

A high-speed posterior composite developed specifically for Brush&Bond

Imagine this. You're placing a deep Class I composite in #14.

If you're a traditionalist, after prepping you could ...

1. etch the tooth
2. rinse the tooth
3. dry the tooth
4. apply the primer
5. apply the bonding agent
6. cure the bonding agent
7. apply a liner (RMGI or flowable)
8. Cure the liner
9. Apply a 2mm increment of restorative composite
10. Light-cure the increment for 30-secs
11. Apply another increment
12. Light-cure the increment for 30-secs
13. Repeat 9-12 as necessary

On the other hand, if you're a Brush&Bond™ fan, here's an alternative. After prepping ...

1. Apply Brush&Bond with its special applicator micro-brush
2. Let it sit on the tooth for 20 seconds then blow
3. Light cure it for 5-10 seconds
4. Fill the preparation with new HyperFIL™-DC.
5. Light-cure the surface for 30-40 seconds, and begin shaping with a diamond

HyperFIL™ is a new dual-cure composite restorative specifically developed for patients where cost is a major consideration. It costs \$3-7 per gram (vs \$25 for traditional composites), so even allowing for the material you leave in the mixing tip, it can reduce your material costs.

But the real saving isn't in the cost of the material. It's in the time you save.

HyperFIL eliminates the need for liners and incremental build-up. And it's developed specifically to be compatible with Brush&Bond.

What's it NOT recommended for?

For one thing, it's not for cases where precise shade match is critical. HyperFIL comes in a single universal shade (A2/B2). That's why we say it's for "posterior" restorations. The high translucency gives it a chameleon effect, but we wouldn't use it where precise shading is essential.

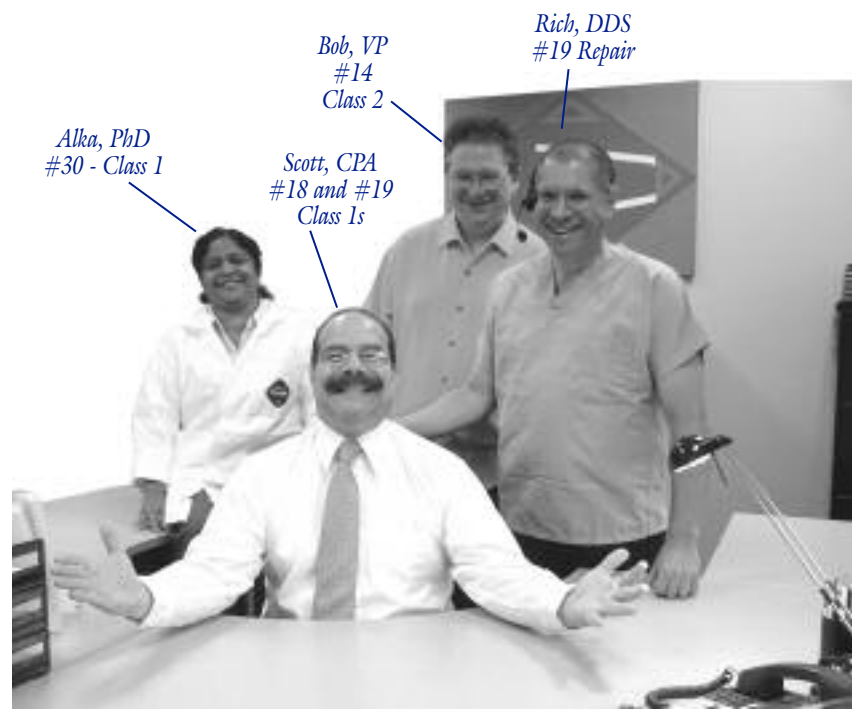
And right now, we're not recommending it for restorations that involve proximal contacts. HyperFIL tends to flow as it first comes out of the mixing tip. Though some dentists in our Beta test reported success building contacts using sectional matrices, we suspect most would find it easier to switch to a traditional composite that offers a little resistance.

Tested on CPAs, PhDs, VPs, DDSs

Did you see the CONSTANT GARDENER? Me neither, but I understand the plot involved despicable drug companies who test new products on poor, unsuspecting 3rd-world populations.

