Etiology of Malocclusion

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Classification

• 3. Salzman
  – a) Prenatal
  – b) Postnatal.

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

Systems of Classification

• Inherited (predetermined) (genetic)
• Acquired (environmental)

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)

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

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

Examples of Congenital Defects

- Clefts of the lip and palate
- Cerebral Palsy
- Crouzon’s syndrome
- Cleido-Cranial Dysostosis
- Cranial Synostosis
Crouzon’s Syndrome

Results of Surgery & Orthodontics

Surgery to reopen cranial sutures

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 rickets, 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

- [Image of teeth with thumb sucking]
Treatment Phase 1

Progress

Tongue Thrusting

Treatment Phase 2

Tongue Thrusting

Post Treatment

Treatment
Progress

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

Hyperactive mentalis muscle

Congenital absence of teeth

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

Missing and peg-shaped lateral
Space adjusted

Congenitally Missing Laterals

Retention

Spaces Opened

Temporary Restorations

Temporary Restorations
Ideopathic Root Resorption

Over Retained Primary Canine

Dilantin Hyperplasia

Ectopic Eruption

Tooth Size

Ankylosed Primary Molar
Ectopic Eruption

Premature loss of Primary Molar and impacted premolar

Congenital Absence of Maxillary Premolars

Composite Odontoma causing Impaction of Central Incisor
Composite Odontoma

Supernumerary Teeth

Supernumerary Tooth