Keystone Dental, Inc.
144 Middlesex Turnpike
Burlington, MA 01803 USA

General Inquiries: 781-328-3600
Customer Relations: 866-902-9272 or 781-328-3400
Fax: 866-903-9272 or 781-328-3400
Email: info@keystonedental.com

Italy
Keystone Dental
Via A. Fleming, 19
37135 Verona, Italy
Phone: +39 045 8230294
Fax: +39 045 8230296
Email: info.it@keystonedental.com

France
Keystone Dental
Paris, France
Phone: +33 1 33 89 09 09
Fax: +33 1 33 89 09 90
Email: info.fr@keystonedental.com

Sweden
Keystone Dental
Särö, Sweden
Phone: +46 31 93 68 23
Fax: +46 31 93 68 45
Email: info.se@keystonedental.com

Germany / Belgium / Netherlands
Keystone Dental
Alfter, Germany
Phone: +49 2222 92 94 0
Fax: +49 2222 97 73 56
Email: Germany: info.de@keystonedental.com
Belgium: info.be@keystonedental.com
Netherlands: info.nl@keystonedental.com

Trademark Acknowledgements
Arcitexture, PrimaConnex, PrimaSolo, Quick-Cap, "Smarter Thinking, Simpler Design." and TiLobe are trademarks and registered trademarks of Keystone Dental, Inc. LOCATOR is a registered trademark of Zest Anchors, Inc.
The products described herein are covered by one or more of the following patents:
Additional patents are pending.

Contact Us:
Phone: 866-902-9272
Fax: 866-903-9272
Email: info@keystonedental.com

Keystone Dental
Smarter thinking, Simpler design.™
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-Prosthetic Considerations</strong></td>
<td>2</td>
</tr>
<tr>
<td>Introduction</td>
<td>2</td>
</tr>
<tr>
<td>Prosthetic Considerations</td>
<td>2</td>
</tr>
<tr>
<td>Sterilization</td>
<td>3</td>
</tr>
<tr>
<td>Color-Coding</td>
<td>3</td>
</tr>
<tr>
<td><strong>Impression and Temporization Procedures</strong></td>
<td>4</td>
</tr>
<tr>
<td>for PrimaConnex® Implants</td>
<td></td>
</tr>
<tr>
<td>Impression Procedures</td>
<td>4-7</td>
</tr>
<tr>
<td>Temporization Procedures</td>
<td>8-10</td>
</tr>
<tr>
<td><strong>Cement-Retained Restorations</strong></td>
<td>11-16</td>
</tr>
<tr>
<td>Esthetic Contour Ti Abutment System</td>
<td></td>
</tr>
<tr>
<td>Esthetic Contour Zi Abutment System</td>
<td>17-21</td>
</tr>
<tr>
<td>Quick-Abutment System</td>
<td>22-30</td>
</tr>
<tr>
<td>UCLA Abutment System</td>
<td>31-32</td>
</tr>
<tr>
<td><strong>Screw-Retained Restorations</strong></td>
<td>33</td>
</tr>
<tr>
<td>UCLA Abutment System</td>
<td>33-36</td>
</tr>
<tr>
<td><strong>Overdenture Restorations</strong></td>
<td>37</td>
</tr>
<tr>
<td>Restorative Options</td>
<td>37-38</td>
</tr>
<tr>
<td>Zest® LOCATOR® Abutment System</td>
<td>39-47</td>
</tr>
<tr>
<td>Snap Abutment System</td>
<td>48-53</td>
</tr>
<tr>
<td>Bar-Retained Options</td>
<td>54-64</td>
</tr>
<tr>
<td>UCLA Abutment System</td>
<td>54-59</td>
</tr>
<tr>
<td>Multi-Unit Abutment System</td>
<td>59-64</td>
</tr>
<tr>
<td><strong>Temporization and Restoration Procedures</strong></td>
<td>65</td>
</tr>
<tr>
<td>for PrimaSolo® Implants</td>
<td></td>
</tr>
<tr>
<td>Preparing the Abutment Portion of the Implant</td>
<td>65</td>
</tr>
<tr>
<td>Temporization of the Implant</td>
<td>65-67</td>
</tr>
<tr>
<td>Healing Cap Placement</td>
<td>67</td>
</tr>
<tr>
<td>Final Restoration</td>
<td>67-68</td>
</tr>
</tbody>
</table>
INTRODUCTION
This Prosthetic Manual is designed to aid clinicians and dental technicians in the restorative
procedures of Keystone Dental’s PrimaConnex® Straight and Tapered Implants and PrimaSolo®
One-Piece Implants.

The procedures and guidelines presented in this manual are not intended to be a substitute
for formal implant restoration training for the clinician and the dental technician. It is the
responsibility of the clinician and the dental technician to determine the final protocol and
component selection.

PROSTHETIC CONSIDERATIONS

PrimaConnex
• Cement-Retained Restorations (Fixed) single and multi-unit
• Screw-Retained Restorations (Fixed-Removable) single and multi-unit
• Implant or Bar Retained Overdenture Restorations

PrimaSolo
• Cement-Retained Restorations (Fixed) single and multi-unit

Federal (USA) law restricts this device to sale by or on the order of a licensed dentist or physician.
STERILIZATION

Select prosthetic components are provided in sterile, gamma irradiated packaging. Please refer to individual package labeling to determine if the prosthetic component is sterile.

If necessary, all metal components can be re-sterilized according to the sterilization table below:

Sterilization Table

1. Autoclave: 121-124°C (~250°F) 60 minute exposure/40 minute dry time or 132-135°C (~270°F) 40 minute exposure/30 minute dry time.

**CAUTION:** Do not exceed 140°C (284°F). Always use the dry cycle.

2. Dry Heat: 160°C (320°F) 120 minute exposure (minimum). Do not exceed 170°C (338°F).

**NOTE:** It is recommended that the proper biological indicators for the selected sterilization method accompany each load and that the appropriate sterile packaging be used to maintain sterility until use.

**NOTE:** Keystone Dental does not recommend chemclave sterilization procedures as they may damage surgical trays and/or instruments.

KEYSTONE DENTAL PRIMA IMPLANT SYSTEM COLOR-CODING

Where possible, the Prima System components have been color-coded to improve the overall ease-of-use. Color-coding makes components easier to identify, reduces chairtime, and improves communication among the restorative team members. Color-coding is fully integrated between surgical and restorative components and based on the implant prosthetic table below:

<table>
<thead>
<tr>
<th>PrimaConnex®</th>
<th>PrimaSolo®</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prosthetic Table</strong></td>
<td><strong>Icon</strong></td>
</tr>
<tr>
<td>3.5mm</td>
<td>SD</td>
</tr>
<tr>
<td>4.1mm</td>
<td>RD</td>
</tr>
<tr>
<td>5.0mm</td>
<td>WD</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
IMPRESSION PROCEDURES FOR PRIMACONNEX® INTERNAL CONNECTION IMPLANTS

The internal connection for PrimaConnex Implants is designed with TiLoBe™ Technology, a patented 6-lobe design for superior strength, stability, and esthetics.

PrimaConnex Implant Impression Posts

Each impression post is packaged with a long screw for open tray impressions and a short screw for closed tray impressions. When implants are divergent from each other, angled or placed across the arch, an open tray impression is recommended. When restoring a single-tooth implant, a closed tray impression can be used.

**NOTE:** Use the appropriate diameter of the Implant Impression Post to match the diameter of the healing abutment. They are available in contoured and straight diameters. When seating the Impression Post into the implant, the Impression Post captures the implant’s vertical and rotational position and the contour of the tissue.

Procedure for Seating PrimaConnex Implant Impression Posts

Place the long screw (open tray technique) or short screw (closed tray technique) into the top of the Impression Post body. Connect the Quad Driver to the screw and deliver the assembly to the implant. Lightly tighten the screw. Rotate the Impression Post body into the lobed connection of the implant until it is fully seated. Firmly tighten the screw by hand. Take a radiograph to verify the Impression Post is completely seated.

Procedure For Taking an Open Tray Impression

Step 1: Take an alginate impression of the implant site and fabricate a full arch custom tray.

*(Block out over the implant sites approximately 15mm. All other areas of the arch use the standard block out technique.)*

Step 2: Cut hole(s) in the top of the custom tray over the implant site(s) to allow the Impression Post screw to protrude through the top of the tray.

Step 3: Remove the Healing Abutment with the Quad Driver.

*(If it is a multi-unit restoration, remove one Healing Abutment at a time and place the Impression Post to avoid tissue slumping.)*
Step 4: Inspect the implant prosthetic table for tissue invagination.  
(If tissue is covering the prosthetic table, replace the healing abutment lightly and have the patient return to the surgical doctor or contact the surgical doctor for guidance.)

Step 5: Place the screw into the Impression Post body and place over the implant. The Impression Post body will self-align into the lobed connection of the implant. Firmly tighten the screw by hand.

Step 6: Take a radiograph to verify that the Impression Post is completely seated. (The X-ray cone should be perpendicular to the implant prosthetic table.)

Step 7: Place the custom tray in the mouth to verify that the screw is extended approximately 2mm above the top of the tray.

Step 8: Block out the square hole in the top of the screw with a soft wax.

Step 9: Syringe the impression material around the entire body of the Impression Post exposing only the top of the screw. (Impression materials: any medium to heavy body polyvinylsiloxane.)

Step 10: Fill and seat the custom tray in the mouth covering the Impression Post and exposing the top of the screw through the hole in the top of the tray.

Step 11: Once the impression tray is seated and before the material sets, remove the impression material from the top of the tray to expose the screw.

Step 12: Once the material has set, remove the screw from the Impression Post and remove the impression tray from the mouth. (The Impression Post will be embedded inside of the impression.)

Step 13: Replace the Healing Abutment.

Step 14: Inspect the impression for accuracy.

Step 15: Place the Implant Analog (replica of the implant) onto the male lobed portion of the Impression Post body in the impression. Slide the screw through the top of the impression and engage the analog. This step may be completed by the laboratory technician. (Hand tighten the screw. Firmly hold the analog so that the Impression Post will not move or dislodge within the impression.)
Step 16: Send the impression with the seated Implant Analog, opposing model, shade, and bite registration to the laboratory.

Procedure For Taking a Closed Tray Impression

Step 1: Take an alginate impression of the implant site and fabricate a full arch custom tray
*(Block out over the implant sites approximately 15mm. All other areas of the arch use the standard block out technique.)*

Step 2: Remove the Healing Abutment with the Quad Driver.
*(If it is a multi-unit restoration, remove one Healing Abutment at a time and place the Impression Post to avoid tissue slumping.)*

Step 3: Inspect the implant prosthetic table for tissue invagination.
*(If the tissue is covering the prosthetic table, replace the Healing Abutment lightly and return the patient to the surgical doctor or contact the surgical doctor for guidance.)*

Step 4: Place the screw into the Impression Post and place over the implant. The Impression Post body will self-align into the lobed connection of the implant. Firmly tighten the screw by hand.

Step 5: Take a radiograph to verify that the Impression Post is completely seated.
*(The X-ray cone should be perpendicular to the implant prosthetic table.)*

Step 6: Block out the square hole in the top of the screw with a soft wax.

Step 7: Syringe the impression material around the entire impression post.
*(Impression materials: any medium to heavy body polyvinylsiloxane.)*

Step 8: Fill the full arch impression tray with impression material and seat the custom tray in the mouth covering the impression post.

Step 9: Once the material has set in the mouth, remove the impression tray.
*(The impression post body and short screw will remain in the mouth.)*

Step 10: Inspect the impression for accuracy.
Step 11: Remove the Impression Post with the Quad Driver and replace the Healing Abutment.

*(If it is a multi-unit restoration, remove one Impression Post at a time and immediately seat the appropriate Healing Abutment.)*

Step 12: Select the indicated Implant Analog (replica of the implant). Place the Impression Post into the female lobed portion of the analog and hand tighten the screw with the Quad Driver.

Step 13: Seat the Impression Post connected to the Implant Analog back into the impression, aligning the flat side of the Impression Post to the flat side of the impression. Steps 12 and 13 may be completed by the laboratory technician.

Step 14: Send the impression with the seated Impression Post and Implant Analog, opposing model, shade, and bite registration to the laboratory.
TEMPORARY RESTORATIONS

Creating a Temporary Using a PrimaConnex® Temporary Abutment

Keystone Dental offers acrylic PMMA (polymethylmethacrylate) temporary abutments with a titanium base to simplify the process of making in-office temporaries for short-term use. The PMMA material will bond to all leading dental composites/acrylics used in the dental office.

The following are two techniques:

Screw-Retained:

Step 1: Using the master cast, place a denture tooth in the edentulous area and then fabricate a vacuum-formed stent using .020 stent material.

Step 2: Place the PrimaConnex Temporary Abutment using the Quad Driver.

Step 3: Prepare the Temporary Abutment as necessary so there is adequate space for acrylic between the stent and the Temporary Abutment.

Step 4: Trim the stent so it fits over the edentulous area with the Temporary Abutment in place and seats onto the adjacent teeth.

Step 5: Block-out the abutment screw access hole to prevent acrylic from flowing inside.

Step 6: Place the temporary acrylic material of choice into the stent and place it over the adjacent teeth.

(Follow manufacturer’s recommendations for curing times.)

Step 7: Remove the stent and separate it from the acrylic Temporary Abutment.

Step 8: Grind through the acrylic and into the screw access hole to gain access to the screw.

Step 9: Adjust the bite so it is out of occlusion and polish the temporary restoration.

Step 10: Remove the temporary restoration using the Quad Driver and adjust the acrylic for optimum emergence and contour.

