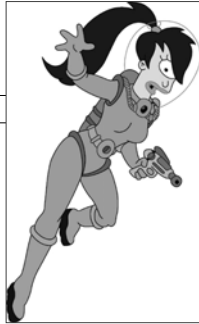


Anatomic Anomalies



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Anomalies

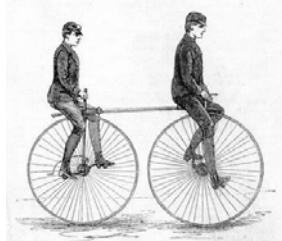
- Anomalies are variations in the:
 - Size
 - Morphology
 - Number
 - Eruption of the teeth



Anomalies

There are two categories:

- **Developmental**
- Acquired



Anomalies



- Developmental anomalies occur **during** the formation of the tooth or teeth.
- Acquired anomalies are changes to the teeth **after** their formation.

Supernumerary Teeth

- Teeth that form **in addition to** the normal complement of 20 Primary or 32 Permanent teeth.
- May have morphology similar to other nearby teeth. (Supplemental)
- Tend to be familial, polygenic, initial spontaneous gene mutations



Supernumerary Teeth

- Occur twice as often in males
- When erupted, tends to be positioned outside of the arches, either buccally or lingually.



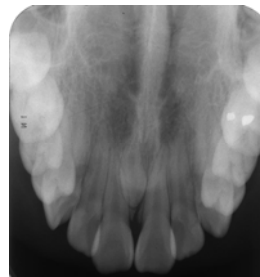
Supernumerary Teeth

Mesiodens is a single supernumerary tooth found in the maxilla between the two central incisors. Mandibular mesiodens is rare.



- It may erupt or unerupted. Unerupted mesiodens may interfere with normal eruption of the central incisors.

Mesiodens



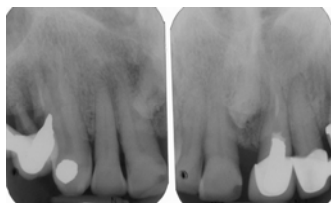
Mesiodens



Mesiodens



Mesiodens



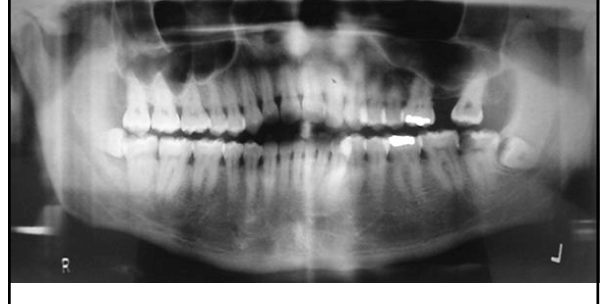
Supernumerary Teeth

- **Paramolars** are additional molar teeth.
- When they are positioned distal to the third molar, they are called **distodens** or **distomolars**

