

CONTENTS

- 1 The Counter-Clockwise Crown Preparation: A 90-second Procedure**
Dr. Omer Reed
- 7 Aurum Ceramic Product Collection**
Prodont-Holliger Dentition Models for Children
- 8 Implants**
Impression Techniques for Predictable Implant Restorations
- 9 Case spotlight**
Dr. Lawrence J. Winans
- 10 Crown & Bridge**
*Contessa™ Alumina or Contessa™ Zirconia
 Two Choices for Optimal Anterior or
 Posterior All-Ceramic Restorations*
- 12 LVI Viewpoint**
Dr. William Dickerson
- 13 Product Spotlight**
Mucopren® soft
- 14 Vitallium® 2000**
Finest Cast Partials available!
- 15 Cast Partials**
Combining Technique and Technology
- 16 Upcoming Events**

Plan to Attend:

Inspiring a Metamorphosis
The 2005 Annual LVI Gala
 Las Vegas, NV - February 11 - 12, 2005



Call the Las Vegas Institute for Advanced Dental Studies at 1-888-584-3237 to reserve your space or for further information. Please call to confirm course date.

The Counter-Clockwise Crown Preparation: A 90-second Procedure

Dr. Omer Reed



The procedure I describe is an exacting, disciplined, conservative, fail-safe procedure that is efficient, effective and brings fun and happiness

to dentistry. When applied properly it can easily at least double productivity per unit time over random, undisciplined procedures. This procedure was constructed in the early 60s from the work of great restorative dentists, Rex Ingraham, Morton Amsterdam, Bob Barkley and Henry Tanner. It can be used for any of the procedures that are being accomplished in today's supra-gingival, non-metal preparations as well as the porcelain fused to metal, long-span rehabilitative procedures.

The technique begins with a vision of the outcome clearly in the mind of the operator. Once this image of the completed prep is brought to mind with the fail-safe of a pilot's checklist, the end point is approached sequentially. This means from the vision in one's mind to the end point. . . pronto! The rotary instrument is allowed to work easily at its own rate, greatly reducing preparation time and trauma.

Preparations: An Overview

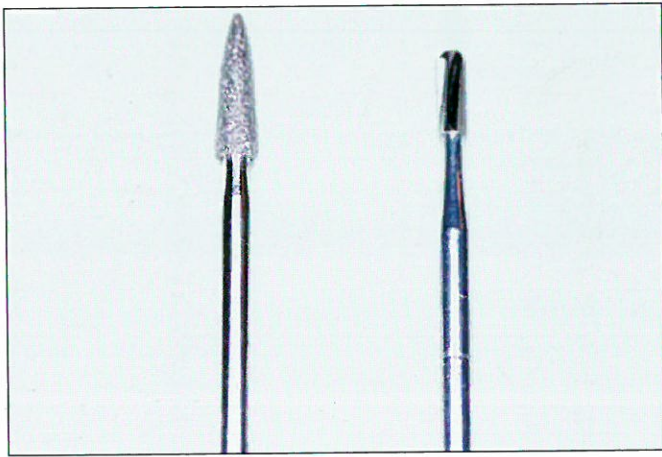
This article focuses on the most common problem in full coverage, post-perio prosthesis, the under preparation of the tooth. Each type of restoration has its own preparation. With a ceramo-metal restoration, the reduction must be sufficient for the coping, opaueing and the porcelain so as to not over-contour the tooth. Preparations being done by the Sopha CAD/CAM laser scanner and the Cerec (Seimens) require a very heavy chamfer. A smooth surface prep means an easier and better impression, producing a smoother die, which in turn produces a smoother pattern, a smoother casting and provides a thinner cement seal (which is considerably stronger than a thicker cement seal). With this in mind, we feel it is appropriate to use



