Systemic (disease) factors which cause late eruption

1) TRISOMY21 SYNDROME (DOWN SYNDROME DS):

Trisomy 21 syndrome (Down syndrome [DS]) is the presence of three number 21 chromosomes rather than the normal two (diploid). It is one of the congenital anomalies in which delayed eruption of the teeth frequently occurs. The first primary teeth may not appear until 2 years of age, and the dentition may not be complete until 5 years of age. The eruption often follows an abnormal sequence, and some of the primary teeth may be retained until 15 years of age. DS occurs very early in embryonic development, possibly during the first cell divisions. Anomalies of the eye and external ear are seen, and congenital heart defects are often present. The occurrence of DS is frequently related to maternal age. The frequency of DS: Approximately 0.9 per 1000 births when the mother is less than 33 years, 2.8 per 1000 when the mother is 35 to 38 years old, 38 per 1000 when the mother is 44 years or older, with certain populations reporting a high of 91 per 1000 in this older age group.

The diagnosis not usually difficult to make because of the characteristic facial pattern:

1. the orbits are small

2. the eyes slope upward

3. the bridge of the nose is more depressed than normal.

4. The formation of the external ear, characterized by outstanding "lap" ear with flat or absent helix.

5. Mental retardation is another characteristic finding, with most children in the mild to moderate range of disability

6. Retardation in the growth of the maxillae and mandible was evident in those with DS. Both the maxillae and mandible were positioned anteriorly under the cranial base.

7. The upper facial height was found to be significantly smaller.

8. The midface was also found to be small in the vertical and horizontal dimensions.

9. The smaller jaws contribute to a tendency for protrusion of the tongue and dental crowding, both of which may compromise the development of good occlusion.

10. The tongue also tends to be larger than normal.

11. Individuals with DS have a higher prevalence of periodontal disease mainly in the anterior region. However, susceptibility to dental caries is low for both primary and permanent teeth.

Many children with DS have chronic inflammation of the conjunctiva and a history of repeated respiratory tract infections. The use of antibiotics has reduced the incidence of chronic infection and has resulted in fewer deaths from infection.

2) CLEIDOCRANIAL DYSPLASIA:

A rare congenital syndrome that has dental significance is cleidocranial dysplasia (CCD), which has also been referred to as cleidocranial dysostosis

1. The diagnosis is based on the finding of an absence of clavicles, although there may be remnants of the clavicles, as evidenced by the presence of the sternal and acromial ends.

2. The fontanels are large, and radiographs of the head show open sutures, even late in the child's life.

3. The sinuses, particularly the frontal sinus, are usually small.

4. The development of the dentition is delayed. Complete primary dentition at 15 years of age, resulting from delayed resorption of the deciduous teeth and delayed eruption of the permanent teeth, is not uncommon.

5. One of the important distinguishing characteristics is the presence of supernumerary teeth. Some children may have only a few supernumerary teeth in the anterior region of the mouth; others may have a large number of extra teeth throughout the mouth. Even with removal of the primary and supernumerary teeth, eruption of the permanent dentition is often delayed and irregular.

3) HYPOTHYROIDISM:

Hypothyroidism is another possible cause of delayed eruption. Patients in whom the function of the thyroid gland is extremely deficient have characteristic dental findings.

Congenital hypothyroidism (Cretinism)

Occurring at birth and during the period of most rapid growth, if undetected and untreated, causes mental deficiency and dwarfism. This condition was referred to as cretinism.

1. Congenital hypothyroidism is the result of an absence or underdevelopment of the thyroid gland and insufficient levels of thyroid hormone.

2. The dentition of the child with congenital hypothyroidism is delayed in all stages, including eruption of the primary teeth, exfoliation of the primary teeth, and eruption of the permanent teeth.

3. The teeth are normal in size but are crowded in jaws that are smaller than normal.

4. The tongue is large and may protrude from the mouth. The abnormal size of the tongue and its position often cause an anterior open bite and flaring of the anterior teeth.

5. Tooth crowding, malocclusion, and mouth breathing cause a chronic hyperplastic type of gingivitis.

CH occurs in approximately 1:2,000-1:4,000 newborns. The clinical manifestations are often subtle or not present at birth. Common symptoms include decreased activity and increased sleep, feeding difficulty, constipation and prolonged jaundice, large fontanels, macroglossia, a distended abdomen and hypotonia are common signs.

juvenile Hypothyroidism (Acquired Hypothyroidism)

It results from a malfunction of the thyroid gland, usually between 6 and 12 years of age. Because the deficiency occurs after the period of rapid growth, the unusual facial and body patterns characteristic of a person with congenital hypothyroidism are not present. However, obesity is evident to a lesser degree. In untreated juvenile hypothyroidism, delayed exfoliation of the primary teeth and delayed eruption of the permanent teeth are characteristic. A child with a chronologic age of 14 years may have a dentition in a stage of development comparable with that of a child 9 or 10 years of age. There are other signs and symptoms which include

Deceleration of growth

Rough, dry skin

Constipation

Cold intolerance

Headaches

Fatigue

Excessive sleeping

Vision problems.

4) HYPOPITUITARISM

1. A pronounced deceleration of the growth of the bones and soft tissues of the body will result from a deficiency in secretion of the growth hormone.

2. Pituitary dwarfism is the result of an early hypofunction of the pituitary gland.

3. An individual with pituitary dwarfism is well proportioned but resembles a child of considerably younger chronologic age.

4. The dentition is essentially normal in size.

5. Delayed eruption of the dentition is characteristic. In severe cases the primary teeth do not undergo resorption but instead may be retained throughout the life of the person.

6. The underlying permanent teeth continue to develop but do not erupt. Extraction of the deciduous teeth is not indicated because eruption of the permanent teeth cannot be ensured.

7. Some degree of cognitive disability often occurs.

5) ACHONDROPLASTIC DWARFISM

1. Easily diagnosed at birth, demonstrates a few characteristic dental findings.

2. Many children die during first year of life.

3. Growth of the extremities is limited because of a lack of calcification in the cartilage of the long bones. Stature improvements have been reported with surgical lengthening of the limbs and also with growth hormone therapy.

4. The head is disproportionately large, although the trunk is normal in size.

5. The fingers may be of almost equal length, and the hands are plump.
6. The fontanels are open at birth.

7. The upper face is underdeveloped, and the bridge of the nose is depressed.

8. The etiology of achondroplastic dwarfism is unknown, it is clearly an autosomal-dominant disorder. There is some evidence that the condition is more likely to occur when the ages of the parents differ significantly. In contrast to DS, the increased age of the father may be related to the occurrence of the condition.

Oral conditions

1. Deficient growth in the cranial base is evident in many individuals with achondroplastic dwarfism.

2. The maxilla may be small, with resultant crowding of the teeth and a tendency for open bite.

3. Chronic gingivitis is usually present. However, this condition may be related to the malocclusion and crowding *of* the teeth.

4. The development of the dentition was slightly delayed.