Anatomic Anomalies

Anomalies

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

There are two categories:
- Developmental
- Acquired

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

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

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 erupted or unerupted. Unerupted mesiodens may interfere with normal eruption of the central incisors.

**Paramolars** are additional molar teeth.

- When they are positioned distal to the third molar, they are called **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

Supernumerary Incisor

Supernumerary Teeth

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

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

Oligodontia

Size of the teeth
- Microdontia
- Macroodontia
  - 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

Microdontia
Macrodontia

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
Impaction

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

Cold Fusion

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

Cold Fusion
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
Concrescence

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
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.

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

Altered Morphology - Dilaceration

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

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.

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.

Often discovered as an incidental radiographic finding or if the 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 in a peg lateral

Dialated 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.
Amelogenesis imperfecta (hypoplastic form)

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

Dens Evaginatus

Amelogenesis Imperfecta

- Smooth hypoplastic type
Amelogenesis Imperfecta

- Amelogenesis Imperfecta-hypocalcified type

- Amelogenesis Imperfecta

Amelogenesis imperfecta

- Amelogenesis Imperfecta-hypomaturation type

- Amelogenesis imperfecta

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
  - Type II. No associated skeletal defects. More variable appearance; pulp chambers may be enlarged in the primary teeth

Clinical photograph courtesy of University of Michigan School of Dentistry
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

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

Odontodylsplasia

Phalangeoma

Thank you!