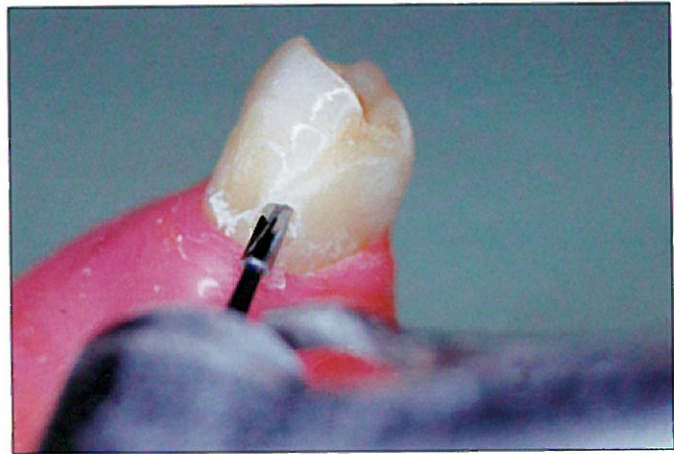
Picture#1 - Hand-Piece Monitor.

Continued on page 2

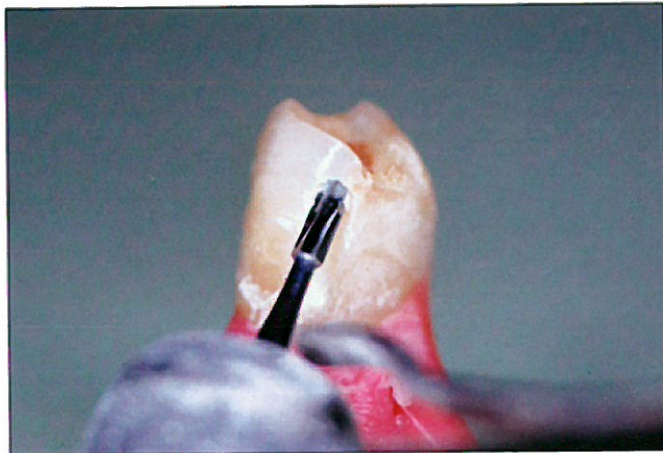
VISIT OUR WEBSITE
www.aurumgroup.com



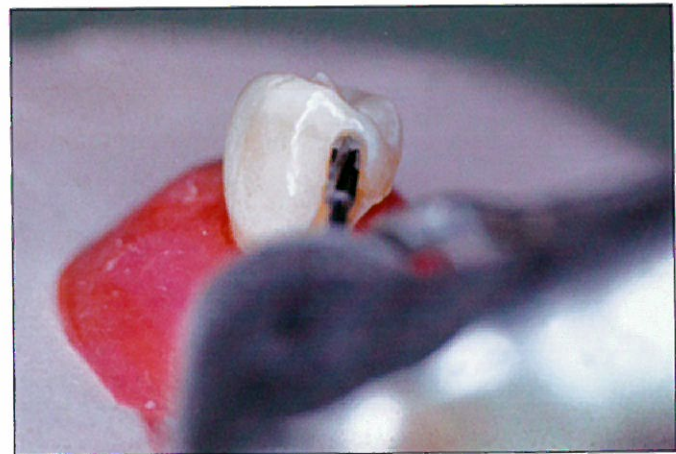
Picture #2 - Burs Used (not actual size).



Picture #3 - 1158 Reaching the Marginal Ridge.



Picture #4 - Tip of bur penetrating the marginal ridge.



Picture #5 - Central Fossa Alignment.

instruments that produce a fine, smooth surface.

The dentino-enamel-junction (DEJ) preparation cuts through the dental tubule only one time, which is far less traumatic than to procedurally reduce the tooth by the more random and hazardous method often observed.

Thermocouple studies were accomplished in the 60s, both *in vivo* and *in vitro*, to show the dramatic differences in the thermal release during preparation by honoring this procedure. You can even hear the difference in the revolutions per minute of the hand-piece as one goes from the clockwise to the counter clockwise, illustrating the effectiveness and the efficiency of the lowered resistance.

