Washington State Dental Association’s
2015 Pacific Northwest Dental Conference

Presents

Go Ahead...Bite Into That Apple:
The Nuts and Bolts of Implant-Assisted Overdentures Workshop
Dr. Ronni Schnell

Thursday, June 11, 2015
2:00 p.m. – 5:00 p.m.

Official Disclaimer

Neither the content of a program nor the use of the specific products in courses should be construed as indication endorsement or approval by the Pacific Northwest Dental Conference or Washington State Dental Association.
"Go Ahead… Bite into that Apple!"
The Nuts & Bolts of Implant-Assisted Overdentures © 2015
Ronni A. Schnell, DMD, MAGD, FICD
Boston University Henry M Goldman School of Dental Medicine
rschnell@bu.edu

Thursday June 11th
8:30-11:30 AM
Lecture
2:00-5:00 PM
Workshop

Implant - Assisted
Overdentures
Clinical cases continued

Photo Album
CU/OL with 2 Bone Level fixtures placed at FGM restored with Sterngold Micro ERA

Bone level fixtures at FGM
The shortest Micro ERA for this system is a .5mm

Fitting the wrench
Hand torqueing to 20 ncm

Night height discrepancy due to position of fixtures
Will equalize with attachments

Overall the Micro ERA (abutment + attachment) is up to 30% smaller in total dimension

Relieve the intaglio with an end cutting pear or round bur
This, but not perforated

Core cutter and seating tool
Remove core from tool

“Flick-off” flash
Remove outer shell

Add retention to add vertical resiliency

First core out center button

Remove outer shell

Photo Album

EZ Pickle™ Springs and Tips (Self-Curing)

Remove when set

“Kidnoff” each

... and cover attachments

Express pick up material ½ way into wells

Use lemon desiccant bead as a dehydrator & prevent sticking on
Select the least amount of retention needed to start.

"SNAP" firmly into place

Pick up the retention desired with the seating tool.

CU/OL with 2 Bone Level severely divergent fixtures restored with Sterngold 2-piece Micro ERA Angle Correction Abutments

Built extra-orally

Assessing Angulation Intra-orally

Locations originally placed:
- Occupied too much interocclusal space
- Too divergent for reliable retention

Removing healing cap

With Driver

Review Miller & Everts Lip Reader

Soft tissue cuff height

Preparing to make implant level impression

Now-engaging impression copings and analogs

Place each analog tip non-engaging impression copings

Full arch impression

Preparing to pour a soft tissue model

Soft tissue gingival collar

To analyze angulation and build angle correction abutments

Assess frontal and lateral views on a surveyor

\#22 = 11° and \#27 = 17°

Soft tissue model

To evaluate angulation and build angle correction abutments.

Soft tissue

To develop angulation and build angle correction abutments.

\#22 = 11° and \#27 = 17°

Prepare to cement with Sterngold’s auto-mixing resin cement

Lock cement is automatically mixed and syringed into base

Base + Abutment

Prepare to cement with 1:1 lock cement Sterngold’s auto-mixing resin cement

Abutment is snapped into base aligned on surveyor, then immediately wiped clean of cement
Denture is retort fit
With attachments snapped into place
Close bite waxed down in denture while recombing
Notice have thin, but not perforated denture base is
Rubber dam cut for blockout
Some top surface can be removed by a “turtle neck”
No housing will be used for more ease
Notice thin, but not perforated denture base is
Rubber dam material sits on abutment like a “turtle neck”
No housing will be used for more ease
This denture is post surgery. A definitive softer will follow
Photo Album
Restoration of 4 Mandibular implant fixtures
-Tissue Level –
Denture fabricated after fixtures placed
Retention activated after denture inserted
Pickup material syringed around attachments
First, close to align occlusion
Then, open to cure
Core cutter
Remover when completely set
Removal of core cutter block core cutter
Replace with retentive male for SRM2140M/3M/3M
Core cutter
Remover when completely set
Core cutter
Lifting removal of core
"SNAP" to place
Core cutter and seating tool
"SNAP" to place
Core cutter and seating tool
"SNAP" to place
Core cutter and seating tool
Final activated overdenture
Core cutter
Core cutter
LOCATOR® Retention Rings
angle correction occurs within retention rings

<table>
<thead>
<tr>
<th>COLOR</th>
<th>Clear</th>
<th>Pink</th>
<th>Blue</th>
<th>Green</th>
<th>Red</th>
<th>Orange</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMPLANT ANGLE DIVERGENCE</td>
<td>1° - 10°</td>
<td>1° - 10°</td>
<td>1° - 10°</td>
<td>11° - 20°</td>
<td>11° - 20°</td>
<td>11° - 20°</td>
</tr>
<tr>
<td>RETENTION FORCE</td>
<td>5 lbs</td>
<td>3 lbs</td>
<td>1.5 lbs</td>
<td>3 – 4 lbs</td>
<td>1.5 lbs</td>
<td>2.0 lbs</td>
</tr>
</tbody>
</table>

