POVISONAL RESTORATIONS AND ABUTMENT DESIGNS IN IMPLANT DENTISTRY

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Graft
Exposed
Graft
Submerged
Pouch
Procedure
Tunneling
Procedure
VIP-CT

Implant Esthetic Failure
• Crowns unattractive due to poor implant placement
• Decision: remove implants or bury implants
• Plan
  VIP-CT and tunnel procedures to cover implants
  Wait to see if site stable
  Fixed prosthesis if tissue stable
Why did these cases present as treatment failures?

- Inadequate pre-operative planning
- Failure to correlating the prosthetic end-result with existing bone volumes
- Improper implant positioning
- Lack of use of provisional restorations as a diagnostic tool
- Improper abutment selection and design

**SICAT Surgical Guides**

Scanning appliance

**Anatomage**

1. Identify vital structures
2. Determine the available height of bone
3. Determine the available mesial – distal width
4. Identify the width at the crest
5. If not ideal width, determine the method of getting the proper width: reduction of crest, augmentation, size of implant

**Digital Planning of Implant Placement**
If multiple implants, adjust angulations and position of implants with respect to one another.
1. Confirm the position of guide base

2. Of either canine area, choose the side with the smallest bone volume

3. Place first implant ideally within the constraints of this bone

4. Assess the prosthetic implication of this first implant position

5. Make corrections to this first implant position to compensate for prosthetic complications with the other side in a "macro" sense
6. After fine tuning the position of this implant of this first implant (6), place the opposite side implant (11) parallel to the first (6).

7. Position this second implant as best possible within the bone volume, making changes in only orthogonal directions, not changing the angulations.

8. Place third implant (12) parallel and distal to the second implant (11).

9. Place the fourth implant (5), parallel and distal to the first implant.
10. Confirm the position parallel position of all implants.
The purpose of provisional restorations on dental implants

- Maintain occlusal integrity
- Provide an acceptable aesthetic replacement
- Phonetic structural support
- Influence the gingival form
- Serve as a template for the final restoration

Provisional Restoration of Implants and Abutment Design

- Provisional restoration materials
- How contours affect gingival form
- Temporary abutment fabrication
- CAD-CAM fabrication of abutments
- Transferring the shape of the provisional restoration
- Prefabricated abutments
- Screw retained provisional restorations
- Provisional restorations for immediately placed implants
- Provisional restorations made at the time of implant exposure
What provisional materials are available?

- Poly (methyl methacrylate)
- Poly (ethyl methacrylate)
- Poly (vinyl methacrylate)
- Bis-acryl composite
- VLC urethane dimethacrylate

**Effect of fabrication technique**

**Shell method is best**

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<th>Technique</th>
<th>Marginal fit</th>
<th>Transverse strength</th>
<th>Polishing</th>
<th>Durability</th>
<th>Detail</th>
<th>Aesthetics</th>
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**poly (methyl methacrylate)**

- **(Jet)**
  - Good marginal fit
  - Good transverse strength
  - Polishes well
  - Moderate durability
  - Good marginal detail
  - Good esthetics
  - Exothermic heat exchange
  - Low abrasion resistance
  - Monomer toxicity
  - Shrinkage

**poly (ethyl methacrylate)**

- (Snap)
  - Polishes well
  - Minimal heat increase
  - Good stain resistance
  - Low shrinkage
  - Poor surface hardness
  - Moderate transverse strength
  - Moderate to poor durability
  - Poor fracture toughness

**poly (vinyl ethyl methacrylate)**

- (Trim)
  - Polishes well
  - Minimal heat increase
  - Good abrasion resistance
  - Good stain resistance
  - Flexibility
  - Moderate to poor surface hardness
  - Poor fracture toughness
  - Moderate transverse strength
  - Poor esthetics
**Bis-acryl composites**
*Protemp Garant, Luxatemp*
- Good marginal fit
- Low heat exchange
- Good abrasion resistance
- Good transverse strength
- Low shrinkage
- Dual cure available
- Poor stain resistance
- Poor shade selection
- Limited polishability
- Brittle

**VLC Urethane dimethacrylate**
*Triad*
- High surface hardness
- Good transverse strength
- Controllable working time
- Color stability
- Poor marginal fit
- Less stain resistance
- Limited shades
- Brittle
- Expensive
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How do the contours of provisional influence gingival form?

- The cross-sectional shape of the abutment at the level of the CEJ influences the gingival form.
- Increasing the labial contour will increase the facial recession.
- Increasing the interproximal contours may cause the papillae to move coronally.

How do I influence the interproximal contours?

- At insertion, error on undercontoured abutment shape.
- Gradually add to the interproximal surfaces.
- Iatrogenic gingival recession is difficult to treat.

How can I identify the correct contour of the abutment or crown?

Custom provisional abutments should simulate the cross-section of the root at the CEJ.
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Temporary abutment fabrication

- Placement of only slightly widened profile healing abutment
- Take implant level impression
- Pour stone or gingival mask model
- Alter the peri-implant "tissue" on the stone model for an ideal emergence profile

Temporary abutment fabrication

- Modify an impression coping or temporary cylinder to fit into implant "sulcus" without touching the stone
- Lubricate the stone or gingival mask
- Fill space with Triad or flowable composite
- Light cure
- Create ideal preparation of this abutment

Temporary abutment fabrication

- Block out bottom half of access cylinder
- Fabricate temporary crown to fit over this abutment
- If necessary, create index for proper orientation of the abutment
- Deliver abutment using local anesthesia
Temporary abutment fabrication

- Remove healing abutment
- Insert temporary abutment
- Tissue will blanche
- If tissue remains blanched for more than 10–15 minutes, reduce width of abutment slightly
- Facial margin of abutment should be at least 1mm "long" at this time
Prefabricated provisional abutments which replicate the cross-section of the root at the CEJ.
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Custom CAD-CAM Abutment Options

- Physical Model Copy
  - Sculpey gingival form
  - Scan of implant level
  - Scan of model ideal form
  - Scan and design
  - Fabrication

- Scan of Implant Level
  - Screw gingival form
  - CAD
  - Fabrication

- Commercial Service
How are abutments created using CAD-CAM technologies?
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I am concerned about temporary cement being displaced subgingally. How do I make screw retained provisionals?
How do I create provisional restorations for immediately placed implants?

Methods of provisionalization are not unique, but...

Protection of the healing implant during bone remodeling is critical.

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Keystone Genesis Implant

- Surgical Guide
- Eggshell Provisional
- High-quality sectioned model
- Try-in Abutment
- Stock esthetic
- Slightly subgingival
- Polyurethane (TRIAD)
- Block-out undercuts
Create Model
• Attach analog
• Place on 1st model
• Pour stone around transfer

Adjust Abutment
• Margin contour
• Interproximal shape
• Digital scan

Fabricate Temp
• Marginal contour
• Polish

Fabricate ceramic coping from digital file
• Healing time

Pickup Impression
• Don’t remove abutment

Final Working Model
• Soft tissue contours
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Can I make the provisional abutment before the second stage surgery?
Thank you!

Please feel free to send any questions to: Kevin@periopros.net