We do something like that here at Parkell. Long, long before we ever send a new product out for Beta testing, we test it on our managers.

Bob Burke (Parkell's Executive Vice President) received the world's first HyperFIL filling. Not long after, Dr. Alka Thakur (the Parkell chemist who headed development of HyperFIL) received



her restoration.

By the way, did you notice the clinical photos in our introductory ads for HyperFIL? The patient receiving those multiple Class I restorations was our Vice President of Finance. Scott is a determined grinder (possibly resulting from a mis-spent life dealing with the IRS and late-paying customers), so he's chewed through a parade of posterior restorations. So far, his HyperFIL restorations are standing up beautifully.

The strangest HyperFIL restoration of all involves Dr. Rich Goldman (Parkell's VP of Clinical Dentistry - and a certifiable nut-case.) When Rich fractured the cusp of an Empress molar crown one evening, he rebuilt it HIMSELF intraorally. That's right. He took his Brush&Bond kit, a HyperFIL cartridge and our Aurora light into the bathroom and performed a little auto-restorative dentistry. When he showed me his work, I had to admit it looked darn good.

Though we do not recommend self-administered dentistry, Rich's excellent adventure does make a point about just how easy a HyperFIL/Brush&Bond restoration can be.

For those of you who aren't inclined to take our word for things, HyperFIL comes with a 3-month, money-back trial.

Dual-cures die twice

A couple of issues ago, I mentioned that if your air-conditioning conks out during the summer and turns your office into an oven, you can pretty much forget those expiration dates printed on the materials stored in the closet.

High temperatures speed the aging of materials. So I suggested that if you know materials have been overheated, you should ignore the expiration date printed on the bottle and periodically make a test mix to be sure they still set properly.

The folks in our chemistry department reminded me that I should have included a special comment about testing dual-cure resins.

Dual-cure materials like Absolute Dentin and our new HyperFIL have two separate initiator systems - a light-cure system and a self-cure system. Since self-cure systems are considerably more fragile than light-cure, it's possible that excessive heat will destroy a dual-cure's self-cure property, but leave the light-cure property unaffected.

In other words, you should test dual-cures both with and without a light. If you discover that the self-cure initiator has croaked, but light-cure hasn't, you can continue to use the stuff - but you have to treat it like a pure light-cure material.

When is it best to etch even though you're using a "self-etch" bonding agent?

Self-etch bonding agents don't bond well to uncut enamel unless it's etched. Even the manufacturers who claim their self-etchers bond to pristine enamel usually admit it bonds even better after a short session with phosphoric acid.

Class IVs

In a Class IV restoration you're almost certainly feathering composite over virgin enamel to achieve an esthetic transition from tooth to restoration. Furthermore, this transition is smack on the facial, where even slight marginal staining will mean an unhappy patient.

So in my opinion all Class IV restorations should be etched.

"No-prep" Class V's

A number of dentists have told me they love the speed of Brush&Bond with Epic[®]-

TMPT or a flowable to restore non-carious Class V's.

If they routinely prep the surface with a diamond, this is fine. But I suspect many don't. Most abfraction/erosive lesions have a coronal margin in enamel. So if the enamel isn't cut or etched what's going to make the B&B bond there?

In my opinion most non-prepped cervical lesions should be cut or etched.

Enamel-etching with some self-etchers can be a little tricky, because according to the lecturers you have to keep the acid off the dentin. But not with Brush&Bond and Touch&Bond. Studies have shown that they bond just as well to etched dentin as unetched dentin.³

Another victory for you cavemen out there. (Amalgam vs Composite - Round #15)

The June 07 issue of Quintessence reported the results of an Israeli study comparing the success of composite and amalgam restorations with proximal surfaces.¹

Bitewings of 650 interproximal restorations in 18- and 19-year old patients were examined to determine evidence of secondary caries and overhanging margins.

You probably won't be surprised to learn that amalgam restorations showed more overhangs. However, the difference wasn't as great as I expected. 4% of the alloy restorations showed marginal overhangs vs 1% for the composite restorations.