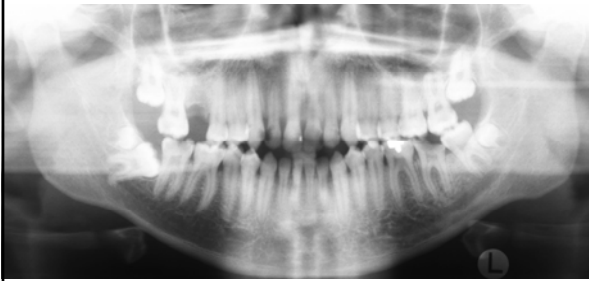
Paramolars



Distodens or Distomolars



Distodens or Distomolars



Distodens or Distomolars

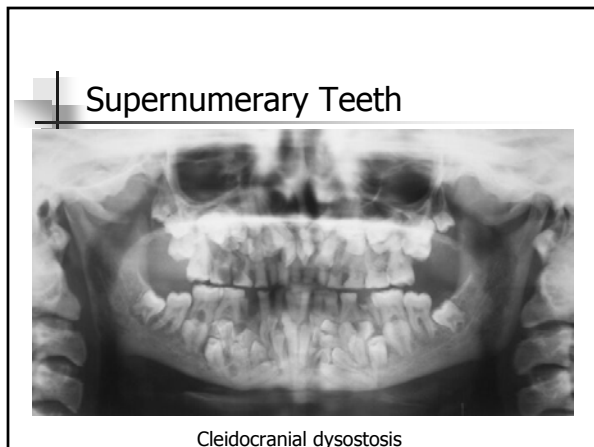
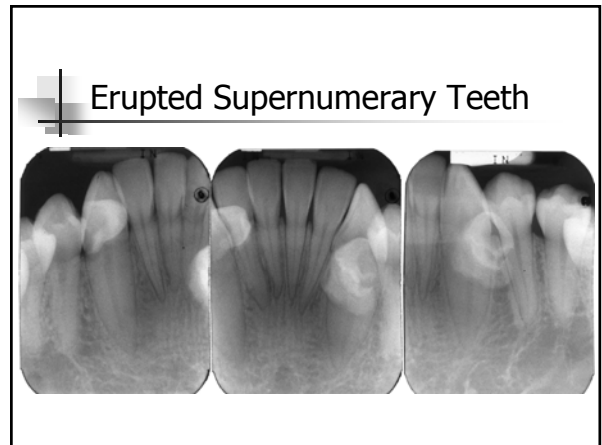
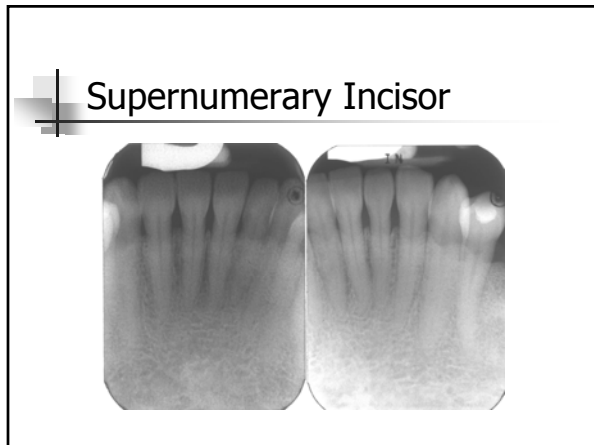
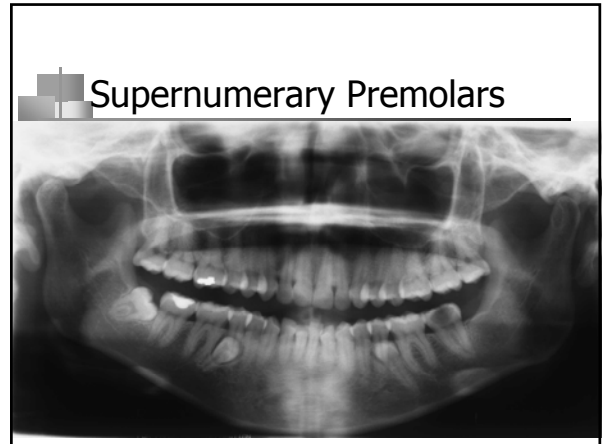
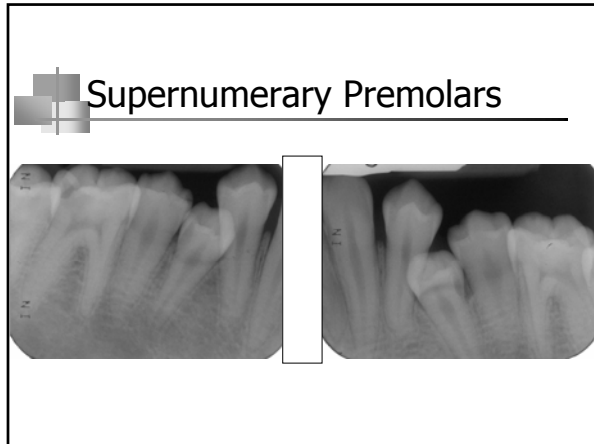


Supernumerary Teeth

- Often occur in mandibular premolar area.
- Similar in size and morphology to other premolars
- May be erupted or unerupted

Supernumerary Premolars





Missing Teeth

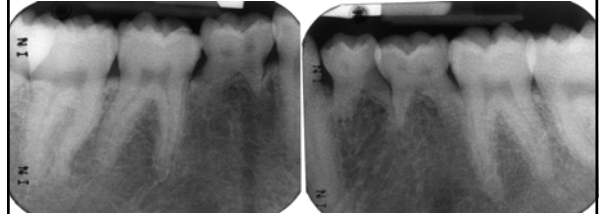
- Hypodontia
- Oligodontia
- Anodontia

The Case of the Missing Teeth

Missing Teeth

- May range from one or two teeth (hypodontia), to numerous teeth (oligodontia), to all teeth (anodontia).
- Cause may be local, such as failure of a tooth germ to develop properly, or as part of a syndrome, such as ectodermal dysplasia.

