Case Report

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Biomimetic Restoration Using Microbrush Stamp Technique for Direct Posterior Composite Restorations: A Case Report

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ABSTRACT

Background: The restoration of composite resin on posterior teeth using the incremental technique is, in general, a time-consuming process with the risk of contamination between layers. In many cases, it is best to restore the teeth to their original occlusal morphology, without the need to polish and finish them. It is a challenge to achieve precise anatomy as the natural tooth with direct restorations as compared with indirect restorations. The replication of the exact anatomy of the tooth requires dexterity, but it is quite technical and time-consuming to restore the tooth via a direct technique. Even minor differences in occlusion, if not taken into account, lead to alterations in the entire stomatognathic system. In order to maintain the occlusal integrity, a micro brush stamp procedure has been developed and has become the standard in modern dentistry for patients seeking esthetic restoration for the posterior teeth.

Keywords: Biometric, restoration, micro brush.

INTRODUCTION

The restoration aims primarily at restoring the form, function and occlusal topography of a single tooth mutilated by the disease.[1] The numerous matrices are available in the market which allows making proper contact and contour of proximal surfaces but does not result in precise occlusal topography.[2] Occlusal carving is left to the freehand with expertise and the flexibility that can contribute to over/under reclaimed surfaces.[3] The process of micro brush stamp technique is one of the new developments in restorative dentistry for posterior teeth utilizing composite material for precise occlusal topography.[4]

The stamp is like an index, which is the mini impression made by putty, flowable composite or liquid dam before tooth preparation. [3, 4] This matrix is then pressed against the final composite increment before curing takes place.5 The procedure of stamping includes reproducing the initial morphology of the tooth structure by emulating the original unprepared tooth structure.[6] This is advised that the exact indication of this procedure be restricted to pits, cavities, fissures and cracks where the tooth has preserved anatomical features.[7] The method is used where the occlusal surface is almost unaltered before the restorative operation.8 In instances with mild to moderate carious lesions, the decayed layer is covered by wax, and the occlusal surface is engraved on the wax.

This article discusses the application of stamp technique using six different cases where

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conventional, as well as modified methods, have been used.

Fig 1: Pre – operative photograph, Class I superficial cavitated caries.

Fig 2: Rubber dam isolation.

Fig 3: The tip of the microbrush is cut for better handling characteristics.

Fig 4: Liquid dam placed on the tooth and Microbrush is pressed beforecuring.

Fig 5: Prepared cavity.

Fig 6: Selective enamel etching with37% ortho phosphoric acid.

Fig 7: Etched enamel and moist dentin.

Fig 8: Application of 7th generation bonding agent.

Fig 9: Incremental layering of composite 1mm short of occlusal level.

Fig 10: Placing final layer of composite.

Fig 11: Teflon tape placed covering occlusal Surface of tooth.

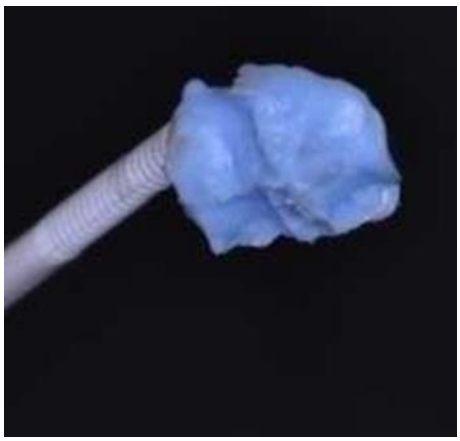

Fig 12: Occlusal stamp of first molar.

Fig 13: Stamp of second molar.

Fig 14: After stamping.

Fig 15: Application of stain to mimic natural tooth.

Fig 15: Polishing of restoration.

Fig 16: Occlusion is checked.

Fig 17: Final restoration.

CASE REPORT

The cavitated tooth to be restored was isolated under a rubber dam. In the given cases, no separating medium has been used on tooth surface before fabrication of stamp.

