The prevention of malocclusion

The interception and early treatment

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Malocclusions

• Malocclusion is a reflection of the nature variation that occurs in any biological system.
Malocclusions

• Prevention of malocclusion is difficult as there is a strong genetic component in the make-up of the most malocclusions.
• Preventive measures may be effective in dealing with environmental factors, but are unlikely to influence the outcome in cases where the genetic background is one of the most important determining factors.
• The interception and early treatment of developing malocclusions has come to be regarded as almost synonymous with the prevention of malocclusion, but interception is, of course, early treatment of malocclusion rather than prevention.
• True prevention is virtually impossible, but early treatment may result in easier treatment, or less treatment. On the other hand, it sometimes results in two courses of orthodontic treatment rather than one.
Ideal occlusal development

• Variation in the eruption sequence of the primary teeth is relatively uncommon
  – The primary incisor teeth erupt at approximately 7 months of age, followed by the primary first molars at approximately 16 months of age. These are followed by the primary canine teeth at around 19 months and the primary second molars at around 28 months.

• There is considerable variation in the age at which the teeth erupt into the mouth.
Ideal occlusal development

- Spacing
  - in the primary incisor region (absence is a reliable indication that the permanent incisors will be crowded)
  - mesial to the upper primary canine (primate space)
  - distal to the lower primary canine (primate space)
    - transitory stage of mandibular incisor crowding at age 8 to 9
Ideal occlusal development

• The distal surfaces of the primary second molars are in the same vertical plane. (flush terminal plane)

• These teeth guide the erupting first permanent molars into a cusp-to-cusp occlusion with their opposing teeth. (half unit Class II)
Ideal occlusal development

• Leeway space
  – The permanent premolars are smaller than the primary teeth they replace.
  – The lower second primary molar is larger than the corresponding tooth in the upper arch
Aetiology of malocclusion

• Skeletal factors
  – Treatment effects mainly by inducing dento-alveolar changes rather than modifying the underlying skeletal pattern.

• Soft tissue form and function
  – Muscular activity in the lips, cheeks, and tongue, and in the muscles of mastication.
  – Sucking habits.

• Dento-alveolar factors
Possibilities of the prevention

I. General prevention
II. Space maintainers
III. Early treatment
I. General prevention

- Preventive measures dealing with environmental factors.
- In most cases there is a strong genetic component.
  - Clefts: genetics of clefting
  - Heredity factors
    - Familial clustering
- Teratogens:
  - Environmental agent that causes congenital malformation

Measures:
- Elimination of the damaging environmental factors during the development of craniofacial complex
- Proper nutrition essential to the growth (food quality, vitamins, essential minerals)
II. Space maintainers

• a primary molar tooth is lost prematurely: a permanent supple
  – primary dentition:
    • primary first molar lost: primary second molar drift mesially
    • primary second molar lost: permanent first molar drift mesially
    • primary incisors lost: primary incisors are in space and there is no tendency for crowding of the permanent teeth, not expect much mesial drift of the buccal segment
  – mixed dentition:
    depends on the amount of crowding
    • primary canine and first molar lost: teeth are crowded
      the permanent incisors will move round to that side=shift of the centre-line
    • primary second molar lost: mainly the first permanent molar drift mesially
Primary second molar lost:
mainly the first permanent molar drift mesially
II. Space maintainers

• Space maintainers can be fixed and removable
III. Early treatment

- Cessation of the (oral) sucking habits
- Myotherapy
- Serial extraction

Early treatment may prevent the full expression of a malocclusion or may result in easier treatment.

- of malocclusions caused by skeletal discrepancy
- for patients with clefts
Digit-sucking habits

The effect will according to

- What it is that is being sucked
- At what age
- For how many ages (wrong if it continued into mixed dentition)
Myotherapy

• The dental arches and, indeed, the skeletal pattern itself, develop within a soft-tissue environment.
• Muscular activity in the lips, cheeks, and tongue, and in the muscles of mastication, has a profound effect on the occlusion of the teeth, influencing, as it does, the labio-lingual inclination of the anterior teeth and the development of buccal segment crossbites (Wilmott 1984).
• Training of the dysplastic activity of surrounding muscles.
Serial extraction

• In the case of a crowded Class I occlusion, the occlusal problem generally becomes apparent following the eruption of the permanent lateral incisors, when it can be seen that there is insufficient space to accommodate the anterior teeth.
• The four primary canine teeth should be extracted in these cases, at around the age of 8 or 9 years.
• This would allow the four incisor teeth in each arch to move distally into the space made available by the extractions, thereby improving the alignment of these teeth. It would be anticipated that the buccal segment teeth would move mesially, to some extent, helping to close any residual space.
• This mesial movement would occur in both upper and lower arches, maintaining the Class I buccal segment occlusion.
Serial extraction

• The intention is to obtain good alignment of the teeth and relief of crowding by the eventual extraction of all four first premolars.

• Early loss of these teeth will afford the maximum opportunity for spontaneous alignment of the permanent canine teeth.
Early treatment for patients with clefts