

Gordon and Paul's Top 10 Concepts, Techniques, and Products

Gordon and Paul's Clinical Bottom Line: *Clinicians Report* in-house staff, field evaluators, and owner evaluators observe hundreds of new products and concepts each year. Only about one out of every five or six of these evaluations identifies a concept, technique, or product that is faster, easier, better, or less expensive than previously available options. The following ten top concepts and techniques represent just a few of the many topics that could have been included. Gordon and Paul consider all of them to be useful for you and your patients.








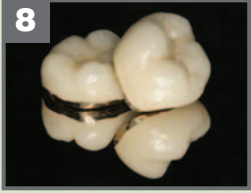


Experienced clinicians have favorite products or techniques that they have seen work well in practice. When these concepts have been proven by both research and clinical observation, they become indispensable.

The following concepts will help ensure your practice is up-to-date and attractive to patients, and that you are offering optimum service to the public. Gordon and Paul would use all of the products listed in this

section. Usefulness as well as cost were considered when choosing items to include in this list.

This special CR feature identifies some of the most important concepts, techniques, and products of the recent past as observed and evaluated by Gordon with Paul Child, CEO.

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Composite Polishing—State of the Art

Gordon's Clinical Bottom Line: All restorative dentists are looking for fast and easy methods to produce the smoothest possible surface on resin-based composites. Burs, disks, strips, wheels, and pastes are used depending on clinician preference. The initial finish and polish is under the control of the clinician and varies from extremely smooth and shiny to irregular and dull. The long-term retention of smoothness is the responsibility of resin manufacturers, and it varies significantly among brands.

Numerous products are currently promoted for intraoral polishing of composite restorations. Choices include disks, strips, abrasive impregnated rotary tools of various shapes, brushes with abrasive bristles, and polishing pastes. Systems may be multi-step, progressing from coarser to finer grit, or single-step using the same tool from start to finish.

Finishing generally consists of using fine diamonds or multi-fluted carbides to remove excess restorative material to contour the surface.

Polishing removes very little material in comparison to finishing and primarily smooths the surface. Some systems include both finishing and

polishing instruments. This report focuses on polishing instruments. CR conducted a clinical and laboratory evaluation of polishing systems to answer key clinical questions, including:

- Do single-step polishers work as well as multi-step systems?
- Do abrasive impregnated polishers work as well as disks?
- Is polishing paste required to achieve the highest shine?
- Which systems quickly and reliably produce a good polish?

The following report answers these questions and provides clinical tips for successful polishing.

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1. Small Diameter Implants

Root form implants have been the most important innovation in dentistry since the air rotor nearly 50 years ago. Millions of people globally have need of retention and support for removable prostheses, crowns, or fixed prostheses. However, many of them do not have adequate bone quantity in which to place root form implants 3 mm or over in diameter, and, for financial or health reasons, they cannot have bone grafting. Small diameter "mini" implants serve these patients. Small implants, ranging from 1.8 mm to 2.9 mm in diameter, have now proven themselves capable of supporting complete dentures, removable partial dentures, fixed prostheses, and even some single tooth replacements. Although criticized by some, the research is supportive of these implants with proper treatment planning and placement.

Examples of top popular and effective brands:

- Atlas by Dentatus, www.dentatus.com
- ERA Implant System by Sterngold, www.sterngold.com
- MDI by Imtec a 3M company, www.imtec.com



2. Digital Radiography

The practice management and visualization benefits of digital radiography are numerous. The time saved during procedures such as endodontics, implant placement, and simple diagnosis allow clinicians to do more, faster. Advancements in imaging are moving toward extraoral imaging for diagnosis including extraoral bitewings and clearer panoramic images. Cone beam radiography allows accurate placement of implants and fabrication of easy-to-use surgical guides. These advantages are provided at lower radiation doses with improved patient care.

Examples of top digital intraoral imaging products:

- Dexis by Dexis, LLC, www.dexis.com
- Schick by Schick Technologies, Inc., www.schicktech.com
- Kodak by Carestream, www.kodak.com

Examples of top digital extraoral imaging products:

- Galileos by Sirona Dental Systems, www.sirona.com
- i-CAT by Imaging Sciences International, www.imagingsciences.com
- ProMax by Planmeca, www.planmecausa.com



3. Class II Resin-Based Composites

Competency in class II resin placement is a major practice need, and most patients greatly appreciate or demand tooth-colored restorations. These relatively low-revenue restorations need to be accomplished rapidly, at high quality, and with non-sensitive predictability. Materials are now available that rival the acceptability of amalgam for small to moderate sized restorations. All major resin-producing companies have acceptable resins for class II use.