Missing Teeth



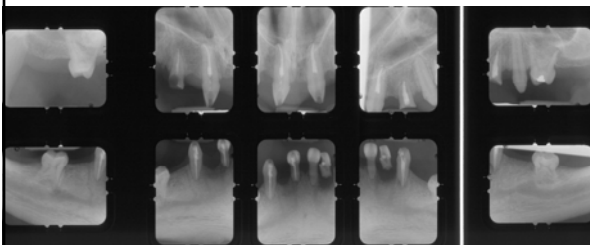
Missing Teeth



Ectodermal Dysplasia

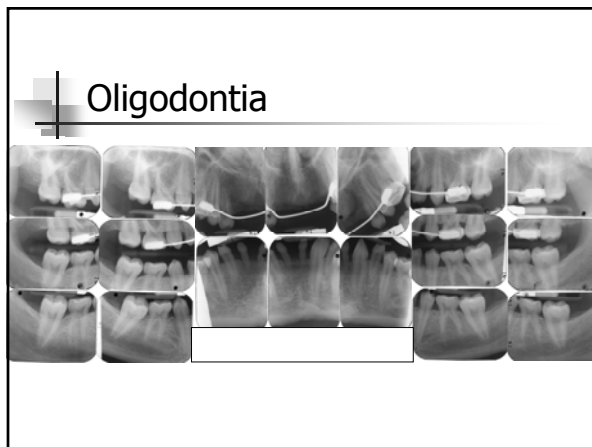
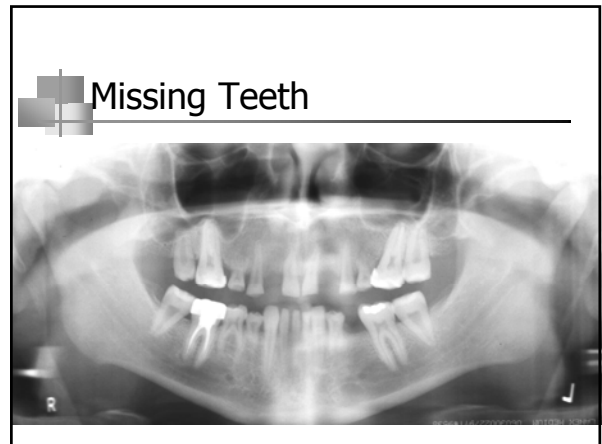
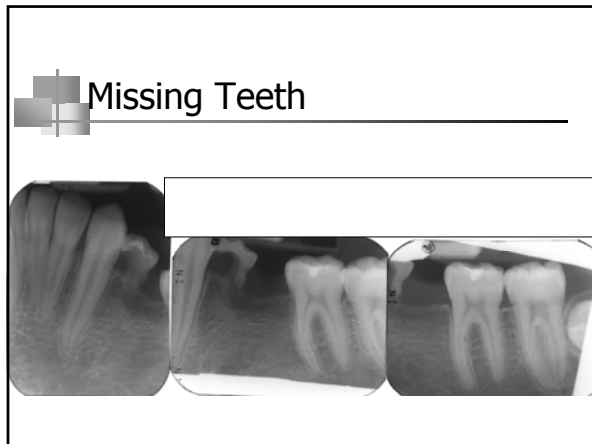


Ectodermal Dysplasia

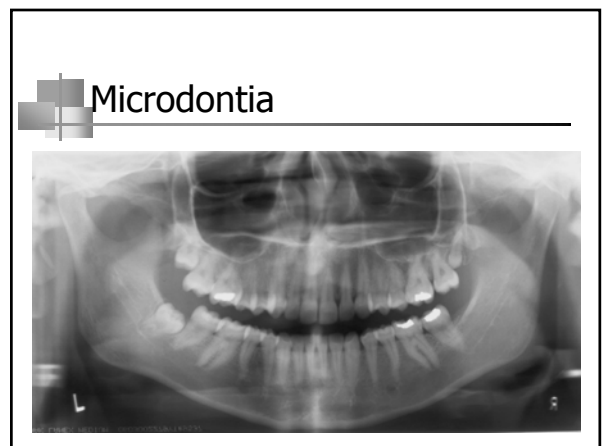
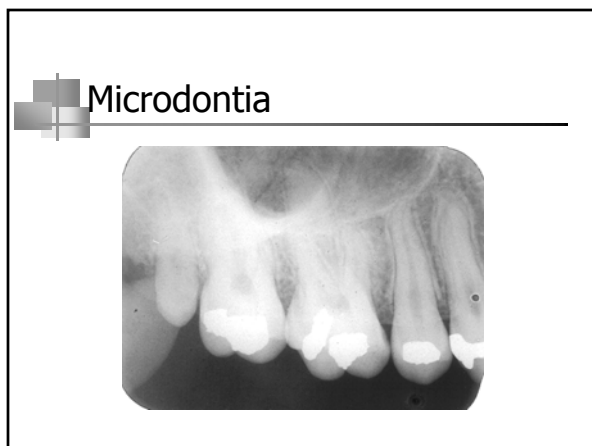


Missing Teeth

- Most commonly missing teeth are
 - Third molars
 - Second premolars
 - Maxillary lateral incisors
 - Mandibular central incisors



- ### Size of the teeth
- Microdontia
 - Macrodontia
 - Macrodontia may be relative to the size of the jaws i.e.: normal sized teeth in a small jaw. Sequellae may be malocclusion, impactions, ectopic eruptions



