ETIOLOGY of MALOCCLUSIONS
PREVENTIVE and INTERCEPTIVE ORTHODONTICS

Nov. 2007

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Diplomate, American Board of Orthodontics
USA (various studies): 35 - 95%

USPHS (1960’s):
- most thorough epid. study ever done
- statistically representing 26M (6-17y)
- Grainger’s TPI (severity)

75% Occlusal Disharmony

25% Near-ideal Occlusion
ANGLE CLASSIFICATION
(Molar Relationship)

- **NORMAL** 25%
- **CL-I** 50-55%
- **CL-II** 15-20%
- **CL-III** 1%

USPHS 1960’s, age 6-17
Why early orthodontic screening?

6’s erupted = Post. Occl. established

Detection of:
- Fct. habits, crowding, deep/open bites
- AP & transverse discrepancies

Benefits:
- "influence" jaw growth, harmonize width of arches
- improve eruption patterns,
- lower risk of trauma to protruding U inc.
- correct harmful O. habits
- improve esthetics & self-esteem
- simplify / shorten Tx time for later corrective phase
- reduce likelyhood of impactions
- improve some speech problems
- preserve / gain space for erupting perm. teeth

AAO Recommendations 1998
INCIDENCE OF PROBLEMS

- **CROWDING**
  - 6-11: 40% (age 6-11)
  - 12-17: 85% (age 12-17)

- **OVERJET (≥ 6mm)**
  - 16% (CL-II & skeletal)

- **CL-III MOLARS**
  - 1%

- **ANT. OPB (≥ 2mm)**
  - 1% whites, 10% blacks

- **DEEP BITE**
  - 10% whites, 1% blacks

- **POST XB (≥2 teeth)**
  - 6%

USPHS 1960’s / age 6-17
ETIOLOGIC FACTORS
Classification

- Inherited & Acquired
- Predisposing (direct) & Determining (indirect) (Mc Coy 1956)

7 Causes & Clinical Entities (Moyers, 1958)

- Heredity
- Developmental defects of unknown origin
- Trauma (pre & post-natal)
- Physical agents (pre & post-natal)
- Habits (thumb, fingers, tongue, etc...)
- Diseases (systemic, endocrine)
- Malnutrition

Extrinsic (general) & Intrinsic (local)
ETIOLOGY OF MALOCCLUSIONS
TERMINOLOGY

- SERIAL EXTRACTIONS (Kjellgren, 1929)
- GUIDANCE OF ERUPTION (Hotz, 1970)
- GUIDANCE OF OCCLUSION

...influence tooth eruption into a favorable occlusion...
COMPLETION OF ANTERO-POST.

MANDIBULAR GROWTH

<table>
<thead>
<tr>
<th>AGE</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>85%</td>
<td>90%</td>
</tr>
<tr>
<td>13</td>
<td>90%</td>
<td>95%</td>
</tr>
<tr>
<td>15</td>
<td>90%</td>
<td>98%</td>
</tr>
<tr>
<td>19</td>
<td>98%</td>
<td>98%</td>
</tr>
</tbody>
</table>

SERIAL EXTR. - CASE SELECTION
(ideal conditions)

- NO SKELETAL DISHARMONY
  (Good facial balance / harmony)
- CL-I MOLAR RELATIONSHIP
- MINIMAL OVERBITE & OVERJET
- SEVERE SPACE DEFICIENCY
  (> 10mm / ARCH)
1- PRIM. CUSPIDS (C’s)  
relieves inc. crowding
2- PRIM. 1st MOLARS (D’s)  
accelerates 4’s eruption
3- 1st PREMOLARS (4’s)  
provides room for 3’s eruption
4- MECHANOTherAPy
ROOT FORMATION vs ERUPTION
(Longitudinal Studies, Moorrees et Al., 1963)

- ROOT 1/2 → STANDS STILL
- ROOT 3/4 → EMERGES into O.C.

ROOT 1/4 → 1/2
ROOT 1/2 → 3/4

3’s:
- 2.5 years + 1.5 years = 4y

4’s:
- 1.75 years + 1.5 years = 3.25 y

SG 15.2
ALTERNATE S. EXTR. SEQUENCE

1- **D’s** (keep the cuspids)
   - Avoids Li tipping of incisors
   - Prevents bite deepening
   - Accelerates eruptionn of 4’s

2- **4’s** & REMAINING PRIM. CUSPIDS
   - makes room for 3’s

3- **MECHANOTHERAPY** (fixed appliances)
Indications:

- Dentoalveolar protrusion
- Minimal incisor crowding
- 3’s & 4’s at same level
- Extr. D’s to accelerate 4’s
- Keep the C’s
No cookbook approaches...
Not a licence for no supervision
Take pan-Xr, evaluate space
Have specific Tx objectives
  • Explain them to parents & patient
    (Phase-II & mechanotherapy usually indicated)
  • Short & Long term goals
  • Esp. when extracting permanent teeth
When in doubt, DON'T take them out…
### Congenitally Missing Teeth (% Population)

<table>
<thead>
<tr>
<th>Teeth</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>U &amp; L 8’s</td>
<td>20-30%</td>
</tr>
<tr>
<td>U 2’s</td>
<td>1.5%</td>
</tr>
<tr>
<td>L 5’s</td>
<td>1%</td>
</tr>
<tr>
<td>U 5’s</td>
<td>0.5%</td>
</tr>
<tr>
<td>L 1+2+3+4’s</td>
<td>0.5%</td>
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