Examples of top effective products for class II: (Numerous other effective and new products are available; see Clinicians Report July 2009 for full report)

- Desensitizers—
 - Gluma by Heraeus, www.heraeus-kulzer-us.com
 - MicroPrime G by Danville, www.danvillematerials.com
- RMGI liners—
 - Fuji Lining Cement by GC America, www.gcamerica.com
 - Vitrebond by 3M ESPE, www.3mespe.com
- Low sensitivity bonding agents—
 - Brush & Bond by Parkell, www.parkell.com
 - Clearfil SE by Kuraray, www.kuraraydental.com
- Matrices—
 - Composit-Tight 3D by Garrison Dental Solutions, www.garrisonsdental.com
 - Greater Curve Tofflemire Band by Greater Curve, www.greatercurve.com
 - V3 Ring Sectional Matrix by TrioDent, www.triodent.com
- Restorative materials—
 - Estelite Sigma by Tokuyama, www.tokuyama-us.com
 - Filtek Supreme Plus by 3M ESPE, www.3mespe.com
 - Renamel Nano by Cosmedent, www.cosmedent.com
 - Venus Diamond by Heraeus, www.heraeus-kulzer-us.com



4. Bone Regeneration and/or Ridge Preservation

The majority of simple extractions are completed by general dentists, yet the majority of ridge preservation techniques, including subsequent implant placement, are completed by specialists. This simple, revenue-generating procedure is far too often overlooked by clinicians due to a lack of knowledge about what products to use and how to complete the procedure and/or a lack of patient education. Informed consent of patient options for socket preservation is now standard of care. There are many seminars and publications (including *Clinicians Report*) that offer the necessary information for providing this indispensable service.

Examples of top bone substitutes:

- Bio-Oss (*xenograft*) by OsteoHealth, www.osteohhealth.com
- Bioplant (*allopplast*) by Kerr, www.kerrdental.com
- Foundation (*xenograft*) by J. Morita, www.jmoritausa.com
- GenMatrix ($CaSO_4$) by Innovative Implant Tech, www.iitweb.com
- MinerOss/Grafton DBM (*allograft*) by BioHorizons, www.biohorizons.com
- OraGraft (*allograft*) by LifeNet Health, www.lifenet.org

Examples of top membranes/instruments:

- Cytoplast PTFE (*non-resorbable*) by Osteogenics Biomedical, www.cytoplast.com
- Mem-Lok (*resorbable collagen*) by BioHorizons, www.biohorizons.com
- Luxators by HuFriedy, www.hufriedy.com; or by Salvin, www.salvin.com
- Proximators by Karl Schumacher, www.karlschumacher.com



5. Whitening (Bleaching) Teeth

Every dentulous patient should be offered the opportunity to *elect* to have tooth whitening *before* starting restorative treatment. Most accept the procedure as an entry into esthetic dentistry. More elective procedures follow as patients become more conscious of their smiles. At-home whitening (15% carbamide peroxide) is more popular than in-office whitening because of the minimal interruption of office activity and its effectiveness. Lights remain an *ineffective* adjunct to the procedure. Some dentists prefer an in-office start followed by at-home bleach.

Examples of top effective and popular at-home and in-office products:

- Opalescence by Ultradent, www.ultradent.com
- Day White by Discus Dental, www.discusdental.com



6. CAD/CAM (Computer Aided Design/Computer Aided Manufacturing)

CAD/CAM is finally becoming an acceptable part of the dental industry with the success of chairside digital imaging and restoration fabrication. The digital revolution is reaching into almost every discipline within dentistry. However, its acceptance and use still lags far behind that of other industries such as medical, automotive, and even the dental laboratory industry. Automation and new digital technologies improve efficiency, accuracy, and patient care through improved techniques.