In terms of caries, however, it wasn't even close. Just 8% of the amalgam restorations showed radiographic evidence of secondary caries ... vs 43% of the composite restorations. Composite restorations showed more than 5 times the incidence of secondary caries.*

But it's probably safe to say that 100% of the composite restorations looked nicer than the amalgams.

Forget what we told you. Feel free to spin MetaSEAL™

We try to be conservative when we write instructions ... particularly for new products like MetaSEAL. We do not want to suggest anything that may cause your first experience with a product to be less than it could be.

Several of our Beta testers reported that MetaSEAL set too fast when they spun it into the canal using a lentulo in a handpiece.

The researchers couldn't recreate this problem in the lab. Nevertheless, we decided to suggest that when a lentulo was used, it was safer to spin it by hand than in a contra-angle.

It turns out that highspeed spinning isn't a problem at all. Just by coincidence the dentists who had problems spinning, happened to be using hot obturation.

It wasn't the spinning that was causing the rapid setting, it was the heat.

So feel free to spin MetaSEAL into the canal. In fact a recent study suggested that a lentulo spiral in a handpiece is more likely to optimally fill the canal than a hand-spun spiral.

In other words, using a slow speed not only isn't contraindicated, it may be preferred.²

* By coincidence, the June issue of JADA featured two more clinical studies comparing amalgam to composite and compomers. Both studies concluded that amalgam lasted longest and showed significantly fewer caries. 17, 18

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“If your experiment needs statistics, you ought to have done a better experiment”*

Ernest Rutherford

New Zealand’s wacky 1908 Nobel Prize Winner in Chemistry

Let’s free-associate for a minute.

I’ll say - “Cat”

You say - “Hairball.” Or “Whiskers.” Or maybe “Mouse.”

If I said “Chinese,” you might say - “Top grades on SATs” - “Hard-working” - or perhaps “Short.”

Let’s stick with “short” for a minute.

I Googled the topic and the consensus seems to be that Chinese males average about 5’5” in height - and the average American male is about 5’9”. So if you conducted a meta-analysis of all height-studies, you’d probably find it “statistically confirmed” that Chinese males are shorter than US males.

Based on this, you’d probably hesitate to build an NBA franchise around a Chinese basketball player, right?

So how do you explain 7’6” Yao Ming of the Houston Rockets? He’s arguably the best (and certainly the tallest) center in the NBA?

“There’s nothing to explain” you’d reply. “Statistics involves the law of large numbers. They permit you to describe certain tendencies within a group. But they tell you nothing about any specific individual in the group.”†

And you’d be absolutely correct.

Unfortunately, many dental researchers don’t understand this.

In fact meaningless over-generalization is seen by some as the very highest form of Evidence Based Dentistry - only in EBD they call it the **“systematic reviews of clinical trials.”**

Let me give you an example -

I had one researcher look me in the eye and tell me with the certainty of fools that amalgam adhesives do not reduce sensitivity. And you know something? He was absolutely correct ... but only statistically. If you did a systematic review of the literature, you’d be very likely to conclude that amalgam adhesives do not reduce sensitivity, because most amalgam adhesives don’t reduce sensitivity. A number of studies suggest that Panavia® doesn’t reduce sensitivity.^{4,5,6} Others suggest that Multipurpose® Plus doesn’t reduce sensitivity.⁷ Or Optibond®.⁸ Lost in this sea of data is the fact that virtually 100% of the studies involving Amalgambond® concluded that it DID reduce post-op sensitivity.^{9,10,11,12,13}

In other words, Amalgambond is the Yao Ming of amalgam adhesives.

So one potential error of “systematic clinical reviews” is the “Yao Ming” effect - in which an important exception (Amalgambond) gets hidden in the forest of statistical truth.

Another potential error with “systematic reviews of clinical trials” is that the categories analyzed frequently contain such wildly dissimilar materials that any conclusions are meaningless.

* I believe what Ernie was trying to say here was that truly significant research tends to produce conclusions that are apparent. When the meaning of research becomes evident only after statistical analysis - there’s a danger of accepting absurd conclusions.