Step 11: Proceed with the final insertion using the Quad Driver and tighten the screw to 30Ncm.
Step 12: All PrimaConnex Temporary Abutments include an occlusal plug to fill the screw access hole. The concave end of the plug is placed towards the occlusal surface. Place the occlusal plug into the screw access hole and shorten enough to allow room (1-2mm) for the composite. Fill the remaining portion of the screw access hole with composite. Adjust the occlusion, perform the final contour, and polish with the recommended composite polishing medium.

Cement-Retained: (Chairside)

Step 1: Remove the Healing Abutment.

Step 2: Seat the PrimaConnex Temporary Abutment onto the implant. Use the Quad Driver to tighten (finger pressure only) the abutment screw. Modify the abutment height and the gingival contours to provide adequate space for acrylic.

Step 3: Using wax, block-out the screw access channel to prevent acrylic from flowing into the access channel. Select an appropriate shell crown (color and size) to seat over the temporary abutment. Modify the shell crown as needed.

Step 4: Apply a separating material on the Temporary Abutment to keep the composite/acrylic from adhering to the abutment. Carefully pack the shell crown with a tooth-colored dental composite/acrylic material and insert over the trimmed abutment.

*(Follow manufacturer’s recommendations for curing times.)*

Step 5: Remove the temporary restoration from the mouth. Follow standard laboratory procedures to finish the temporary restoration. Check the occlusion, contacts, and the margin integrity in centric occlusion.

Step 6: Block-out the screw access channel with wax. Cement the temporary restoration with provisional cement. The provisional cement provides easier retrievability when future access to the abutment/screw is desired.

Cement-Retained: (Laboratory)

In some instances, the clinician may have the laboratory modify the Temporary Abutment and fabricate the temporary crown.

Step 1: Remove the Healing Abutment. Seat an open or closed tray Impression Post and take a full arch polyvinylsiloxane impression of the implant site. Additionally, take an opposing arch impression and an occlusal record.

Step 2: Attach an Implant Analog to the Impression Post. Pour a working cast with dental stone. Use a soft tissue material to replicate the gingival contours. Remove the Impression Post from the working cast. Utilize the occlusal record to articulate the casts.
Step 3: Seat the PrimaConnex Temporary Abutment into the Implant Analog. Use the Quad Driver to tighten (finger pressure only) the abutment screw. Modify the abutment height and the gingival contours to provide adequate space for acrylic.

Step 4: Using wax, block out the screw access channel to prevent acrylic from flowing into the area. Apply a separating material on the Temporary Abutment to keep the composite/acrylic from adhering to the abutment. Follow standard laboratory procedures for buildup of tooth-colored dental composite/acrylic material over the trimmed abutment.

*(Follow manufacturer’s recommendations for curing times.)*

Step 5: Remove the temporary from the model. Follow standard laboratory procedures to finish the temporary restoration. Check the occlusion, contacts, and the margin integrity in centric occlusion. Return to the clinician for final seating.
PRIMACONNEX® ESTHETIC CONTOUR TI ABUTMENT SYSTEM

The PrimaConnex Esthetic Contour Ti Abutment provides for a cement-retained restoration and is a titanium tapered abutment that extends through the tissue into the oral cavity. It engages the lobed connection of the PrimaConnex Implant resulting in a secure and stable restoration. The abutment is held in place in the implant using a titanium-nitride coated screw that is included with the abutment. The abutment has a pre-machined sculptured facial margin in various cuff heights which follow the contour of the gingival tissue, resulting in minimal or no prepping in most cases. The Esthetic Contour Ti Abutments are available in Straight and 15° Angled configurations for Small Diameter (SD), Regular Diameter (RD), and Wide Diameter (WD) PrimaConnex prosthetic tables.

Prosthetic Options:
- Can be used for single-tooth or multi-unit (splinted) crown and bridge restorations.
- The titanium screw requires the use of the Quad Driver which is a square design with a lead-in bevel for easy insertion into the screw.
- Pre-machined sculpted margins simplify abutment preparation. In addition, the abutment may be further prepared if needed.
- It is recommended that the Abutment Lab Screw be used during laboratory procedures to avoid damage to the final abutment screw.

Technical Considerations:
- A minimum inter-occlusal distance of 4.5mm plus the restoration thickness is required between the implant prosthetic table and the occlusal plane.
- A straight abutment may be used when space near the adjacent teeth or implant(s) is limited.
- Do not adjust the TiLobe connection.
- It is recommended that the Abutment Lab Screw be used during laboratory procedures to avoid damage to the final Abutment Screw.

Two Methods for Preparation of the Esthetic Contour Ti Abutment:
1. If the patient has a temporary prosthesis that they are currently wearing, you may elect to have the laboratory technician prepare the Esthetic Contour Ti Abutment. See the following section on Lab Preparation of the Esthetic Contour Ti Abutment.
2. If the patient requests that they leave the office with a temporary restoration, the Esthetic Contour Ti Abutment must be prepared chairside and a temporary restoration must be fabricated. Alternately, Keystone Dental offers an acrylic Temporary Abutment, refer to page 8 for details.
Labratory Preparation of the Esthetic Contour Ti Abutment

NOTE: When abutments are prepared in the dental laboratory, an implant level impression utilizing either a closed tray or open tray technique is required. Refer to pages 4-7 for implant level impression techniques.

Laboratory Procedure - Master Model Fabrication

NOTE: Attach the Implant Analog(s) to the Impression Post(s). A soft tissue model is recommended to provide an accurate replication of the patient’s soft tissue.

Step 1: Pour the soft tissue around the Implant Analog. When the material has set, pour a stone master model.

Esthetic Contour Ti Abutment Modifications

Step 2: When selecting the proper Esthetic Contour Ti Abutment cuff height, measure the tissue depth from the top of the Implant Analog to the height of the soft tissue.

NOTE: For esthetics, the final margin of the Esthetic Contour Ti Abutment should be 1-2mm below the tissue height.

Step 3: Place the Esthetic Contour Ti Abutment. Determine if reduction in the height of the abutment and/or the cuff is required. Mark the abutment with a felt tip marker.

Step 4: Modify the Esthetic Contour Ti Abutment.

TIP: To improve stability when adjusting the Esthetic Contour Ti Abutment, attach an Implant Analog to the abutment.

TIP: For a multi-unit case, the laboratory may fabricate a “positioning jig” using a pattern resin material. Using the positioning jig, the clinician can transfer the abutment from the master model to the mouth, simplifying the abutment seating procedure.

Step 5: After preparation is complete, block out the top of the screw access hole to prevent wax from flowing into the area.

Metal Framework Fabrication

Step 6: Wax the coping following standard crown and bridge procedures. It is recommended that the bucco-lingual dimension of the implant restoration be narrower than that of natural dentition.
Step 7: Sprue, invest and cast following conventional crown and bridge techniques.

Step 8: Finish the metal framework using conventional crown and bridge techniques.

**NOTE:** To confirm a passive fit of multi-unit restorations, an intraoral metal try in is recommended.

Step 9: If there is no metal framework try in, proceed with porcelain application following standard laboratory procedures. Return the restoration on the master model to the clinician.

**Clinical Procedure - Metal Framework Try in**

Step 1: Remove the Healing Abutment using the Quad Driver.

**CAUTION:** In a multi-unit case, remove one Healing Abutment at a time and place the appropriate Esthetic Contour Ti Abutment to prevent tissue slumping. When removing multiple Healing Abutments, working from the posterior of the patient's mouth to the anterior is recommended. If the laboratory fabricated a positioning jig, remove all of the Healing Abutments and seat the Esthetic Contour Ti Abutments utilizing the positioning jig.

Step 2: Remove the metal framework from the master model. Before placement in the mouth, note the orientation marks on the model and on the Esthetic Contour Ti Abutments placed by the laboratory technician.

Step 3: Place the Esthetic Contour Ti Abutments in the patient's mouth. Verify that the position of the orientation marks are in the same position in the mouth as they were on the model or use a positioning jig if supplied.

Step 4: Take a radiograph to verify that the abutments are completely seated. *(The X-ray cone should be perpendicular to the implant prosthetic table.)*

Step 5: Use the Quad Driver to hand tighten the abutments in the mouth.

Step 6: Seat the metal framework and verify that the framework fits passively and completely over the Esthetic Contour Ti Abutments.

**CAUTION:** If the framework binds as it is seated or does not go completely down to the margin of the abutment(s), then the bridge must be cut, orientated in the mouth, and returned to the laboratory for soldering/laser welding. It may be possible to use an indicating spray or paste to determine if the internal aspect of the bridge can be modified to allow the bridge to seat.
TIP: If the framework is not passive, mark the area where the framework is not seating and needs to be sectioned. Remove the framework from the patient’s mouth. Section the framework, creating a space of approximately 0.3mm using an ultra-thin disc. Reseat the sections in the mouth. Lute the sections of the framework together using a pattern resin material.

Once the material has set to the manufacturer’s specifications:
- Return the metal framework to the laboratory to be soldered/laser welded and returned for a second framework try in.

OR
- Pick up the luted together framework in a secondary full arch impression. Then, return the framework to the laboratory for soldering/laser welding and porcelain application.

Step 7: If the metal framework did fit passively and completely, it can be removed and returned to the laboratory. Next remove the Esthetic Contour Ti Abutments one at a time, replacing the appropriate Healing Abutment immediately to avoid tissue slumping, or replace the temporary prosthesis.

TIP: It may be advantageous to take a bite registration with the metal framework seated to verify an accurate articulation of the models.

Laboratory Procedure - Porcelain Application
Proceed with porcelain application following standard laboratory procedures. Return the restoration on the master model to the clinician.

Clinical Procedure - Final Insertion
Remove the Healing Abutments or the temporary prosthesis from the patient’s mouth. Place the Esthetic Contour Ti Abutments in the patient’s mouth. Take a radiograph to verify that the abutments are completely seated. (The X-ray cone should be perpendicular to the implant prosthetic table.) Use a 30Ncm torque wrench to tighten the abutment screw.

NOTE: The position of the orientation marks must be in the same position in the mouth as they are on the model or use a positioning jig if supplied.

Place the final restoration onto the abutments prior to cementation. Check the occlusion, contacts, and the margin integrity in centric occlusion. Once satisfied, block out the screw access hole and use temporary cement for easier retrievability if future access to the abutment/screw is desired, or use a permanent cement.
Clinical Procedure - Chairside Preparation

NOTE: Preparation of Straight or Angled Esthetic Contour Ti Abutments follow a similar process. Slight changes in preparation of the Angled Abutments will be noted in this section. Keystone Dental offers a Bur Kit for modifications of PrimaConnex® abutments (see page 65).

CAUTION: When intraoral abutment modification is necessary, use copious amounts of irrigation to eliminate excessive heat build up in the surrounding bone tissue that may compromise the osseointegration of the implant.

Step 1: Remove the Healing Abutment using the Quad Driver.

Step 2: When selecting the proper Esthetic Contour Ti Abutment cuff height, measure the tissue depth from the top of the implant to the height of the soft tissue. For esthetics, the margin of the abutment (the cuff height) should be 1-2mm below the gingival tissue height.

Step 3: Use the Quad Driver to seat the appropriate Esthetic Contour Ti Abutment (Straight or Angled). Determine if a reduction in the height of the abutment and/or the cuff is required. Mark the abutment with a carbide bur or felt tip marker.

Step 4: Remove the abutment from the patient’s mouth and modify.

TIP: To improve abutment stability while modifying, attach an Implant Analog to the abutment.

Step 5: After the correct height is obtained, place the Esthetic Contour Ti Abutment and take a radiograph to verify complete seating. Use a Torque Wrench and the Quad Driver to tighten the abutment screw to 30Ncm.

Step 6: Final adjustments using the Bur Kit may be completed in the mouth.

CAUTION: After final preparations are made, verify that the abutment screw has not come loose. Tighten the Abutment Screw with the Torque Wrench as necessary.

Step 7: Place a removable material into the screw access hole to protect the abutment screw. Fill the remaining portion of the screw access hole with composite.

Step 8: Conventional impression techniques should be used for the final restoration. Always take a full arch impression. If the margin is subgingival, retraction cord may be necessary. A temporary restoration may be fabricated to support the soft tissues.
Laboratory Procedure - Fabrication of the Restoration

**NOTE:** To prevent chipping or breaking of the master die, it is recommended to pour the master die using an epoxy type die material.

Step 1: Wax, sprue, invest, cast, and finish the understructure using conventional techniques.

Step 2: Proceed with porcelain application following standard laboratory procedures. Return the final restoration on the master model to the clinician for final insertion.

Clinical Procedure - Final Insertion

Remove the Healing Abutment or the temporary prosthesis from the patient's mouth. Verify the temporary cement is completely removed from the abutment. Place the final restoration onto the abutment prior to cementation. Check the occlusion, contacts, and margin integrity. There should be no occlusal contacts in excursive movements and only light contact in centric occlusion. Cement the final restoration with either permanent or temporary cement.

**CAUTION:** To prevent tissue irritation or implant failure, ensure that all excess cement has been removed from the sulcus surrounding the abutment/implant interface.
PRIMACONNEX® ESTHETIC CONTOUR ZI ABUTMENT SYSTEM

The PrimaConnex Esthetic Contour Zi Abutment is fabricated of Zirconia. Minimal modification is needed due to a pre-shaped, scalloped margin and contours that match the PrimaConnex healing abutments. The Esthetic Contour Zi Abutment is a very esthetic, anatomically-designed prosthetic solution. This abutment is intended for use in the anterior and pre-molar regions and is available in Straight and 15° Angled versions. It is not recommended for use in the molar regions.

Intended Applications:
- Can be used for single-tooth or multi-unit (splinted) cement-retained restorations.
- Anterior, canine and premolar teeth.

Configurations:
- Straight and 15° Angled designs.
- Available in cuff heights of 2.0mm (SD) or 1.5mm (RD and WD).