The Counter-Clockwise Crown Preparation: Step-by-Step

Picture #1 shows an instrument developed in concert with Motorola to measure, with a mini-microphone, the actual contact of the instrument on the

tooth. This is set for different hand-pieces and is set each time prior to preparation. Connected to the back of the hand-piece, it allowed us to actually measure the instrument time on tooth. Based on over 300 individual dentists using this instrument to measure time on tooth/preparation, 90 seconds was found to be the maximum, even though their stop watch "real time" (random approach) showed 30-60 minutes of preparation time.

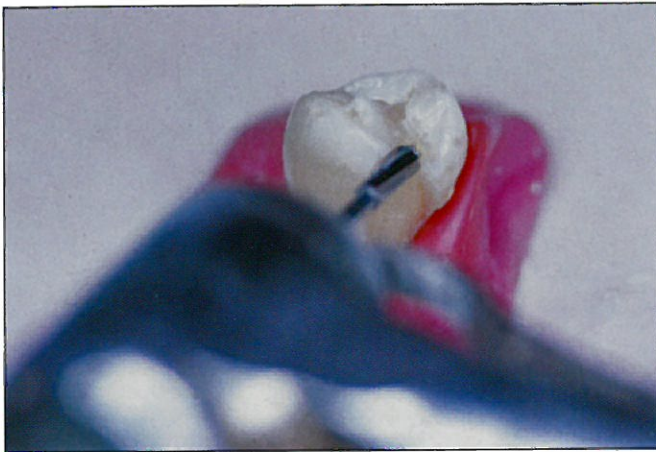
Picture #2 shows the two instruments primarily used for full coverage

The technique begins with a vision of the outcome clearly in the mind of the operator.

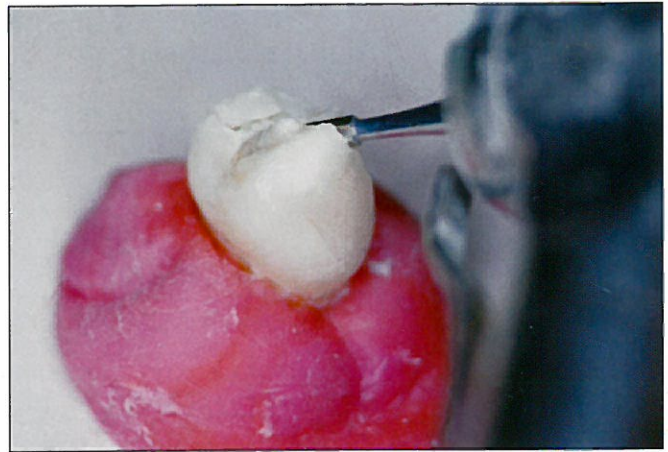
ceramo-metal restorations and/or the preparation of your choice. We use the 1158 carbide, non cross-cut, spiral fluted bur. This bur is a combination of the round bur (which is the most efficient and coolest rotary instrument) and a fissure bur. It produces a much smoother surface than cross-cut or diamonds. The round tip of the bur is placed on a lower posterior at the mesial buccal gingival angle where the slot is created from the gingival to the occlusal with the tip of the bur preceding the barrel thereby undermining the enamel engaged by the barrel. (Picture #3).

Attack the tooth at the gingival where the enamel is most thin and/or in the old amalgam or restoration that must be removed prior to completion. As we proceed with the bur preceding the barrel, we are working, always, in undermined enamel.