Examples of top effective chairside systems:

- Cerec AC by Sirona Dental Systems, www.sirona.com
- E4D by D4D Technologies, www.d4dtech.com
- i-Tero by Cadent, Inc., www.cadentitero.com
- Lava COS by 3M ESPE, www.3mespe.com

Examples of top effective dental lab systems:

- Atlantis Components by Astra Tech Dental, www.astratech.com
- Dental Wings/Envision TEC by Zahn Dental, www.henryschein.com
- Laserdenta by Laserdenta AG, www.laserdenta.com
- NobelProcera by Nobel Biocare, www.nobelbiocare.com



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7. Double-Arch Impression Techniques

Although this concept was probably criticized while you were in school, years of research have confirmed the ability of properly used double-arch impressions to produce one or two units of restorations more adequately, faster, and with fewer adjustments than impressions made with full-arch impressions. Additionally, clinical overhead is reduced by not having to make an opposing arch impression and an interocclusal record.

Requirements:

- Acceptable preoperative occlusion/removal of objectionable disharmonies
- Impression includes canine, and tray does not contact tooth structure
- Wide tray without high sides on the tray
- Thin non-water absorbent interocclusal wafer
- Thin distal connector

Examples of top effective brands:

- Premier Sideless Triple Tray by Premier, www.premusa.com
- Quad Tray by Clinicians Choice, www.clinicianschoice.com



8. Ceramics

The widespread demand for esthetic restorations with higher strength has resulted in many new innovations in chairside and laboratory fabrication of beautiful and functional restorations. Zirconia-based restorations are gaining more confidence while newer materials made of lithium disilicate and leucite-reinforced porcelain are showing great promise. Porcelain fused to metal restorations continue to dominate the dental industry, but newer technologies, improved ceramic formulations, increasing metal costs, and potential conservative preparations with onlays are driving a shift to these "all-ceramic" restorations.

Examples of top effective zirconia products:

- Cercon by Dentsply Ceramco, www.ceramco.com
- Everest by Kavo, www.kavousa.com
- IPS e.max ZirCAD by Ivoclar Vivadent, Inc., www.ivoclarvivadent.us
- Lava by 3M ESPE, www.3mespe.com
- Vita YZ by Vident, www.vident.us.com

Examples of top effective CAD/CAM or pressed products:

- IPS e.max CAD/Press by Ivoclar Vivadent, Inc., www.ivoclarvivadent.us
- IPS Empress Esthetic/CAD by Ivoclar Vivadent, Inc., www.ivoclarvivadent.us
- Noritake CZR by Zahn Dental, www.henryschein.com
- Pentron 3G/OPC by Zahn Dental, www.henryschein.com
- VITABLOCS Mark II by Vident, www.vident.us.com



9. Rotary and Reciprocal Endodontic Therapy and Endodontic Filling Materials

Endodontic therapy can be effective and predictable when accomplished well with the best materials. Although unpopular when first introduced, rotary endodontic techniques now dominate current endodontic procedures. The "crown-down" technique has made endo easier and more predictable. Gutta percha filling materials are still most popular, but bonded resin-based root canal filling materials are challenging gutta percha. Nickel/titanium files have added the advantage of fewer broken files and easier adaptation to curved root canals. However, broken files are still a challenge with rotary endo; some find that reciprocal root canal filing can reduce this threat.

Examples of top effective products:

- Rotary endodontic devices and instrumentation—
 - ♦ Aseptico Endo DTC by Dentsply Tulsa, www.tulsadental.com
 - ♦ EndoSequence by Brasseler, www.brasseler.com
- Reciprocal endodontic systems and instrumentation—
 - ♦ Endo-Eze AET by Ultradent, www.ultradent.com
 - ♦ SafeSider System by Essential Dental Systems (EDS), www.edsdental.com
- Root canal filling materials other than gutta percha—
 - ♦ EndoRez by Ultradent, www.ultradent.com
 - ♦ Epiphany by Pentron Clinical Technologies, www.pentron.com
 - ♦ MetaSEAL by Parkell, www.parkell.com
 - ♦ RealSeal by Kerr, www.kerrdental.com



10. Magnification with Headlamp

Dentistry without loupes and a headlamp is hard to imagine! Most dentists appreciate the benefits that magnification provides and are passing those benefits on to their patients through enhanced and more conservative dentistry. Headlamps augment visibility and illumination of the entire oral cavity and are now lightweight. Magnification with a headlamp is a "must have" accessory.

