

Etiology of Malocclusion

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Systems of Classification

- Inherited (predetermined) (genetic)
- Acquired (environmental)

Systems of Classification

- 1) McCoy and Shepard (1956)
 - a) Direct (determining)
 - b) Indirect (predisposing)

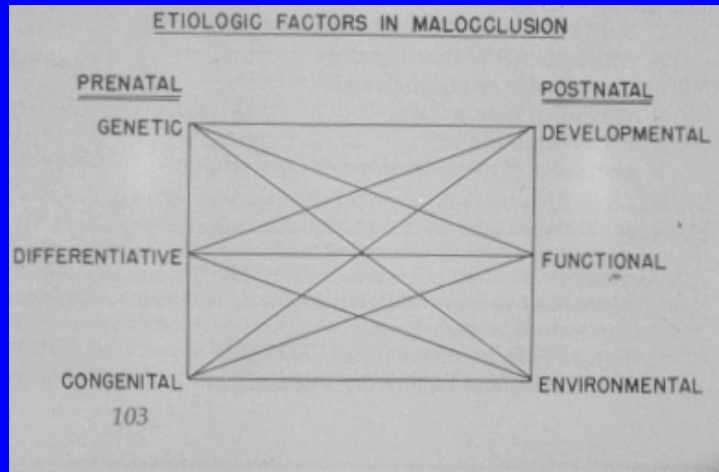
- 2) Moyers (1972)
 - a) Heredity
 - b) Developmental Defects
 - c) Trauma
 - d) Physical agents
 - e) Habits
 - f) Diseases
 - g) Malnutrition

Classification

- 3. Salzman
 - a) Prenatal
 - b) Postnatal.

- 4. Graber
 - a) General (extrinsic) factors
 - b) Local (intrinsic) factors

Salzman's Classification



Graber General Factors

- Heredity
- Congenital defects
- Environment
- Predisposing metabolic climate & disease
- Diet
- Abnormal pressure habits
- Posture
- Trauma

Heredity

- Two Facts
- 1. For each individual there is a basic pattern or blueprint for dentofacial development which may be masked but not really changed. (unless by surgery).
- 2. Racial and familial characteristics repeat

Facial Typing

- Brachycephalic – short, broad
- Dolicocephalic – narrow, tapering, long
- Mesocephalic – round, oval

Facial Typing-Profile

- Convex – Class Two (protrusive maxilla or retrusive mandible) or Class 1 bimaxillary
- Concave – Class Three (protrusive mandible or retrusive maxilla)
- Flat – Class One (denture bases in harmony)

Affected by Heredity

- Tooth size
- Arch length and width
- Height of the palatal vault
- Crowding or spacing
- Overbite and overjet
- Position and configuration of muscles
- Tongue size and shape
- Character of the oral mucosa

Heredity also plays a role in:

- Congenital deformities
- Facial asymmetry
- Size and position of the jaws
- Oligodontia and anodontia
- Supernumerary teeth
- Variations in tooth shape

Examples of Congenital Defects

- Clefts of the lip and palate
- Cerebral Palsy
- Crouzons syndrome
- Cleido-Cranial Dysostosis
- Cranial Synostosis

Crouzon's Syndrome



Surgery to reopen cranial sutures



Results of Surgery & orthodontics



Results of Surgery & Orthodontics



Results of Surgery & Orthodontics



Environmental Factors

- Prenatal
 - trauma
 - maternal diet
 - maternal metabolism & diseases
 - fetal posture
 - maternal consumption of alcohol & drugs

Environmental Factors

- Postnatal
 - Birth injuries
 - TMJ injuries
 - Accidents, fractures
 - Avulsion or displacement of teeth

Metabolic Factors & Diseases

- Acute febrile disease – e.g. measles, mumps, chicken pox, etc.
- Diseases of muscle dysfunction – e.g. muscular dystrophy, cerebral palsy, polio.
- Endocrine disorders – e.g. pituitary, thyroid, parathyroid.

Diet

- Poor diet may cause deficiency diseases such as ricketts, beri beri scurvy etc.
- These may cause severe malocclusion due to interference with craniofacial growth and development in addition to Periodontal problems associated with significant bone loss

Posture

- Not an important factor
- May be a contributing factor
- Seldom considered a primary cause

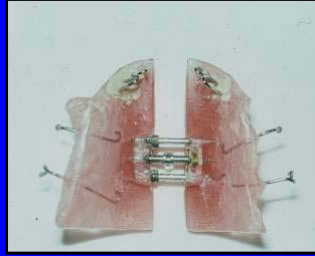
Habits

- Thumb or finger sucking
- Foreign objects
- Tongue thrusting
- Lip or cheek biting
- Mentalis muscle strain