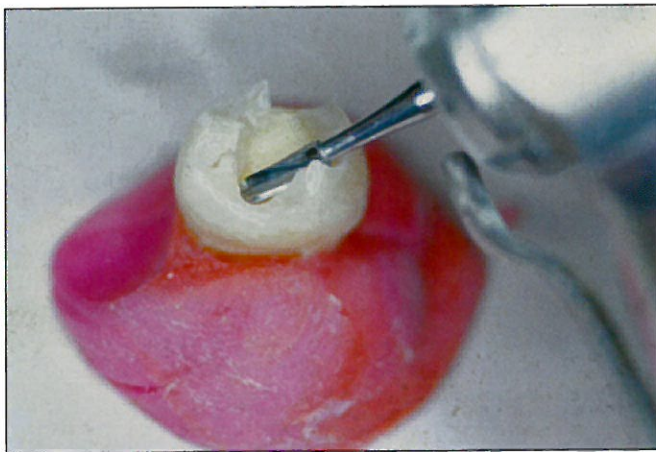
Picture #4 shows the tip of the 1158 reaching the marginal ridge of the lower first bicuspid, again the barrel is demonstrably working in undermined enamel.



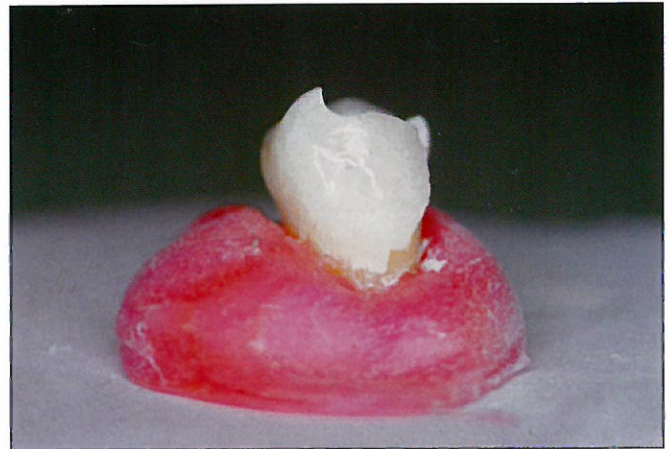
Picture #6 - Central Fossa Alignment.



Picture #7 - Tip of bur in central fossa.



Picture #8 - Bur moving mesial to distal.



Picture #9 - Buccal view.

Picture #4 and #5 show the tip of the bur penetrating the marginal ridge area and Picture #6 and #7 show the alignment in the central fossa of the tip of the bur as we begin to remove the buccal occlusal on the lower first bicuspid. It should be noted that from the distal buccal the barrel of the bur is working in the enamel at the DEJ parallel to the existing buccal occlusal angulation of the anatomy of the tooth to produce, by primary intent. The bur is moving clockwise so we're moving from mesial to distal to keep the dentino-enamel-junction as our target (Picture #8).

Picture #7 shows, from the distal occlusal, the tip of the bur in the central fossa approaching the distal triangular fossa. The angulation allows the barrel of the bur to be in undermined enamel at the same angulation, buccal occlusally, as the original anatomy of the tooth. Reducing the occlusal on the lower right posterior, for example, we remove the buccal half of the occlusal by having the bur at the dentino-enamel-junction in

that the angle where the buccal cusp slope of that tooth. The rotation of the bur will throw the debris of milling away from the tooth and the bur moves on the occlusal from mesial to distal, the tip preceding the barrel at an angulation so as to pre-undermine the enamel prior to the barrel engaging it.

Picture #9 shows a buccal view of the same process shown in picture #8. The bur tip simply follows the central fossa from mesial to distal. For the lingual, the hand-piece is simply flopped over and moved from the distal to the mesial. Similarly angulated creating a circumferential exposure from the occlusal of the dentino-enamel-junction.

Picture #10 illustrates a mesio-buccal view with the occlusal removed and the initial mesial slot.