† To belabor the basketball/height metaphor, it’s also statistically correct that short players have trouble playing around the hoop. But that didn’t prevent 5’7” phenom Spud Webb from winning the 1986 NBA slam-dunk contest.

When weekend lecturers claim that the earlier 4th-generation adhesives remain the "gold standard" of bonding, they are referring to a research paper which discussed a systematic statistical review of 85 clinical trials. I suspect many of these lecturers may not have actually read it - or even realize they're referring to it.¹⁴

This paper concluded that the old etch+rinse+prime+bond agents (like Amalgambond) demonstrate clinical performance superior to all other systems - and particularly superior to the really simple one-step systems (presumably like Brush&Bond.)

85 clinical trials PLUS statistics! This must be formidable evidence.

On the other hand, maybe not.

When you actually read the paper and check the references, you discover some bewildering things.

For example, of the papers that were categorized as reviews of "one-step self-etchers" (the category that didn't do so well) -

13% of these "self-etch" papers didn't even involve self-etch bonding agents. They tested the performance of total-etch systems (Prime&Bond NT, Syntac, etc) when used WITHOUT ETCHING! Using this logic you could throw a Chevy into Lake Michigan and call it a "boat".

50% (HALF!) of the papers didn't involve bonded composite. They evaluated bonded compomers or resin-modified glass ionomer!

50% (HALF!) of the papers involved just two adhesives. One was the early version of Prompt-L-Pop®, which I suspect even Espe/3-M would admit had a few problems. The other was Dyract®'s adhesive primer, which isn't what most dentists think of as a "self-etch bonding agent."

As a result, the performance of just two products heavily skewed the outcome. It's rather like someone doing a statistical analysis of European automobile reviews in which half the cars reviewed were Yugos ... and the other half were washing machines.

Interesting point: the very worst clinical performance in all 85 papers surveyed belonged to a member of bonding's "gold standard" (the etch-rinse-prime-bond group). In one clinical study, only 20% of the restorations retained by Denthesive™ were still in the mouth at the end of 5 years.

I'm groping for a funny analogy here - but there's really nothing funny about this, because this paper is regularly summarized by evidence-based gurus as showing that 1-step adhesives demonstrate average annual failure rates of 10%. Many dentists who actually USE one-step materials know this is nonsense.

After reading the paper twice, I've come up with four conclusions - none of which correspond with the authors' - and none of which require an intimate knowledge of statistics.

1) All categories of bonding agents include some materials that perform well and some materials that perform not-so-well. Categorizing materials is a great way to lose sight of this very important fact.

2) If you're going to use a total-etch system, it's probably a good idea to consider etching.

3) Glass ionomers bond well in Class V restorations despite a

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low dentin bond strength of just 6MPa ... and that's on a good day.

But most important -

4) Be wary of authorities who make grand statements based on statistical analyses of multiple diverse papers.

Oh terrific - NOW you tell us.

According to a quick computer search, since the year 1990 there have been at least 1213 research papers published that reported microleakage around, under or possibly through restorations. That's roughly one new microleakage study every five days ... for 16 1/2 years.

So now a just-published summary of the research in the prestigious Journal of Adhesive Dentistry has concluded that there is no evidence that microleakage is correlated with anything. Not caries. Not bond. Not clinical success. Nothing.¹⁵

A few quotes from this paper -

"Literature data suggest there is no correlation between microleakage data as measured in the laboratory and clinical parameters"

"The quantitative marginal analysis of Class V fillings in the laboratory was unable to predict the performance of the same materials in vivo"

"Therefore, microleakage tests or the quantitative marginal analysis should be abandoned and research should focus on laboratory tests that are validated with regard to satisfactorily predict the clinical performance of restorative materials."

Err ... and what would those "validated" laboratory tests be? Oh never mind. Besides, I suspect this paper will have no effect on future microleakage studies. They'll continue to appear every five days for the next 16 1/2 years. After all, microleakage studies are what researchers do, what lecturers quote and what manufacturers cite in their advertising.

Glass Ionomer and B&B

"I have recently been sealing my preparations with B&B and have enjoyed the lack of sensitivity even on deep shoulders. I use a light mix of Durelon for cementing my provisional restorations. There is no adhesion of the Durelon to the tooth when removing the provisional and the clean-up is almost too easy.

