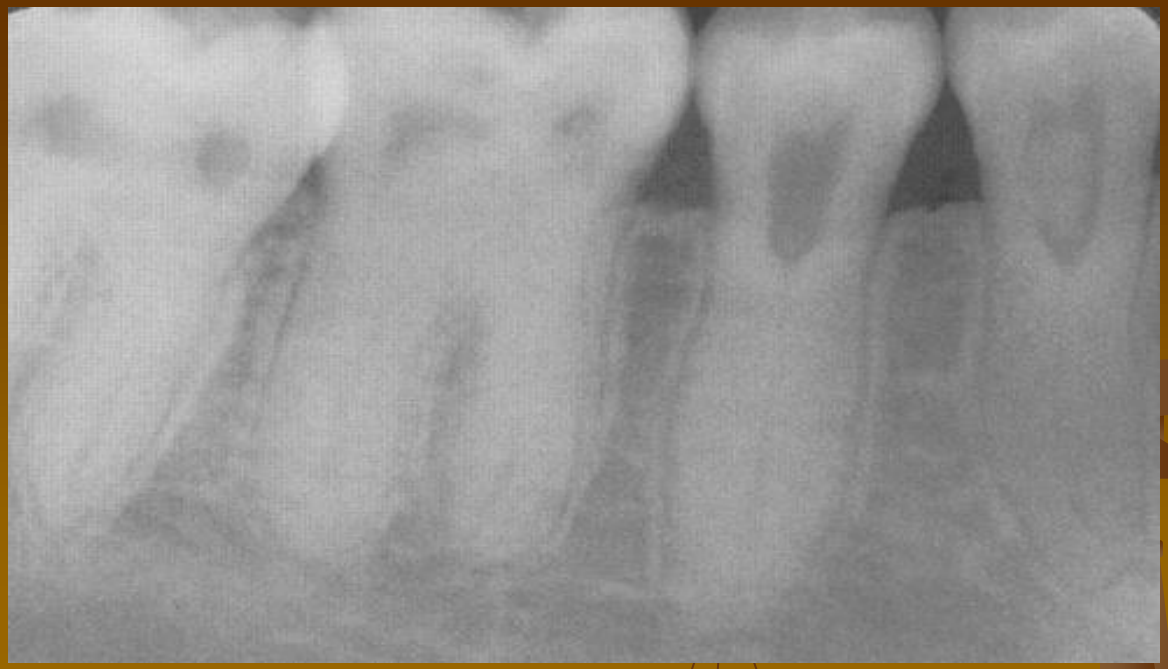
b-**Type II (coronal dentin dysplasia):-**

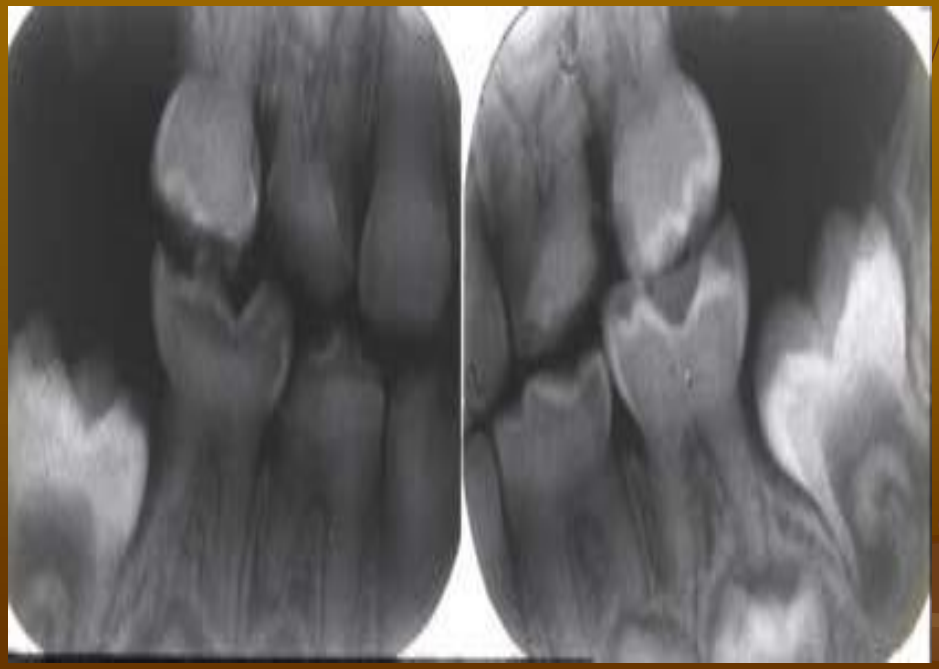
Mainly affected deciduous teeth.

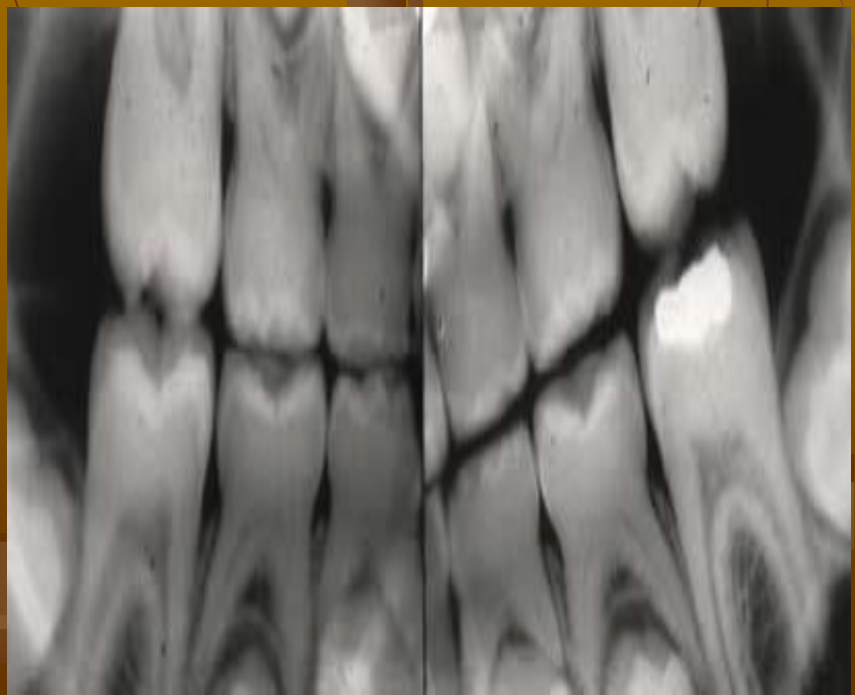
Teeth exhibit a bluish-grey, brownish or yellow color with same translucent opalescent seen in D.I.

Permanent dentition have normal clinical appearance.

Radiographically: obliterated pulp chamber and canals, pulp stones, normal roots shape and length.







Regional Odontodysplasia (Ghost teeth)

Localized non-hereditary developmental abnormality of teeth. Unknown etiology

Defective formation of enamel, dentin & cementum

The thinnest & poor mineralization quality of enamel & dentin layers have giving rise to

Ghost teeth

Clinical features:-

More common in maxillary permanent anterior teeth.

Affected tooth has delay or total failure to erupt.

Deformed teeth shows yellowish deformed crowns, often with rough surface. They are susceptible to caries & fractures.

X-ray:-

Teeth with marked decrease (hazy) radiodensity (Ghost- teeth).

Enamel and dentin very thin and indistinct.

Pulp chamber large with occasional pulp stone.