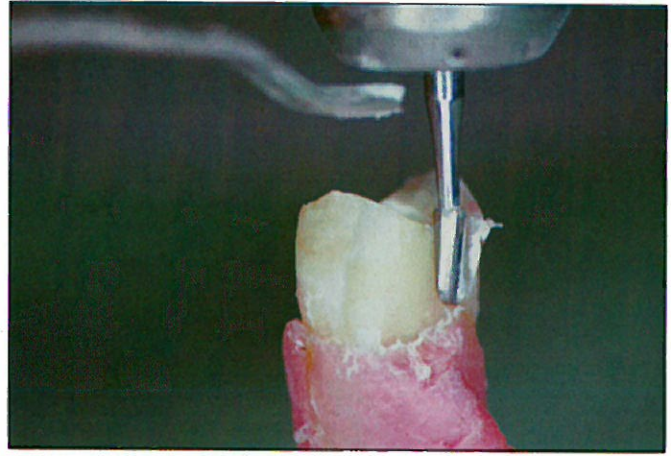
Peeling the tooth counter-clockwise at the DEJ is now quite simple. The bur is simply placed vertically in the initial mesial-buccal slot and the enamel is peeled at the dentino-enamel-junction by the counter clockwise movement of the

hand-piece (Picture #11). With the bur rotating clockwise, this is in keeping with the undermining and shattering of the enamel rather than milling or grinding in non-undermined enamel. This is cooler, faster and less traumatic thermally than if the bur is used in a clockwise movement at the DEJ. If used clockwise, the bur teeth would then move through a non-undermined enamel to the dentino-enamel-junction throwing milling waste into the tooth producing a great deal more heat, both by clogging the bur and by proceeding through non-undermined enamel.

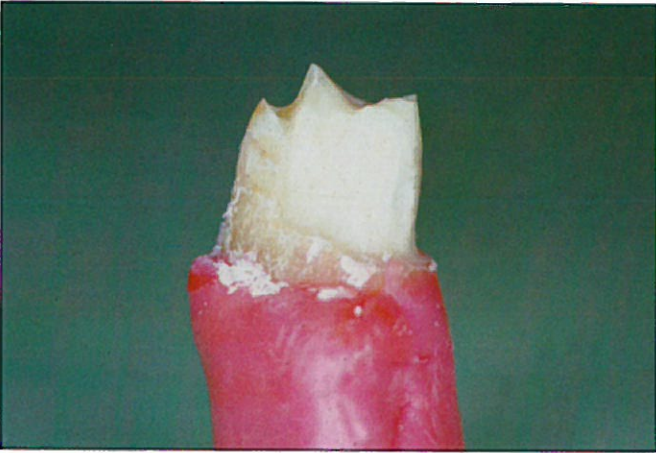
As in the initial studies back in the 1960s, the replicated studies show that if an extracted tooth is prepared in a darkened room, when the bur is going clockwise through non-undermined enamel, the entire tooth will incandesce clear to the apex. This is not quickly forgotten once observed. The bur at the DEJ rotating counter clockwise in the same experiment will shatter the undermined enamel from the tooth with less energy



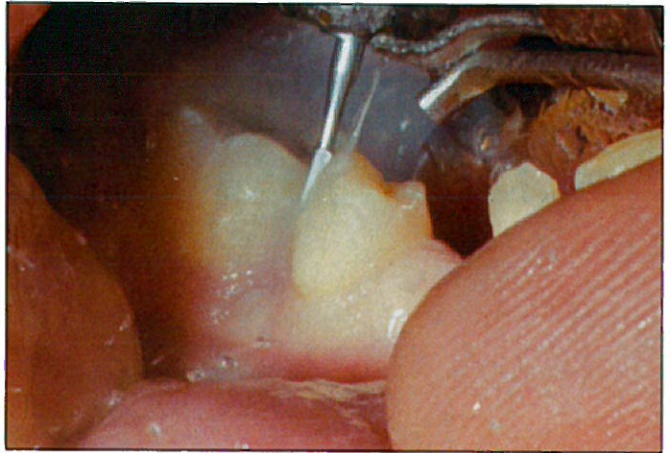
Picture #10 – Occlusal removed and initial mesial slot.



Picture #11 – Enamel peeled at dentino-enamel-junction.



Picture #12 – Lingual completed.