Examples of top effective magnification products:

- Designs for Vision, www.designsforvision.com
- Orascoptics, www.orascoptics.com
- SurgiTel, www.surgitel.com

Examples of top effective headlamps:

- Feather Light by Ultralight Optics, www.ultralightoptics.com
- LED DayLite by Designs for Vision, www.designsforvision.com
- Solaris by PeriOptix, www.perioptix.com



Composite Polishing—State of the Art (Continued from page 1)

Clinical Evaluation

Method: 16 polishing systems were clinically tested by 60 CR Evaluators and compared to each other and the study control (*Enhance Composite Finishing and Polishing System, Dentsply Caulk*).

Results: All systems evaluated produced clinically acceptable polish when using proper techniques and sufficient time. Overall, the Astropol/Astrobrush system (*Ivoclar Vivadent*) received the highest ratings.



Rotary polisher in use on class II restoration

Highest Rated Products in CR Evaluator Clinical Use Survey

(Percentages reflect responses from CR Evaluators)





Would recommend to a colleague:	<ul style="list-style-type: none"> • FlexiDisc/FlexiPoints/FlexiCups, Cosmedent (94%) • Enhance with PrismaGloss, Dentsply Caulk (85%) • Astropol/Astrobrush, Ivoclar Vivadent (84%)
Would purchase product:	<ul style="list-style-type: none"> • Astropol/Astrobrush, Ivoclar Vivadent (74%) • Enhance with PrismaGloss, Dentsply Caulk (73%) • FlexiDisc/FlexiPoints/FlexiCups, Cosmedent (71%)
Acceptable cost:	<ul style="list-style-type: none"> • Jazz Supreme, SS White (94%) • KerrHawe Polishing Kit, KerrHawe (90%) • Jiffy Polishing Kit, Ultradent Products (89%)
Overall highest rated polishing systems:	<ul style="list-style-type: none"> • Astropol/Astrobrush, Ivoclar Vivadent (94%) • FlexiDisc/FlexiPoints/FlexiCups, Cosmedent (94%)

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Composite Polishing—State of the Art (Continued from page 3)

Clinical and Laboratory Results

The following chart compares 16 polishing systems and their various components. This study included 875 samples of five resin brands (*Durafill VS*, *EsthetX HD*, *Filtek Supreme Plus*, *Heliomolar*, and *Renamel Microfill*) finished with a 12-fluted carbide bur and polished under controlled conditions. Surface smoothness was measured with an optical profilometer. Polishing systems are listed by overall grade.

Company	Product/System	Cost	Approximate Cost/Use	Polisher Type	Surface Smoothness Grade	Clinical Evaluation Grade†	Overall Grade‡ (See criteria below)
Shofu	Super-Snap Rainbow Technique Kit	US\$95/	Low	Disk	Excellent	Excellent	Excellent 
	+ Composite Polishing Paste	US\$30/		Paste	Excellent		
Ivoclar Vivadent	AstroPol	US\$115/	Low	Impregnated	Excellent–Good	Excellent	Excellent 
	Astrobrush (single-step)	US\$75/		Brush	Good		
Cosmedent	FlexiDisc	US\$183/	Low	Disk	Excellent–Good	Excellent	Excellent 
	+ FlexiPoints/FlexiCups	US\$24/		Impregnated	Good		
	Nano & Microhybrid Polishing Kit	US\$88/		Impregnated	Excellent–Good		
	+ Enamelize	US\$18/		Paste	Excellent		
KerrHawe	KerrHawe Polishing Kit—OptiDisc	US\$36/ Kit	Low	Disk	Excellent	Good	Excellent 
	Gloss Plus/HiLuster Plus			Impregnated	Good		
Komet	Diamond Composite Polishers	US\$92/	Medium	Impregnated	Excellent–Good	Excellent	Excellent–Good
Dentsply Caulk	Enhance Flex NST	US\$105/	Medium	Disk	Excellent	Pre-Market	Pre-Market
	Enhance + PrismaGloss (Control)	US\$135/	Medium	Paste	Excellent–Good	Excellent–Good	Excellent–Good
Ultradent	Jiffy Polishing Kit	US\$55/ Kit	Medium	Impregnated	Good	Excellent–Good	Excellent–Good
	Jiffy brush (single-step)			Brush	Good		
	+ Diamond Polish Mint .5µm	US\$17/		Paste	Excellent–Good		
Axis	PDQ (single-step)	US\$52/ Kit	Medium	Brush	Excellent–Good	Excellent–Good	Excellent–Good
	PDQ ² (single-step)			Impregnated	Excellent–Good		
Brasseler	ET Illustra	US\$113/	Medium	Impregnated	Excellent–Good	Excellent–Good	Excellent–Good
SS White	JAZZ Supreme (single-step)	US\$55/	High	Impregnated	Excellent	Excellent–Good	Excellent–Good
Heraeus Kulzer	Venus Supra	US\$97/	Medium	Impregnated	Excellent–Good	Excellent–Good	Excellent–Good
Premier	Diamond Twist SCO (single-step)	US\$75/	High	Paste	Excellent	Good	Excellent–Good
Microdont	Diamond Polidont Kit	US\$50/	High	Disk	Excellent–Good	Good	Good
Shofu	CompoMaster Kit	US\$145/	High	Impregnated	Excellent–Good	Good	Good
Dentsply Caulk	PoGo (single-step)	US\$151/	Medium	Impregnated	Good	Good	Good

