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Preserving the Uniqueness of the Tooth Using Stamp Technique: A Case Report

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Abstract

An innovative technique for precisely replicating occlusal anatomy is the stamp technique (ST). The novel stamping procedure re-establishes the tooth's natural contact and contour while preserving a precise functional occlusion. This method can be used when there is radiographic evidence of caries but no visible cavitation or occlusal structural damage. Here, a tooth's unobstructed occlusal surface is used to build an occlusal matrix that replicates a precise tooth-like restoration. Additionally, the time needed for finishing and polishing is kept to a minimum. In order to restore class I cavities, the stamping technique is a unique, biomimetic method that mimics the exact architecture of the tooth. Thus, the present case series describes 2 cases of posterior composite restorations and 1 case involving multiple teeth in a single quadrant using this novel technique.

Keywords: Class I restoration**;** Composite resin; Conservative dentistry; Occlusal anatomy; Stamp technique

Introduction

With passing of the amalgam period, more aesthetically pleasing restorations have emerged [1]. Ever since cosmetic dentistry was developed, dental practice has never been the same. Since the second decade of the new century, there has been a tremendous progress in dentistry, greatly improving the quality of care provided to the population [2]. Nowadays, posterior composite resin restorations are the norm in modern dentistry, which is transitioning to Biomimetic dentistry [1].Despite the fact that dentists are using composite restorations and handiwork more frequently, a stunning

direct composite needs skill and precision to achieve harmonious occlusal and cusp-fossa relationship with opposing teeth [1,3]. Moreover, it consumes more time for finishing and polishing [3]. To overcome this, an alternative placement technique of composite restoration was introduced named as "Stamp Technique" combining both the function and aesthetics [1,3].

This innovative stamping technique begins by making an index with flowable composite, which is comparable to a miniature imprint of the occlusal topography. This technique can be used when there is radiographic evidence of caries but no visible or tooth structural occlusal damage [1]. The index is placed against the composite before resulting in a successful mimic that replicates the original anatomy of the tooth structure by virtue of copying the original unprepared tooth structure [3,4]. It allows accurate reproduction of original occlusal anatomy, minimal finishing, polishing, and voids with optimal polymerization due to exclusion of air during stamp pressing. In the present study, composite restoration employing the stamp technique was carried out in permanent molar, premolar and three consecutive teeth in a single quadrant [5].

Case Report

Case 1:

A 28-year-old male patient reported to the Department of Conservative Dentistry and Endodontics and complained of black stains on his lower right back tooth region. There was no relevant medical history to be found. An intraoral examination revealed good oral hygiene with pit and fissure caries on mandibular right first molar (tooth #46) (Figure 1A). Consequently, it was decided to employ composite resin and a stamp method to rebuild the decayed area.

The tooth was isolated with a rubber dam (GDC Dental dam kit, India). A stamp was created by applying flowable composite (Brilliant Flow Coltene) on the tooth's intact occlusal surface (Figure 1B). To make the stamp, a microbrush tip was cut to function as a handle and dipped in the flowable composite, followed by light-curing (Figure 1C). Cavity preparation was done followed by etching (Figure 1D and 1E) for 30 seconds using 37% orthophosphoric acid (Prime dental, India), then rinsed and air-dried with a 3-way syringe. The bonding agent (3m ESPE Single Bond Universal, USA) was applied and light-cured for 20 seconds (Figure1F). The cavity was gradually restored with composite (Spectrum Dentsply Sirona, USA) up to 1mm below the occlusal surface, with light-curing for 20 seconds. Before curing, the last layer of composite was applied, and a piece of Teflon tape was fixed to the occlusal surface (Figure 1G). After that, the micro-brush occlusal stamp was placed over the tape and gradually pressed with light pressure (Figure 1H). The extra material was removed, and composite was polymerized (Figure 1I). Minimal finishing and polishing were done using a polishing paper disk (Shofu-snap Mini snap kit, Kyoto,Japan) (Figure 1J).