Up to 20° angulation between 2 implants

Extended Range: Up to 40° angulation

STRAUMANN LOCATOR® Retention Rings

COLOR
Clear Pink Blue Green Red Orange
IMPLANT ANGLE DIVERGENCE 1° - 10° 1° - 10° 1° - 10° 11° - 20° 11° - 20° 11° - 20°
RETENTION FORCE 5 lbs 3 lbs 1.5 lbs 3 – 4 lbs 1.5 lbs 2.0 lbs

Up to 20° angulation between 2 implants
Extended Range: Up to 40° angulation

Photo Album
Restoration of severely misaligned fixtures – U Custom Abutment
Restoration of severely misaligned fixtures - L Locator Abutment - Tissue Level –

- Tissue Level placement of 1 mm Locator Abutment
- Assessing the angulation of the implant fixtures
- Less than 40° can be accommodated by the extended range nylon attachment

Using Articulating paper to retro fit denture

Cuff height measurement Trans-Gingival measurement
LOCATOR® Retention Rings

angle correction occurs within retention rings

<table>
<thead>
<tr>
<th>COLOR</th>
<th>Pink</th>
<th>Blue</th>
<th>Green</th>
<th>Red</th>
<th>Orange</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>IMPLANT ANGLE DIVERGENCE</th>
<th>1° - 10°</th>
<th>1° - 10°</th>
<th>1° - 10°</th>
<th>11° - 20°</th>
<th>11° - 20°</th>
</tr>
</thead>
<tbody>
<tr>
<td>RETENTION FORCE</td>
<td>5 lbs</td>
<td>3 lbs</td>
<td>1.5 lbs</td>
<td>3 – 4 lbs</td>
<td>1.5 lbs</td>
</tr>
</tbody>
</table>

Up to 20° angulation between 2 implants

Extended Range: Up to 40° angulation

Teaching the path of insertion to the patient is critical to avoid premature wear of the nylon attachment

Assessing the angulation of the maxillary implant fixture

Greater than 40° must have a custom abutment restoration

Over-extended pick up impression of overdenture for clear matrix to observe borders and folds

Straumann Impression Coping

Full-Arch Impression of both implant fixtures – even though only one will be a custom abutment
Over-extended pick up impression of overdenture for clear matrix to observe borders and folds.

Cast restoration is waxed and cast within confines of denture.

Over the ridge

And parallel to the path of insertion.

The other abutment is a conventional Locator.

Block out is CRITICAL before attachment pick up.

The other abutment is a conventional Locator.
A standard retentive attachment may now be used.

Photo Album

- Restoration of an edentulous mandible with a Hader Bar and 2 ERA attachments

Bar vs. Stud

- Can increase retention and decrease movement if in combination
- Requires additional inter-arch distance
- Incr cost (lab fab)

Evaluation of Existing Dentures

Right working CR

Pre-op assessment of mandible and soft tissues

Patient will need to be without their denture for a short time – to be determined by the lab tech

A duplicate lower denture is processed in clear acrylic

Patient Name:
ID
Age
Sex
F

Patient Information

General Information

Grayscale Information

Level Width Description
Placement and alignment

Cover Screws

Adjustment of mandibular denture after 2 weeks

Soft liner placed after sutures are removed

Uncovering of implant fixtures 4 months post-op

Implant fixture position not obvious

Crestal incision to remove cover screws and replace with healing collars

Healing collar should extend 2-3 mm

Denture retrofit to healing collars using PIP

2 weeks post uncovering showing poor OH and plaque accumulation

Tissue conditioner (Coe-Comfort) placed
OH reviewed and stressed
TC + Healing Collar helps provide additional stability while healing
2 weeks later…

Punch technique used to uncover fixture and replace healing collar

1 week post (second) uncovering

Note: continued presence of plaque

Space analysis – implant fixture to occlusal plane – Angled implant fixtures? Tx options?

Preliminary impression for new mandibular denture

Neil's Lateral Throat Form?

Block out of healing collars

Custom tray fabrication

Open tray impression will be made for implant level final impression

Removal of healing collars and replacement with impression copings

2 additional weeks of healing - home care improving

Custom tray adjusted for impression copings

An implant level impression is to be taken

to evaluate the angulation of the implant fixtures
to fabricate a custom implant restoration

Border mold as usual

Final impression with PVS impression material

Unscrew to pick up impression copings
Bead, box & pour soft tissue model with laboratory analogues of the implant fixtures. Note the soft tissue model since this restoration will be retrofit, we will need denture to modify.