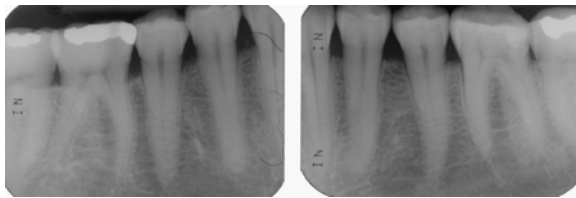
Macrodontia



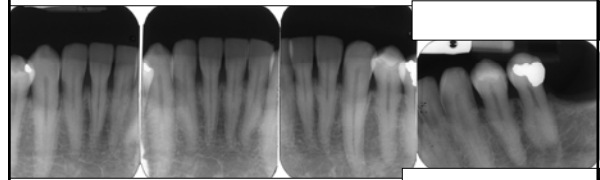
Macrodontia



Morphology



Morphology



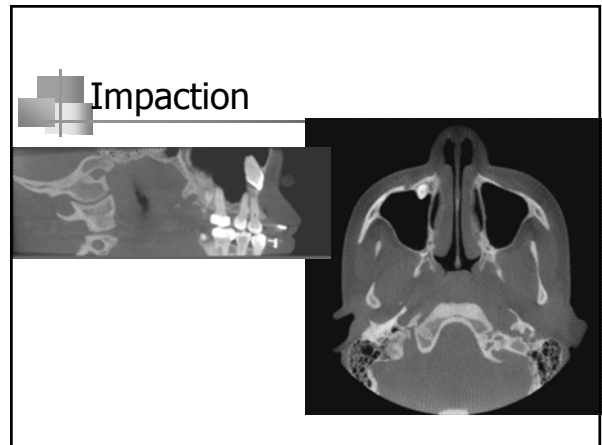
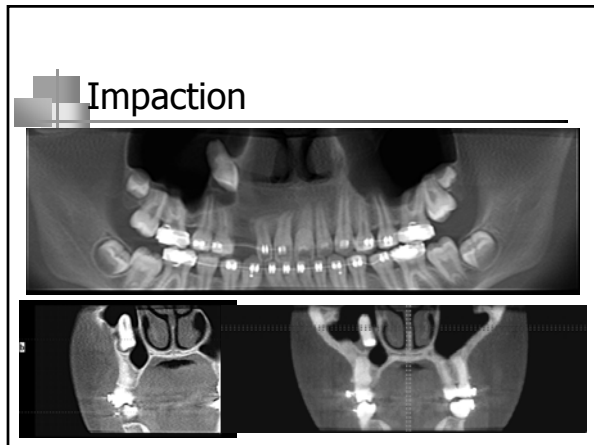
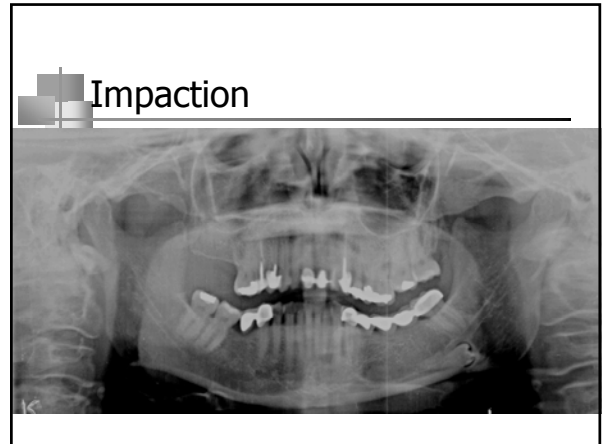
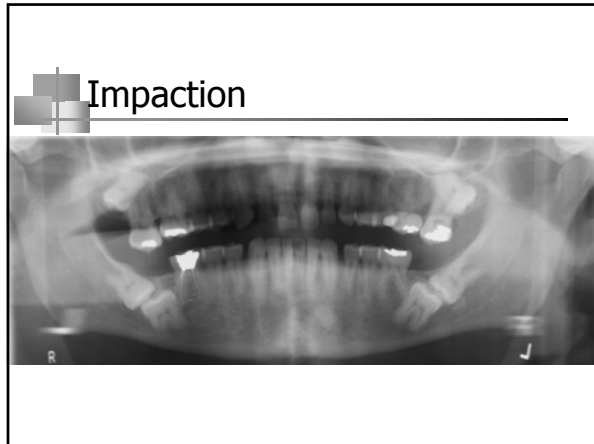
Multiple canals in lower anterior teeth

Eruption of the teeth

- Transposition
 - Exchange of position of two teeth
 - Usually canine and premolar
 - Not reported in the primary dentition

Transposition





Altered Morphology - Fusion

- **Fusion** is the union of two developing teeth
- Results in fewer teeth in the arch

Cold Fusion

A photograph of a laboratory experiment. A glass beaker contains a white, opaque liquid. Two metal rods are inserted into the liquid, and a small object is being held between them. The title 'Altered Morphology - Fusion' is at the top left, and 'Cold Fusion' is at the bottom.

Altered Morphology - Fusion

- Occurs in both primary and permanent dentitions
- Morphology and mesiodistal width of the clinical crown varies

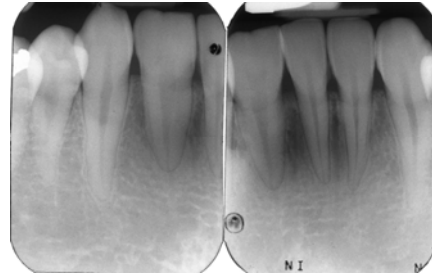
Cold Fusion

A photograph of a laboratory experiment, identical to the one in the previous slide. The title 'Altered Morphology - Fusion' is at the top left, and 'Cold Fusion' is at the bottom.

