

Omnichroma: One Composite to Rule Them All

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Abstract: Over the past several decades of the 20th and the 21st Centuries, there has been development upon development in the field of bonded esthetic restorations. A new promising product introduced into the market is Omnichroma by Tokuyama Dental. In this article, we would be looking into this material that could potentially have a huge impact on esthetic restoration as we know.

Keywords: Esthetic, Adaptiveness, Omnichroma, Comosite

Introduction

The world of restorative and esthetic dentistry evolves at a rapid rate when it comes to newer and better innovations in order to meet with the ever increasing demand of more natural and life-like appearance of dentition. Composite restorations and new formulations of bonding agents have led to the evolution in the adaptiveness of composites.¹

History

Dr. Michael Buonocore in the mid 1955 found that phosphoric acid improves the mechanical bonding of the restoration to the acid treated tooth surface.² However; RL Bowen invented dental composites in 1962.³

The first successful commercial composite resin was first introduced in the 1970's {Concise (3M) and Adaptic (Dentsply Sirona)}. They had large fillers with sizes ranging from 0 to 5µm. These large fillers had good strength but lacked polishability because of their irregular edged surfaces.

Macrofill composites in the 1980's was introduced in the form of Durafill VS (Kulzer) and Renamel (Cosmodent).⁴ These exhibited good polishing and esthetic properties but lacked strength in occlusal load bearing areas except when Heliomolar (Ivoclar Vivadent) was introduced.

Hybrids and layering of composites was introduced in the 1990s. These hybrids were not easily polishable.⁵ Esthet-X (Dentsply Sirona) was stronger but the esthetic properties was inferior to today's options of composites.

Newer formulations with increased esthetic characteristics were brought into the market in the 2000s. This was truly the first time that translucent and opaque shades have been allowed to imitate the natural tooth structure. This introduced problems the dental practitioners had never foreseen since products are sold in kits and most of the time the entire kit ends up unused during the product's life span.

Nanofilled composites were introduced just after; with particle sizes ranging from 5 to 75nm and nanocluster fillers (5 to 20nm).^{5,6} This resulted in restorations with smoother finish and shine.⁷ E.g. Tetric EvoCeram (Ivoclar Vivadent) and Filtek Supreme Plus (3M).

By the 2010s, Bulk-fill composites have been accepted by most dentists since these composites offered less polymerization shrinkage with a greater depth of cure upto 4mm.⁸ SureFil SDR Flow

(Dentsply Sirona) was the first flowable bulk-fill that was accepted but its uses was limited touse as a base under restorations.

Newer bulkfill agents like Tetric EvoCeram Bulk Fill (Ivoclar Vivadent) and Estelite Bulk Flow (Tokuyama Dental America) does not require any other layer of composite as a capping. They have higher strength and esthetics but some can be translucent; which presented with its pros and cons depending on the restorations.

Evolution of Material

Bioactivity of a material and bioceramics has been taken into great account over the last decade. Such positive property of the materials has benefitted a diverse group of patients over the years. Bioactivity of a material is based on the material's ability to be reactive during the entire lifespan of the product.⁹

Tokuyama Dental America in 2007 introduced Estelite Sigma Quick (first 100% supra-nano spherical filled resin composite). Being a universal composite, it allows high polishability because of the presence of spherically designed particles that are manufactured in absence of irregular edges. This led to the development of concept of polychromatic composite; Estelite Omega (Tokuyama Dental America).

In 2018, other spherical-particle-based composites were also introduced; Harmonize (KaVo Kerr) and Brilliant Everglow (COLTENE). Brilliant Everglow, with dual shade compules is also known as an “all-round” material, whereas Harmonize depends on “crosslink's of spherical silica and zirconia particles together with positive and negative charges”.

The Revolution

2019 marked the introduction of a number of products that would eventually change the trend of dentistry compared to the last two decades.

2019 brought the introduction of Omnichroma (Tokuyama Dental America). This was the first composite resin-based material that could match any tooth with any shade, on any patient. In the times where multiple shading of composite restoration is followed as the benchmark for restoring the tooth's anatomy, Omnichroma poses a unique property that allows clinicians to not be concerned by the multiple shades. This provides a quick, easy system that creates attractive and functionally esthetic restorations.

Omnichroma (Fig 1) has been known to potentially save time in the clinic by almost eliminating the need for shade selection. According to a survey, almost 52% of doctors require 30 to 60 seconds for shade-matching in restorative treatment.^{1,9}



Fig1.Omnichroa

Smart Chromatic Technology in Omnichroma was debuted by Tokuyama Dental America where the material uses uniformly sized spherical filler particles. Omnichroma fillers alter the light that is transmitted along the red-to-yellow area of the color spectrum, which allows matching the color of the patient's adjacent teeth. It contains UDMA/TEGDMA monomers and 260nm silica and zirconia fillers.



Fig 2. Omnichroma Blocker

Superior polish ability, excellent handling, and ambient light effect resistance are the main characteristics of Omnichroma. Wear and abrasion properties; along with wear of the composite and opposing tooth structure are minimal.

Omnichroma comes in a paste, which is more of an opaque-white before curing, thereby allowing the material to be more visible for clinicians while manipulating and placement. The material is homogeneously blended with the surrounded tooth structure when application of light source during curing is carried out. In order to facilitate marginal borders to disappear, a chamfered margin is preferred.

A single shade is only required to match most posterior and anterior teeth. In case of extensive Class III and Class IV restorations, a blocking agent (Omnichroma Blocker (Fig 2) [Tokuyama Dental America]) is used by placing 0.5mm layer before placement of Omnichroma. This masks the inner part of the crown; especially in presence of any discoloration. The blocker's function is to reduce shade-matching interference.^{1, 10}

Potential Advantages:

- Management of inventory is simplified considerably.
- Unused composite wastage is reduced.
- Being short stocked on shades will never be a potential occurrence.
- There will never be a shortage of a single composite shade.

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Recommendations of using Omnicroma:

- Direct restorations in both anterior and posterior dentitions.
- Direct composite veneering.
- Closure of diastema or any interdental spacing.
- Porcelain and composite repair.¹¹

Conclusion

Over the many decades of improving esthetic restorations, there have been many noteworthy composite restorations that have been introduced into the practice by clinicians globally. However, Omnicroma serves to be one of the most; if not the most exciting developments in the recent years. Moreover, more studies and follow-up of cases in the future needs to be done in order to arrive at the final conclusion whether this material will live up to its promising expectations.

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