Technical Considerations:
- A minimum inter-occlusal distance of 4.5mm plus the restoration thickness is required between the implant prosthetic table and the occlusal plane.
- Torque recommendation 30Ncm.
- Stay at least 1.5mm from the conical portion of the TiLobe connection.
- Leave a minimum wall thickness of 1mm from the screw channel to the outer diameter of the abutment.
- Do not adjust the TiLobe connection, screw channel or any internal surface.

NOTE: When abutments are prepared in the dental laboratory, an implant level impression utilizing either a closed tray or open tray technique is required. Refer to pages 4-7 for implant level impression techniques.
Preparation Considerations:
The Esthetic Contour Zi Abutment is designed to follow gingival contours and minimize the need for modification. If extensive modification is needed, it is recommended to use a CAD/CAM fabricated abutment. When modifying the Esthetic Contour Zi Abutment, heat, stress and energy are introduced into the material which will lower the flexural strength of the material, causing it to become weaker. The user can prevent this weakening by using the correct burs to avoid fractures. When adjusting the Esthetic Contour Zi Abutment, copious amounts of irrigation should be used.

Recommended Tools for Adjustments:
- New ultra-fine or fine diamond burs with irrigation.
- New diamond rubber wheels designed for Zirconia adjustments (Brasseler, Noritake, Comet and other manufacturers carry these types of specialized rotary instruments).

Tools Not Recommended for Adjustments:
- Carbide burs.
- Coarse diamond burs.
- Sand Blast with Aluminum Oxide.

NOTE: If any adjustments are made to the Esthetic Contour Zi Abutment a regeneration firing cycle must be completed.

Dental Zirconia is engineered to be in the tetragonal phase at room temperature. During the adjustment of a Zirconia abutment, the heat and stress induce a phase change of the Zirconia from the tetragonal to monoclinic phase, making the Zirconia weak and brittle. To rid the Zirconia of these unwanted stresses, the user must put the Zirconia through a regeneration firing cycle. The regeneration firing allows stresses to be removed from the Zirconia materials and brings it from the monoclinic phase (weak and brittle) to the tetragonal (strong and hard).

Regeneration Firing Cycle:

<table>
<thead>
<tr>
<th>Pre-Drying Temp °C</th>
<th>Pre-Dry Hold (Min.)</th>
<th>Rise Time (Min.)</th>
<th>Rise °C/Min.</th>
<th>Target Temp °C</th>
<th>Hold Time (Min.)</th>
<th>Vacuum</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>0</td>
<td>5</td>
<td>100</td>
<td>1000</td>
<td>15</td>
<td>No Vacuum</td>
</tr>
</tbody>
</table>
Step 1: Attach an Implant Analog to the Impression Post. Pour a working cast with dental stone. Use a soft tissue material to replicate the gingival contours. Remove the Impression Post from the working cast. Utilize the occlusal record to articulate the casts.

**Esthetic Contour Zi Straight or 15° Angled Abutment Selection and Modification**

Step 2: When selecting the proper Esthetic Contour Zi Abutment cuff height, measure the tissue depth from the top of the implant to the height of the soft tissue.

**NOTE:** For esthetics, the final margin of the abutment (the cuff height) should be 1-2mm below the gingival tissue height.

Step 3: Place the Esthetic Contour Zi Abutment using the abutment screw and the Quad Driver. Determine if a reduction in the height of the abutment and/or the cuff is required. Mark the abutment for the required vertical reduction with a felt tip marker.

Step 4: Modify the Esthetic Contour Zi Abutment.

**TIP:** To improve stability when adjusting the Esthetic Contour Zi Abutment, attach an Implant Analog to the abutment.

**NOTE:** Avoid sharp edges and corners to ensure a good fit between the abutment and all-ceramic crown. Attempt to keep the edges rounded with a radius of approximately 1mm.

**NOTE:** For multi-unit cases, the laboratory may fabricate a positioning jig using a pattern resin material. Using the positioning jig, the clinician can transfer the abutment from the laboratory cast to the mouth, simplifying the abutment seating procedure.

Step 5: After preparation is complete, block out the top of the screw access hole to prevent wax from flowing into the area.

**Laboratory Procedure - Framework Fabrication**

Step 6: Press, mill or outsource the ceramic coping/framework. It is recommended that the bucco-lingual dimension of the final restoration be narrower than that of the natural dentition.

**NOTE:** To confirm a passive fit of multi-unit restorations, an intraoral try in is recommended.

Step 7: If there is no framework try in, proceed to porcelain application following standard laboratory procedures. Return the final restoration on the master model to the clinician.
Clinical Procedure - Framework Try-in

Step 1: Remove the ceramic coping/framework from the master model. Before placement in the mouth, note the orientation marks on the model and on the Esthetic Contour Zi Abutments.

Step 2: Remove the Healing Abutment using the Quad Driver.

**CAUTION:** In a multi-unit case, remove one Healing Abutment at a time and place the appropriate Esthetic Contour Zi Abutment to prevent tissue slumping. When removing multiple Healing Abutments, working from the posterior of the patient’s mouth to the anterior is recommended. If the laboratory fabricated a positioning jig, remove all of the Healing Abutments and seat the Esthetic Contour Zi Abutments utilizing the positioning jig.

Step 3: Place the Esthetic Contour Zi Abutment in the patient’s mouth. Verify that the position of the orientation mark is the same in the mouth as it was on the model or use a positioning jig if supplied.

Step 4: Use the Quad Driver and the Abutment Screw to hand tighten the abutment in the mouth.

Step 5: Take a radiograph to verify that the abutment is completely seated. *(The X-ray cone should be perpendicular to the implant prosthetic table.)*

Step 6: Seat the ceramic coping/framework and verify that the framework fits passively and completely over the Esthetic Contour Zi Abutments.

**CAUTION:** If the framework binds as it is seated or does not go completely down to the margin of the abutments, then the bridge must be cut, orientated in the mouth, and returned to the laboratory for soldering/laser welding. It may be possible to use an indicating spray or paste to determine if the internal aspect of the bridge can be modified to allow the bridge to seat.

**TIP:** If the framework is not passive, mark the area where the framework is not seating and needs to be sectioned. Remove the framework from the patient’s mouth. Section the framework, creating a space of approximately 0.3mm using an ultra-thin disc. Reseat the sections in the mouth. Lute the sections of the framework together using a pattern resin material.

**Once the material has set to the manufacturer’s specifications:**

- Return the ceramic coping/framework to the laboratory to be joined, refired and then returned to the clinician for a second framework try in.

OR

- Pick up the luted together framework in a secondary full arch impression. Then, return the framework to the laboratory for alterations and porcelain application.
If the ceramic coping/framework did fit passively and completely, it can be removed and returned to the laboratory. Next remove the Esthetic Contour Zi Abutments one at a time, replacing the appropriate Healing Abutment immediately to avoid tissue slumping, or replace the temporary prosthesis.

TIP: It may be advantageous to take a bite registration with the metal framework seated to verify an accurate articulation of the models.

Laboratory Procedure - Porcelain Application
Proceed with porcelain application following standard laboratory procedures. Return the restoration on the master model to the clinician.

Clinical Procedure - Final Insertion
Remove the Healing Abutment or the temporary prosthesis from the patient’s mouth. Place the Esthetic Contour Zi Abutment in the patient’s mouth. Take a radiograph to verify that the abutment is completely seated. *(The X-ray cone should be perpendicular to the implant prosthetic table.)* Use a 30Ncm torque wrench to tighten the Abutment Screw.

NOTE: The position of the orientation marks must be in the same position in the mouth as they are on the model or use a positioning jig if supplied.

Place the final restoration onto the abutments prior to cementation. Check the occlusion, contacts, and the margin integrity in centric occlusion. Once satisfied, block out the screw access hole and use temporary cement for easier retrievability if future access to the abutment/screw is desired, or use a permanent cement.
QUICK-ABUTMENT SYSTEM

The Quick-Abutment is used when a cementable restoration is desired and is available in a variety of cuff heights for each prosthetic table. Once the appropriate tissue height is selected, the Quick-Cap® Impression System makes cement-retained restorations simple. Conventional crown and bridge techniques are applied for both clinical and laboratory procedures.

Technical Considerations:
- For use in single-tooth or multi-unit (splinted) restorations.
- Inter-occlusal space needed is 4mm plus cuff height. Include 2mm of inter-occlusal space for the restoration.
- Includes a separate Abutment Screw torqued to 30Ncm.
- The Quad Driver is used.
- It is recommended that the Abutment Lab Screw be used during laboratory procedures to avoid damage to the final abutment screw.

Clinical Procedure - Abutment Selection and Placement

Step 1: Remove the Healing Abutment utilizing the Quad Driver.

Step 2: Using a periodontal probe, measure the tissue depth from the top of the implant platform to the crest of the gingival tissue.

Step 3: Determine the prosthetic table of the implant and select the appropriate tissue height Quick-Abutment. The selection is based on the criteria to place the margin of the crown approximately 1mm subgingival for ideal esthetics.

**NOTE:** A minimum of 2mm of clearance is required between the top of the abutment and the opposing dentition for a metal to porcelain restoration; 1mm if using an all ceramic restoration.

**NOTE:** For additional occlusal clearance for the final restoration, the Quick-Abutment can be reduced by 1mm in overall height. You MUST notify the laboratory before the restoration is fabricated.

**NOTE:** If 1mm reduction was done to the Quick-Abutment, you can still use the Quick-Cap Impression Cap for the impression technique.

Step 4: Place the selected Quick-Abutment with the Quad Driver. For easier identification, it is recommended to place the flat of the abutment towards the facial.

Step 5: Torque the Quick-Abutment Screw to 30Ncm using the Quad Driver AccuTorque tip and the 30Ncm Torque Wrench.
Step 6: Protect the abutment screw from cement by blocking out the screw access hole with a resilient removable material.

Impression Procedure - Using the Quick-Cap®

The Quick-Cap Impression System makes impression-taking simple. The Quick-Cap precisely transfers the Quick-Abutment positioning to the laboratory model. It virtually eliminates the need for retraction cord.

Step 1: Select the appropriate color-code and contour of the Quick-Cap Impression Cap. The Quick-Cap is color-coded based on the prosthetic table of the implant. The flat inside is easily identified by the elevated tab on the top of the Quick-Cap.

Step 2: Align the flat of the Quick-Cap Impression Cap with the flat of the Quick-Abutment. With finger pressure at the top, fully seat the Quick-Cap onto the Quick-Abutment. The Quick-Cap engages the abutment at the top and completely seats over the cuff of the abutment to accurately capture the position of the Quick-Abutment for an abutment-level impression.

Step 3: Syringe impression material around the Quick-Cap. The Quick-Cap should be completely covered.

Step 4: Fill the custom tray with impression material and seat. *(Follow the manufacturer’s specification for impression material setting time.)*

Step 5: Remove the impression and verify accuracy.

Step 6: Send the impression, opposing model, shade, bite registration, and color-coded Quick-Abutment Analog (optional) to the laboratory for crown fabrication. *(Analogs are color-coded to match the prosthetic table.)*
Placement of the Temporary/Healing Cap
Temporary/Healing Caps are available for all Quick-Abutments and may be utilized in two different ways. The Temporary/Healing Caps are provided sterile and are manufactured from PMMA acrylic (polymethylmethacrylate). This material will bond to all leading dental composite/acrylic used in the dental office.

Temporization Procedure - Option One
Use as a Healing Cap
If a temporary restoration is not being fabricated, the Temporary/Healing Cap can be used to cover the Quick-Abutment while the restoration is being fabricated.

NOTE: The Healing Caps cannot be re-sterilized and are designed for short-term use only.

Step 1: Select the appropriate size Temporary/Healing Cap for the Quick-Abutment.

Step 2: Place the Temporary/Healing Cap with a minimal amount of temporary cement for retention onto the Quick-Abutment.

Temporization Procedure - Option Two
Use as a Temporary Cap
The Temporary/Healing Cap is used as a foundation for the temporary acrylic to bond. Create a temporary restoration using the method of choice by bonding acrylic to the PMMA Temporary/Healing Cap.

The following are two techniques:

Vacuum-formed Stent Technique:
Step 1: Using a diagnostic cast, place a denture tooth in the edentulous area and then fabricate a vacuum-formed stent using .020 stent material.

Step 2: Trim the stent so it fits over the edentulous implant area with the Temporary Cap in place and seats onto the adjacent teeth.

Step 3: Place the temporary acrylic material of choice into the stent and insert it over the patient's adjacent teeth.

(Follow the manufacturer's recommendations for curing times.)
Step 4: Remove the stent and separate it from the acrylic temporary.

Step 5: Adjust the acrylic for optimum emergence profile and contour.

Step 6: Adjust the bite so it is out of occlusion and polish the temporary restoration. Protect the abutment screw from cement by filling in the abutment screw access hole(s) with a resilient removable material.

Step 7: Apply a minimal amount of temporary cement to the temporary crown and place onto the implant. Care must be taken to avoid contaminating the surgical site with cement.

**NOTE:** Take a radiograph to verify that no excess cement is in the area of the incision.

**Temporary Shell Crown Technique**

Step 1: Select the appropriate shell crown that fits over the Temporary Cap and adjust if needed.

Step 2: Using the material of choice, fill the shell crown with acrylic and insert it over the Temporary/Healing Cap into the required position. *(Follow the manufacturer’s recommendations for curing times.)*

Step 3: Adjust the acrylic for optimum emergence profile and contour.

**NOTE:** Use a Quick-Abutment Analog to accurately finish the margins.

Step 4: Adjust the bite so it is out of occlusion and polish the temporary restoration.

