Biologic Transformation - Putting The Teeth In The Middle Of The Smile

J. William Robbins, DDS, MA
1202 E. Sonterra Blvd., #402
San Antonio, TX 78258
(210) 341-4409
robbinsdds@aol.com
www.robbinsdds.com
www.coredentistry.com
www.surgeryrr.com

Incisal Edge Guidelines

1. Incisal edges of maxillary incisors are cradled by the lower lip in full smile
2. There is a smooth continuation of the incisal edges of the maxillary anterior teeth with the buccal cusp tips of the maxillary posterior teeth (no step-up or step-down)
3. 3-4 mm of incisal display of the maxillary incisors in repose in young female; 2 mm less in young male
4. Average length of the maxillary central incisor is 10 mm
5. Phonetics and function are determined in the provisionals

Esthetic Crown Lengthening

Altered Passive Eruption
- Tooth short by measurement (normal 10-11mm)
- Cannot feel CEJ in the sulcus

1. Facial flap - interproximal tissue left intact
2. Move bone _____ mm apical from CEJ from facial line angle to facial line angle
3. Tissue is positioned _____ mm coronal to alveolar bone crest
4. Instrumentation
   - Wedelstaedt Chisels  Hu Freidy  CP 1/2  20-15-3
     CP 3/4  11.5-15-3
   - Burs     Brasseler  856 Round tapered diamond
              7009 Carbide finishing bur
Functional Crown Lengthening

1. Full facial and palatal flaps for access
2. Margin of crown should be a minimum of _________mm from alveolar bone
3. Differential diagnosis for chronic inflammation around a crown:
   - 
   - 
   - 

4. Instrumentation
   - Wedelstaedt Chisels  Hu Friedy  CP 1/2  20-15-3
   - CP 3/4  11.5-15-3
   - Rhodes Back Action Chisel  Hu Friedy  36/37
   - Burs  Brasseler  856 Round tapered diamond
   - 7009 Carbide finishing bur
   - 169 L  Carbide bur

Forced Eruption

Materials for Forced Eruption
1. Anterior orthodontic brackets
2. .018 Wildcat wire, or .0175 Twist
3. Composite
4. A-lastics and hemostat

Forced Eruption Indications

1. Restorative purposes
   a. Biologic Width impingement
   b. Increased clinical crown
   c. Leveling CEJs
2. Ridge preservation

Forced Eruption Prior to Restoration of Tooth

1. Line up brackets on adjacent teeth. Program the amount of eruption by bracket placement, i.e., if you want 3mm of eruption, place the bracket 3mm more gingivally on the tooth to be erupted than on the adjacent teeth. Insure that the tooth to be erupted is out of occlusion.
2. Check patient each week to insure that eruption is going as planned and to adjust the occlusion. If the tooth to be erupted is ankylosed, the adjacent teeth will start to intrude. If this occurs, stop the eruption immediately and remove the appliances.

3. The tooth should erupt approximately ___ mm per week.

4. Upon completion of eruption, (approximately _____ weeks) perform crown lengthening surgery to create adequate biologic width and acceptable gingival contours with adjacent teeth. Alternatively, a fiberotomy procedure may be performed one or more times during the eruption process. The disadvantage is that you have no access to change bone contours.

5. Leave erupted tooth in retention for approximately ______ additional months prior to removing brackets. Restore the tooth when gingival level is healed and stable.

Forced Eruption for Ovate Pontic Site Development

1. Program the amount of eruption by bracket placement, i.e., if you want 3mm of eruption, place the bracket 3mm more gingivally on the tooth to be erupted than on the adjacent teeth.

2. Erupt the tooth approximately 1mm per week.

3. Erupt the tooth to be extracted enough so that the gingival crest is approximately 3mm more coronal on the erupted tooth than on the adjacent teeth. Ideally, erupt the tooth until there is a significant excess of tissue apicocoronally.

4. After completion of the forced eruption, allow approximately 3 additional months for the hard and soft tissue to follow the tooth being erupted. During this time, the tooth should remain in retention.

5. On the day of extraction, remove the tooth atraumatically and place the provisional ovate pontic. The extracted tooth can be rounded and polished and serve as the ovate pontic. The pontic should extend into the extraction socket approximately ____ mm.