However, if the tooth presents with very deep pits and fissures, separating media is recommended. In

such cases, the separating media fills the pits and fissures and does not allow the subsequent flowable composite to flux inside. This leads to a more continuous surface of the final restoration. The tip of a micro brush was trimmed with the scissors for ease of handling. The flowable composite material was applied to the occlusal surface, and the micro brush was placed over it with gentle digital pressure. It was light-cured, and thus occlusal stamp was fabricated. Caries was excavated, and cavity preparation was done using Airotor handpiece using tungsten carbide bur. Selective enamel etching was done with 37% phosphoric acid [Tetric N Etch Ivoclar Vivadent] and rinsed with water using disposable needle and syringe. The cavity was dried with chip blower to obtain frosty white appearance in enamel, while the dentin was blot dried. Bonding agent [Tetric N Bond, Ivoclar Vivadent] was applied with an applicator tip and cured for 20 seconds followed by the incremental addition of packable resin composite resin [B2 shade Tetric N Ceram, Ivoclar vivadent]. The restoration was light-cured using LED [Bluephase] for 20 seconds.

After final increment was added, a Teflon tape was applied onto the surface. The fabricated micro brush stamp was pressed over the Teflon sheet. The resin composite was then cured. The artificial stain is applied to give the tooth a natural appearance. Polishing was carried out using soflex spirals and buffs.

DISCUSSION

Often the posterior teeth have cavities with the preserved enamel surface, but dentin has been undermined. These lesions may be identified as bluish/black discolouration under the enamel surface.[9] Such cases are ideal for 'stamp technique' restoration. Stamp technique has various advantages. Firstly, it helps in reducing the overall time required for the restoration as instantly desired cusp –fossa relationship is attained.[4,10] This is suitable in a busy practice scenario as it ensures predictability with accuracy. Secondly, the degree of voids in the final restoration is reduced. It helps in excluding oxygen from the top layer of composite and thus prevents its polymerization inhibiting effect. This ensures long term success of the restoration.[11] The potential limitation of this technique is a limited number of cases to which it can be applied. However, with modifications in the technique and further research, its scope can be expanded.[12]

CONCLUSION

The technique of the occlusal stamp is successful for direct restoration of posterior teeth with secret cavities and considerable dentin involvement. Therefore, this approach minimizes operating time by avoiding occlusal modifications upon reconstruction.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

REFERENCES

1. Hamilton JC, Krestik KE, Dennison JB. Evaluation of custom occlusal matrix technique for posterior light-cured composites. Oper Dent. 1998;23:303–7.

2. Abdelrahman Tawfik, Style Italiano; Direct Posteriors - Community Stamp Technique,

3. Varsha R K, Microbrush Stamp Technique – Case report, General Practice Feature, 98 September 2015 // dentaltown.com, 98-9.

4. Geena MG, Kevin RG. Building Proximal Contacts and Contours in Resin Composite Restorations: A Technical Report. Journal of Scientific Dentistry 2014;4(1):62-9.

5. Dawson EP. Evaluation, Diagnosis and treatment of Occlusal problems, 2nd Ed., C.V. Mosby Co.(Toronto): 1989.

8. Volschan BCG, Soares LMB. Cárie oculta: diagnóstico e tratamento. J BrasOdontopediatria OdontolBebe. 2000; 3(15): 399-403.

9. Silva SREP, Imparato JC. Técnica da matriz oclusal: umaalternativa para o restabelecimento das estruturas anatômicas. Bras.Clin. Estet Odontol. 2000; 4(24):49-52.

10. Pontes MCC, Tollara M, Salim D, Imparato JC. Técnica alternativa pararestauração de dentes decíduos posteriores através de matriz oclusal. J. Bras. Clín. Estética Odontol. 1999; 3(17): 28-32

11. José Guilherme Férrer Pompeu 1, Rhoana Coelho Morais 2, Occlusal Stamp Technique For Direct Resin Composite Restoration: A Clinical Case Report. International Journal of Recent Scientific Research Vol. 7, Issue, 7, pp. 12427 12430, July, 2016

12. Leibenberg WH. "Occlusal index-assisted restitution of aesthetic and functional anatomy in direct tooth-colored restorations". Quintessence International 27 (1996): 81-88.