Step 5: Protect the abutment screw from cement by filling in the abutment screw access hole with a resilient removable material. Fill the remaining portion of the screw access hole with composite.

Step 6: Apply a minimal amount of temporary cement to the temporary crown and place onto the Temporary/Healing Cap. Care must be taken to avoid contaminating the surgical site with cement.

**NOTE:** Take a radiograph to verify that no excess cement is in the area of the incision.
Laboratory Procedure - Pouring the Master Cast

Step 1: Inspect the impression for accuracy. Make sure the Quick-Cap® Impression Cap is secure in the impression.

**NOTE:** If the Quick-Abutment Analog was not sent with the impression, the correct analog can be selected by choosing the same color component as the Impression Cap.

**NOTE:** Refer to the clinician’s prescription included with the case. This will inform the laboratory technician if the clinician has modified the abutment and if the necessary modification will need to be made before wax-up of the restoration.

Step 2: Prior to seating of the Quick-Abutment Analog, identify the position of the flat inside the Quick-Cap. The color of the Quick-Abutment Analog matches the Quick-Cap. Align the flat of the Quick Abutment Analog with the flat on the Quick-Cap. An audible snap identifies that the Quick Abutment Analog is fully seated.

Step 3: If the margins of the restoration are subgingival, a soft tissue model is recommended.

**NOTE:** If a PFM restoration is indicated, follow crown and bridge procedures on pages 26-28: Fabrication of the Restoration – Utilizing PrimaConnex® Plastic Sleeve.

**NOTE:** If an all-ceramic restoration is indicated, follow the procedures for Fabrication of Restoration – Utilizing the Quick-Abutment Ceramic Coping on pages 28-30.

Fabrication of the Restoration - Utilizing the PrimaConnex Plastic Sleeve

Step 1: Select the appropriate prefabricated plastic sleeve. Use a Locking Plastic Sleeve for a single-tooth restoration and a Non-Locking Plastic Sleeve for a multi-unit (splinted) restoration.

Step 2: Place the prefabricated Plastic Sleeve onto the Quick-Abutment Analog. Use light finger pressure to snap the Plastic Sleeve over the shoulder of the Quick Abutment Analog. If the clinician has modified the abutment height, shorten the Plastic Sleeve according to the height of the Quick-Abutment Analog.

**NOTE:** Optional Direct Wax Technique: If waxing directly to a Quick-Abutment Analog is desired, it is recommended that a die spacer be applied, as with any traditional crown and bridge die, to provide space for the cement. Additionally, if engagement of the slot opposite the flat is not desired, it is recommended to be blocked out prior to die spacer application and wax-up.

Step 3: Wax directly onto the Plastic Sleeve. Sprue, invest, and cast the wax coping using conventional crown and bridge techniques.

**TIP:** It is recommended that the laboratory technician use an additional analog to check the substructure, wax margins and fit of the understructure. This allows for individual verification while still maintaining a solid model for accuracy.
Step 4: After the metal understructure is removed from the investment, removal of the remaining investment with a chemical divesting material is recommended. The small lip of extension at the margin must be removed before the cast coping is placed on the abutment analog.

**Procedure for Using the Reamer Tool**

Step 1: Insert Alignment Guide into the internal aspect of the metal casting. Single units must align the flat of the Alignment Guide with the internal flat of the casting.

Step 2: Insert Reamer Tool into the handpiece.

Step 3: Place the Reamer Tool over the Alignment Guide.

Step 4: Utilizing 15,000 rpm or less and light pressure, carefully remove the snap-on mechanism from the metal framework.

Step 5: Once the lip is removed, finalize the margins by removing the overextension. Finish the remainder of the understructure and apply porcelain using conventional crown and bridge technique. When fabricating a multi-unit restoration, a metal try in is recommended.

**Clinical Procedure - Metal Framework Try in (Optional)**

Step 1: Remove the temporary prosthesis or Temporary/Healing Cap. Remove the excess cement around the Quick-Abutment.

Step 2: Seat the metal framework. Ensure the framework seats passively.

Step 3: Evaluate the fit of the framework and return the framework to the laboratory for porcelain application. Replace the temporary prosthesis or the Temporary/Healing Cap.

**NOTE:** If the framework binds as it is seated or does not go completely down to the margin, then the bridge is not passive and must be sectioned. It may be possible to use an indicator spray or paste to determine if the internal aspect of the bridge can be modified to allow for a passive fit.

**CAUTION:** If the framework is not passive, mark the area where the framework is not seating and remove it from the mouth. Use an ultra thin disc to section the framework thereby creating a gap approximately 0.3mm wide. Seat all the sections of the framework in the mouth. Using an acrylic pattern resin material, lute the sections together.
Once the material has set to the manufacturer's specification:

1. Remove and return the framework to the laboratory to be soldered.

**OR**

2. Pick up the luted framework in a secondary full arch impression and return it to the laboratory for soldering and porcelain application.

**Laboratory Procedure - Porcelain Application**

Proceed with porcelain application following conventional laboratory procedures.

**TIP:** Keep the occlusal tables narrow (like on a pontic) and avoid any excursive contacts with only light contact in centric occlusion.

**Clinical Procedure - Final Insertion**

Step 1: Remove the temporary prosthesis or Temporary/Healing Cap. Check that all temporary cement is removed from the Quick-Abutment. Try in the final restoration. Check the occlusion, contacts, and margin integrity. There should be no occlusal contacts in excursive movements and only light contact in centric occlusion. Seat using either a temporary or permanent cement.

**Fabrication of Restoration**

**Utilizing the Quick-Abutment Ceramic Coping**

The PrimaConnex® Quick-Abutment Ceramic Coping provides for a cement-retained, highly esthetic, and natural looking restoration. Zirconia is a white ceramic material utilized in fabrication of all-ceramic restorations. It offers a precision fit, plus optimal strength, biocompatibility, and superior esthetics. The PrimaConnex Quick-Abutment Ceramic Coping is available for Small Diameter (SD), Regular Diameter (RD), and Wide Diameter (WD) PrimaConnex Quick-Abutments.

**Clinical Procedure**

Step 1: Select and place the PrimaConnex Quick-Abutment. (Refer to page 22.)

Step 2: Impression the Quick-Abutment using the Quick-Cap. (Refer to page 23.)

Step 3: Place the Temporary/Healing Cap or temporize. (Refer to pages 24-25.)
Laboratory Procedure - Pouring the Master Cast

Step 1: Inspect the impression for accuracy. If Quick-Cap® impression components were used, check to make sure they are secure in the impression. Align the flat of the Quick-Abutment Analog with the flat of the Quick-Cap and snap the Quick-Cap over the margin of the Quick-Abutment Analog with firm finger pressure.

**NOTE:** If the Quick-Abutment Analog was not sent with the impression, select the correct Quick-Abutment Analog. (Quick-Abutments are color-coded for easy identification.)

**TIP:** If the margins of the abutment are subgingival, fabricating a soft tissue model is recommended.

Step 2: If the abutment margin has been modified, evaluate the impression for a detailed replication of the margin and contours of the abutment. Pour the impression using a hard die stone or epoxy.

Laboratory Procedure

Step 1: Select the appropriate size Ceramic Coping that corresponds with the Quick-Abutment being used.

Step 2: Reduce/adjust the Ceramic Coping using traditional porcelain fine diamond finishing burs and wheels, as needed, in order to provide for ideal dimensions for porcelain application.

**NOTE:**
- Use irrigation to keep the Ceramic Coping cool during preparation.
- Do not reduce the thickness to less than 0.5mm.
- All edges and angles must remain rounded to prevent porcelain fracture.
- Do not use the Ceramic Coping option if more than 2mm of porcelain thickness is required.

Step 3: Sandblast the surface of the Ceramic Coping with 50-120 micron aluminum oxide at 30-38 PSI. Steam clean or use distilled water in an ultrasonic cleaner.

Step 4: Select a porcelain which is specifically formulated for Zirconia application. This type of porcelain will accommodate the coefficient of thermal expansion (CTE) of the Ceramic Coping (10.2 x 10^-6/°C). Apply porcelain and complete the restoration following the manufacturer’s recommendations.
Clinical Procedure

Step 1: Remove the Temporary/Healing Cap from the Quick-Abutment. Ensure all temporary cement is removed.

Step 2: Try in the final restoration. Check the occlusion, contacts, and margin integrity. There should be no occlusal contacts in excursive movements and only light contact in centric occlusion.

Step 3: Protect the Abutment Screw from cement by blocking out the screw access hole with a resilient removable material. Use permanent cement to seat the crown. Be sure to remove all excess cement.
CUSTOM ABUTMENT FABRICATION WITH THE PRIMACONNEX® UCLA ABUTMENT

The PrimaConnex UCLA Gold/Plastic Abutments are designed to achieve optimal contouring of the soft tissue for a more esthetic emergence profile of the restoration through the tissue. The plastic sleeve portion is color-coded to match the prosthetic table for easy identification. The abutments are available in locking for single-tooth and non-locking for multi-unit restorations.

Prosthetic Options:
- Can be used for single or multi-unit (splinted) cement or screw-retained crown and bridge restorations.
- Can be used for bar-retained overdenture restorations.
- Indicated for esthetic custom restorations that attach directly to the implant.
- It is recommended to use the Abutment Lab Screw during laboratory procedures to avoid damage to the final Abutment Screw.

Technical Considerations:
- A minimal inter-occlusal distance of 4.5mm for SD and RD and 5mm for the WD UCLA Abutments is required between the implant prosthetic table and the top of the Abutment Screw when seated.

Other Restorative Options for Screw-Retained Restorations:
A transmucosal Multi-Unit Abutment is also available for the fabrication of screw-retained restorations. It is available in SD, RD, and WD in various cuff heights. Due to the 18° tapered axial walls, divergence between implants can be accommodated up to 36° with the Multi-Unit Abutment. (See page 59.)

Clinical Procedure - Impressioning

NOTE: For implant level impressions, refer to pages 4-7 for an open or closed tray impression technique. The laboratory will be able to select the proper abutments from either one of these impressions.
Laboratory Procedure - Master Cast and Custom Abutment Fabrication

**NOTE:** An implant level impression utilizing either a closed or open tray technique is required. (See pages 4-7.) A soft tissue model is recommended to provide accurate replication of the soft tissue.

Step 1: Attach the Implant Analog to the Impression Post and pour soft tissue material around the analog. When the material has set, pour a stone master cast.

Step 2: Place the UCLA Gold/Plastic Sleeve on the master cast.

Step 3: Determine the modifications needed to provide adequate clearance for adjacent and opposing dentition. Shorten the Gold/Plastic Sleeve with a separating disc to obtain the correct vertical and interproximal dimensions. Adjust the Gold/Plastic Sleeve for the ideal angulation.

Step 4: Lightly lubricate the Abutment Lab Screw so that wax and/or acrylic will not stick to the screw when removing it from the abutment. Add wax and/or acrylic burnout resin to the sleeve to contour the abutment into the appropriate dimensions.

**NOTE:** Extend a small amount of wax onto the gold base to ensure a smooth junction between the gold base and the plastic sleeve.

Step 5: Sprue, invest and cast following conventional crown and bridge techniques. See the UCLA Gold/Plastic Sleeve package insert for technical data on casting and melting temperatures.

**NOTE:** Pour the investment into the ring very slowly. Watch for the investment to completely flow up through the screw access hole.

**CAUTION:** A chemical divestment material is recommended to preserve the abutment/implant interface.

Step 6: Confirm a passive fit on the master cast. The soft tissue material can be removed to verify an accurate fit of the custom abutment to the Implant Analog on the model. Polish any part of the abutment that will be exposed to the soft tissue.

**NOTE:** When polishing the abutment collar, attach an Implant Analog to protect the interface between the abutment and the implant.

**TIP:** Block out the screw access hole and apply a die spacer to the abutment.

Step 7: Wax, invest, cast, and finish the understructure using conventional crown and bridge techniques.

Step 8: Apply porcelain following conventional crown and bridge techniques.
Clinical Procedure - Final Insertion

Step 1: Note the orientation marks on the custom abutment and on the working cast before transferring it from the cast to the mouth. The custom abutment must be seated in the mouth in the same position.

Step 2: Use the Quad Driver to remove the Healing Abutment or temporary prosthesis.

Step 3: Place the abutment using the orientation marks as a guide or use a positioning jig if supplied.

Step 4: Take a radiograph to verify that the abutment is completely seated.

Step 5: Use a Torque Wrench to tighten the final Abutment Screw to 30Ncm.

Step 6: Try in the final restoration on the custom abutment. Check the occlusion, contacts, and margin integrity. There should be no occlusal contacts in excursive movements and only light contact in centric occlusion. Once satisfied, use either a temporary or permanent cement to seat the restoration.

CAUTION: To prevent tissue irritation or implant failure, ensure there is no excess cement left in the sulcus surrounding the abutment/implant interface.
SCREW-RETAINED RESTORATIONS USING THE UCLA ABUTMENT SYSTEM

Technical information on the PrimaConnex™ UCLA Abutment, its options, and considerations can be found on page 31.

Laboratory Procedure - Master Cast Fabrication

Step 1: Attach the Implant Analog to the Impression Post. A soft tissue model is recommended to provide an accurate replication of the patient’s soft tissue.

Step 2: Pour the soft tissue material around the Implant Analog. When the material has set, pour a stone master cast.

Abutment Selection

PrimaConnex® UCLA Gold/Plastic Sleeves

- Gold/Plastic Sleeve combines a precision-machined interface with the convenience of a castable plastic sleeve.
- Color-coded to match the implant for easy identification.
- Offered in both locking (for single-tooth) and non-locking (for multi-unit, splinted) restorations.
- Includes an Occlusal Plug to protect the screw access hole.

Metal Framework Fabrication

Step 1: Place the UCLA Gold/Plastic Sleeve on the master cast.