Fusion of the central and lateral incisors



Fusion of the central and lateral incisors



Fusion of the Central and Lateral Incisors



Fusion of the Central and Lateral Incisors (Maxillary)



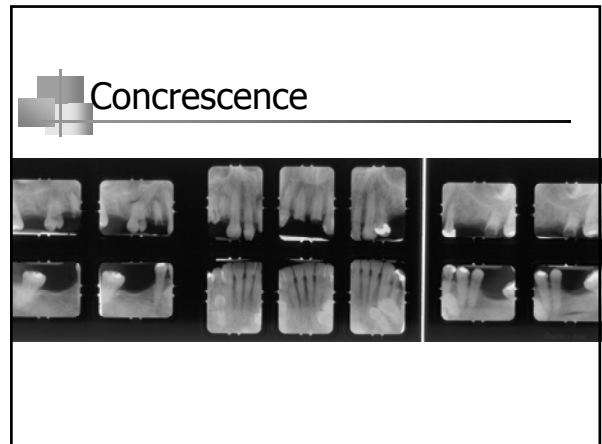
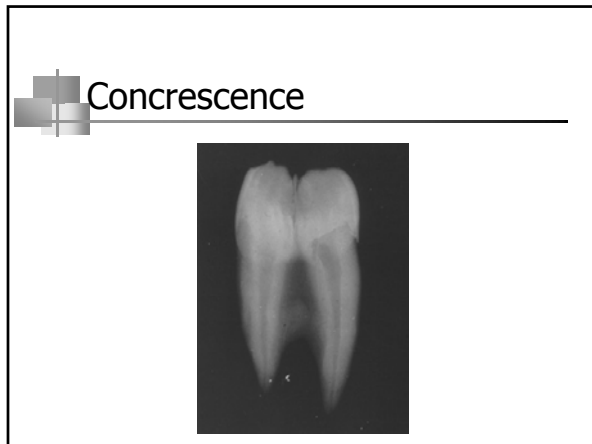
Fusion of the Central and Lateral Incisors (Mandibular)



Altered Morphology

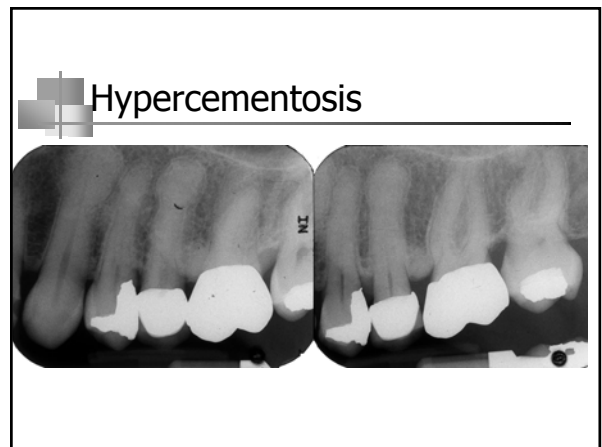
- **Concrescence** is the union of the roots two teeth by cementum only
- May be developmental or acquired





Hypercementosis

- Excessive deposition of cementum at apex of root
- May be:
 - Idiopathic
 - Response to inflammation
 - Responses to hyperocclusion
 - Seen with Paget's Disease of Bone

