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Original Research Paper

Dentistry

STAMP TECHNIQUE- FOR CLASS I COMPOSITE RESTORATIONS: A CASE SERIES

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KEYWORDS :

INTRODUCTION

The dental industry has witnessed significant, advancements in restorative materials and techniques shifting from traditional amalgam fillings to more aesthetically pleasing and biocompatible alternatives. In modern dentistry, especially in regions like Scandinavia and Japan, amalgam use has declined significantly as patients prefer natural-looking restorations. Nowadays, the focus is on using biomimetic and minimally invasive dentistry to achieve functional and aesthetic results while maintaining healthy tooth structure [1]. Some aesthetically pleasing materials are glass ionomer cement and composite resin. Even though glass-ionomer cement is tooth colored restorative material, it is more translucent compared to natural tooth, which can affect its appearance, especially in a thin layer or at the margin. Because of their improved aesthetics, superior adhesive qualities, and decreased risk of health problems, composite resin restorations are becoming more and more popular [2]. Composite resins offer enhanced visual appeal and preserve tooth integrity by bonding directly to the tooth surface[3]. However, accurately replicating the original tooth morphology and occlusal anatomy still remains a challenge. Direct composite restorations require skilled craftsmanship and can be timeconsuming, prone to inaccuracies, and they may cause patient discomfort. To address these challenges, the stamp technique has emerged as a promising solution. By precisely capturing the preoperative occlusal morphology in an occlusal stamp, this approach enables correct and effective restoration [4,5].

Despite its potential, little research has been done on how various stamp materials and restoration depths affect the accuracy of composite restorations. Discussing the correctness and effectiveness of the stamping approach for direct composite resin restorations for Class I cavities is the goal of this case series [6,7,8].

Case Series

Case 1

A 7y/o boy complained of a decayed tooth in the lower right rear area of his teeth when he came to the Sathyabama Dental College and Hospital's Department of Pedodontics and Preventive Dentistry. Using the stamp approach, which involved applying flowable composite to the occlusal aspect, holding the stamp in position with a microbrush, and light curing, pre-operative occlusal anatomy was documented. Post this caries was excavated, cavity preparation was done, etching, bonding, and final increment of packable composite was placed. Finally, on the final increment, the stamp was placed, which helped in achieving accurate occlusal anatomy, and light curing of same was done.

(Figure:1) Pre-operative photograph

(Figure:2) Stamp index prepared

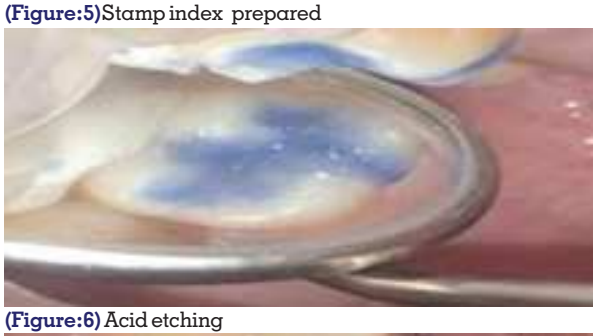
(Figure:3) Post-operative photograph

Case 2

A 6y/o boy complained of a decaying tooth in the upper right rear tooth area when he came to the Sathyabama Dental College and Hospital's Department of Pedodontics and Preventive Dentistry.

(Figure:4) Pre-operative photograph

(Figure:5) Stamp index prepared



(Figure:6) Acid etching

(Figure:7) Post-operative photograph

Case 3

A 6 y/o male patient reported to the Department of Pedodontics and Preventive Dentistry in Sathyabama Dental College and Hospital with a complaint of decayed tooth in his lower left back tooth region.

(Figure:8) Pre-operative photography

(Figure:9) Stamp index prepared

(Figure:10) Post-operative photography

DISCUSSION

The concept of biomimetics originates from Latin roots, with "bios" signifying life and "mimesis" meaning imitation. In order to restore damaged teeth, the field of bio-mimetic dentistry combines art and science to create restorations that replicate the inherent properties of living tissues [10,11,12,13]. Biomimetic restoration is a dental approach that seeks to replicate the natural structure and function of teeth. There are two main types of biomimetic restoration methods for reducing the pressure exerted during chewing. The first is to eliminate the masticatory strain, which involves removing any factors contributing to excessive force on the teeth, such as adjusting the bite or reshaping the tooth structure. The second is to maximize the tissue-material bond, which aims to improve the stability and endurance of the restoration by strengthening the bond between the dental material and the native tooth structure.[14,15]

This method aims to achieve both practical and aesthetic results while preserving healthy tooth structure. Long-lasting outcomes, increased strength of the remaining tooth structure, and less stress on nearby structures are the objectives.[16]

Composite resin is a popular material used for direct restorative procedures due to its aesthetic and bonding properties. It is the perfect option for visible restorations since it may be matched to the teeth's natural color. Additionally, composite resin requires minimal tooth preparation, reducing the risk of damage to the surrounding tooth structure. However, achieving accurate occlusal anatomy remains a

challenge when using composite resin. The occlusal surface of the tooth is complex, with intricate details that are difficult to replicate. Inaccurate occlusal anatomy can lead to functional problems, such as uneven biting surfaces and premature wear.

The stamp technique has emerged as a solution to this challenge. To address polymerization shrinkage, composite restoration must be placed incrementally. This involves placing small increments of composite resin and allowing each increment to polymerize before adding the next.

The stamp is thus used to shape the occlusal anatomy on the final increment.

Using this approach, an occlusal stamp that replicates the tooth's preoperative occlusal morphology is created. The stamp is used to shape the composite resin on the final increment, ensuring accurate occlusal anatomy. It has a number of advantages since it reduces oxygen interference and microbubble generation during polymerization, strengthening the link between the composite resin and the tooth structure. also lessens the final restoration's porosity, increasing its resistance to wear and durability [17].

It is particularly beneficial for Class I cavities, which involve the restoration of the occlusal surface of posterior teeth, as it allows for efficient restoration with minimal time required for finishing. However, it may require modification for Class II restorations involving proximal caries[17].

It can be used in conjunction with various materials, including flowable composite resin, gingival barriers, pit and fissure sealants, and transparent acrylic resin. Every material has advantages and disadvantages, and the patient's particular requirements will determine which material is best for them. In addition to the stamp approach, other methods might be employed to achieve accurate occlusal anatomy. One of these is the application of occlusal matrices, which may be customized to match the teeth of each patient. These techniques, however, may take longer and require more equipment [18].

Overall, the stamp technique offers a straightforward and efficient approach for restoring Occlusal anatomy. By replicating the natural structure and function of teeth, this technique promotes patient compliance and acceptance.

CONCLUSION

In conclusion, the stamp technique has proven to be a valuable and effective method in pediatric dentistry, particularly in the restoration of teeth in young children. By utilizing this technique, clinicians can achieve accurate and efficient restorations, minimizing chair time and enhancing patient comfort. The stamp technique replicates the natural morphology of teeth to promote oral function and esthetics. As pediatric dentistry continues to evolve, the stamp technique provides a reliable and versatile tool, allowing practices to provide high-quality, child-centered care.

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