Surgical Orthodontics Diagnosis and Treatment Planning

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Physical attractiveness

• Beauty – a sign of goodness
• Ugliness – a sign of evil

Features of attractiveness

• Large eyes
• High cheek bones
• Narrow nose

Facial Esthetics

• Physical beauty – How do we discern it?
• Assessment of beauty – visceral attention to small variations.
  1. Size
  2. Symmetry of facial features
  3. Body weight

Ideal Male Face

• Broad forehead
• Prominent nose and cheekbones
• Large jaw and strong chin

Ideal Female Face

• High forehead
• Full lips
• Shorter jaw
• Shorter nose and chin
Facial Analysis

- Full Face – brachycephalic, mesocephalic, dolicocephalic
- Profile – convex, concave, flat

Facial Analysis

- Posture
- Lip Strain
- Lip competence
- Symmetry
- Swallowing
- Tongue posture
- Dental display

Photographic Analysis

- Evaluate:
  - Lip competence
  - Mentalis strain
  - Perioral musculature
  - Profile
  - Facial proportions

Intraoral Examination

- General dental and oral health
  - Hygiene
  - Periodontic
  - Restorative
- Vertical – Overbite, openbite
- A-P - Anterior crossbite, overjet
- Transverse – Posterior crossbites

Model Analyses

- Measurements
  - overbite
  - overjet
  - open bite
  - Bolton analysis
  - Record individual tooth positions
  - Evaluate dental compensation

Panoramic X-ray

- Check for:
  - Unerupted or impacted teeth
  - Generalized periodontal assessment
  - Other dental pathology Root(resorption)
  - Overt signs of TMJ pathology
  - Root form and parallelism
Cephalometric Analysis

- Columbia Analysis
- COGS Analysis
- Grummons A-P Analysis

Columbia Analysis

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<tr>
<th>Stated</th>
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<th>Adult Mean</th>
<th>S.D.</th>
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<td>82.7</td>
<td>5.5</td>
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<tr>
<td>N</td>
<td>78.9</td>
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COGS Analysis

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### Grummons Analysis

Grummons Analysis is a method for determining asymmetry by using a grid to compare locations of bilateral landmarks. The midline is placed along a vertical from the orbit through the nasal septum. Location of the major landmarks in relation to the midline and horizontal grid lines are noted. A grid drawn on acetate with demarcations of one centimeter is useful for this purpose.

After tracing the PA cephalogram, construct horizontal planes by joining the following bilateral landmarks (see Figure 34):

1. The intersection of the lateral wall of the orbit with the greater wing of the sphenoid (the oblique line)
2. The most lateral point on the zygomatic arch
3. The deepest point on the concavity formed by the lateral wall of the maxilla and the inferor border of the zygomatic process of the maxilla
4. Superior plane (upper face model space)
5. Glabella

### A-P Analysis (Grummons)

Questions

- 1. Is this a face that needs change?
- 2. Does the Patient perceive the need?
- 3. Is there a reasonable possibility of producing a functional, esthetic and stable result by orthodontics alone?
- 4. Is there any pathological condition which may dictate a surgical approach?
Presurgical Orthodontic Goals

1. Level align the dental arches.
2. Coordinate the dental arches.
3. Remove dental compensations.
4. Stabilize the dental arches.
5. Provide attachments for intermaxillary fixation.

Postsurgical Orthodontic Goals

1. Close any residual space.
2. Improve occlusal interdigitation.
3. Finishing and artistic positioning.
4. Smooth transition to retention.
5. Exercises to improve range of motion.

Class III Compensation

Class II Division 1 Compensation

Class II Division 2 Compensation

Open Bite Compensation
Deep Bite Compensation

Patient B.S.  29 yrs. 4 mos.

Initial Ceph
Postsurgery Ceph
Three years Post Treatment

Superimposition

Pre    post
Patient B.N. 19 yrs. 7 mos.

Pretreatment Ceph