CASE REPORT
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Replicating Occlusal Topography Via Stamp Technique

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Abstract

While performing posterior restorations, it is critical to reestablish proper occlusion because even small occlusal discrepancies can cause discomfort. Stamp technique is the most precise and simple method for restoring occlusal anatomy of carious tooth with occult caries. It inherits the accurate anatomy of occlusion in carious tooth. Compared with conventional composite restoration, stamp technique provides higher results in less time by simply transferring the occlusal anatomy of an unprepared tooth to the restoration via a stamp. The objective of this paper is to present two successful cases restored with stamp technique.

Keywords: Composite resin, occlusal topography, stamp technique

INTRODUCTION

The primary objectives of a restoration are to rehabilitate the form, function, and occlusion of the individual damaged tooth.[1] Manually crafting an occlusal aesthetic direct composite restoration requires understanding and expertise. Being better informed, today's patients require aesthetic restorations as natural as possible.[2] One of the advanced procedures for achieving a combination of the aesthetics and function is the "Stamp technique."[3] This procedure involves fabrication of occlusal index before the start of cavity preparation. This creates the negative replica. The procured index is later compressed against the last composite layer and subsequently cured, thereby creating an exact anatomical form of missing tooth structure.[3]

CASE PRESENTATIONS

Case 1

A 12-year-old female patient reported with a chief complaint of presence of dark pigments on pits and shading on the surface of the mandibular left first molar, without evidence of cavitation. Clinical examination showed moderate caries in the mandibular left first molar. Because only occlusal surface of the tooth was involved, we opted for stamp technique for composite resin restoration in mandibular left first permanent molar.

Isolation was obtained by application of rubber dam, and petroleum jelly was applied as barrier onto the surface of tooth. Composite resin was used to fabricate stamp on occlusal surface of tooth. Composite was flowed onto the occlusal surface of the tooth, and the microbrush used was immersed in the composite (Figure 1),

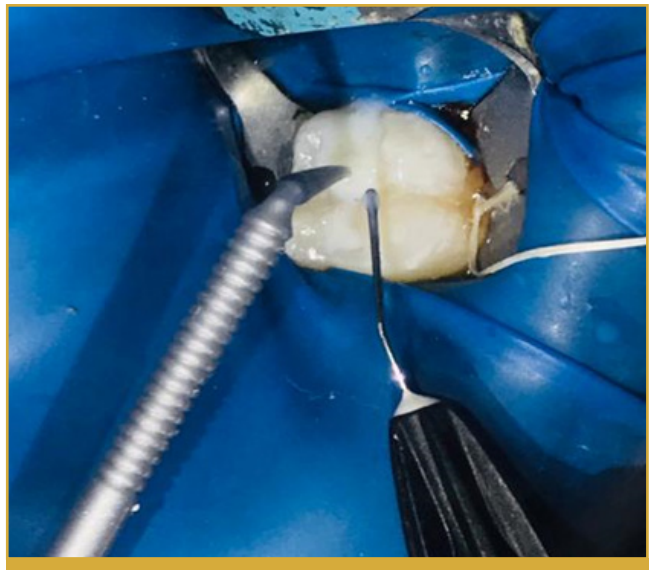

Figure 1. Prepared stamp over the tooth

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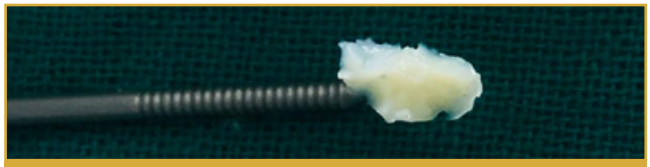

Figure 2. Prepared stamp made of flowable composite resin

Figure 3. Stamp placement over last layer of composite resin

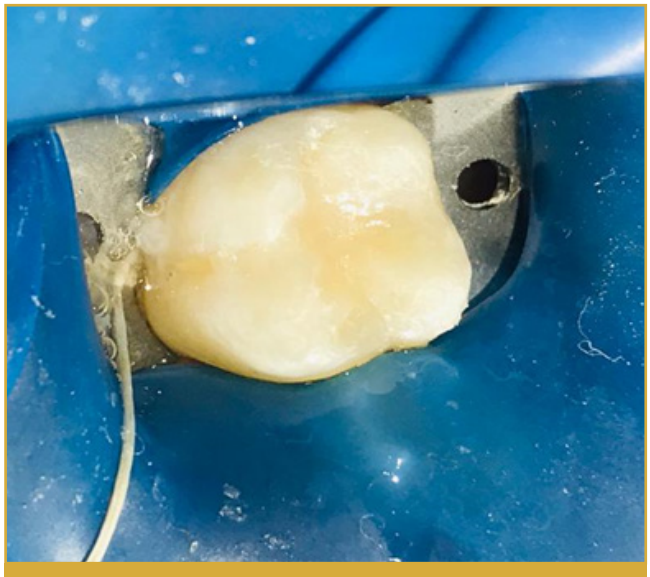

Figure 4. Final restoration

and polymerization was done with light curing technique for stamp preparation. After polymerization, a stamp was obtained, with occlusal topography recorded on to the composite (Figure 2). The carious lesion was cleared off to prepare class one cavity. Etching was done for 40 seconds

