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CLINICAL **CASE**

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Clinical case: Flowable Composites: Where They Fit in Your Dental Workflow

Keyword(s): Flowable Composites, Restorative Dentistry, Dental Materials, Resin-based Composites, Dental Restoration Techniques

In restorative dental care, practitioners encounter numerous variables that significantly impact treatment decisions. Factors such as the type of restoration required, the patient's oral health history, and their oral hygiene practices all play a critical role. Additionally, dental professionals must balance the need for durability with aesthetic considerations, adapting to each distinct situation.

Flowable composites have emerged as a top choice for many clinical indications. These innovative materials differentiate themselves from conventional restoratives through their unique properties, enabling dental professionals to effectively tackle challenges like decay or fracture. It is essential to understand how flowable composites are designed to offer alternative approaches to restorative care and to recognize the modern advancements that have improved their application.

The Unique Form of Flowable Composites

Flowable resin-based composites are distinguished by their reduced filler load and the use of less viscous monomers[1]. They can be employed alongside conventional composites, but many contemporary options achieve results comparable to traditional materials. This means that, where applicable, flowable composites can be utilized for the entire restoration without any compromise in quality.

Typically, the filler load in restorative composites ranges from 37% to 53%[1]. It's important to note that the difference in inorganic filler primarily lies in quantity, with an increase in dilutant monomer. The size of the filler particles generally remains consistent across different products. However, it’s essential to point out that not all flowable composites are identical; each product may contain unique inorganic fillers, with variations in type, size, and geometry[2]. These differences impact the clinical properties of the material, offering clinicians the flexibility to choose specific flowable composites based on their treatment goals or personal preferences.

One measurable outcome related to the choice of flowable composites is compressive strength, which refers to the durability of a filling over time. This strength often correlates with the amount of inorganic filler present; however, variations in filler type, size, and geometry can also influence performance.

Avoiding Voids: The Role of Clinical Skill

The success of a dental restoration hinges not only on the materials used but also on the clinician's skill. One potential complication that can arise is the creation of voids — air pockets trapped within the composite material. These voids can occur due to insufficient application techniques, resulting in uneven material distribution or the entrapment of air within the composite itself[3].

While minor voids may not pose significant issues for the patient, they can lead to unsatisfactory visual results in radiographic exams[3]. More serious voids, however, can jeopardize the integrity of the restoration. If they are large enough, voids can cause cracks to form under stress, diminishing the durability and performance of the restoration[4]. Defects at restorative margins can also lead to microleakage and discoloration, both of which are significant concerns that may necessitate more invasive retreatments.

Embracing Modern Advancements

Modern flowable composites have been engineered to optimize application and reduce the incidence of void creation in several ways, particularly through improvements in syringe design. Dental professionals should seek flowable composites that enhance ease of access to restorative sites, minimizing the potential for errors during application. Additionally, innovative syringe designs allow air to escape rather than becoming trapped within the composite.

A prime example of this is the 3M™ Filtek™ Supreme Flowable Restorative from Solventum, previously known as 3M Health Care. This product features an upgraded syringe and a new tip design that effectively eliminates trapped air. The design allows air to escape through venting on the plunger, resulting in virtually no bubbles. The 3M™ Filtek™ Supreme Flowable Restorative excels in adapting to the oral cavity, offering exceptional polish retention and wear resistance, along with natural-looking results that ensure your patients can smile confidently for years to come.

The Importance of Material and Skill

Flowable resin-based composites can be an effective solution for dental professionals; however, success is contingent upon the properties of both the material and the syringe, as well as the clinician's expertise. Investing time in selecting the right approach that optimizes both material and skill is essential for achieving long-lasting restorations.

Composite Research Award: 3M™ Filtek™ Supreme Flowable Restorative (Basiq Dental Article No. 498472)

3M™ Filtek™ Supreme Flowable Restorative delivers strength and aesthetics in an easy-to-use formula in a new ergonomic syringe virtually eliminating bubbles.

Why it won:

- Provides excellent wear resistance for long-term restorations.
- Low shrinkage for minimal stress on tooth structure.
- Smooth flow for precise placement in small or deep cavities.

What evaluators said:

- “Great handling and a fantastic polish – it stays looking good for years.”
- “The flowability is perfect for difficult areas, and it holds up well over time.”

Sources / footnotes:

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