6. Allow tissue to heal prior to final impression for bridge; approximately 6 weeks

Orthodontic Intrusion

1. Primary indication - Supereruption with or without incisal wear

2. If teeth are to be restored, gingival crest heights are leveled rather than incisal edges

3. Implant and TAD anchorage facilitates intrusion
Root Coverage

Connective Tissue Graft
1. Primary method of root coverage
2. Must have adjacent interproximal bone and soft tissue to gain root coverage
3. High level of success with this method of root coverage
4. Excellent color match with adjacent tissue

Semilunar Coronally Positioned Flap
1. No more than _____ mm of desired root coverage
2. At least _____ mm of keratinized tissue
3. Normal or High Crest
4. Normal thickness of tissue

Ovate Pontic

1. The pontic is convex in all dimensions.
2. The pontic supports the facial and interproximal tissue without pressure.
3. The facial contour of the pontic is not egg-shaped. It has a flat surface, approximately 1 mm, which supports the facial soft tissue just as the facial surface of a natural tooth supports the tissue. The pontic then rounds into the convex contour.

Steps in Ovate Pontic Site Development

1. Create the ideal ovate pontic site with the KS-5 bur: approximately _____ mm deep and emerging facially at the correct position to adjacent and contralateral teeth.
2. Fit provisional ovate pontic to the site. This may require relining of the gingival surface of the pontic.
3. Remove the provisional and bone sound from the bottom of the pontic site to the crest of alveolar bone. If the distance is 2 mm or more, cement the provisional. If the distance is less than 2 mm, use the KS-5 bur to remove the soft tissue in the base of the ovate site and enough alveolar bone to ensure that there is at least 2 mm from the base of the pontic to the alveolar bone. Cement the provisional.

Ovate Pontic in Area of Healed Extraction Site

1. There is commonly a bony defect in the pontic area.
2. These areas commonly require one or more grafting procedures to develop the ovate pontic site.
3. Wait 6 weeks after soft tissue grafting to create ovate pontic site.
4. Use a large pear-shaped diamond bur (Brasseler KS-5) to create the ovate pontic site.
5. There should be a minimum of _____mm from the depth of the ovate pontic site to the alveolar crest. This is determined by bone sounding after the ovate pontic site has been created. If there is less than 2mm, osseous correction is required. This is accomplished with the same diamond bur. The ostectomy is done directly in the bottom of the ovate pontic site without a flap.

**Ovate Pontic With Extraction**

1. Always maintain as much bone and soft tissue as possible during extraction.
2. Never remove facial or interproximal bone. Do not use an elevator interproximally. Remove only palatal or lingual bone.
3. When possible, consider forced eruption prior to extraction.
4. If attempting to create a site for a pontic, always place a provisional ovate pontic into the extraction site immediately.
5. After extraction, tissue will retract a minimum of 2mm as it heals. More if there is bone loss facially or interproximally.
6. Place provisional ovate pontic _____mm below gingival crest. It should support the interproximal and facial tissue without placing pressure on it.
7. After healing, the final ovate pontic should be approximately 1mm below the gingival crest. This allows for naturally appearing emergence of the pontic from the site while still being cleansable.
8. After placement of the provisional ovate pontic, do not floss under the pontic for 6 weeks.

**Black Triangles**

**Etiology**

1. Crown Form
2. Root Angulation
3. Inadequate bone to support the papilla, ie. periodontal disease

**Diagnostic Key** - Tissue will fill interdental space if distance from crest of bone to bottom of interproximal contact is less than _____ mm.
Critical Restorative Dimensions  
Salama, Salama, Garber, Adar

<table>
<thead>
<tr>
<th>Class</th>
<th>Restorative Environment</th>
<th>Proximity Limitations</th>
<th>Vertical Soft Tissue Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tooth-Tooth</td>
<td>1mm</td>
<td>5mm</td>
</tr>
<tr>
<td>2</td>
<td>Tooth-Pontic</td>
<td>N/A</td>
<td>6.5mm</td>
</tr>
<tr>
<td>3</td>
<td>Pontic-Pontic</td>
<td>N/A</td>
<td>6.0mm</td>
</tr>
<tr>
<td>4</td>
<td>Tooth-Implant</td>
<td>1.5mm</td>
<td>4.5mm</td>
</tr>
<tr>
<td>5</td>
<td>Implant-Pontic</td>
<td>N/A</td>
<td>5.5mm</td>
</tr>
<tr>
<td>6</td>
<td>Implant-Implant</td>
<td>3mm</td>
<td>3.5mm</td>
</tr>
</tbody>
</table>