Step 2: Reduce the plastic sleeve with a rubber wheel. The plastic sleeve should be reduced so it is approximately 2mm out of occlusion. Lightly lubricate the Abutment Lab Screw. Add wax and/or acrylic resin following normal crown and bridge techniques.

**TIP:** Flow a small amount of wax onto the gold base to ensure a seamless interface between the gold base and the plastic sleeve.

Step 3: Sprue, invest and cast following conventional crown and bridge techniques. See the UCLA Gold/Plastic Sleeve package insert for technical data on casting and melting temperatures.

**NOTE:** Pour the investment into the ring very slowly. Watch for the investment to completely flow up through the screw access hole.

**CAUTION:** A chemical devestment material is recommended to maintain the abutment/implant interface.
Step 4: Confirm a passive fit on the master cast. The soft tissue material can be removed to verify an accurate fit of the framework to the Implant Analog on the model. Polish any part of the abutment that will be exposed to the soft tissue.

**NOTE:** If the restoring doctor requested a temporary restoration, fabrication can be done following Step 4 using a temporary abutment (see pages 8-10).

**NOTE:** An intraoral metal try in on all multi-unit restorations to confirm a passive fit is recommended.

**Clinical Procedure - Multi-Unit Metal Framework Try in**

Remove the Healing Abutments or temporary prosthesis with the Quad Driver. Place the metal framework in the mouth without the abutment screws. Verify the fit of the bridge as follows:

1. Place the first abutment screw and confirm a passive fit.
2. Continue until all abutment screws are placed.
3. If the metal framework fits passively and completely, it can be removed and returned to the laboratory. Next, seat the appropriate Healing Abutments immediately to avoid tissue slumping or replace the temporary prosthesis.
4. If the bridge does not seat passively, section the bridge and reassemble in the mouth. Lute together with a resin material and either pick up in an impression or remove and send to the laboratory.

**CAUTION:** If the framework binds as it is seated or does not go completely down to the margin of the abutments, then the bridge must be sectioned, orientated in the mouth and returned to the laboratory for soldering/laser welding. It may be possible to use an indicator spray or paste to determine if the internal aspect of the bridge can be modified to allow for a passive seat.

**TIP:** If the framework is not passive, mark the area where it is not seating and needs to be sectioned. Remove the framework from the patient’s mouth and section, creating a space of approximately 0.3mm using an ultra-thin disc. Reseat the sections in the mouth using a pattern resin material, lute the sections of the framework together.

5. Return the metal framework to the laboratory to be soldered/laser welded and returned for a second framework try in.

**OR**

Pick up the luted framework in a secondary full arch impression. Then, return the framework to the laboratory for soldering/laser welding and porcelain application.

**TIP:** It may be advantageous to take a bite registration with the metal framework seated to verify accurate articulation of the models.
Laboratory Procedure - Porcelain Application
Proceed with porcelain application following conventional crown and bridge techniques.

**CAUTION:** Do not sandblast the pre-machined surface of the metal framework.

**TIP:** When polishing the abutment and the implant collar, attach an Implant Analog to protect the implant/abutment interface.

Clinical Procedure - Final Insertion

Step 1: Use the Quad Driver to remove the screw-retained bridge from the working model. Inspect the internal aspect of the abutment base for any glaze or porcelain that may have overextended into the male portion.

Step 2: Remove the Healing Abutments or temporary prosthesis with the Quad Driver.

Step 3: Without the abutment screws in place, seat the completed restoration on the implants in the mouth. Check the proximal contacts before placing the abutment screws. Place one abutment screw and examine the fit. Place the remaining screws examining the fit after each screw is placed. All screws should be seated with firm finger pressure.

Step 4: With the final restoration seated, check the occlusion, proximal contacts, and margin integrity. There should be no occlusal contact in excursive movements and only light contact in centric occlusion. If the crowns are subgingival, take a radiograph to verify a complete seating.

Step 5: With the final restoration in place, use a 30Ncm Torque Wrench and AccuTorque Quad Driver to apply the final torque to the abutment screws.

Step 6: All PrimaConnex® Implant UCLA Abutments include an occlusal plug to fill the screw access hole. The concave end of the plug is placed towards the occlusal surface. Place the occlusal plug into the screw access hole and shorten enough to allow room (1-2mm) for the composite. Fill the remaining portion of the screw access hole with composite. Adjust the occlusion, perform the final contour, and polish with the recommended composite polishing paste.
OVERDENTURE RESTORATIONS

In most cases the patient perceives no esthetic difference between an implant attachment-retained and bar attachment-retained overdenture. However, the patient can expect a more stable (less movement) prosthesis with a bar attachment-retained overdenture. “Attachment-Retained” means the restoration has some type of built-in releasing mechanism that permits the restoration to reposition itself when the occlusal loads are applied. Therefore, a portion of the occlusal load is distributed to the soft tissue and the bony structures of the edentulous areas.

Restorative Options:
1. Implant Attachment-Retained Overdenture Tissue-Supported Prosthesis
2. Bar Attachment-Retained Overdenture Tissue-Supported Prosthesis
3. Milled Bar Overdenture Implant-Supported Prosthesis
4. Screw-Retained Fixed-Detachable Implant-Supported Prosthesis

Implant Attachment-Retained Overdenture Tissue-Supported Prosthesis:
- Primarily indicated for use in the mandible.
- Two or more implants are indicated.
- The patient removes the overdenture for proper hygiene.
- Denture is retained by female attachments only.
- Totally mucosa supported prosthesis.

Bar Attachment-Retained Overdenture Tissue-Supported Prosthesis:
- Indicated for use in the maxilla and mandible.
- Two or more implants are indicated.
- The patient removes the overdenture for hygiene.
- Various attachment mechanisms are used for retention of the denture.
- Slight movement provides the patient with stability and comfort.
- Bar design should be 1-1.5mm above the tissue.
- Can be implant and tissue supported or all implant supported.

Milled Bar Overdenture Implant-Supported Prosthesis:
- Indicated for use in the maxilla and mandible.
- Six or more implants are indicated for this prosthesis in the mandible.
- Eight or more implants are indicated in the maxilla.
- The patient removes the denture for proper hygiene.
- Various attachment mechanisms are used for retention of the denture to the bar.
- All implant supported prosthesis.
Screw-Retained Fixed-Detachable Implant-Supported Prosthesis:
- Primarily indicated for use in the mandible.
- Six or more implants are indicated for this prosthesis in the mandible.
- Eight or more implants are indicated in the maxilla.
- Only the dentist can remove the prosthesis.
- Screw-retained directly to the implants or transmucosal abutments.
- The bar design should be 2-2.5mm above the tissue.

Preliminary Considerations For Implant Attachment-Retained Overdentures:
For predictable outcomes for an overdenture restoration, preliminary treatment planning is imperative.
- Evaluate the patient’s oral and general health.
- Request a full wax setup to evaluate tooth position and the vertical dimension (interarch space).
- Evaluate the contours/angle of the bone for possible divergence of the implants.
- Determine the inter-occlusal space available for the abutments and the attachment mechanism.
- Ask the laboratory technician to assist with design, abutment selection, and attachment type.

Implant Attachment-Retained Overdentures:
There are two types of overdenture abutment systems available for the PrimaConnex® Implant System: the Zest® LOCATOR® Abutment System and the Snap Abutment System.
LOCATOR Abutments are used with two or more implants for attachment-retained overdenture restorations. The LOCATOR Abutment threads directly into the PrimaConnex® Implant. The Denture Cap is processed into the denture base either chairside or at the dental laboratory. Nylon LOCATOR Replacement Males provide varying degrees of retention.

Indications:
The LOCATOR Abutment System is designed for use with overdentures or partial dentures retained in whole or in part by implants.

Contraindications:
Not appropriate where a totally rigid connection is required. Not recommended for use on two or more implants with greater than 40° total divergence.

Technical Considerations:
- Lowest Vertical Height: The total height of the LOCATOR Abutment (Abutment plus Replacement Male) Assembly is only 2.5mm plus cuff height for the PrimaConnex Implant.
- Locating Design: Self-locating design allows the patient to easily seat their overdenture without the need for accurate alignment of the attachment components.
- Retention Inside and Out: The patented Dual Retention feature provides the LOCATOR Abutment with greater retention surface area than with other attachments. A combination of inside and outside retention ensures the longest lasting performance.
- Rotational Pivoting Action: The design of the pivoting LOCATOR Replacement Male delivers a resilient connection for the prosthesis without any resulting loss of retention.
- Use With Non-Parallel Implants: Standard LOCATOR Replacement Males can be used to restore an implant with up to 10° of divergence (20° between implants). The LOCATOR Extended Range Replacement Males can accommodate a divergence of up to 20° (40° between implants).
- LOCATOR Core Tool: The LOCATOR Core Tool is a multi-purpose tool that contains a LOCATOR Male Removal Tool, a LOCATOR Male Seating Tool and a LOCATOR Abutment Driver.

Clinical Procedure - Impressioning
NOTE: For implant level impressions, refer to pages 4-7 for an open or closed tray impression technique. The laboratory will be able to select the proper abutments from either impression. As an alternative procedure, the clinician may elect to place the LOCATOR Abutments and take a direct impression. Refer to page 42-43 for details.
Laboratory Procedure - Master Cast Fabrication
Step 1: Attach the Implant Analogs to the Impression Posts. A soft tissue model is recommended to provide an accurate replication of the patient’s soft tissue.

Step 2: Pour the soft tissue material around the Implant Analogs. When the material has set, pour a stone master cast.

**NOTE:** For the laboratory procedures, the wax rim try in and the wax setup follow conventional denture procedures.

Clinical Procedure - Wax Try in
**NOTE:** Follow conventional wax rim try in and wax setup procedures.

Laboratory Procedure - LOCATOR® Abutment Selection and Fabrication
Step 1: Fabricate a silicone putty matrix around the labial surface of the teeth in the denture wax-up. Doing so records the position relative to the implants in the master cast.

Step 2: To select the proper LOCATOR Abutment, measure the tissue thickness on the model from the top of the prosthetic platform of the Implant Analog to the crest of the gingiva at the highest side of the implant site. Choose the abutment cuff height that equals the tissue measurement, or is the next longer available. This will position the functioning 1.5mm of the abutment above the surrounding gingival level. (The top 1.5mm of the LOCATOR Abutment should be above the tissue.)

Step 3: Place the LOCATOR Abutments on the model using a LOCATOR Core Tool. Hand-tighten into place.

Step 4: Place a White Block-Out Spacer over the head of each LOCATOR Abutment. The spacer is used to block out the area immediately surrounding the abutment. The space created will allow the full resilient function of the pivoting metal denture cap over the LOCATOR Replacement Male.

**NOTE:** If the White Block-Out Spacer does not completely fill the space between the tissue and the metal denture cap, it is necessary to block out any remaining undercuts to prevent the acrylic resin from locking the denture onto the abutment.
Step 5: Insert a LOCATOR® Cap with a Black Processing Male onto each LOCATOR Abutment, leaving the White Block-Out Spacer beneath it. The Black Processing Male will maintain the overdenture in the upper limit of its vertical resiliency during the processing procedure.

**CAUTION:** Do not trial pack. Trial packing could dislodge the male portion from the abutment. Pack and cure the denture to the acrylic manufacturer’s specifications. Finish the overdenture.

Step 6: Invest, following conventional denture procedures. A small metal mesh may be incorporated into the denture for added strength.

Step 7: Complete the processing and discard the white spacer. Avoid damage to the final male by polishing the denture base before changing to the final Replacement Male.

Step 8: Use the LOCATOR Core Tool to remove the Black Processing Male from the metal Denture Cap. Insert the Male Removal Tool end into the cap assembly and push straight down into bottom of the nylon male. Then tilt the tool so that the sharp tip will grab hold of the male and pull it out of the cap.

Step 9: The LOCATOR Core Tool is used to firmly push a LOCATOR Replacement Male into the Denture Cap. The Replacement Male must seat securely into place, level with the rim of the cap.

**NOTE:** The Replacement Male will not stay on the tool when it is turned upside down due to the varying sizes of males available. It is best to hold the denture with the occlusal side down and snap the male into the metal denture cap.

**Clinical Procedure - Delivering the Final Prosthesis**

Step 1: Remove the Healing Abutments one at a time using the Quad Driver. Using the LOCATOR Core Tool, place the LOCATOR Abutments as they were positioned on the model and hand tighten into place.

**CAUTION:** Due to tissue variations, abutments are not always the same cuff heights. Be sure to place the correct abutment in the correct implant site according to how they were placed on the master cast.

Step 2: Using a Torque Wrench and a LOCATOR Torque Wrench Driver, tighten the abutments to 30Ncm.

**NOTE:** The LOCATOR Torque Wrench Driver available through Keystone Dental fits into the Keystone Dental Torque Wrench. Additionally, any torque wrench with a .050” (1.25mm) Torque Wrench Driver Tip will fit into the backside of the LOCATOR Abutment Driver which is exposed by unthreading the gold end of the LOCATOR Core Tool. Use your own Torque Wrench with either of these options to achieve the minimum seating force of 30Ncm to preclude loosening of the LOCATOR Abutment.
Step 3: Procedure for seating the final denture (LOCATOR® attachments have been processed into the denture by the laboratory):

- Seat the final denture.
- Make any final adjustments to the occlusion.
- Instruct the patient about proper insertion and removal of the prosthesis, proper homecare and hygiene.
- Insertion instructions to the patient should include not biting the denture into place.
- Instruct the patient to remove the prosthesis by lifting vertically when removing the denture.

NOTE: Taking these precautions will help extend the life of the nylon LOCATOR Replacement Males.