Thumb Sucking



Treatment Phase 1



Progress



Treatment Phase 2



Post Treatment



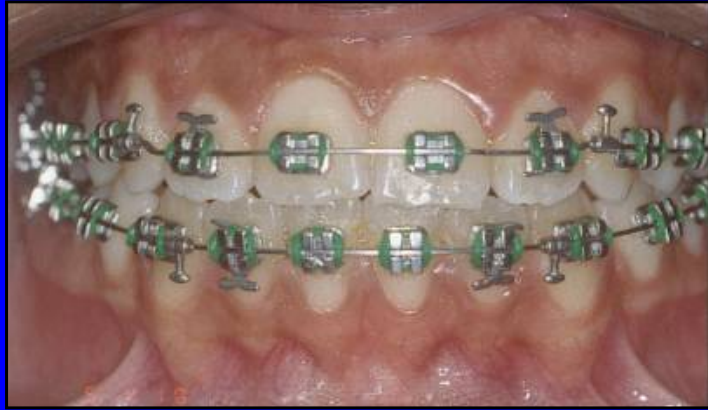
Tongue Thrusting



Treatment



Progress



Hyperactive mentalis muscle



Local Factors

- Congenital absence of teeth
- Anomalies of tooth size
- Anomalies of tooth shape
- Abnormal labial frenum
- Premature loss of deciduous teeth
- Supernumerary teeth

Local Factors

- Abnormal resorption of deciduous teeth
- Delayed eruption of permanent teeth
- Abnormal eruptive path
- Ankylosis of deciduous teeth
- Proximal caries
- Improperly contoured restorations

Congenital absense of teeth



Missing and peg-shaped lateral



Space adjusted



Retention



Temporary Restorations



Congenitally Missing Laterals



Spaces Opened



Temporary Restorations



Mandibular Retrusion



Mandibular Prognathism and facial asymmetry



Mandibular Prognathism & facial asymmetry



Bilateral Clefts



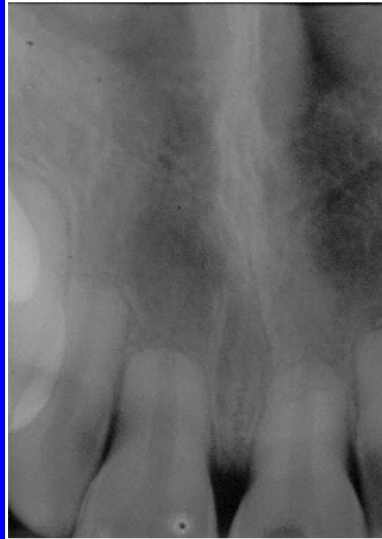
Expansion



Pre-grafting



Ideopathic Root Resorption



Dilantin Hyperplasia



Tooth Size



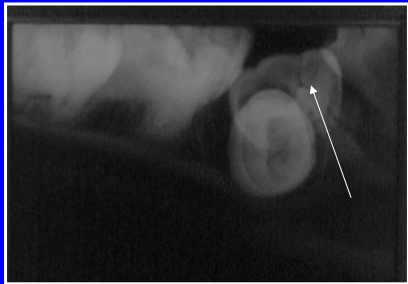
Over Retained Primary Canine



Ectopic Eruption



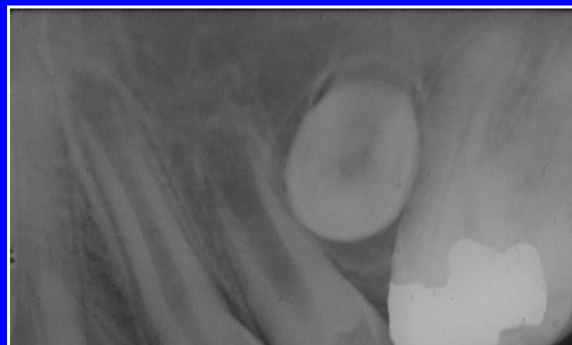
Ankylosed Primary Molar



Ectopic Eruption



Premature loss of Primary Molar and impacted premolar



Congenital Absence of Maxillary Premolars



Congenital Absence of Lateral Incisors



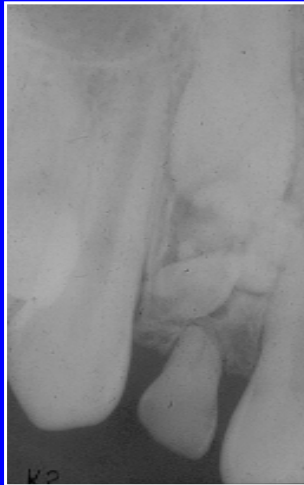
Congenital Absence of Lateral Incisors



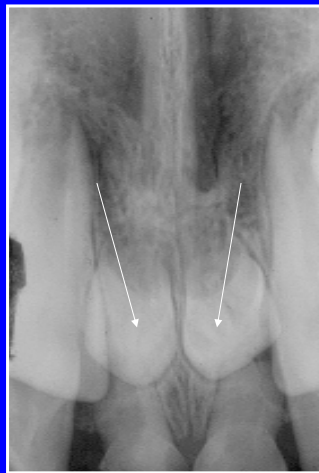
Composite Odontoma causing Impaction of Central Incisor



Composite Odontoma



Supernumerary Teeth



Supernumerary Tooth