Picture #13 – In vivo view of completed lingual.

and no enamel grinding or milling and the tooth does not incandesce.

If a diamond is “painted” back and forth on the surface of the enamel the energy release is phenomenal even with water (mist). Picture #10 shows us beginning in that vertical slot and beginning the counter clockwise movement. When a clockwise peel is completed to the gingival point of decision, the bur is replaced with a fine grit diamond, shape of choice.

Picture #12 shows the lingual having been completed in the first trip around the buccal wall, showing the outline of the 1158 at the DEJ. Because of the length of the bur, several journeys will be made across the buccal surface at the DEJ providing various alignments for the emergence angle and other anatomical traces the operator may want to make. Picture #13 shows an *in vivo* view of this same event. It will be noted that back in the 60s when these pictures were taken, gloves were not worn routinely.

Picture #14 shows the next “journey” around the buccal at the DEJ to create the desired contours. It also shows the approach to the proximal back at the point where the original vertical slot was made. When one is approaching the contact of the adjacent tooth it is quite simple to look at the surface you want to miss instead of the one you are preparing and you’ll easily create the amount of reduction necessary for a fine crown and leave the contact of the adjacent tooth untouched.

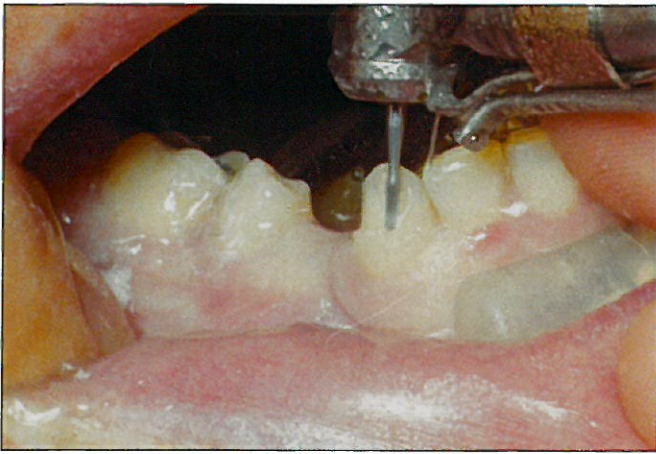
Picture #15 shows the final journey at or near the gingival for the reduction of this preparation. Picture #16 shows the finished preparation prior to the chamfer being placed supra- or sub-gingival, at the choice of the operator.

Again, depending upon the contours that are chosen, the instrument form will vary. It is noted that if one keeps the barrel of the diamond on the wall freshly prepared by the carbide the dentino tubules will again be surgically insulated (Picture #17). It is also noted that the

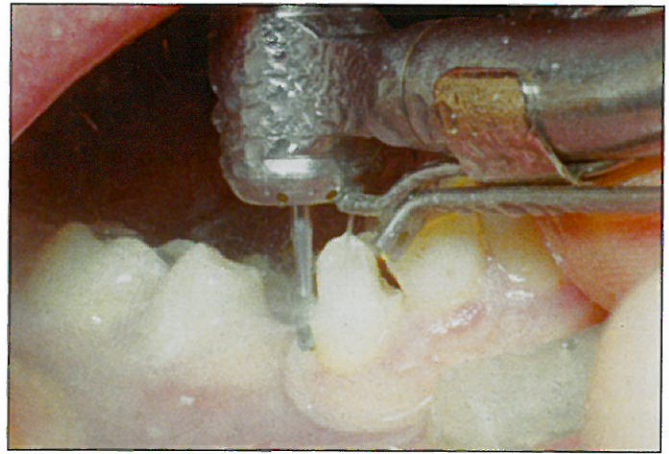
tip of the diamond in this position would not be at the gingival because the shape of the instrument would have the tip of the bur out in the tissue.

