

# Garrison® Dental Composi-Tight® 3D Fusion™ System



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By Dr. Robert Rosenfeld

For the greater part of the last century, silver amalgam has been the material of choice for restoring the majority of posterior teeth with interproximal decay. The introduction of composite resin materials provided a more esthetic alternative, but the earliest examples of these materials were intended for use on anterior teeth only. Those who experimented with resins on posterior teeth soon learned why – inadequate physical properties, especially poor wear resistance, doomed most of these restorations to failure.

Manufacturers, recognizing the growing demand, soon improved their formulations by creating “hybrid” composite resins. For more than thirty years, products have been available that are suitable for the restoration of posterior teeth. Important distinctions exist however regarding the handling properties of these composite resins compared to silver amalgam, as well as with the techniques dentists employ to help them create perfect contour and tight contact with adjacent teeth.

For seventy years, Tofflemire circumferential bands and matrices have been utilized to create good contact when using amalgam. Silver amalgam is sufficiently dense to deform the band, resulting in excellent contact upon the band’s removal. Composite resins, being less dense, cannot deform the band, which has a finite thickness, and users of Tofflemire bands and matrices often find that their resin restorations have a flat shape and inadequate or non-existent contact with the neighboring tooth.

Long ago, alternative methods were introduced to obtain quality restorations with composite resins. They involve the use of smaller, kidney-shaped “sectional” bands and separating rings. The separating force that the ring exerts on the teeth

yields excellent contact upon removal of the band, despite the band’s thickness. These systems, however, have not been without their own set of problems. For experienced Tofflemire users, the new systems came with a steep learning curve and many practitioners abandoned the bands and rings and went back to the comfort of their Tofflemire system. Even today, many composite users resist the change to the newer systems, citing problems with certain clinical situations. Manufacturers have introduced numerous iterations of the sectional matrix systems, each one addressing various shortcomings of their predecessors. Still, those who have adopted the sectional matrix systems find situations that make it challenging to use the newer systems that they have otherwise come to trust.

One of these situations is what is sometimes termed the “Wide Prep”, where the interproximal preparation extends beyond the buccal or lingual line angles. With most systems, the placement of the separating ring results in the crushing or altered shape of the sectional matrix band



Figure 1

(Fig. 1). “Work-arounds” exist to enable the persistent user to accomplish their goals, but it often involves a good degree of struggling.



Figure 2

Enter the newly designed Garrison® Dental Composi-Tight® 3D Fusion™ System. (Fig. 2) Their updated sectional bands have wider bucco-lingual extension. Their redesigned 3D Fusion™ Wedges feature soft “fins” that smoothly adapt matrix bands to tooth irregularities and prevent the wedge from backing out. These are helpful in a wide array of situations, to eliminate the likelihood of flash at the gingival margin. Perhaps most noteworthy



Figure 3



Figure 4

is the latest generation of separating rings. There are now three different rings, each for different clinical

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circumstances, and they address many of the challenges that confront users. All three incorporate Garrison's exclusive Soft-Face™ silicone tips that better adapt the band to the tooth for flash reduction. Many rings have a tendency to "pop off" certain teeth, especially short ones, and they can shoot across the treatment room like a projectile. All three of the 3D Fusion™ rings have Ultra-Grip™ retention extensions (Fig. 3) which catch under the wedge to prevent "pop off". The rings' new shape enhances the separating force, thus ensuring good contacts. The addition of a third, larger Wide Prep Ring to the system (Fig. 4) is intended to help in the aforementioned "Wide Prep" scenario. The following case report illustrates the usefulness and efficiency of this new ring.

**Case Report**

This 57 year old female patient presented with an existing MOL amalgam restoration on tooth #31 (lower right second molar) (Fig. 5).

Half of the mesio-lingual cusp had been replaced by the amalgam, which was now found to have recurrent decay beside and gingival to the restoration. Additionally, two spots of buccal decay were noted. Although the tooth was a candidate for an indirect restoration, the patient's finances dictated a direct-placed filling. The amalgam was removed and the decay excavated (Fig. 6).

Cavo-surface bevels were placed on enamel margins, which were then etched with 37% phosphoric acid (UltraEtch, Ultradent Products) as part of the "selective etch" technique (Fig. 7).

A Composi-Tight® 3D Fusion™ non-stick sectional matrix band was placed and secured with a 3D Fusion™ wedge. The 3D Fusion™ Wide Prep separating ring was then placed and the band was burnished to ensure good adaptation to the adjacent tooth (Fig. 8).

Bonding adhesive was applied to the tooth (Clearfil SE Protect, Kuraray Dental) and light cured (Valo curing light, Ultradent Products). The preparation was filled with a bulk-fill composite (Bulk EZ, Zest Dental). After removal of the separating ring, wedge, and band, which left little residual flash, the additional buccal areas of decay were excavated (Fig. 9).

They were restored with Clearfil SE Protect and Clearfil Majesty composite (Kuraray Dental). After minimal trimming and occlusal shaping, the restoration was polished using an Enhance silicone point (Dentsply Sirona) and Groovy Diamond brush (Clinician's Choice). (Fig. 10,11).

In summary, Garrison® Dental has taken their quality Composi-Tight® 3D



Figure 5



Figure 6



Figure 7



Figure 8



Figure 9



Figure 10



Figure 11

system and improved upon all of the components in introducing their new 3D Fusion™ system. The addition of their Wide Prep Ring, dentistry's first ring designed to conquer the problems associated with a wide open preparation, has given users a useful new tool for their armamentarium. The restoration of the once-frustrating Wide Prep has been simplified by the use of this new system.



**Dr. Rosenfeld** is a graduate of Cornell University and Northwestern University Dental School. He served a one year General Practice Residency, and a second year as Chief Resident, at Long Island Jewish Medical Center. He is a "wet-fingered" general dentist who has practiced in Westwood, New Jersey since 1993. He has advanced training in Esthetic dentistry and has served as a mentor at the Nash Institute in Charlotte, North Carolina. Dr. Rosenfeld is a member of the American Dental Association, the American Academy of Cosmetic Dentistry and their component societies, and several dental study clubs. He has had numerous articles published in Dentistry Today, Inside Dentistry, Dental Economics, Oral Health, DentaTown, and Dental Products Report. He serves as an assistant attending in the Department of Dentistry at Hackensack University Medical Center. Dr. Rosenfeld has a "key opinion leader" relationship with several dental manufacturers and he has lectured on various subjects in restorative dentistry. He was inducted as a Fellow of the International Academy of Dental Facial Esthetics.