

Why Build It When You Can Stamp It: Direct Posterior Composite Restoration: A Case Series

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Abstract

Composite resin restoration of posterior teeth through the incremental technique is generally time-consuming procedure with risk of contamination in between layers. “Stamp technique” for posterior composite restoration placements is a relatively new and novel method for duplicating occlusal anatomy with near perfection. This technique is indicated when the preoperative anatomy of the tooth is intact and not lost due to the carious lesion. Although convenient, it has found acceptance in only a small percentage of practitioners. The purpose of this article is to demonstrate and discuss the application of this technique using different materials, emphasizing the fact that it is reliable and predictable and when performed correctly, helps the practitioner to a great extent.

Keywords: composite, impression compound, stamp technique, putty, occlusion.

Introduction

Esthetic demands are increasing not only for the anterior teeth but also in the posterior segment of the oral cavity. But manually crafting an esthetic direct posterior composite restoration is a technique that requires experience and skill. “Stamp technique” is one of the newer evolved technique for placing composite with accurate occlusal topography.

This new technique consists of fabricating an occlusal index which records the occlusal anatomy of posterior teeth before cavity preparation^[1-4]. Thus, obtained index is then pressed against the final composite increment before curing to achieve a positive replica of the pre-operative anatomy.

Therefore, this technique is indicated when the preoperative anatomy of the tooth is intact and not lost due to carious lesion. In addition, this technique minimizes the operative time by eliminating post-restoration occlusal adjustments^[5-6].

This article discusses application of stamp technique using 3 different materials namely putty, impression compound and flowable composite.

Case reports

Case 1: A 20-year-old female reported with the chief complaint of blackish discoloration of her lower left back teeth region. Clinical examination revealed presence of occlusal caries on 36. Taking in account that the occlusal surface of the tooth involved had no change in its morphology, we opted for occlusal stamp technique for resin composite restoration. After oral prophylaxis and rubber dam isolation, the stamp was made with impression compound to copy the tooth occlusal details to be restored. A small amount of impression compound was softened by placing it in a hot water bath and then was pressed on the tooth of interest to record its occlusal anatomy (figure 2). Once the stamp was completely set, it was removed and the corresponding edge on the buccal surface of the tooth was marked for orientation at the time of the stamp repositioning. Following this, the cavity preparation was done. Then the last increment of composite was cured after the occlusal stamp was placed back on the teeth to replicate the previous anatomy. The occlusion was checked using a 20micron thickness articulating paper (figure 5)



Figure1: Pre-operative view



Figure 2: Stamp made from impression compound



Figure 3: Cavity preparation

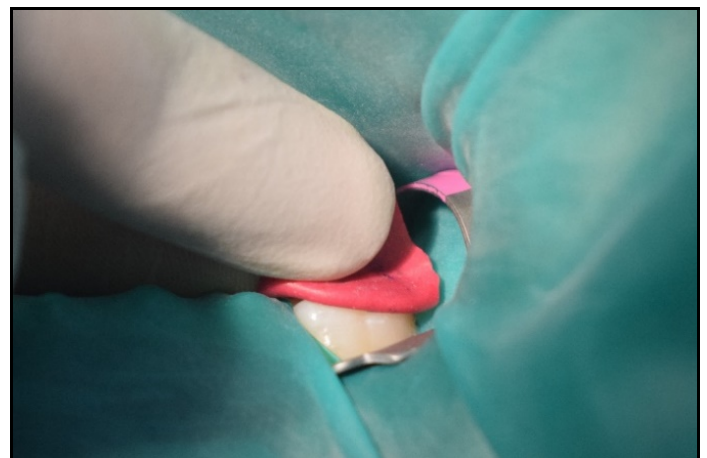


Figure 4: Composite is filled into the cavity & application of stamp under gentle pressure.



Figure 5: Final restoration & Occlusion check

Case 2: A 23-year-old male patient reported with the chief complaint of decay in his lower left back teeth region. Oral examination revealed occlusal caries on 37. After oral prophylaxis and rubber dam isolation, the stamp was made with putty, equal amount of base and catalyst was taken and was kneaded till uniform colour was obtained and then was pressed on the tooth of interest and was held in position till the material set (figure 7). The stamp after its completely set was removed and the corresponding edge on the buccal surface of the tooth was marked for orientation at the time of the stamp repositioning (figure 8). Following this, the cavity preparation was done. Then the last increment of composite was cured after the occlusal stamp was placed back on the teeth to replicate the previous anatomy. Final restoration was checked using a 20micron thickness articulating paper (figure 11, 12)