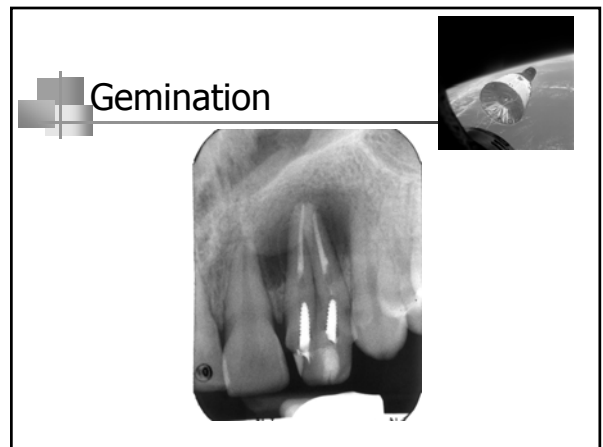
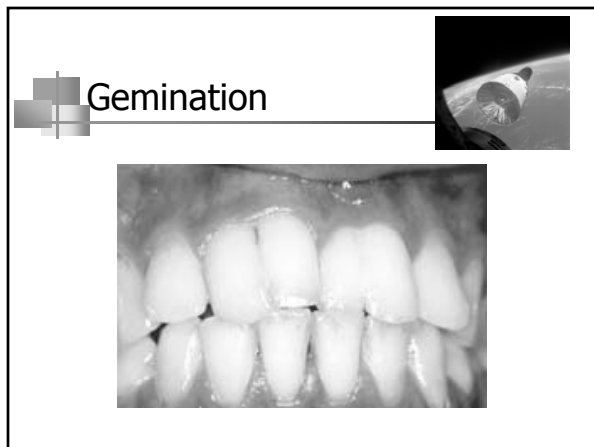
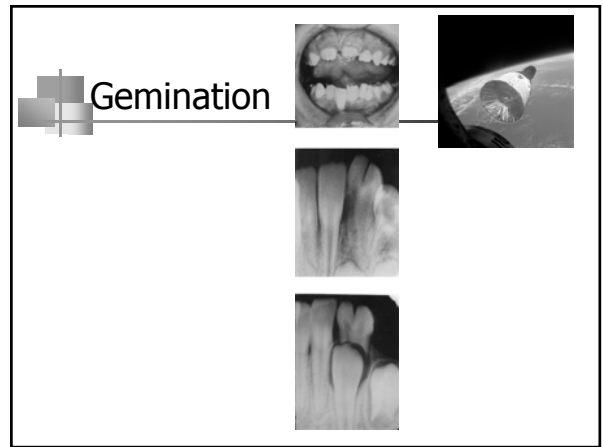
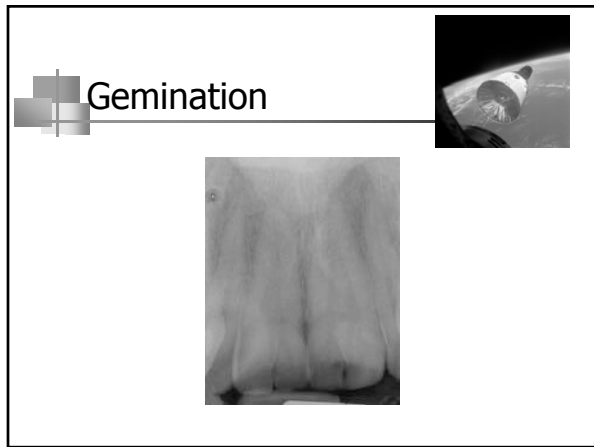
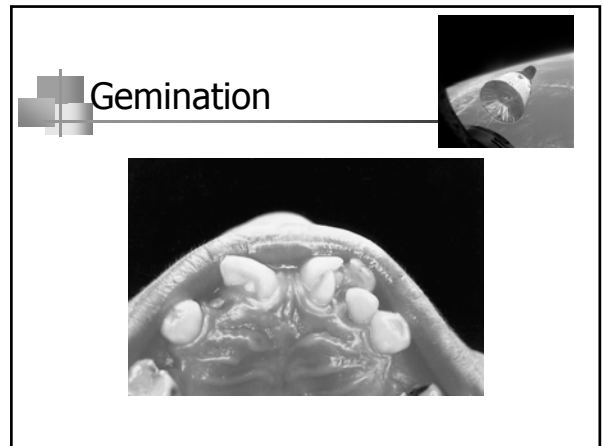
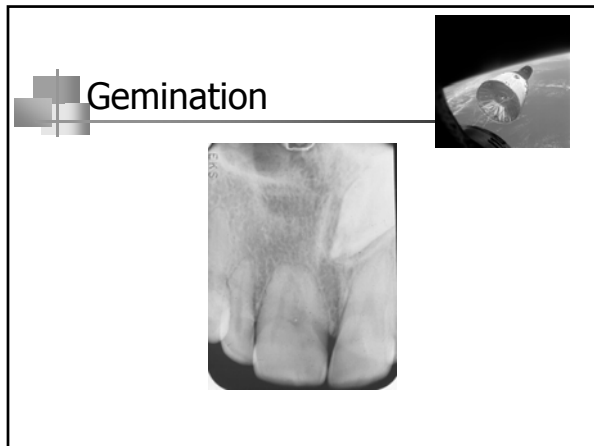


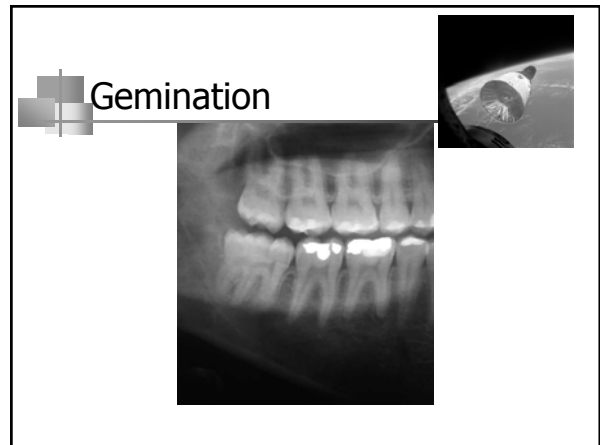
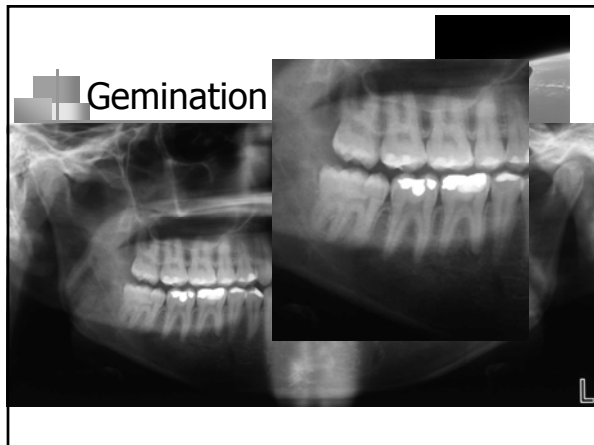
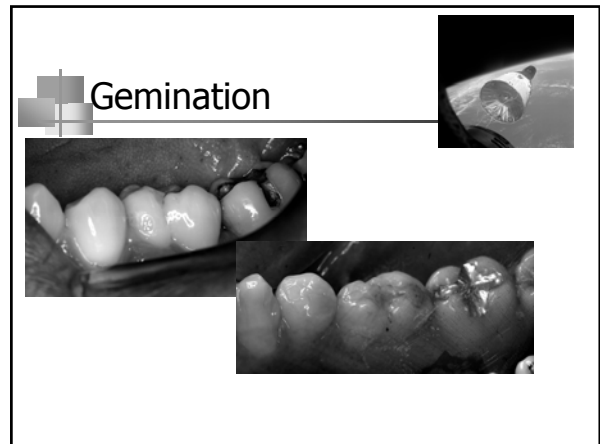
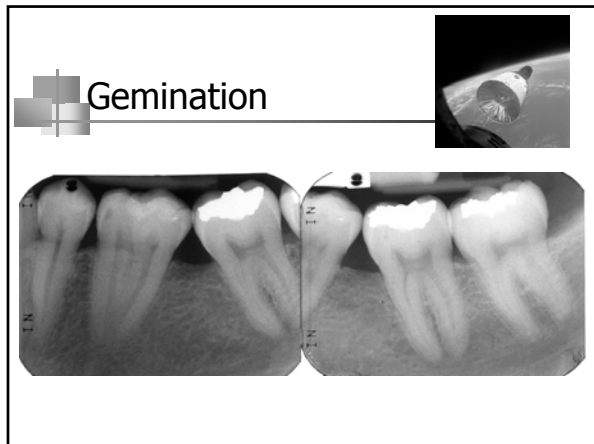
Altered Morphology