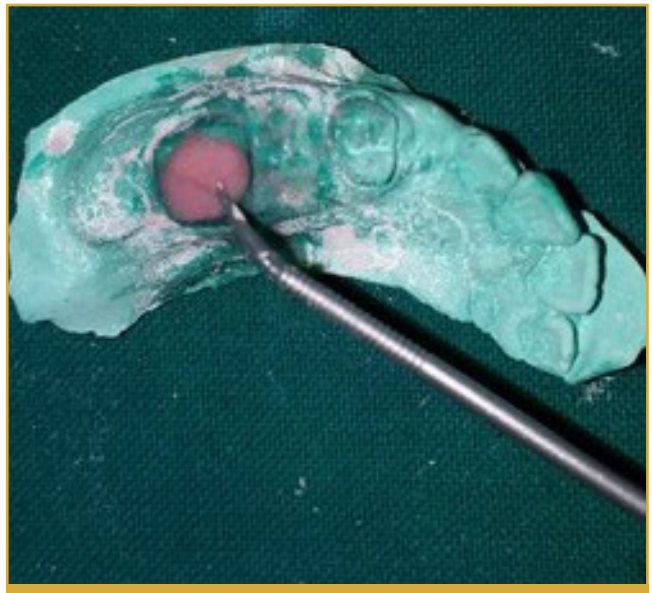

Figure 5. Prepared stamp over the cast

Figure 6. Prepared stamp made of acrylic resin

and was washed and air-dried with three-way syringe. After that, application of bonding agent was done, and it was light cured for 20 seconds. Additional technique for composite filling was followed up to 1 mm lower to that of occlusal level, and it was cured for 20 seconds. After laying the final coat of composite, the stamp was placed on the occlusal surface and pressed against it (Figure 3). The excess material was removed with Teflon-coated restorative instruments followed by final curing, finishing, and polishing (Figure 4).

Case 2

A female patient aged 9 years reported to the department for restoration of upper right back tooth. A rather indirect tech-

Figure 7. Stamp placement over last layer of composite resin

Figure 8. Final restoration

nique was improvised. Here, segmental alginate impression of the indicated side of the arch was obtained, and cast was poured in dental stone, after which an index using microbrush and self-cure acrylic was prepared on the cast model (Figure 5), and this acrylic occlusal stamp (Figure 6) was consequently utilized to simulate exact occlusal topography of direct restoration on the affected tooth by placing it against the last layer of composite restoration before polymerization (Figure 7). After polymerization finishing and polishing, an exact topography was obtained (Figure 8).

In both the above cases, occlusion was checked for any high points, and finishing and polishing of the restoration were done.

DISCUSSION

Restoring the original form and function is the main aim of any restoration. These cases describe posterior composite restoration that restores its original form and balanced cusp–fossa relation to the teeth in opposing arch or adjacent to it. This avant-garde stamp technique is used to reinstate the original contour of the tooth with intact structure and presence of initial proximal or occlusal caries.[4]

Stamp technique reduces the need for minimal postrestoration adjustments. The pressure applied when reproducing composite resin using stamp diminishes the microbubble formation and the oxygen effect in the polymerization period of the last layer, thus reducing the extend of porosity and elevating the strength of the composite. In addition, polished surface can be achieved in little time.[5]

The limitations of this technique are that it requires dexterity and clinical awareness to be perfectly executed,[5] which can be easily acquired with practice. Other limitations include fracture of stamp and additional expense of flowable composite material in the preparation of the stamp.[6] To overcome these constraints, expired flowable composite resin or clear acrylic resin can be used for stamp fabrication.[5] Acrylic resin was used to make stamp in the second case, thereby reducing the cost and intraoral chair side time. Nevertheless, the scope of stamp technique can be unfolded with future research and refinement of this technique.[7]

The precision of occlusal topography put forward by stamp technique is more substantial than hand-operated designing of the restoration. It is a handy, feasible, time saving, and a bio-mimicking method. Nevertheless, long-term observation is essential to mandate the feasibility.

Informed Consent: Written informed consent was obtained from patients who participated in this study.

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