Sonicfill: The Breakthrough in the Evolution of Direct Composite Delivery

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Date of Receiving : 18/Aug/2013
Date of Acceptance : 25/Sep/2013

Abstract: The process of placing posterior composites is time consuming and cumbersome. The procedure involves achieving the necessary isolation, selecting and placing an appropriate matrix, precise execution of the adhesive steps, the placement of a flowable resin or resin ionomer liner and finally, the incremental placement, adaptation, and light curing of at least 2 or more layers of composite. Add to this sculpting, adjusting the occlusion, and finishing and polishing. In recent years, materials like Quixx (DENTSPLY Caulk), Calset (AdDent), Surefil SDR (DENTSPLY Caulk) have been introduced in an attempt to reduce some of the time and effort needed for layering and adaptation when placing posterior composites. The recently introduced Sonicfillsystem also helps us fulfill this need, the need for speed.

Keywords: Composite, Canes, Posterior Teeth, Sonicfill.

INTRODUCTION
Although composite restorations are still widely used in posterior cavities, they still represent some shortcomings such as polymerization shrinkage and obtaining a tight contact point.

The stickiness of the composite on the instrument and void inclusions are also some problems faced by the dentist while placing the first composite layer in the bottom of the cavity. Many solutions were suggested, but so far no one gave satisfactory results at all the levels.

Packable composites, were developed in 1999 aiming to replace amalgam restorations. They were supposed to have higher mechanical properties and allow to obtain a tighter contact point.

But it was shown that those materials did not have higher properties than universal hybrid composites and mostly, did not help to improve the contact point. Another suggestion to overcome the stickiness of resin composites, and enhance their adaptation to the cavity floor, was to place a very thin layer of flowable composite in the bottom of the cavity. Wagner et al. suggested a technique where the packable composite was to be preheated before being placed in the tooth preparation. However this technique remains controversial.

Layering technique or stratification concept helps in reduction of polymerization shrinkage, but is time consuming; it takes 2.5 times more to achieve an adequate composite than an amalgam. It is obvious that dentists are looking for a fast and reliable filling technique allowing the reduction of layers, effort and time. Sonicfill system for posterior restorations has been developed jointly by Kerr and KaVo keeping these very goals in mind.

CASE REPORT
A 24 year old patient reported to the Department of Conservative Dentistry and Endodontics with the chief complaint of food getting stuck in the upper left back tooth since 4 months. No history of pain, sensitivity was reported. On clinical examination Class II mesio-occlusal dental caries was found with respect to 26. Quadrant isolation was done and tooth preparation was done making sure all carious dentin and defective tooth margins were removed.

The tooth preparation was etched with 37% phosphoric acid for 15 seconds. The etchant was rinsed and the preparation walls were dried. Kerr optibond bonding agent was applied and cured using ZLED light.

Sonicfill (Kerr) was used to dispense the material in the tooth preparation starting from the deepest part of the preparation (proximal box). Speed was set at level five. The material was then cured for 40 seconds using an LED light source.

DISCUSSION
The SONICFILL system consists of a handpiece manufactured by KaVo (Germany), activated sonically and attached to the high-speed multiflex connection. A special composite Unidose manufactured by Kerr Corporation (USA) is screwed on the handpiece. Upon activation with the foot switch, the sonic energy lowers the viscosity and extrudes the composite that has initially a thick consistency. The composite contains about 83.5% of fillers by weight, mainly silica and barium aluminoborosilicate glass and is available in four shades (A1, A2, A3 and B1).

The handpiece can be set on five different dispensing speeds for composite delivery; the most used are the 4 and 5.

The composite, delivered by a small nozzle that accesses almost all cavity sizes, intimately adapts to cavity walls without any voids inclusion.

Cavities up to 5 mm of depth are filled in one bulk increment (over 80% of cases). Upon deactivation of the sonic energy, viscosity of the composite increases and allows easy adaptation and accurate sculpting morphology of the composite.

Sonicfill system is indicated for posterior restorations in class I and II and as build up material for cusp reconstruction, as well as a base after a root canal treatment.

CONCLUSION
Composite used in posterior cavities must fulfill some...
criteria such as have a high percentage of fillers to withstand the occlusal forces, and a low polymerization shrinkage. They must also have a good adaptation to the cavity walls, thus reducing voids inclusion and allowing the achievement of a tight contact point. SonicFill appears to be a fast and reliable new technique used for the restoration of posterior cavities and the learning curve for using SonicFill system is fast. It has an improved handling and delivers a nonsticky, non-slumpy composite with optimal sculptability.

REFERENCES

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LIST OF PHOTOGRAPHS

Fig 1 Pre-operative radiograph

Fig 2 Photograph after tooth preparation

Fig 3 Restored and finished cavity

Fig 4 Post restoraion photograph

Fig 5 The sonicfill system