†Clinical evaluation grade based on overall rating, would purchase, would recommend, acceptable cost, durability, speed, mandrel, and color ratings.

‡Overall grade based on clinical evaluation, surface smoothness, and cost.

Clinical Tips and Techniques

Initial finishing of the restoration should be completed with multi-fluted carbides (12–30 flutes) with water spray or extra fine diamonds with water spray. Final finishing near margins is best done with sharp instruments, water off, and light touch. Caution should be used to avoid over-finishing the margins.

Overfilling of the preparation should be avoided to minimize the need to finish and/or cut-back the restoration, often contributing to enamel cracking at the margins.

Moderate pressure should be used initially with the more aggressive polishers; lighter pressure should be used near completion of polishing the restoration.

RPM should be monitored carefully and adjusted per system. High RPM can heat the tooth, gouge the restoration, and cause dangerous failure of the polisher and/or mandrel.

Water use during polishing clouds the visibility and may decrease the effectiveness of polishing systems. However, water should be used with polishing systems to cool the teeth.

Posterior vs. Anterior: Flexible disks such as Cosmedent FlexiDisc and Dentsply Enhance Flex NST are best suited for anterior direct resin restorations followed by a polishing paste. Most other abrasive impregnated points, cups, or disks are appropriate for the posterior region, but can be used in the anterior as well.

Polishing paste increases the gloss, luster, and surface smoothness of the restoration and is recommended with all resin composites, regardless of the polishing system used. **Do not use prophylactic paste as the final polishing material.**

Margin sealing can be completed on the finished restoration with a 10-second etch on the margin followed by a thin coat of low-viscosity light-cured resin such as BisCover LV (Bisco) or G-Coat (GC America). Sealing resin imparted the highest level of smoothness and shine; however, it may wear off after a period of time.

Sterilization of many multi-use systems causes rapid degradation and poor efficiency. Single-use systems should *not* be re-used.

CR Conclusions: All polishing systems tested can produce clinically acceptable smooth surfaces. Polishing products can be selected based on clinician's preference in components, techniques, and cost. It is advantageous for clinicians to use both abrasive impregnated polishers and disks. Polishing pastes used after polishing instruments always produce the smoothest finish and glossy appearance. Overall, Super-Snap Rainbow Technique Kit (*Shofu*), Astropol (*Ivoclar Vivadent*), Cosmedent polishing system (*Cosmedent*), and KerrHawe Polishing Kit (*KerrHawe*) received the highest overall ratings.

“Clinical Success is the Final Test”

Results of Study

Resin brand and type did not have a significant effect on *initial* polish. However, long-term retention of smoothness does vary by brand and was not evaluated in this study. Microfills generally get smoother over time.

Single-step polishers potentially save time and effort, yet are technique sensitive and brand dependent. Single-step polishers that produced smoothest surfaces were Diamond Twist SCO paste, Jazz Supreme abrasive impregnated polisher, and PDQ brush.

Abrasive impregnated polishers are the most commonly used polishing systems as they are simple and fast. Those producing smoothest surfaces were Jazz Supreme, Diamond Composite Polishers, and Astropol.

Disks produced smoother surfaces than abrasive impregnated polishers, but performance varied by brand. The smoothest were Super-Snap and Enhance Flex NST.

Brushes generally left a rougher surface than other types of polishers. Brushes are indicated for fissures or areas of difficult access. PDQ brush produced the smoothest surface.

Polishing paste used after other instruments *always* improved surface smoothness and shine. Pastes are indicated wherever high esthetics are required.