- **Gemination** happens when a single tooth bud attempts to divide
- Morphology varies from partial division to complete replication of all dental structures and may even result in a supernumerary tooth


Jean Arp (Hans Arp) (French, born Alsace, 1886-1966.
Lived in Switzerland
1959-66.)
Two Heads [Deux têtes], (1927)








Altered Morphology



- **Taurodontism** is the elongation of the pulp chamber and surrounding tooth structure.
- It is usually seen in molars and occasionally in premolars.
- May be unilateral or bilateral, single tooth or multiple teeth.

Altered Morphology

- Taurodontism is entirely a radiographic finding. The clinical crowns of the teeth have normal morphology.

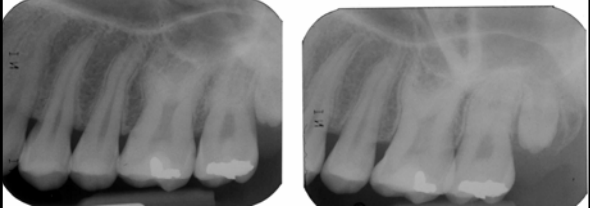


Taurodontism



Images courtesy of SUNY Buffalo School of Dental Medicine

Taurodontism



Altered Morphology- Dilaceration

- A sharp bend or angulations seen in a portion of the root




Image courtesy of www.dental.mu.edu

Dilacerated Root




Image courtesy of www.dental.mu.edu

Dilacerated Root

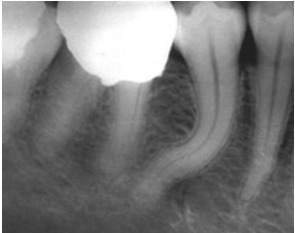



Image courtesy of www.dental.mu.edu

Dilacerated Root



Dilacerated Root



Altered Morphology

- **Dens in dente**, also known as *dens invaginatus*, is the infolding of enamel and dentin during development.
- It is the result of an invagination of Hertwig's epithelial root sheath.
- It is most often seen in permanent maxillary lateral incisors, but can also be seen in mandibular incisors and premolars

Altered Morphology

- There are several forms noted in the literature that describe the position of the dens in the crown, root, or both
- The most extreme form is called a **dilated odontome**
- Clinical importance comes from the potential for communication with the pulp through the thin enamel wall of the dens

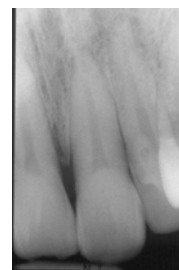
Altered Morphology

- Often discovered as an incidental radiographic finding or if patient presents with acute or chronic symptomatology of apical rarefying osteitis
- Radiographic appearance is characteristic, with pear-shaped rim of radiopaque enamel.

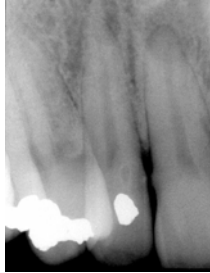
Dens in dente



Dens in dente



Dens in dente



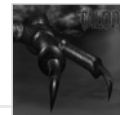
Dens in dente in a peg lateral



Dilated Odontome



Altered Morphology



- **Dens evaginatus**, also known as Leong's premolar or talon cusp, is an outpocketing of the enamel.
- It also occurs occasionally in a molar or canine.
- Often includes dentin and pulp, which may become exposed as the tubercle wears

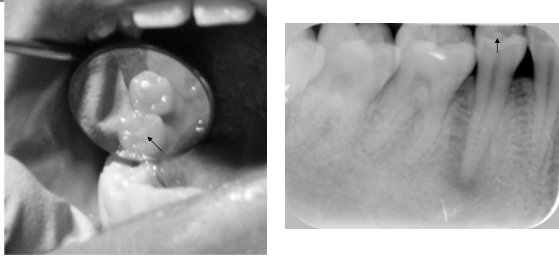
Dens evaginatus



Dens evaginatus



Dens Evaginatus



Altered Morphology

- **Amelogenesis imperfect** is due to a developmental disturbance and results in altered enamel formation
- 1 in 14,000 people are affected

