ANALYSIS OF THE DENTITION & OCCLUSION

By

Debora Priestap, Michelle J. Thornberg, Michael L. Riolo

From


CHAPTER 13
Pages 315-370

DIAGNOSIS & TREATMENT PLANNING

ANALYSIS OF THE DENTITION & OCCLUSION

- BOLTON ANALYSIS
- SPACE ANALYSIS
- MIXED DENTITION ANALYSIS
DENTAL CASTS

- number
- size
- morphology
- position
- inclination

TEETH

DENTAL CASTS

- shape
- symmetry
- midlines
- sagittal
- vertical
- transverse

OCCLUSION

- depth
- width

PALATAL VAULT

DENTAL CASTS

- number
- size
- morphology
- inclination

TEETH
TEETH SHAPE / SIZE

PEG LIKE LATERAL INCISOR
CUSP OF CARABELLI

FACTORS AFFECTING OCCLUSION

fusion

peg lateral

taurodontia
BALANCE

BETWEEN THE MESIODISTAL DIAMETER

(SIZE)

OF MAXILLARY & MANDIBULAR TEETH

BOLTON TOOTH RATIO ANALYSIS

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If the over-all ratio exceeds 95.3 the discrepancy lies in excessive mandibular arch length. In such cases locate the patient's maxillary 12 measurement and opposite it the correct mandibular measurement. The difference between the actual and correct mandibular measurement is the amount of excessive mandibular arch length.
DENTAL CASTS

TEETH
- position
- inclination

TOOTH POSITION

First order-labiolingual
TOOTH INCLINATION

Second order-mesiodistal

third order-labiolingual-torque

DENTAL ARCHES

DIFFERENCES BETWEEN BASAL ARCHES AND DENTAL ARCHES
DENTO-ALVEOLAR RELATIONSHIPS

Apical base arch

Alveolar arch

Dental arch

APICAL BASE SIZES VERSUS DENTAL ARCH SIZES

CROWDING CONSTRICTED MAXILLARY ARCH BROAD MANDIBULAR ARCH
<table>
<thead>
<tr>
<th></th>
<th>Mesiodistal Crown Diameters</th>
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<tbody>
<tr>
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<td>Observed Value</td>
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<tr>
<td>Deciduous 6c</td>
<td>6.7</td>
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<tr>
<td>6m</td>
<td>7.0</td>
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<tr>
<td>6l</td>
<td>8.8</td>
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<td></td>
<td></td>
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<tr>
<td>Permanent 4s</td>
<td>6.4</td>
</tr>
<tr>
<td>2s</td>
<td>6.5</td>
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<td></td>
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<tr>
<td>Maxilla</td>
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<tr>
<td>Mandible</td>
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* Max* refers to the maximum observed value.
### TOOTH SIZE

**Maxilla**

<table>
<thead>
<tr>
<th>TOOTH</th>
<th>MESENODISTAL CROWN DIAMETERS</th>
<th>MAN</th>
<th>95% CI</th>
<th>Z SCORE</th>
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<td></td>
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<td>0.5</td>
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<td>PERMANENT</td>
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<td></td>
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<td>c</td>
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<tr>
<td>TOTAL</td>
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**Mandible**

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CURVE OF SPEE

MIXED DENTITION ANALYSIS
- Estimate of the size of permanent canines and premolars
- Estimate of the available space in permanent dentition
mixed dentition  mixed dentition

PANORAMIC RADIOGRAPHIC IMAGE

MIXED DENTITION ANALYSIS
### Mixed Dentition Analysis

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age</th>
<th>years</th>
<th>months</th>
<th>Sex</th>
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<tbody>
<tr>
<td>Date</td>
<td>Address</td>
<td>Parent</td>
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#### Upper

<table>
<thead>
<tr>
<th>Space left for</th>
<th>Alignment of 2 and 1</th>
<th>Predicted size of 3 = 4 = 5</th>
<th>Space left for molar adjustment</th>
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</thead>
<tbody>
<tr>
<td>Right</td>
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#### Lower

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**Remarks:**
- Overjet =
- Overbite =
- Molar Relationship =
- Remarks =

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### Curve of Spee

![Curve of Spee Image]
MOYERS MIXED DENTITION ANALYSIS

DENTAL CASTS

DENTAL CASTS

DENTAL ARCH -shape
-symmetry
-midlines
Bonwill-Hawley Arch Form

Catenary Curve

Brader Arch Form
Asymmetry (ankylosis)

Asymmetry (ectopic eruption)
ASYMMETRY (SPACE LOSS)

Interproximal caries

ASYMMETRY (SPACE LOSS)

Early extraction of deciduous teeth
ASYMMETRY
Midline discrepancy
congenitally missing teeth

DENTAL CASTS
- sagittal
- vertical
- transverse
OCCLUSION
CLASS I (Angle)

sagittal plane

Class II division 1 (Angle)  Class II division 2 (Angle)

sagittal

mixed dentition  mixed dentition
Class III (Angle)

sagittal
permanent dentition

VERTICAL PLANE
DEEP OVERBITE
VERTICAL PLANE
ANTERIOR OPEN BITE

VERTICAL PLANE
open bite malocclusion

midline deviation
asymmetric open bite
habit?
VERTICAL MALOCCLUSION
POSTERIOR OPEN BITE

TRANSVERSE RELATIONSHIP
cross bite
TRANSVERSE RELATIONSHIP

posterior bilateral cross bite  anterior cross bite

FUNCTIONAL SHIFT
TRANSVERSE RELATIONSHIP

large mandibular arch  narrow maxillary arch

CROSS BITE

MORE FACTORS AFFECTING OCCLUSION
TEETH POSITION & INCLINATION

- impacted maxillary canines
- impacted third molars

TEETH SIZE / MORPHOLOGY

- small teeth
FACTORS AFFECTING OCCLUSION

agenesis

FACTORS AFFECTING OCCLUSION

supernumerary teeth
crowding
Factors affecting occlusion
Premature loss of deciduous teeth

condyle morphology affecting one side
ASYMMETRY

hyperplasia of mandible affecting one side

DIGITAL MODELS
### DENTAL CASTS

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FACTORS AFFECTING OCCLUSION

- peg lateral
- fusion
- taurodontia

VERTICAL MAXILLARY EXCESS

- "gummy smile"
- short teeth?
- upper thin lip