But my worry is this: I use Rely-X glass ionomer cement for a permanent cement. If there is no adhesion to Durelon why should I expect any adhesion with Rely-X?"

W. E. Harkness,III,DDS
Houston, TX

Great question. And you're absolutely correct, Brush&Bond doesn't bond to polycarboxylates like Durelon. It won't bond to traditional glass ionomers either.

However, RelyX Luting Cement (formerly called Vitremer) isn't a traditional glass ionomer. It's a resin-modified glass ionomer, so Brush&Bond will grab onto the resin in the formula. You should find you get as good, and probably better bonds to dentin

using Brush&Bond plus RelyX than RelyX alone.

Curing spots before your eyes.

“Interesting how in the ad for the Aurora curing light, where Parkell compares the size of the curing spots, they cut off the four lower wavelength diodes on the UltraLume 5 image. They show the entire reflector on the Aurora but not on the Flashlite or the UL 5.

Wouldn't have expected something like that from Parkell.

The Aurora has a single diode which suggests that it cannot activate lower wavelength initiators.”

John Kanca III, DMD
Middlebury, CT

The UltraLume 5 is unusual in that it has 5 LEDs. The diode in the center cures CQ-initiated materials (99+percent of all light-cure products), but is totally ineffective in curing TPO-initiated materials. The 4 outlying diodes cure TPO-initiated materials (like Durafinish and Touch&Bond) but have virtually no effect on CQ-initiated materials.

When we took our photo we treated the UltraLume 5 just like all the other lights in the photo. You really shouldn't point a digital camera directly into an illuminated curing light, so we placed the same dark neutral filter over each curing-light's lens before snapping the picture.

We didn't notice that the UltraLume's four outlying diodes had disappeared till John voiced his criticism. But sure enough, our picture didn't show those outlying LEDs. Where did they go? The UltraLume's outlying LED's are much dimmer than the central one - so apparently by the time the bright central LED had been reduced enough to photograph, the 4 surrounding lights had disappeared completely.

So does this mean that John's criticism is correct? Yes and No. Actually, he's precisely 1% correct and 99% incorrect.

You see, the size of UltraLume V's curing spot depends on what you're curing.

For 99+% of all light-cure products (those based on conventional CQ initiator), the curing spot is restricted to the small, bright area illuminated by its central LED. That's the spot that appears in our ad.

For the remaining 1% of light-cure products that require a high-frequency light (products like DuraFinish and Touch&Bond), the curing spot is the larger-but-dimmer area illuminated by the four outlying diodes.

For the record, here are the relative curing spots depending on what you're curing -



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Desensitizing with Brush&Bond

In the past few issues, we've mentioned a number of independent surveys/studies suggesting that Brush&Bond is a terrific dentin desensitizer. In fact, one paper concerned a long-term clinical study conducted at the University of Alabama in which B&B was almost 100% effective immediately after application and was still 96.3% effective after 3 years.

In the interest of fairness, we should also mention some unpublished clinical work done at NYU School of Dentistry suggesting that neither Brush&Bond nor Gluma desensitizer were any more effective than water in resolving hypersensitivity.

Okay, so which is it? 100% effective (AL)? Or 0% effective (NY)?

Unless you're willing to believe that desensitizing effectiveness is influenced by latitude, it's hard to see how both studies can be correct.

So here's my modest proposal - Next time a patient complains of cervical sensitivity and reacts strongly to cold air from your 3-way, simply treat the quadrant with Brush&Bond. (Apply it. Keep it wet for 20 seconds. Blow it dry. Light cure.)

Now give it another shot of air or ask the patient to swish cold water. My prediction is that there will be a dramatic drop in reaction. Perhaps not 100% of the time - but way closer to 100% than 0%.

University researchers might point out that what you have just seen is mere anecdotal evidence. This is true. Ask the patient if he/she cares.



PS Got questions or cases you want to discuss? Feel free to call either Rich or me (800-243-7446), or drop me an e-mail (ngendusa@parkell.com). You can even send us a question via the "Ask Nelson" page on our web-site (www.parkell.com).

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