DEVELOPMENTAL DISTURBANCES

DEVELOPMENTAL DISTURBANCES IN NUMBER OF TEETH

Anodontia

- Total anodontia, in which all teeth are missing, may involve both deciduous and permanent dentition.
- This is a rare condition; when it occurs, it is frequently associated with a more generalized disturbance, hereditary ectodermal dysplasia
- Induced or false anodontia occurs as a result of extraction of all teeth
- The term pseudo anodontia is sometimes applied to multiple unerupted teeth.
- True partial anodontia (hypodontia or oligodontia) involves one or more teeth

ETIOLOGY

- Although the etiology of a single missing tooth is unknown, a familial tendency for this defect is present in many instances
- Some investigators believe cases of missing third molars to be an evidence of an evolutionary trend towards fewer teeth.
- X-ray radiation of the face at an early ageTooth buds are extremely sensitive to X-ray radiation and may be destroyed completely by relatively low dosages. Teeth already forming and partially calcified may be stunted by X-ray radiation

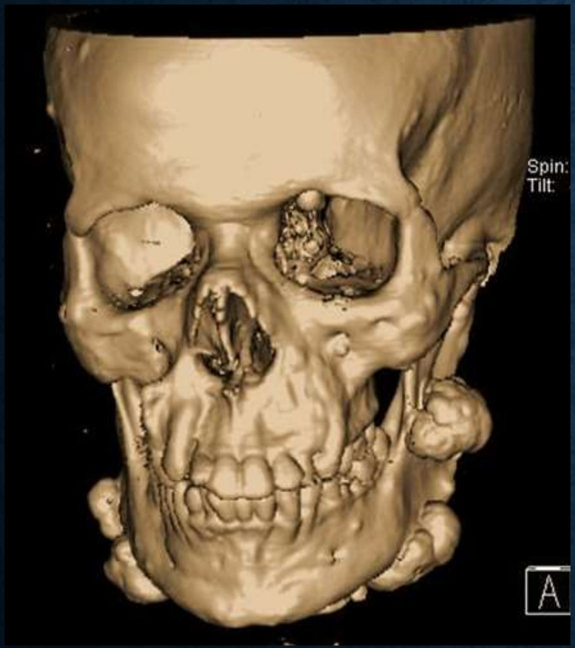
SUPERNUMERARY TEETH

- The conditions commonly associated with an increased prevalence of supernumerary teeth include cleft lip and palate, cleidocranial dysplasia, and Gardner syndrome.
- Four different morphological types of supernumerary teeth have been described: • Conical • Tuberculate • Supplemental • Odontome.

GARDNER SYNDROME

This syndrome consists of:

- (1) multiple polyposis of the large intestine,
- (2) osteomas of the bones, including long bones, skull, and jaws,
- (3) multiple epidermoid or sebaceous cysts of the skin, particularly on the scalp and back,
- (4) occasional occurrence of desmoid tumors, and
- (5) the impacted supernumerary and permanent teeth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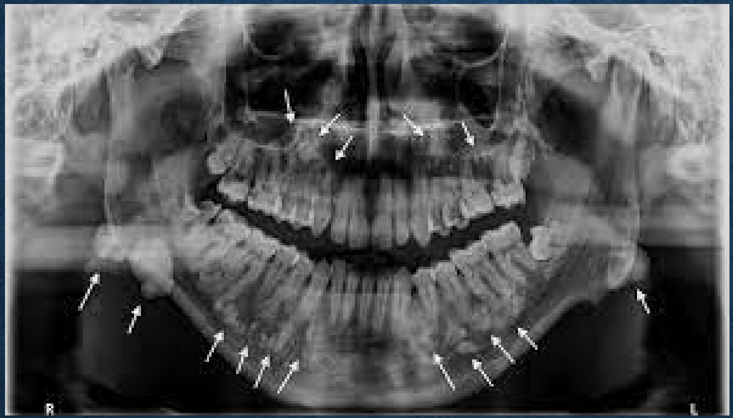
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- Predeciduous dentition???

- Postpermanent dentition???

DEVELOPMENTAL DISTURBANCES IN STRUCTURE OF TEETH

AMELOGENESIS IMPERFECTA (HEREDITARY ENAMEL DYSPLASIA, HEREDITARY BROWN ENAMEL, HEREDITARY BROWN OPALESCENT TEETH)

- A structural defect of the tooth enamel.
- depending on the clinical presentation of the defects and the likely stage of enamel formation that is primarily affected

Amelogenesis Imperfecta

- hypoplastic (HP)
- hypocalcified (HC)
- hypomature (HM)

- Hypoplastic AI represents 60–73% of all cases, hypomaturation AI represents 20–40%, and hypocalcification AI represents 7%.
- Disorders of the enamel epithelium also can cause alterations in the eruption mechanism
- Each main clinical group of AI may be further divided into several subgroups depending on the mode of inheritance, as well as the clinical appearance of the defective enamel

Table 1. Classification of Amelogenesis Imperfecta according to Witkop (1988).