To create the desired result, the diamond will be standing parallel to the long axis of the tooth (as is shown in picture #18) if the tip is going to scribe a margin around the tooth. In a healthy situation if we go halfway between the crest of the tissue and the attachment apparatus, avoiding the biological zone, one may go sub-gingival to eradicate old amalgam or defects that are there or the margin may be super-gingival depending upon the restorative material being used.

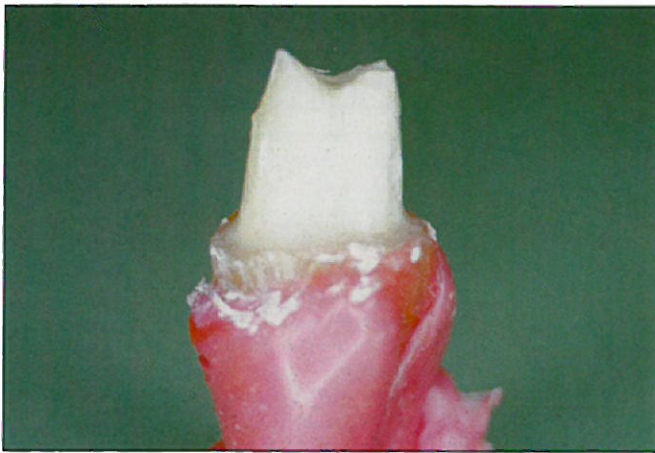
It should be noted that the diamond also creates a vortex of water and air going clockwise so when it’s taken sub-gingivally at the expense of the tooth, not the tissue, to create the margin, it will force the tissue away from the instrument. A smooth, steady counter-clockwise motion, if you are going sub-



Picture #14 – Next “journey” around buccal at DEJ.



Picture #15 – Final journey at or near gingival.



Picture #16 – Finished prep prior to chamfer being placed.



Picture #17 – Keeping barrel of diamond on freshly prepared wall.

gingival, is essential to not do a “D & C” on tissue that is already healthy and not in need of internal gingival beveling.

In Picture #19, it can be seen clearly that the tissue wall stands clear and is free of hemorrhage when this procedure is instituted.

The shape of the chamfering instrument is chosen to produce the desired result. The following is a checklist if the margin is to be sub-gingival:

1. Essential need to get beyond the old restoration
2. Caries, to reduce the margin and healthy tooth structure is essential.
3. To increase the critical length for retention from an engineering point of view may be essential and
4. Cosmetics and if this choice is made, the margin will be placed most carefully halfway between the crest of the gingival and the attachment apparatus.

The diamond must be used counter clockwise at the expense of the tooth, not the tissue. There’s no reason to

I believe this particular technique is one of the most misunderstood techniques in dentistry.

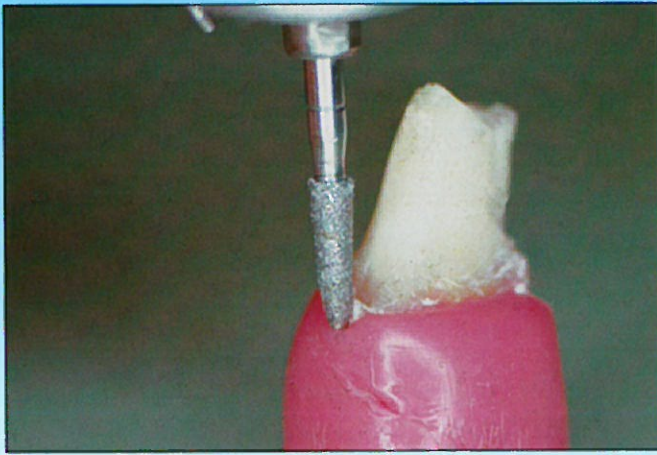
move the intaglio of the epithelium of a healed sulcus during the preparation in a post-perio person. Using the diamond counterclockwise at the expense of the tooth creates a vortex of water and air that safely accomplishes this result. If you move that same instrument clockwise, this vortex will bring the tissue into the diamond, creating hemorrhage and trauma.

