Porcelain Fused to Metal

Technique Manual

Non-Shouldered Abutment
Choose the widest abutment that supports but does not encroach upon the interdental papillae and whose height can satisfy all occlusal considerations. Seat the abutment with its corresponding emergence cuff into the implant well. Abutment diameter dictates the diameter of the emergence cuff.

Incorporate the emergence cuff into the transitional crown such that it becomes the apical third of the transitional crown. The circumferential groove on the emergence cuff allows the transitional crown material to mechanically lock to the emergence cuff. The emergence cuff may be easily modified to achieve a desired sulcus contour. Trim and polish the transitional crown prior to cementing it to the abutment with temporary cement.

Allow the soft tissue to mature for at least 6 weeks after a stage two surgical uncovering prior to making an impression.

Remove the transitional crown with the emergence cuff before making the final impression.
Impression Making and Cementation of an Unmodified Abutment

The diameter of the abutment is measured at the widest part of the abutment. The height of the non-shouldered abutment is measured from the widest portion to the occlusal aspect of the abutment. The abutment post height is constant and is not variable.

Make a direct impression of the modified or unmodified abutment and pour a conventional stone model. The laboratory procedures are the same as for the fabrication of a crown or fixed bridge for a natural tooth.

After any needed occlusal, interproximal, or aesthetic contouring, cement the crown conventionally with minimal cement at the cervical aspect of the crown to avoid adverse hydraulic forces. Care must be taken to remove all extraneous cement.

Measurement Guide

The design of the Bicon non-shouldered abutment system is such that the hemispherical base of the abutment does not sit flush with the neck of the implant. By design, there is a space below the abutment post when the abutment is fully seated. When viewing this on a radiograph, it can be seen as a radiolucency. Please note that the post of any abutment may not be modified. Altering the abutment post in any manner or using a cementing medium will affect the frictional fit of the locking taper resulting in a potentially non-retentive abutment.

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At the time of implant uncovering, place a non-shouldered abutment and allow the soft tissue to heal around the hemispherical base of the abutment for 6 weeks. Choose the widest non-shouldered abutment that will support the interdental papillae without encroaching upon them.

Use a sharp #1557 carbide bur to modify the abutment, if necessary. Use irrigation when preparing the abutments intra-orally to prevent heating and potential damage to the bone.

Make a direct impression of the modified or unmodified abutment with conventional impression materials and pour a conventional stone model. The laboratory procedures are the same as for the fabrication of crowns or fixed bridges for natural teeth. Use a knife or feathered edge margin.

A try-in of the casting prior to the porcelain application is advised to assure a passive seating.
Choose the widest abutment to accommodate the edentulous space without encroaching upon the interdental papillae. 3.5mm abutments are recommended only for mandibular incisors; 4.0mm abutments are primarily used for maxillary laterals and bicusps; 5.0mm abutments are more universal in their use; 6.5mm and 7.5mm abutments are ideally suited for molars.

The abutment can rotate 360˚ to reach a desired position or to achieve parallelism prior to seating.

Avoid direct handling of an abutment post, since a change of its geometry may result in a non-retentive abutment.

Use an abutment preparation holder (260-101-390) when modifying abutments extra-orally.

Use irrigation when preparing an abutment intra-orally.

Do not make an impression with the emergence cuff.

The use of retraction cord is not necessary.

An emergence cuff can act as a means of gingival retraction.

The casting may end with a knife or feathered edge margin anywhere along the coronal aspect of the abutment.

Use minimal amount of cement at the cervical margin to avoid hydraulic forces which may prevent the crown from seating fully.

Note: Use irrigation when preparing the abutment intra-orally to prevent heating and potential damage to the bone. A try-in of the casting prior to the porcelain application is advised to assure a passive seating.

A knife or feathered-edge margin is employed at the most apical portion of the die. The margin need not be at the abutment’s height of contour.

Statistically, a 2.0mm diameter abutment post will move 0.1mm into the well of an implant from its initial insertion to its being definitively seated, and a 3.0mm abutment will move 0.25mm.

**Keys to Success**

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- The abutment can rotate 360˚ to reach a desired position or to achieve parallelism prior to seating.
- Avoid direct handling of an abutment post, since a change of its geometry may result in a non-retentive abutment.
- Use an abutment preparation holder (260-101-390) when modifying abutments extra-orally.
- Use irrigation when preparing an abutment intra-orally.
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- The casting may end with a knife or feathered edge margin anywhere along the coronal aspect of the abutment.
- Use minimal amount of cement at the cervical margin to avoid hydraulic forces which may prevent the crown from seating fully.

Cementation of a Modified Abutment

After any needed occlusal, interproximal, or aesthetic contouring, cement the crown conventionally with minimal cement only at the cervical aspect of the crown to avoid adverse hydraulic forces. Care must be taken to remove all extraneous cement.