Intermaxillary records with Record base & Occlusion rim. Incorporation of metal substructure within denture.

Lab returns Hader Bar restoration underneath modified denture.

Hader Bar + 2 ERA attachments. Bar is parallel to the occlusal plane. ERA attachments centered to the ridge.

Path of Insertion of attachments must match path of insertion of denture. ERA placement is ⊥ to path.

Evaluation of final fit or implant restoration and modified denture.

A silicone putty matrix is made to maintain tooth position. While the substructure of the denture is fabricated.

Implant restoration. Wax up of substructure.

Metal substructure. Processed denture incorporating substructure.

Embedded substructure in processed denture. 2 Hader Bar clips 2 ERA attachments.
Completed restorations

Insertion of screw retained custom restoration

Fit and path of insertion evaluated with PIP

Occlusion?

Photo Album

Restoration of a Hader Bar with 2 clips and 2 ERA attachments

14 year old implant fixtures and restoration
Custom Tray and Impression Copings
- Entire Hader Bar has been blocked out.
- Custom tray relieved for Hader bar and impression copings.
- Posterior tray is tissue borne (no relief)

ERA impression coping are snapped in place (same copings used for partial dentures)

ERA impression coping are snapped in place (same copings used for partial dentures)

Poly Ether generally fails as a final impressions material due to its inability to coat the impression tray properly due to its Rheologic properties

Record Base provides relief for implant prosthesis

Dentures are fabricated as usual

Tray is seated, relieved and border molded as usual

Block out undercuts using Blu-mousse or OralSeal Putty

Preliminary Impression
Dentures are processed with 2 Hader Bar clips as locators. ERA's will be added later chairside. Hader bar clips are almost impossible to "pick up" chairside. Therefore care is taken in the final impression so that it may be processed and delivered with the denture.

Rubber Dam material is cut to fit through and under ERA to block out undercuts for chairside activation of attachments.

Auto-polymerizing material is placed in the area of the ERA attachments to pick up the housing intraorally. This procedure is done under light occlusal load.

SFI* Bar System
Built Chairside / Intra-Orally

*Stress-Free Implant

Initial situation:
- Patient unhappy with retention lower denture
- Decision to improve comfort & retention was to use 2 implants and the SFI BAR System

Tighten abutments into implant (35 Ncm)
Attach the first ball joint
Secure driver with dental floss

Case done at Univ. Of Bonn, Dec. 2007
Edentulous Patient

08.02.2010

Excess flash is trimmed. Voids may be repaired with "salt and pepper" technique and a sable brush.

06.02.2010

08.02.2010

- Patient returned in 3 months for bar placement
- First step, remove healing caps, choose correct abutment heights
- If fixtures are not parallel, the ball joints can correct the angulation

Choice of the correct adapter-heights for a perfect alignment parallel to the occlusal plane.

06.02.2010

08.02.2010

08.02.2010
Mount bar tube onto ball joint
Place gauge onto 2nd abutment
Tighten screw
Shortening of the bar tube using a premium separating disc
Remove all burrs on the inner and outer surfaces of the tube with the appropriate abrasives.

Seal the hollow of the bar tube (i.e. using "Gapseal" from Hager Werken).

Tighten fixation screws with the torque-wrench.

Torque for the SFI-Bar® fixation screws Max. 30 Ncm

Measure the length of the female part: Total length should exceed the length of the tube bar so that the outer ends of the female part are also supported onto the thicker part of the ball joint pin. Green arrows!

Mount the female part onto the bar tube
Block out any undercuts along the bar as well as the ball joints with light curing composite (Opal dam, Fa. Ultradent)

Satisfied patient, duration of chairside treatment appr. 45 minutes!
- Detach tube bars and attach fixation screws.
- Large ball joint in posterior & half ball in anterior.
- Slightly loosen screws to align pin.

- Shorten tubes equally & shorten on model.

- Slightly loosen fixation screws on the ball joint to align pin, remove flash.
- Slide tube bar gauge onto the tube and fix by turning screws.

- Assemble all components.

- Mount female titanium retention part.
- Measure maximum tube length between implants.
- Cut along grooves for plastic inserts.
- Recommended to use reinforcing framework.

- Place plastic inserts using insert tool.

- If the surgeon or the information is unknown...
  www.whatimplantisthat.com
  An online resource for Radiographic Implant Identification

Acknowledgements and References
- Clinical and Laboratory Manual of Implant Overdentures
  Hamid R. Shafie, DDS, CAGS
  Blackwell Munksgaard
- www.Sterngold.com
  James Ellison, CDT
- www.straumann.com
  Kerri Nelson, Adam Donkey, Richard Roomes
- www.zestanchors.com
  Educational marketing
- www.dentsply.com
  David Sipperly, Joel Montiero