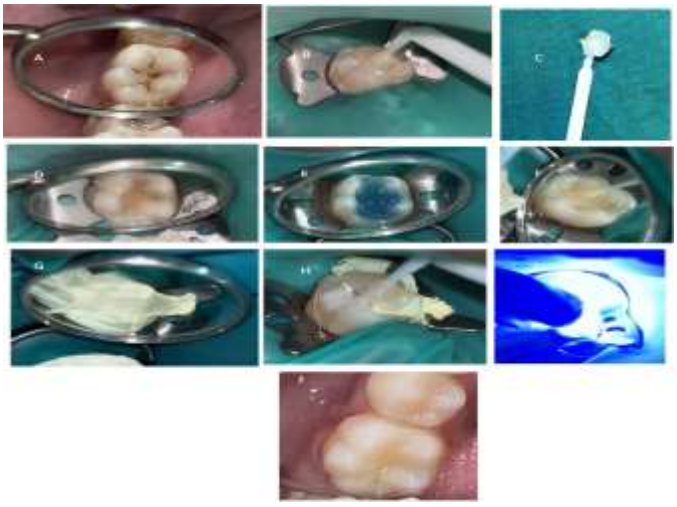

Figure 1.(A) Pre-operative photograph; (B) Fabrication of occlusal stamp; (C) Obtained occlusal stamp; (D)

Caries excavation and cavity preparation; (E) Etching with 37% orthophosphoric acid;

(F) Application of bonding agent; (G) Teflon application over composite; (H) Placement of stamp;

(I) Light curing for 20 seconds; (J) Post-operative photograph

Case 2:

A 23-year-old female patient came with a complaint of blackening of the upper left back tooth region. Clinical examination showed Class 1 carious lesion with intact occlusal anatomy on maxillary left first premolar (tooth #24) (**Figure 2A**). Before starting the procedure, the tooth was isolated using rubber dam and the stamp was made with flowable composite as described in case 1(**Figure 2B**). Cavity preparation was carried out using BR45 round bur and remaining tooth structure was removed with spoon excavator. The cavity was rinsed and etched with 37 % phosphoric agent followed by application of bonding agent. The cavity was filled with composite and teflon tape was applied on the top followed by stamp placement with finger pressure for 20 s.

The excess composite was removed and cured for 20 s. The rubber dam was removed and the occlusal contacts were checked. Minimum finishing and polishing was done (Figure 2C).

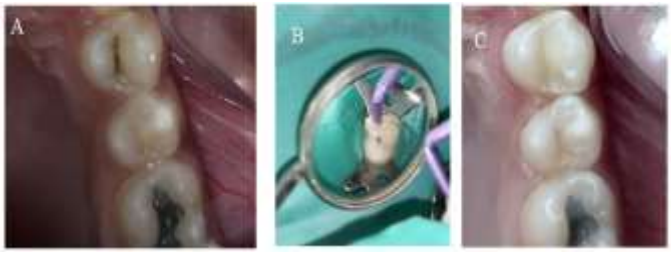

Figure 2: (A) Pre-operative photograph; (B) Fabrication of occlusal stamp; (C) Post-operative photograph

Case 3:

A 29 year female patient reported to the clinic complaining of mild sensitivity to cold in lower right back tooth region. An oral examination revealed Class I caries involving multiple teeth (tooth #46, 47 and 48) (Figure 3 A).

After thorough examination and deliberation, it was decided to restore 46, 47 and 48 using the stamp technique. Flowable composite was used to fabricate stamps for all the three teeth separately and were marked according to the tooth number (Figure 3 B).

After caries excavation, teeth were etched with phosphoric acid (Figure 3 C), then rinsed and dried. Restoration was carried out as described in both the previous cases starting with the most posterior tooth (tooth #48) (Figure 3 D) followed by tooth # 47 and then 46 using the individual stamps which were prepared .