Alternative Clinical Procedure

Clinician Placement of the LOCATOR Abutment for Direct Impressioning

Abutment Selection and Chairside Procedures

Step 1: After the secondary gingival healing period is complete, remove the Healing Abutment using the Quad Driver. To select the proper PrimaConnex® LOCATOR Abutment, determine the diameter of the implant. Measure the tissue thickness from the top of the prosthetic table of the implant to the crest of the gingiva at the highest side of the implant site. Choose the abutment cuff height that equals the tissue measurement, or the next closest longer size available. This will position the functioning 1.5mm of the abutment above the surrounding gingival level (which should not be submerged below the tissue).

NOTE: It is imperative that all bone and soft tissue be removed from the superior aspect of the implant body to guarantee complete seating of the LOCATOR Abutment.

Step 2: Thread the LOCATOR Abutment into the implant.

Step 3: To prevent screw loosening, the LOCATOR Torque Wrench Driver and a Torque Wrench should be used to tighten the LOCATOR Abutment to 30Ncm.

Step 4: After the LOCATOR Abutment is securely seated, proceed to take a full arch impression of the abutments. Place a LOCATOR Impression Coping with Black Processing Male onto each LOCATOR Abutment.

Step 5: Take an impression using a firm body impression material, exercising caution not to compress the soft tissue. The LOCATOR Impression Coping is designed with minimum retention to be picked up in the impression material.
Step 6: Inspect the impression for accuracy. Send the impression with the LOCATOR® Female Analogs to the laboratory to fabricate a master cast. Modify the patient’s existing denture using a soft liner over the abutments.

Laboratory Procedure - Master Cast Fabrication and Processing

Step 1: Snap a LOCATOR Female Analog onto each Impression Coping in the impression. The Female Analog must not fall off when turned upside down with vibration.

Step 2: Pour the master cast. Upon separation, the LOCATOR Female Analog is a part of the master cast replicating the position of the LOCATOR Abutment in the mouth.

Step 3: Before waxing and processing the denture, place a Denture Cap with Black Processing Male into each Female Analog in the master cast. Make sure the male is fully seated.

Step 4: Set the teeth and wax the denture. Proceed with the processing technique of your choice through the boil-out step.

Step 5: After the boil-out, remove the Black Processing Male. Place a White Block-Out Spacer over the head of each Female Analog. The spacer is used to block out the immediate area surrounding the LOCATOR Abutment. The space created will allow the full resilient function of the pivoting metal Denture Cap over the LOCATOR Abutment.

Step 6: Reinsert the LOCATOR Black Processing Male into each Female Analog, leaving the White Block-Out Spacer beneath it. The Black Processing Male will maintain the overdenture in the upper limit of its vertical resiliency during the processing procedure.

Step 7: Complete the processing and discard the white spacer. Avoid damage to the final male by polishing the denture base before changing to the final male.

Step 8: Use the LOCATOR Core Tool to remove the Black Processing Male from the metal Denture Cap. Insert the Male Removal Tool end into the cap male assembly and push straight down into bottom of the nylon male. Then tilt the tool so that the sharp tip will grab hold of the male and pull it out of the cap.
Step 9: Use the LOCATOR® Core Tool to firmly push a LOCATOR Replacement Male into the empty Denture Cap. The Replacement Male must seat securely into place, level with the rim of the cap.

**NOTE:** The Replacement Male will not stay on the tool when it is turned upside down due to the varying sizes of males available.

**Angle Measurement of a Divergent Implant**

Alignment Pins, Angle Measurement Guides, and Parallel Posts are available directly from Zest Anchors: 800-262-2310 (US only) or www.zestanchors.com

Step 1: Choose the 1.8 thread on the titanium Alignment Pin (available from Zest Anchors) that matches the type of implant being used.

Step 2: Thread the Alignment Pin by hand directly into the divergent implant (or implant analog on a stone cast) being careful not to cross-thread the pin. Place the stainless steel Angle Measurement Guide behind the Alignment Pin, level with the path of insertion, to determine the divergence in degrees. An additional Alignment Pin can be placed into an adjacent non-divergent implant to determine the difference in the angle between it and the divergent implant.

**CAUTION:** If the alignment pin does not easily thread into an implant, do not force the insertion.

**NOTE:** An alternative method of determining the angulation of an implant is to first place the LOCATOR Abutment onto the implant and then snap a LOCATOR Parallel Post onto it. Use the Angle Measurement Guide behind the Parallel Post to determine the angle of the implant.

Step 3: Choose the final LOCATOR nylon male retention liner based upon the determined angle measurement of each implant. If the divergence of an implant is less than 10°, use one of the LOCATOR Replacement Males (white = 5 lbs., pink = 3 lbs., and blue = 1.5 lbs.). If the divergence of any implant is between 10° and 20°, then use one of the Extended Range Replacement Males (green = 4 lbs.) which can accommodate a divergent implant up to 20° (40° between implants).

**Clinical Procedure - LOCATOR Male Placement by the Clinician Chairside**

Step 1: Insertion of the proper LOCATOR Abutment at tissue level must be completed before beginning the procedure for placement of the LOCATOR Replacement Male.

Step 2: Place a White Block-Out Spacer over the head of each LOCATOR Abutment which is used to block out the area immediately surrounding the abutment. The space created will allow the full resilient function of the pivoting metal denture cap over the LOCATOR Male.
If the White Block-Out Spacer does not completely fill the space between the tissue and the metal denture cap, it is necessary to block out any remaining undercuts to prevent the acrylic resin from locking the denture onto the abutment.

Step 3: Insert a LOCATOR® Cap with Black Processing Male into each LOCATOR Implant Abutment, leaving the White Block-Out Spacer beneath it. The Black Processing Male will maintain the overdenture in the upper limit of vertical resiliency during the processing procedure.

Step 4: Prepare a recess in the denture to accommodate the protruding LOCATOR Replacement Male. There must be no contact between the denture and the titanium cap. If the denture rests on the metal cap, excess pressure on the implant will result.

Step 5: Use cold-cure acrylic to bond the LOCATOR Denture Cap Male into the denture.

Step 6: Insert the denture into position in the mouth. Guide the patient into occlusion, maintaining a proper relationship with the opposing arch.

Step 7: After the acrylic resin has cured, remove the denture and discard the white spacer. Use a bur to remove excess acrylic and polish the denture base before changing to the final male.

**NOTE:** Maintain the denture in a passive position, without compression of the soft tissue, while the acrylic sets. Excessive occlusal pressure during the setting time may cause tissue recoil against the denture base and could contribute to dislodging and premature wear of the nylon males.

Step 8: Use the LOCATOR Core Tool to remove the Black Processing Male from the metal Denture Cap. Insert the Male Removal Tool end into the cap male assembly and push straight down into bottom of the nylon male. Then tilt the tool so that the tip will grab hold of the male and pull it out of the cap.

Step 9: The LOCATOR Core Tool is used to firmly push a LOCATOR Replacement Male into the metal Denture Cap. The Replacement Male must seat securely into place, level with the rim of the cap.

Step 10: Instruct the patient on the path of insertion. Have the patient insert and remove the appliance several times.

**NOTE:** The Replacement Male will not stay on the tool when it is turned upside down due to the varying sizes of males available. It is best to hold the denture with the occlusal side down and snap the male into the metal Denture Cap.
**How to Change the LOCATOR® Replacement Male**

Step 1: Use the LOCATOR Core Tool to remove the nylon Replacement Male. Loosen the male end of the tool a full three turns counterclockwise (you will see a visible gap) from the metal Denture Cap and replace it with another LOCATOR Replacement Male. Insert the tip into the cap/male assembly and push straight into the bottom of the nylon male. Then tilt the tool so that the sharp edge of the tip will grab hold of the male and pull it out of the cap. To discard the nylon male from the tip on the Core Tool, point the tool down and away from you and tighten the Male Removal Tool clockwise back onto the Core Tool. This will activate the removal pin and dislodge the nylon male from the tip of the Male Removal Tool.

Step 2: Using the LOCATOR Core Tool, firmly push a LOCATOR Replacement Male into the denture cap. The Replacement Male must seat securely into place, even with the rim of the cap. Use of multiple LOCATOR Abutments (three or more) in the same dental arch may require use of the 3.0 lbs (light retention) pink Replacement Male or 1.5 lbs. (extra light retention) blue Replacement Male for easier removal of the prosthesis by the patient.

**NOTE:** The Replacement Male will not stay on the tool when it is turned upside down due to the varying sizes of males available. It is best to hold the denture with the occlusal side down and snap the male into the metal Denture Cap.

**Reline and Rebase**

Step 1: Remove each existing nylon replacement male from its metal Denture Cap following the steps in HOW TO CHANGE THE LOCATOR REPLACEMENT MALE. Replace them with Black Processing Replacement Males. The built-in spacer of the Black Processing Male will maintain the overdenture in its level of vertical resiliency during the reline process.

Step 2: Take a reline impression using the existing overdenture as a tray. The Black Processing Males will engage the LOCATOR Abutments and hold the prosthesis in place while the impression material sets.

Step 3: When the impression is removed, the Black Processing Males will remain in the metal denture caps.

Step 4: Snap a LOCATOR Female Analog onto each Black Processing Male and pour a master cast.

Step 5: After processing the reline and polishing the denture base, replace the Black Processing Males with the final Replacement Males.
Patient Care

Good oral hygiene is vital to implant success. The LOCATOR® Abutments must be thoroughly cleaned daily. The use of a soft nylon bristle or end-tufted toothbrush, and floss to polish the abutments is recommended. Nonabrasive toothpaste and an irrigation system is recommended to keep the socket of the LOCATOR Abutment clean.

Patients should maintain a three-to-four month recall for cleaning and implant evaluation. The sulcular area around the implant abutment is a primary area of concern. Use plastic instruments for scaling the abutments. Do not use metal instruments, which may create scratches on the abutment surface. Examine patients for signs of inflammation around the implant abutment, and for implant mobility. Use the gold plated Abutment Driver (contained in the LOCATOR Core Tool), to make sure the LOCATOR Implant Abutment is secure before dismissal.
SNAP ABUTMENT SYSTEM

The Snap Abutment System is used with two or more implants. It provides an economical direct attachment for an implant attachment-retained overdenture restoration. The Snap Abutment threads directly into the implant. The Snap Abutment Assembly (Female) is processed into the denture base either chairside or in the laboratory. The Snap Abutment (Male) is available in various cuff heights to accommodate tissue depths. It is also available for the Small Diameter (SD), Regular Diameter (RD), and Wide Diameter (WD) prosthetic tables. Replacement retention inserts are available in the choice of low (red), medium (yellow), and high (blue) retention.

Technical Considerations:

- A minimum inter-occlusal clearance of 7.0mm + cuff height is required.
- Implants must be relatively parallel to one another with less than 20° of total divergence.
- If a patient cannot tolerate pressure on the mucosa, this type of restoration is not an option.
- The patient must have good manual dexterity to align the denture directly over the attachments prior to seating.

Fabrication of a New Denture

Clinical Procedure - Impressioning

NOTE: For implant level impressions, refer to pages 4-7 for an open or closed tray impression technique. The laboratory will be able to select the proper abutments from either one of these impressions.

Laboratory Procedure - Master Cast Fabrication

Step 1: Attach the Implant Analog to the Impression Posts. A soft tissue model is recommended to provide an accurate replication of the patient’s soft tissue.

Step 2: Pour the soft tissue around the implant analogs. When the material has set, pour a stone master model.

NOTE: For the laboratory procedures, the wax rim try in and the wax setup follow conventional denture procedures.
Clinical Procedure - Wax Try in

NOTE: Follow conventional wax rim try in and wax setup procedures.

Laboratory Procedure - Denture Fabrication

Step 1: Fabricate a silicone putty matrix around the labial portion of the denture wax-up. Doing so records the occlusals of the teeth and their position relative to the implants in the master cast.

Step 2: Measure the tissue height. Select the Snap Abutment that is approximately 1mm above the tissue. (One millimeter above tissue will allow the female of the attachment to fully seat on the abutment without tissue interference.)

Step 3: Place the Snap Abutments on the model using an Overdenture Abutment Driver and tighten.

Step 4: For block-out of the Snap Abutment, seat the brass metal spacers provided. Place the Snap Abutment Housing. The brass spacer also serves as a block-out to keep acrylic from flowing into the undercut of the female ball. Try to close the flask. Check for any interferences with the teeth. If the denture teeth interfere, reduce as necessary to create enough room for acrylic and the female attachment.

CAUTION: Do not trial pack. Trial packing could dislodge the male portion from the abutment. Pack and cure the denture to the manufacturer’s specifications. Finish the overdenture, being careful not to damage the ball portion of the Snap Abutment.

Step 5: Invest, following conventional denture procedures. A small metal reinforcement mesh may be incorporated into the denture for added strength.

Clinical Procedure - Delivering the Final Prosthesis

Step 1: Remove one Healing Abutment using the Quad Driver and with the Overdenture Driver place a Snap Abutment and hand tighten. Repeat until all Snap Abutments have been seated.

CAUTION: Due to tissue variations, not all abutments used will have the same cuff heights. Be sure to place the correct abutment in the correct implant site according to how they were placed on the master model.

Step 2: Using a Torque Wrench and an Overdenture Torque Driver, tighten the abutments to 30Ncm.
Step 3: Procedure for seating the final denture (female Snap attachments have been processed into the denture by the laboratory):

- Seat the final denture.
- Make any final adjustments to the occlusion.
- Instruct the patient about proper insertion and removal of the prosthesis, proper homecare, and hygiene.
- Insertion instructions to the patient should include not biting the denture into place.
- Instruct the patient to remove the prosthesis by lifting vertically.

**NOTE:** Taking these precautions will help extend the life of the nylon Snap Retention Inserts.

**Steps for replacing the Snap Retention Insert**

See pages 51-52.