Figure 7: Stamp made from putty

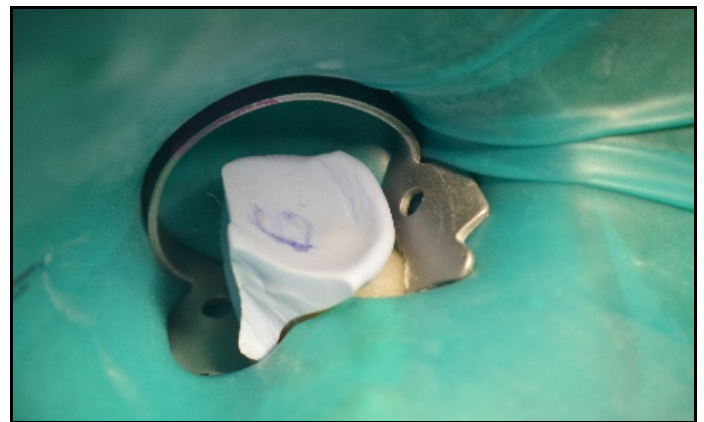


Figure 8: The buccal surface was marked for orientation



Figure 9: Cavity preparation



Figure 6: Intraoral View



Figure 10: Composite is filled into the cavity & Application Of stamp under gentle pressure



Figure 11: Final restoration



Figure 12: Occlusion check

Case 3: A 21-year-old male reported with the chief complaint of decayed teeth in his lower right back teeth region. Clinical examination showed the presence of occlusal caries on 47. After oral prophylaxis and rubber dam isolation, a small amount of flowable composite material was placed on the occlusal surface of the affected tooth. An applicator brush tip was then immersed into this, so that it acts as handle for the composite stamp and the composite was then cured (figure 14). Following this, the cavity preparation was done. Then the last increment of composite was cured after the occlusal stamp was placed back on the teeth to replicate the previous anatomy. Final restoration was checked using a 20-micron thickness articulating paper (figure 18, 19)



Figure 13: Intraoral View



Figure 14: Stamp made from Flowable composite



Figure 15: Cavity preparation



Figure 18: Final restoration



Figure 16: Glass ionomer cement was used as liner



Figure 17: Composite is filled into the cavity & Application Of stamp under gentle pressure



Figure 19: Occlusion check

Discussion

The prevalence of dental caries has decreased in the last decades [7]. Effective use of fluorides may be considered to be a major contributing factor towards this. Especially regarding the carious lesions on smooth surfaces [8]. On the other hand, the massive introduction of different fluoridated agents seems to have masked i.e. undermined areas of dentin decay in absence of frank cavitation. This phenomenon has been identified as the ‘fluoride bombs’ and indicates the direct relationship of fluoride utilization with the increasing resistance of the enamel surface [9]. Such lesions are occult in a sense that they possess an intact occlusal surface but with undermining decay that

can be seen as an area of bluish/black discoloration under the enamel surface.

Like every other technique this one has its own advantages and disadvantages. The most highlighted advantage is, the reduced overall time, once skill is mastered as the post-restoration finishing time is decreased due to almost instantly desired good cusp-fossa relationship. This is a boon for the busy practitioners and helps improve their reputation amongst patients ^[1]. Furthermore, the degree of porosities present in the final restoration is considerably reduced. This is due to the fact that the stamp matrix exerts pressure on the composite, thereby decreasing formation of microbubbles as well as interference of oxygen with polymerization of the final layer of composite ^[10]. These factors have been shown to be major determinants for long-term success of composite restorations ^[11].

A relative disadvantage is that this technique requires skill and clinical acumen in order to be correctly performed. Furthermore, time utilized for mastering and initially practicing this technique is considerable. But this can be easily overcome with practice. Also, it is imperative to mention that the correct and precise placement of the occlusal stamp is a pre-requisite to achieving the objective of obtaining accurate cusp-fossa relationship. Without this, distortions result consequently, thus nullifying the prime objective of the technique. Post-restoration finishing time is decreased due to almost instantly desired good cusp-fossa relationship.

All the three materials used in the study showed satisfactory results. Flowable composite showed excellent reproduction of details when compared to putty and impression compound. Impression compound and putty were less technique sensitive when compared to flowable composite. Impression compound is more cost effective when compared to putty and flowable composite.

Conclusion

The occlusal stamp technique is effective for direct composite resin restoration in posterior tooth with occult caries and extensive dentin involvement. In addition, this technique reduces the operative time by eliminating post-restoration occlusal adjustments.

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