Recheck the occlusion after cementation.

Note: Use irrigation when preparing the abutment intra-orally to prevent heating and potential damage to the bone. A try-in of the casting prior to the porcelain application is advised to assure a passive seating. A knife or feathered-edge margin is employed at the most apical portion of the die. The margin need not be at the abutment’s height of contour. Statistically, a 2.0mm diameter abutment post will move 0.1mm into the well of an implant from its initial insertion to its being definitively seated, and a 3.0mm abutment will move 0.25mm.

**CROWN**

After any needed occlusal, interproximal, or aesthetic contouring, cement the crown conventionally with minimal cement only at the cervical aspect of the crown to avoid adverse hydraulic forces. Care must be taken to remove all extraneous cement.

**RECHECK OCCLUSION**

Recheck the occlusion after cementation.

**Crown**

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**RECHECK OCCLUSION**

Recheck the occlusion after cementation.
Temporization of an Unmodified Abutment with an Acrylic Sleeve*

Note: Statistically, a 2.0mm diameter abutment post will move 0.1mm into the well of an implant from its initial insertion to its being definitively seated, and a 3.0mm abutment will move 0.25mm.

*See pages 14 and 15 for prosthetic components.

1 INSERT ABUTMENT
Insert the appropriate non-shouldered abutment. The diameter of the abutment is dictated by the anatomy of the interdental papillae. The abutment should support the papillae without encroaching upon them.

2 SEAT ABUTMENT
Tap the abutment in the long axis of the abutment post and implant well.

3 SNAP ON TEMPORIZATION SLEEVE
Orientate the internal flat(s) of the appropriate non-shouldered acrylic temporization sleeve with the external flat(s) of the abutment prior to snapping it onto the abutment.

4 CONFIRM APPROPRIATENESS
Confirm the appropriateness of the non-shouldered acrylic temporization sleeve with a vacuum formed template. Adjust the acrylic sleeve as necessary.
Temporization of an Unmodified Abutment with an Acrylic Sleeve*

- Remove transitional prosthesis for polishing.

Choose the widest abutment and sleeve that will support the interdental papillae without encroaching upon them.

Always confirm the complete seating of a snap-on acrylic sleeve for both the non-shouldered abutment and colored abutment transfer die.

Avoid the use of excessive transitional material intra-orally, since it is usually easier to add to a void than it is to remove excess material.

*See pages 14 and 15 for prosthetic components.
Temporization of an Unmodified Abutment with an Acrylic Sleeve*

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*See pages 14 and 15 for prosthetic components.
Temporization of an Unmodified Abutment with an Acrylic Sleeve*

Keys to Success

- It is paramount that the proper abutment transfer die height be chosen to pour the stone model since all transfer dies of the same color will snap into the impression sleeve of that color.
- The diameter and height of the transfer dies are sized to match the diameter and height of the abutments.
- Avoid making an impression with the tooth colored temporization sleeve, since they are not color coded with the transfer dies and are more retentive.

*See pages 14 and 15 for prosthetic components.
Impression of an Occlusally Modified Abutment with an Acrylic Sleeve *

1. **INSERT ABUTMENT**
   Insert the appropriate non-shouldered abutment. The diameter of the abutment is dictated by the anatomy of the interdental papillae. The abutment should support the papillae without encroaching upon them.

2. **SEAT ABUTMENT**
   Tap the abutment in the long axis of the abutment post and implant well.

3. **MODIFY AS NECESSARY**
   Evaluate the occlusal height of the abutment and trim as necessary with a sharp carbide bur and external irrigation.

4. **SNAP-ON SLEEVES**
   After the necessary modifications have been made, orientate the internal flat(s) of the appropriate non-shouldered colored acrylic impression sleeve with the external flat(s) of the abutment prior to snapping it onto the abutment.

*See pages 14 and 15 for prosthetic components.
If an abutment must be modified occlusally, a corrective coping must be made for the modification of the laboratory transfer die. Without the fabrication of a corrective coping the final casting will not accurately fit the modified abutment.

If the margin must be modified chairside, it is recommended to make a direct impression of the abutment.

It is recommended that any modifications be made by the laboratory technician for greater accuracy.

Note: Statistically, a 2.0mm diameter abutment post will move 0.1mm into the well of an implant from its initial insertion to its being definitively seated, and a 3.0mm abutment will move 0.25mm.

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**Keys to Success**

- If an abutment must be modified occlusally, a corrective coping must be made for the modification of the laboratory transfer die. Without the fabrication of a corrective coping the final casting will not accurately fit the modified abutment.

- If the margin must be modified chairside, it is recommended to make a direct impression of the abutment.