Hypoplastic
Hypoplastic, pitted autosomal dominant
Hypoplastic, local autosomal dominant
Hypoplastic, local autosomal recessive
Hypoplastic, smooth autosomal dominant
Hypoplastic, smooth X-linked dominant
Hypoplastic, rough autosomal dominant
Enamel agenesis, autosomal recessive
Hypomaturation
Hypomaturation, pigmented autosomal recessive
Hypomaturation, X-linked recessive
Snow-capped teeth, autosomal dominant
Hypocalcified
Autosomal dominant
Autosomal recessive
Hypomaturation-hypoplastic with taurodontism
Hypomaturation-hypoplastic with taurodontism, autosomal dominant
Hypoplastic-hypomaturation with taurodontism, autosomal dominant.

MOLECULAR GENETIC STUDIES

- Analysis of X-linked AI has shown the defective gene for this specific AI type to be closely linked to the locus DXS85 at Xp22.
- This also has been identified as the general location of the human gene for amelogenin.

RADIOGRAPHIC FEATURES

- The enamel may appear totally absent on the radiograph, or when present, may appear as a very thin layer, chiefly over the tips of the cusps and on the interproximal surfaces.
- In other cases the calcification of the enamel may be so affected that it appears to have the same approximate radiodensity as the dentin, making differentiation between the two difficult


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Figure 2-93 • Hypoplastic amelogenesis imperfecta, rough pattern. Small, yellow teeth with rough enamel surface, open contact points, significant attrition, and anterior open bite.

Figure 2-97 • Hypocalcified amelogenesis imperfecta. Dentition exhibiting diffuse yellow-brown discoloration. Note numerous teeth with loss of coronal enamel except for the cervical portion.

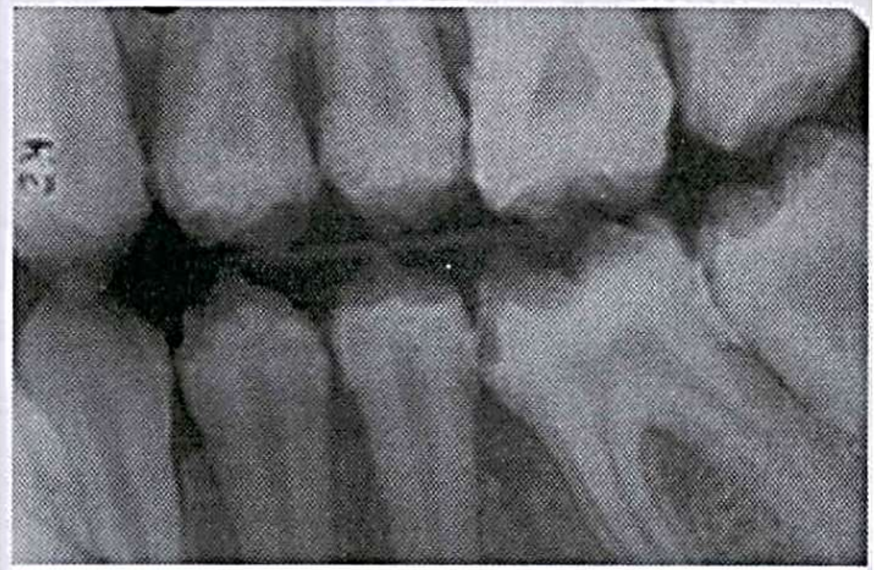

Figure 2-98 • Hypocalcified amelogenesis imperfecta. Radiograph of the same patient depicted in Figure 2-9Z Note the extensive loss of coronal enamel and the similar density of enamel and dentin.

Figure 2-95 • Hypomaturation amelogenesis imperfecta. Dentition exhibiting mottled, opaque white enamel with scattered areas of brown discoloration.

Figure 2-96 . Hypomaturation amelogenesis imperfecta, snowcapped pattern. Dentition exhibiting zone of white opaque enamel in the incisal and occlusal one fourth of the enamel surface. {Courtesy of Dr. Heddie O. Sedano}

HISTOLOGIC FEATURES

- The general histologic features of the enamel also parallel the general type of amelogenesis imperfecta that has been diagnosed.
- There is a disturbance in the differentiation or viability of ameloblasts in the hypoplastic type, and this is reflected in defects in matrix formation up to and including total absence of matrix.
- In the hypocalcification types there are defects of matrix structure and of mineral deposition.
- In the hypomaturation types there are alterations in enamel rod and rod sheath structures.

TREATMENT

- There is no treatment except for improvement of cosmetic appearance.
- In some cases, these teeth do not appear markedly abnormal to the casual observer.