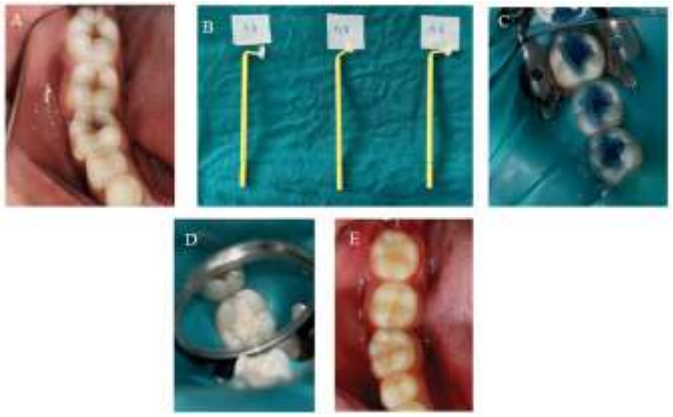

Figure 3.(A) Pre-operative photograph; (B) Occlusal stamps; (C) Etching with 37% orthophosphoric acid; (D) Restoring cavity with composite; (E) Post-operative photograph

Discussion

Restoring normal shape and function and improving patient comfort during dental treatment are the two main goals of any restoration. By preserving a harmonious cusp-fossa relationship with the antagonist and nearby teeth, the stamp approach helps to achieve the stated goal [1].Restorative dentists face difficulties in reconstructing the posterior teeth's occlusal architecture in an optimum manner. In teeth with nearly intact occlusal anatomy, the microbrush stamp technique is a

simple and effective way to recreate accurate occlusal topography. It also minimizes the need for post-restoration adjustments and resin composite porosity by allowing the form, function, and aesthetics of the dental structure to be restored [2].The stamp's pressure on the composite resin reduces the generation of micro bubbles and oxygen interference during the final layer's curing process. These are seen to be components of long-term success [3].With this technique, the occlusal anatomy is shaped by employing the stamp with the last increment after taking care to insert the composite gradually at the cavity. In order to avoid placing the stamp incorrectly, the clinician should be vigilant during the procedure [2].One relative drawback is that proper execution of this procedure necessitates skill and clinical judgment, which can be easily overcome with practice [6].The indirect procedure speeds up the restoration of several teeth in a quadrant as it eliminates the need of contouring and the reduction of high spots. Hence, it is beneficial for people who are unable to open their mouth for extended periods of time.

Conclusion

Every restoration technique, including traditional and stamp techniques, has advantages and disadvantages. The advantage of the stamp method is that it can produce a tooth with an exact anatomical shape. Furthermore, occlusal topography is significantly more accurate and precise than the manual method. If used correctly, the stamp approach for direct composite restorations is a practical, advantageous, and biomimetic process.

References

1. Agrawal P, Nikhade P. Stamp Approach for Posterior Composite Restorations: A Case Report. Cureus 2022; 14(7):e26584.
2. Jaiswal A, Anuja Ikhar, Dr.Pradnya Nikhade, Manoj Chandak, Dr.Kajol Relan, Rathi DrSaurabh. Replica Of Anatomy Of Posterior Teeth Using Stamp Technique- A Case Report European Journal of Molecular & Clinical Medicine 2020;7(7):1661–5.
3. Tambake DrNJ, Tambake DrS, Gandhi DrN, Jadhav DrY, Madhu DrK, Burad DrP. Stamp technique -New perspective of Aesthetic Dentistry : A Case Report IOSR Journal of Dental and Medical Sciences. 2017 ;16(06):49–51.
4. Ambily Jayadevan, Geena Mary G. Microbrush stamp technique to achieve occlusal topography for composite resin restorations - A Technical Report. Journal of scientific dentistry 2016;6(2):76–82.
5. Karunakar P, Ranga Reddy MS, Kumar BS, Namratha R. Direct and indirect stamp techniques for composite restorations - Sealing the uniqueness of a tooth: A case series. J Conserv Dent. 2022;25(3):327-331.
6. Murashkin A. Direct posterior composite restorations using stamp technique-conventional and modified: A case series. International Journal of Dentistry Research 2017;2(1):3–7.