- It is recommended that any modifications be made by the laboratory technician for greater accuracy.

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*See pages 14 and 15 for prosthetic components.*
Laboratory Technique
Crown Fabrication with an Acrylic Sleeve*

1. INSERT ABUTMENT TRANSFER DIE
Orientate the external flat(s) of the colored abutment transfer die with the internal flat(s) of the correspondingly colored non-shouldered acrylic impression sleeve prior to snapping it into the impression. **It is imperative that the correct abutment transfer die be used.** The diameter and height of the transfer die should match the diameter and height of the abutment.

2. FABRICATE MODEL
Pour a soft tissue or stone model.

3a. SNAP ON SLEEVES
Snap a correspondingly colored impression sleeve or a temporization sleeve onto the colored abutment transfer die. Make any necessary adjustments to the waxing sleeve and/or abutment transfer die.

3b. MODIFY SLEEVES

4. MAKE CORRECTIVE COPING
Make a corrective coping using an impression or temporization sleeve.

5. WAXING
Incorporate the waxing sleeve into the wax pattern for the metal casting to be used intra-orally to modify the seated titanium abutment.

*See pages 14 and 15 for prosthetic components.
Laboratory Technique
Crown Fabrication with an Acrylic Sleeve*

6 TRY-IN CASTING
Try-in metal casting for a passive fit after having used a corrective coping to make any necessary modifications.

7 PORCELAIN APPLICATION
Apply porcelain following normal layering techniques until the crown is completed.

8 FINAL CROWNS
Final view of cemented porcelain fused to metal restoration.

_keys to success_
- It is paramount that the proper abutment transfer die height be chosen to pour the stone model since all transfer dies of the same color will snap into the impression sleeve of that color.
- The diameter and height of the transfer dies are sized to match the diameter and height of the abutments.
- Impression sleeves and temporization sleeves of the same diameter are interchangeable for laboratory purposes only.
- The temporization sleeves are more retentive than the impression sleeves.

*See pages 14 and 15 for prosthetic components.
Non-Shouldered Abutment
Abutment Selection Guide

Abutment Selection Board
(Plastic Abutments Included)
Part # 260-101-037

Designed to be used by a laboratory technician to facilitate the selection of the appropriate abutment size. The components on the board may not be used for impressions or any other laboratory procedures.
Note: Snap-on sleeves are only specific for abutment diameter. Abutment height is not a criterion for proper selection of snap-on sleeves. Transfer dies correspond to exact diameter and height of abutment placed.

Because of machining tolerances, acrylic sleeves may not reach the height of contour for some angled abutments.
Temporary and Healing Abutments

At the time of uncovering, place a titanium temporary abutment or a plastic healing abutment. These abutments will support the soft tissue and assist in the formation of the gingival sulcus. Either abutment may be modified to achieve a desired gingival contour. Temporary or transitional crowns should not be placed on temporary or healing abutments.

**Note:** Select a temporary or healing abutment that is of a sufficient size and shape to laterally support the interdental papillae, but will not encroach upon the papillae.
Implant Level Impression

Remove the temporary abutment and make an implant level impression. An implant level impression will allow the laboratory to select and modify the appropriate abutment. Re-insert the temporary or healing abutment into the implant while the crown is being fabricated.

1a TAP IMPRESSION POSTS

1b IMPLANT LEVEL IMPRESSION

2 IMPRESSION

Make Impression.

3 ATTACH IMPLANT ANALOG

Remove the impression post from the implant and attach the implant analog.

4 PLACE INTO IMPRESSION

Place assembled unit into the impression.

Note: An implant level impression provides the opportunity for selection and modification of the abutment at the laboratory as well as for the extra-oral cementation of the crown.
Extra-Oral Cementation

After the crown has been fabricated and checked for color and morphology, extra-orally cement the abutment and crown. Tap the abutment-crown unit into the well of the implant.

Cementation

Cement prosthesis conventionally with only a minimal amount of any type of cement at the cervical margin.

Cemented restoration.
Non-Shouldered Abutment

PFM Flowchart

**PFM**

Non-Shouldered Abutment

**Method of Impression**
- Direct Abutment Level
- Indirect Abutment Level
- Implant Level

**Impression Product Needed**
- None
- Impression Sleeve for Non-Shouldered Abutment
- Implant Level Impression Kit

**Temporization Product Needed**
- Emergence Cuff or Temporization Sleeve for Non-Shouldered Abutment
- Temporization Sleeve for Non-Shouldered Abutment
- Temporary or Healing Abutment and/or Transitional Crown

**Laboratory Product Needed**
- None
- Abutment Transfer Die and Acrylic Sleeve for Non-Shouldered Abutment
- Non-Shouldered Abutment

**Final Crown**