Conclusion

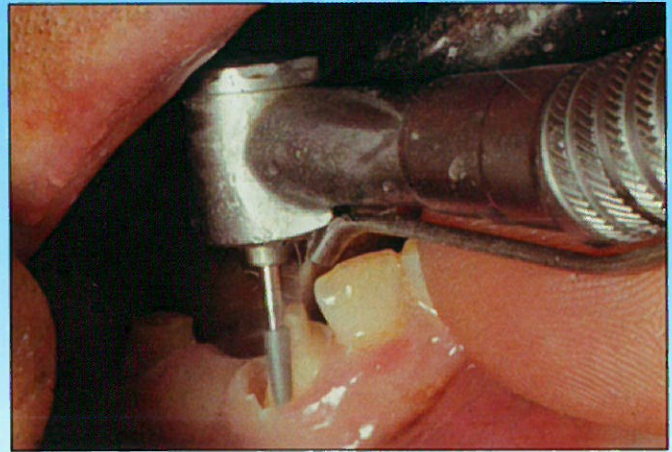
The counter clockwise crown prep is not only fun, but very satisfying and

makes the impression material of your choice predictable in its outcome. It is faster, cooler, safer and more comfortable. It allows working with the state of the art armamentaria in optimal condition. It begins at the tooth’s weakest point, always works in undermined enamel, moves counter clockwise at the DEJ and the visualized end point is achieved by primary intent. If we keep the instrument on the tooth, it will be because we have a clear vision of what our end point will be. When Michelangelo was asked how he accomplished the beautiful statue of the *David*, he said “It was in there all the time, I just took the chips away.” This concept is essential in visualizing prior to initiating the preparation. If you take the instrument away from the tooth, it’s much like shaving. If you take your razor off your face, you can make your shave last all day. In observing dentists in “over the shoulder” office, this is often the case.

We have a reduced temperature and reduced psychological trauma because of the reduced time. Far more productive.



Picture #18 – Diamond standing parallel to long axis of tooth.



Picture #19 – Tissue wall standing clear and free of hemorrhage.

We're using clean, dry, sterile air, oil-free, from the Luckman Compressor at 100# psi. We have a cup of water per minute, misting (not spray or stream) and there's chlorine dioxide in our spray, so we have a bactericidal aerosol as we work.

Formal instruction in full crown preparation at the educational level at most dental schools is less than thorough. Proper preparation remains mandatory or we will have crowns that fit like "socks on a rooster" and their morphology will be much like a tomato.

Shakespeare once said that men desirous of understanding can

communicate. Without understanding, disagreement has no right to take place. I believe this particular technique is one of the most misunderstood techniques in dentistry. There isn't anything sacred about bone, attachment apparatus, gingival tissue. It is their functions that are sacred and must be preserved. Investing these natural resources to achieve function is our task. Hopefully, the reader will be able to apply these same procedures to inlay preparations, super-gingival placement of margins, and the adaptation of this hopefully simple demonstration will produce the desired result.

Omer K. Reed maintains a thriving dental practice in Phoenix, Arizona. He is the originator of Napili (Ohana now) seminars, workshops created to enhance success in dentistry, socio-economically, intellectually and technically. Dr. Reed has been an inspiration to thousands of dentists facing new professional and personal challenges. He has counseled practitioners on how to open fresh horizons of opportunity for personal, professional and economic enrichment. He is a frequent guest on national and local radio and television programs and has been the subject of numerous newspaper and magazine interviews. He serves as an Adjunct Professor at the University of Minnesota and is a faculty member of the Las Vegas Institute.

The Pilot's Checklist

A Re-Cap of the Key Concepts

Pilot's checklist item #1:

Attack the tooth at the weakest point.

Pilot's checklist item #2:

The barrel of the bur will always be in undermined enamel.

Pilot's checklist item #3:

Have the instrument rotate from the DEJ toward the enamel.

Pilot's checklist item #4:

Once you begin, do not remove the instrument from the tooth.