**Alternative Clinical Procedure**

**Clinician Placement of the Snap Abutment for Direct Impressioning**

**NOTE:** The clinician may choose to place the male Snap Abutment and take a direct impression of the Snap Abutments in place. If the patient has an existing denture, once the abutments have been placed, a soft tissue liner is applied to fit the existing denture to the abutments.

To obtain the proper cuff height prior to abutment placement, remove the Healing Abutments and measure the tissue depth.

The abutment platform should be at least 1mm above the tissue. This will keep the tissue from slumping onto the platform of the abutment, causing improper seating of the denture. Order the appropriate height Snap Abutments to ensure proper function of the restoration.

**Step 1:** Remove the Healing Abutments one at a time using the Quad Driver. Using the Overdenture Driver, place the Snap Abutments and tighten.

**Step 2:** Take a radiograph to verify the abutments are completely seated. Using a Torque Wrench and an Overdenture Torque Driver, tighten the abutments to 30Ncm.

**Step 3:** Syringe impression material around the abutments and take a final impression using a medium to heavy body polyvinylsiloxane or polyether material.
Step 4: Inspect the impression for accuracy. Send the impression with the Snap Abutment Analogs to the laboratory to fabricate a master model. Modify the patient’s existing denture using a soft liner over the abutments.

**Alternative Laboratory Procedure - Master Cast Fabrication**

Step 1: Seat the Snap Abutment Analogs into the impression. Pour the master cast.

Step 2: Block out around the analogs and fabricate a wax rim.

**TIP:** The laboratory may incorporate the Snap Abutment Housing into the denture base for stability during the wax rim and denture setup/try in phase.

**NOTE:** For the denture wax rim and try in, follow traditional clinical and laboratory procedures.

**Alternative Clinical Procedure - Delivering the Final Prosthesis**

Procedure for seating the final denture (female Snap attachments have been processed into the denture by the laboratory):

Step 1: Seat the final denture.

Step 2: Make any final adjustments to the occlusion.

Step 3: Instruct the patient about proper insertion and removal of the prosthesis, proper homecare, and hygiene.

Step 4: Instruct the patient not to bite the denture into place.

Step 5: Instruct the patient to remove the prosthesis by lifting vertically.

**NOTE:** Taking these precautions will help extend the life of the nylon Snap Retention Inserts.

**Steps for Replacing the Snap Retention Insert**

The Snap Abutment Assembly includes an abutment, a housing with low retention insert, and a processing Spacer. Replacement inserts are sold in 6-packs.

- 40003K: Low retention insert, Red
- 40004K: Medium retention insert, Yellow
- 40005K: High retention insert, Blue

To replace a worn retention insert or if more retention is desired, perform the following steps:

Step 1: Use a sharp instrument or a bur to remove the old retention insert.
Step 2: Place the appropriate colored insert onto the end of the Retention Insert Seating Tool

Step 3: With firm pressure, insert (snap) the new plastic insert into the metal housing in the denture.

Clinical Procedure

Processing the Snap Abutment Assembly Chairside (Optional)

After the appropriate Snap Abutments have been placed and torqued to 30Ncm, the Snap Abutment Housing may be processed chairside.

Step 1: Mark the tops of the abutments using an indelible pencil. Position the denture over the abutments, transferring the marking to the denture base. Relieve the denture where the markings appear using a large acrylic bur.

Step 2: Remove enough acrylic to easily accommodate the Snap Abutments with the metal housing and the plastic retention in position. The diameter of this area should be about 56mm.

**TIP:** Create a small hole above each Snap Abutment through the lingual flange of the denture to allow excess acrylic to escape during the curing of the attachments in the denture.

Step 3: Place the brass spacer followed by the Snap Abutment Housing onto each Snap Abutment.

**NOTE:** The brass spacer also serves as a block out to prevent acrylic from flowing and engaging the undercut under the ball of the abutment.

Step 4: Confirm the fit of the denture over the Snap Abutment with the female housing and brass spacer in place. Relieve more of the denture base if necessary.

**NOTE:** It is recommended to process one abutment housing at a time.

Step 5: Mix a small amount of self-polymerizing acrylic and place some on the top of the metal housing. Brush acrylic around the edge of the metal housing.

Step 6: Brush a light coat of monomer followed by acrylic into the relieved sites in the denture.
Step 7: Insert the denture. Excess material will be expressed through the lingual vent holes. Have the patient bite down into centric relationship and maintain pressure until the material has set. *(Follow manufacturers recommended setting times.)*

Step 8: Once the acrylic has polymerized, remove the denture. The housing is now cured into the denture base.

Step 9: Use a small brush to paint acrylic into any voids around the metal housing.

Step 10: Once the acrylic has set, remove any flash of acrylic using a small bur.

Step 11: Repeat this entire procedure for any additional implants.
BAR ATTACHMENT-RETAINED OVERDENTURES

Fabrication of a Bar Attachment-Retained Overdenture

In most cases, the patient perceives no esthetic difference between an implant attachment-retained overdenture and a bar attachment-retained overdenture. However, the patient can expect a more stable (less movement) prosthesis with a bar attachment-retained overdenture. The chairside protocols for the bar attachment-retained overdentures using different attachment mechanisms are virtually the same. The primary differences between the attachment mechanisms include interarch space, angle correction capabilities, amount of retention provided, and biomechanical advantages and disadvantages. For PrimaConnex® Implants, two common abutment systems are available for a bar attachment-retained overdenture: the UCLA and the Multi-Unit Abutment Systems.

When the tissue depth exceeds 3mm, a transmucosal abutment (Multi-Unit Abutment) is recommended to extend the seating platform of the restoration to the abutment approximately 1-1.5mm above the tissue height. This will allow better access for hygiene care. It is recommended that a full diagnostic set-up be completed prior to fabrication of any denture restoration. Typically, fabricating a new denture for the patient is required due to the limited ability to retrofit an existing denture to a metal bar.

BAR OVERDENTURE RESTORATIONS USING THE UCLA ABUTMENT SYSTEM

Technical Considerations:

- A minimal inter-occlusal clearance of 4.5mm for SD and RD and 5.0mm for WD UCLA Abutments is required between the implant prosthetic table and the top of the Abutment Screw when seated.
- It is recommended that the Abutment Lab Screw be used during laboratory procedures to avoid damage to the final abutment screw.

Clinical Procedure - Impressioning

NOTE: For implant level impressions, refer to pages 4-7 for an open or closed tray impression technique.
Laboratory Procedure - Master Cast Fabrication

**NOTE:** If the Implant Analogs are subgingival, fabrication of a soft tissue model is recommended.

Step 1: Attach the Implant Analogs to the Impression Posts. A soft tissue model is recommended to provide an accurate replication of the patient’s soft tissue.

Step 2: Pour the master cast.

Wax Rim Fabrication

For the laboratory procedures of a wax bite rim fabrication, follow conventional denture procedures.

**CAUTION:** If the patient’s ridge is flat, incorporate a minimum of two Impression Posts with short screws into the baseplate. This creates a stable baseplate resulting in a more accurate try in by the clinician.

**NOTE:** Since distortion in materials may occur and cause inaccuracies in the impression, a Wax Rim verification jig should be made for all multi-unit bar restorations to ensure an accurate impression was obtained.

Verification Jig Fabrication

Step 1: Place the Impression Posts onto the master cast and hand tighten using the long screws.

Step 2: Intertwine dental floss around the Impression Posts.

Step 3: Apply a pattern resin or a light-cured material to the Impression Posts. Incorporate the dental floss and lute the Impression Posts together.

Step 4: Section the pattern resin between the Impression Posts. Mark the Impression Posts for mid-facial orientation and return to the clinician individually or luted together in sections.

Step 5: Send the sectioned verification jig with the Abutment Screws to the clinician for try in. A passive fit intraorally will confirm that an accurate final impression has been achieved.
**Clinical Procedure - Inter-occlusal Record**

**NOTE:** For the clinical procedures of a wax bite rim try in, follow conventional denture procedures.

Step 1: Once the inter-occlusal record is completed, remove all the remaining Healing Abutments with the Quad Driver prior to try in of the verification jig.

Step 2: Place the sectioned verification jig onto the implants and tighten the screws firmly. Be sure to place the sections in the mouth in the same position as they were on the master model.

Step 3: Lute the sections together using a pattern resin or a light-cured material.

Step 4: Once the luted material has set, remove the screws. Lift the luted verification jig from the mouth. There should be no binding or fracturing of the verification jig upon removal. This will confirm that a passive fit has been achieved.

Step 5: Replace the Healing Abutments and return the verification jig to the dental laboratory.

**Laboratory Procedure - Denture Wax Setup and Cast Verification**

**NOTE:** For the laboratory procedures of a denture wax setup, follow conventional denture procedures.

**NOTE:** Once the clinician has established a passive fit with the verification jig, the master model may need to be altered to the new relationship before the bar framework can be fabricated. Remove the soft tissue from the master model. Using a straight bur, remove the misaligned analog(s) from the master model. Attach the Implant Analog(s) to the verification jig. Soak the master model in water and then carefully vibrate stone into the voids around the flats of the Implant Analog(s).

**Clinical Procedure - Denture Wax Try in for the Patient**

For the clinical procedure of a denture wax setup for try in, follow conventional denture procedures.

**Laboratory Procedure - Bar Fabrication**

The bar fabrication, try in and final processing using the UCLA Abutment System is shown below. If Multi-Unit Abutments are used for fabrication of a bar attachment-retained overdenture, the bar fabrication, try in, and final processing procedures are the same.
Step 1: Index the facial contours of the approved wax setup with a putty or plaster matrix. This will provide a guide for bar positioning and attachment placement.

Step 2: Remove the matrix and the wax setup from the master model. With an Abutment Lab Screw and the UCLA Gold/Plastic Sleeves (Non-Locking), secure the sleeves onto the Implant Analogs and hand tighten. Reduce the occlusal height of the sleeves to fit within the matrix of the denture setup.

Step 3: Using a plastic bar pattern, cut a section of the bar pattern to fit between the implant sites. Adjust the height of the bar so the bar is parallel to the plane of occlusion. The base of the bar should be at least 1-1.5mm off the tissue.

Step 4: Place the matrix back on the model. Use the matrix as a guide to provide adequate clearance for the attachments, housings, bar pattern, teeth and acrylic.

**NOTE:** There are many different types of attachment mechanisms in various heights and diameters. Choose an attachment mechanism that will allow adequate thickness for the acrylic and enough room for the denture teeth.

Step 5: Connect the bar pattern to the Gold/Plastic Sleeves using wax or resin material. Use a rubber wheel to reduce the height of the plastic sleeves to 0.5mm above the top of the bar. Smooth out the wax-up to prepare for spruing.

Step 6: Sprue the pattern with 10 gauge wax with reservoirs. Use a high-heat, phosphate-bonded investment and follow the manufacturer’s specifications for liquid/powder ratios, mixing times, etc.

Step 7: When divesting the bar framework, use of a chemical divesting medium to maintain the integrity of the gold cylinder is recommended.

**CAUTION:** When polishing the interface between the implant and the prosthetic connection, attach an Implant Analog to protect the abutment.

Step 8: Send the bar framework and the denture to the clinician for try in, including the Abutment Lab Screws.

**Clinical Procedure - Framework Try in**
Step 1: Remove the Healing Abutments with the Quad Driver.

Step 2: Confirm that the bar framework seats passively.

Step 3: Beginning with the most distal implant, place the first laboratory screw. Hand tighten the screw. Make sure the abutment interface/connections on all the remaining implants are completely seated.
Step 4: Continue placing the laboratory screws around the arch. Verify the fit each time a screw is placed.

Step 5: Once the bar framework is completely seated, follow the conventional procedures for wax setup evaluation.

Step 6: After the wax setup evaluation, remove the metal bar framework.

Step 7: Replace the Healing Abutments.

**Sectioning Bar Framework Procedure**

Step 1: Mark the bar framework anterior to the first abutment where the bar has lifted and is not seated on the abutment interface.

Step 2: Remove the bar framework.

Step 3: Section the bar framework where necessary and relate it in the mouth using a pattern resin light-cure material.

Step 4: Remove the sectioned bar framework and replace the Healing Abutments.

Step 5: Return the luted bar framework, laboratory screws, abutments, and the master cast to the laboratory for solder/laser welding.

**NOTE:** A non-passive fitting bar framework can sometimes cause the patient to feel pressure or a pulling sensation when the Abutment Screws are tightened.

**Laboratory Procedure - Processing**

Step 1: Process using conventional denture techniques.

Step 2: Return the final restoration to the clinician for final insertion. Include the gold Abutment Screws for seating.

**Clinical Procedure**

Step 1: Remove the Healing Abutments with the Quad Driver. Insert the bar framework, hand tighten the Abutment Screws, and verify fit. Then, use a Torque Wrench and the Quad Driver to torque the screws to 30Ncm.
Step 2: Seat the final overdenture and follow conventional procedures for the delivery of the final restoration.

FIXED DETACHABLE RESTORATIONS USING THE MULTI-UNIT ABUTMENT SYSTEM

**Multi-Unit Abutment system**

The Multi-Unit Abutment System is commonly used for a fixed detachable (hybrid) restoration. Additionally, it can be used as a transmucosal abutment for bar overdenture restorations. The Multi-Unit Abutment’s tapered design provides excellent stability and allows for an easier path of insertion. The Multi-Unit Abutment is commonly used in the maxilla because of its tapered walls. The Abutment is available for Small Diameter (SD), Regular Diameter (RD), and Wide Diameter (WD) implants in various cuff heights.