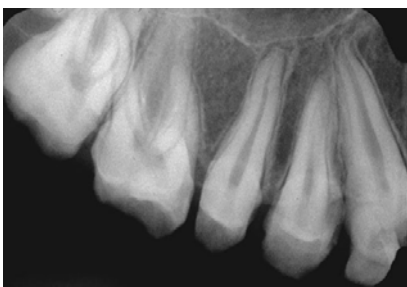
Altered Morphology

- Three varieties:
 - **Hypoplastic**. Enamel is thin and discolored from the underlying dentin. Surface may be pitted or smooth. Teeth generally have open contacts and altered shape of crowns. There may be an anterior open bite
 - **Hypomaturation**. Enamel has normal thickness, but is softer and may separate from dentin. The enamel is also discolored

Altered Morphology

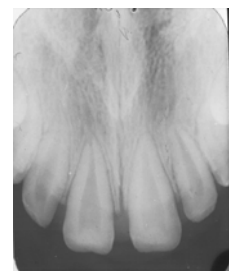
- **Hypocalcification**. Teeth have normal morphology and thickness of enamel on eruption. Soft enamel fractures away easily in function. Teeth can wear to the level of gingiva in extreme cases. Caries is rare in these teeth, but they do tend to stain

Amelogenesis imperfecta (hypoplastic form)

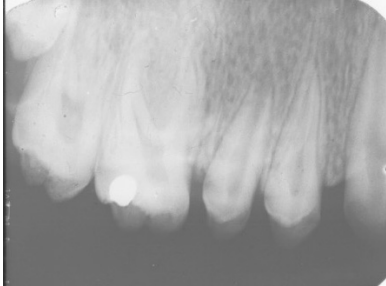


Amelogenesis Imperfecta

- Smooth hypoplastic type



Amelogenesis Imperfecta- hypocalcified type



Amelogenesis Imperfecta



Amelogenesis Imperfecta-



Amelogenesis imperfecta



Clinical photograph courtesy of University of Michigan School of Dentistry

Dentinogenesis imperfecta

- Developmental disturbance of the dentin and sometimes the enamel.
- There are two types:
 - Type I. Associated with osteogenesis imperfecta. Small roots and pulp chambers. Affects primary dentition more severely than permanent teeth

Dentinogenesis imperfecta

- There are two types:
 - Type I. Associated with osteogenesis imperfecta. Small roots and pulp chambers. Affects primary dentition more severely than permanent teeth
 - Type II. No associated skeletal defects. More variable appearance; pulp chambers may be enlarged in the primary teeth

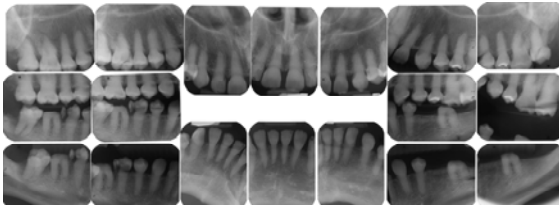
Altered Morphology

- Teeth are discolored. There is a wide range from yellow to blue gray. The color appears to change with variations in the lighting source.
- The enamel tends to fracture

Altered Morphology

- The dentin wears easily. The teeth may be worn to the gingiva
- Radiographically, the teeth appear bulbous, due to constriction at cervical area. The teeth are usually of normal size

Dentinogenesis imperfecta



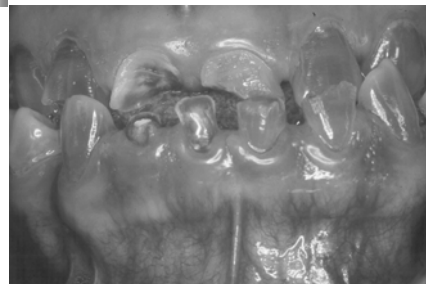
Dentinogenesis Imperfecta Type 2



Dentinogenesis imperfecta



Dentinogenesis imperfecta



Dentinogenesis imperfecta



Dentinogenesis Imperfecta

Image courtesy of Marquette University School of Dentistry

Dentin dysplasia

- Resembles dentinogenesis imperfecta, but is more rare.
- Two types:
 - Type I Radicular. Short and malformed roots are radiographically apparent
 - Type II Coronal.

Dentin Dysplasia – Type I Radicular

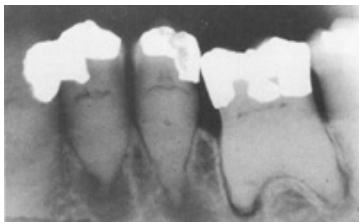
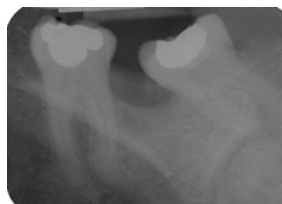


Image courtesy of Marquette University School of Dentistry

Odontodysplasia



Phalangeoma



Thank you!