**Technical Considerations:**

- The tapered 18° axial walls allow up to 36° of divergence between adjacent abutments.
- A minimum inter-occlusal clearance of 4.8mm + cuff is required between the implant prosthetic table and the top of the coping screw of the Multi-Unit Abutment.

**Clinical Procedure - Abutment Placement and Impressioning**

Step 1: Remove the Healing Abutments with the Quad Driver. To prevent slumping of the tissues, remove one Healing Abutment and then seat the Multi-Unit Abutment. Repeat this until all Multi-Unit Abutments are seated.

Step 2: Place the Multi-Unit Abutments using the Quad Driver. Hand tighten with firm finger pressure.

Step 3: Take a radiograph to verify that the Multi-Unit Abutments are completely seated.

Step 4: Using a Torque Wrench and the Quad Driver tighten the abutments to 30Ncm.
Step 5: Place the Multi-Unit Impression Posts onto the Multi-Unit Abutments. The impression taking techniques are the same as implant level impressions except the Multi-Unit Abutment Impression Posts are placed directly on the Multi-Unit Abutments. Please refer to pages 4-7 for the open tray impression techniques.

**NOTE:** Only open tray impression posts are available for the Multi-Unit Abutment System.

### Laboratory Procedure - Master Cast Fabrication

Step 1: Seat the Multi-Unit Abutment Analogs into the Impression Posts and pour the master cast in dental stone.

**NOTE:** A soft tissue model is recommended if the Multi-Unit Abutments are subgingival.

### Wax Rim Fabrication

For wax bite rim fabrication laboratory procedures, follow conventional denture procedures.

**TIP:** If the patient's ridge is flat, incorporate a minimum of two Multi-Unit Abutment Plastic Sleeves with Screws into the baseplate. This creates a stable baseplate resulting in a more accurate try in by the clinician.

**NOTE:** Since distortion in materials may occur and cause inaccuracies in the impression, a verification jig should be made for all multi-unit restorations. The clinician may fabricate a verification jig chairside prior to wax rim try in.

### Verification Jig Fabrication

**NOTE:** For verification jig fabrication refer to pages 54 of the Bar Overdenture section.

### Clinical Procedure - Inter-occlusal Record and Verification Jig Protocol

**CAUTION:** If the laboratory has incorporated Impression Posts, remove corresponding Healing Caps prior to wax bite rim try in.

For wax bite rim try in clinical procedures, follow conventional denture procedures.
Step 1: Remove the remaining Healing Caps with the Quad Driver.

Step 2: Place the sectioned verification jig onto the Multi-Unit Abutments and tighten the long screws firmly.
Step 3: Lute the sections together using a pattern resin or a light cured material.

Step 4: Once the luted material has set, remove the long screws. Lift the luted verification jig from the mouth. There should be no binding or fracturing of the verification jig upon removal. This will confirm that a passive fit has been achieved.

Step 5: Replace the Healing Caps and return the verification jig to the dental laboratory.

**Laboratory Procedure - Denture Wax Try in and Model Verification**

For denture wax setup laboratory procedure, follow normal denture procedures. Once the clinician has established a passive fit with the verification jig, the master model may need to be altered to the new relationship before the Fixed-Detachable framework can be fabricated. Remove the soft tissue from the master model. Using a straight bur, remove the misaligned Multi-Unit Abutment Analog(s) from the master model. Attach the Multi-Unit Abutment Analog(s) to the verification jig. Soak the master model in water and then carefully vibrate stone into the voids around the Multi-Unit Abutment Analog(s).

**Clinical Procedure - Denture Wax Try in for the Patient**

Follow conventional denture procedure for try in of a wax setup.

**Laboratory Procedure - Fixed-Detachable Framework Fabrication**

Step 1: Index the facial contours of the approved wax setup with a putty or plaster matrix. Doing so will aid in positioning of the framework and placing the screw access holes.

**Optional Method For A Matrix:**

1. Place a separating medium onto the denture teeth.
2. Adapt a light-cure material over the teeth. (Place enough material over the teeth so they will be stable in the material.)
3. Extend the light-cure material onto the retromolar pad area.
4. Place a strip of light-cure material from the incisal edge of the matrix down to the vestibule of the stone model.
5. Boil away the wax from the denture teeth.
Step 2: Fasten the Multi-Unit Gold Sleeve and Waxing Pin. Hand tighten using the Quad Driver.

**NOTE:** If the waxing pin/screw access hole interferes with the matrix, relieve the matrix and the denture teeth to allow the waxing pins to seat properly into the Gold Sleeves.

Step 3: Utilizing a pre-formed pattern (e.g. PC pattern, Attachments International, San Mateo, CA), align the pattern over the implant sites.

Step 4: Continue with the following procedure:
   1. Mark the implant sites on the PC pattern and use a bur to cut holes.
   2. Visually inspect to ensure that the PC pattern sits completely around the plastic or gold sleeves.
   3. Shorten the distal extensions if necessary. The PC pattern should support all the teeth.
   4. Connect the PC pattern to the plastic or gold sleeves.
   5. Place retention beads and/or loops with a thin gauge wire wax on the occlusal of the PC pattern.

**TIP:** Placing the PC pattern 2-2.5mm above the tissue is recommended. The underside of the PC pattern should be rounded for easy patient cleaning.

Step 5: Sprue the pattern with 10 gauge wax with reservoirs. Use a high-heat, phosphate-bonded investment and follow the manufacturer's specifications for liquid/powder ratios, mixing times, etc.

Step 6: When divesting the fixed-detachable framework, use of a chemical divesting material to maintain the integrity of the Gold Sleeve is recommended.

**TIP:** When polishing the interface between the implant and the prosthetic connection, attach an Implant Analog to protect the abutment.

Step 7: Send the fixed-detachable framework to the clinician for try in. Include the coping screws.

**Clinical Procedure - Fixed Detachable Framework Try in**

Step 1: Remove the Healing Caps with the Quad Driver.

Step 2: Confirm that the fixed-detachable framework seats passively.
Step 3: Beginning with the most distal implant/abutment, place the first coping screw, and hand tighten. Make sure the abutment interface connections on all the remaining implants are completely seated.

Step 4: Continue placing the coping screws around the arch. Verify the fit of the remaining abutment interface/connection each time a coping screw is placed.

Step 5: Once the fixed-detachable framework is completely seated, verify that all abutment/framework interfaces are completely seated.

Step 6: Remove the fixed-detachable framework from the patient’s mouth.

Step 7: Replace the Healing Caps.

**Sectioning Fixed-Detachable Framework Procedure**

**NOTE:** If the fixed-detachable framework does not seat passively, it must be cut and soldered/laser welded.

Step 8: Section the fixed-detachable framework where necessary and relate it in the mouth using a pattern resin material.

Step 9: Remove the fixed-detachable framework from the patient’s mouth.

Step 10: Replace the Healing Caps. Return the luted fixed-detachable framework and master model to the laboratory for solder/laser welding.

**CAUTION:** A non-passive fixed-detachable framework can sometimes cause the patient to feel pressure or a pulling sensation when the Abutment/Coping Screws are tightened.

**Laboratory Procedure - Denture Wax Setup**

For denture wax setup onto the fixed-detachable framework, follow conventional denture procedures and deliver to the clinician for a final verification in wax.

**Clinical Procedure - Denture Wax Try in**

**TIP:** Follow conventional denture procedures for the try in of a wax setup.
Laboratory Procedure - Processing

Processing tips:
1. Place the waxing pins into the denture and attach an analog to the underside of the framework.
2. Tighten the waxing pin with finger pressure.
3. Pour a separate, new working cast embedding the analogs for stability.
4. Block out under the fixed-detachable framework using an appropriate material.

Step 1: Process using conventional denture techniques.

Step 2: Return the finished fixed-detachable prosthesis to the clinician for final insertion.

Clinical Procedure - Final Insertion of Fixed-Detachable Prosthesis

Step 1: Remove the Healing Caps using the Quad Driver.

Step 2: Seat the final fixed-detachable prosthesis and hand tighten the coping screws.

Step 3: If seating of the final denture is acceptable, use a Torque Wrench to apply 20Ncm of torque to the coping screws.

Step 4: Follow conventional denture procedures for delivery of the final prosthesis. Place a resilient removable material into the screw access hole to protect the coping screw. Fill the remaining portion of the screw access hole with composite. Adjust the occlusion, perform final contours and polish with a recommended composite polishing paste.
PREPARING THE ABUTMENT PORTION OF THE IMPLANT (OPTIONAL)

If the abutment portion requires modification, the surgical site should be protected. Place a rubber dam over the abutment portion using a lower anterior-sized rubber dam clamp. Prepare the abutment portion following the same procedure as conventional crown and bridge dentistry.

**NOTE:** When preparing the abutment portion, use copious amounts of irrigation to avoid heat transfer to the bone.

Bur Preparation Kit*

For optimum titanium cutting efficiency, Keystone Dental offers a Bur Preparation Kit manufactured by Brasseler USA. It contains an assortment of titanium cutting burs to perform the most common types of preparations. The following burs are included:

<table>
<thead>
<tr>
<th>Description</th>
<th>Brasseler USA Item No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Football-shaped, Extra-coarse (180 micron) Diamond Bur: Used for gross reduction of occlusal/lingual surfaces.</td>
<td>2379.023</td>
</tr>
<tr>
<td>Tapered Round-End, Super-coarse (150 micron) Diamond Bur: Used for gross reduction and preparation of a chamfer margin.</td>
<td>5856.018</td>
</tr>
<tr>
<td>Tapered Flat End Super-coarse (150 micron) Diamond Bur with rounded corners: Used for gross reduction and preparation of a modified shoulder.</td>
<td>5847KR.018</td>
</tr>
<tr>
<td>End-cutting Diamond Bur: Used for shoulder preparations.</td>
<td>10839.012</td>
</tr>
<tr>
<td>Carbide Titanium-Cutting Bur: Used for general overall preparation.</td>
<td>H283FQ.010</td>
</tr>
</tbody>
</table>

*Available only in the U.S.

Outside the U.S. Keystone Dental recommends using burs similar to those described above purchased from your local dental retailer.

PrimaSolo Temporary/Healing Caps

Sterile Temporary/Healing Caps are available for all sizes of PrimaSolo Implants and are manufactured out of PMMA (polymethylmethacrylate) material. This material will bond to all leading dental composites/acrylics. Temporary/Healing Caps can be used either as a foundation for a temporary abutment or as a healing cap.

**NOTE:** Temporary/Healing Caps cannot be re-sterilized.
OPTION 1: TEMPORIZATION OF THE IMPLANT

If the immediate provisionalization criteria outlined in the Prima Surgical Guide have been met, temporization of the implant may be performed at the time of placement. If the integrated implant abutment has not been prepared, the Temporary/Healing Cap can be used as a foundation for a short-term temporary restoration. Create a temporary restoration using the method of choice and bond the acrylic to the Temporary/Healing Cap. The restoration should be out of occlusion.

The following are two techniques to fabricate a temporary:

**Vacuum-formed Stent Technique**

Step 1: Using a diagnostic model, place denture teeth in the edentulous area and then fabricate a vacuum-formed stent using .020 stent material.

Step 2: Trim the stent so it fits over the edentulous area with the Temporary/Healing Cap(s) in place and seat onto the adjacent teeth.

Step 3: Place the temporary acrylic material of choice into the stent and insert it over the patient’s adjacent teeth.  
*(Follow manufacturer’s recommendations for curing times.)*

Step 4: Remove the stent and separate from the acrylic temporary.

Step 5: Adjust the acrylic for optimum emergence and contour.

Step 6: Adjust the bite so it is out of occlusion and polish the temporary restoration.

Step 7: Apply a minimal amount of temporary cement to the temporary crowns and place them onto the implants. Care must be taken to avoid contaminating the surgical site with cement.

**NOTE:** Take a radiograph to verify that no excess cement is remaining in the incision.

**Temporary Shell Crown Technique**

Step 1: Select the appropriate shell crown that fits over the Temporary/Healing Cap and adjust as needed.

Step 2: Using the material of choice, fill the shell crown with acrylic and insert it over the Temporary/Healing Cap into the required position.  
*(Follow the manufacturer’s recommendations for curing times.)*
Step 3: Adjust the acrylic for optimum emergence and contour.

Step 4: Adjust the bite so it is out of occlusion and polish the temporary restoration.

Step 5: Apply a minimal amount of temporary cement to the temporary crowns and place them onto the implants. Care must be taken to avoid contaminating the surgical site with cement.

**NOTE:** Take a radiograph to verify that no excess cement is remaining in the incision.

**OPTION 2: TEMPORARY/HEALING CAP**

If a temporary restoration is not being fabricated, a Temporary/Healing Cap may be used to cover the abutment portion of the implant in the short term while the healing process takes place. Place the Temporary/Healing Cap using a minimal amount of temporary cement. Care must be taken to avoid contaminating the surgical site with cement.

**FINAL RESTORATION**

The final restoration may be fabricated after sufficient bone healing and the soft tissue has matured.

**Final Preparation**

Step 1: Remove the temporary restoration or Temporary/Healing Cap from the implant using the method of choice.

Step 2: Make the final preparation of the margins following conventional crown and bridge protocol.

Step 3: Place retraction cord into the gingival sulcus around the implant.

**Final Impression**

Step 1: Remove the retraction cord.

Step 2: Take a conventional crown and bridge type impression.

Step 3: After material sets, remove and send to the dental laboratory to fabricate the final crown.
Step 4: Reline and replace the temporary restoration.

**Delivery of the Final Restoration**

Step 1: Remove the temporary restoration or Temporary/Healing Cap using the method of choice and remove any excess cement.

Step 2: After final adjustments, cement the final restoration utilizing a permanent or temporary cement of choice.

**NOTE:** Take a radiograph to verify that no excess cement is remaining in the incision.
Prosthetic Manual