ISSN: 0976-3031

Available Online at http://www.recentscientific.com

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research
Vol. 10, Issue, 06(B), pp. 32783-32785, Jun, 2019

International Journal of Recent Scientific Research

DOI: 10.24327/IJRSR

Research Article

OCCLUSAL TOPOGRAPHY OF DIRECT COMPOSITE RESTORATION: A CASE REPORT

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DOI: http://dx.doi.org/10.24327/ijrsr.2019.1006.3543

ARTICLE INFO

Article History:
Received 12th March, 2019
Received in revised form 23rd April, 2019
Accepted 7th May, 2019
Published online 28th Jun, 2019

Key Words:
Stamp technique, Composite restoration, occlusion

ABSTRACT

Background:"Stamp technique" is a new technique for restoring class I and class II restorations with accurate occlusal topography. It was introduced mainly to restore Class I cavities and erosively damaged teeth. This technique is possible in teeth where preoperative anatomy of the tooth is intact and not destructed by carious lesion. A precise tooth‑like restoration with an accurate functional occlusion is obtained when the stamp technique is performed.
Aim: To introduce a new "Stamp" technique for placing a composite restorations in class I cavity.
Materials and Methods: The traditional materials and tools used for direct composite restorations are needed with no additional instruments. Clinical illustrations and step‑by‑step description are provided in this paper
Results and Conclusion: It was observed that the stamp technique, when performed correctly, is a reliable and predictable method for the reconstruction of the occlusal anatomy.

INTRODUCTION

In recent years, the use of composite resin for restoring posterior teeth has increased dramatically.[1]Posterior composite resin restoration has become a norm among modern dentist, resulting in very few amalgam used in current practicewhich is progressing towards an era of Bio-mimetic dentistry. [2] Bio-mimetic literally translates to mimicking nature. This is mainly due to patients seeking esthetic restoration even for their posterior teeth.[3]

Although composite restorations have become popular among dentists, crafting an esthetic direct composite restoration manually requires experience and excellent operator's dexterity. Direct restorations may be technique sensitive and not necessarily result in precise reproduction of tooth form and occlusion. Also the time needed for finishing and polishing of the restoration is double compared with the amalgam restoration.[4]

With the aim to achieve an amalgamation of function and esthetic, a newer technique that is Stamp technique was introduced by Dr. Waseem Riaz.[5]

The new "stamp" technique consists of fabricating an occlusal matrix to impress the occlusal anatomy of posterior teeth before cavity preparation takes place. This matrix is then pressed against the final composite increment before curing takes place. This technique is suitable in cases where the caries is evident during the clinical examination or routine radiographic examination of teeth with intact marginal ridges and ideal occlusal anatomy.The advantages of using an occlusal matrix are the reproduction of the originalocclusal anatomy and occlusion, minimal requirement of finishing and polishing, minimal voids at the occlusal anatomy, and reproduction of optimally polymerized occlusal surface due to the exclusion of air during curing.[8]

The only scenario in which stamp technique is therefore practicable is when the tooth being operated upon has intact anatomical features. This implies that occult caries with clinically unnoticeable cavitation can be restored by the stamp technique.

The objective of this article was to propose a new simplified restorative technique for moderate-to-large Class I occlusal cavities that would utilize stamp brush technique.

Case Presentation

A 21 year old male patient reported to the department of Conservative Dentistry & Endodontics with a complaint of black stains on his lower right back tooth region. Clinically occlusal caries was detected without gross destruction of 47 after thorough examination (fig 1). The extent of caries was determined by intraoral periapical radiograph. There was no involvement of marginal ridge. The tooth was isolated followed by application of separating medium (Zartex, Zarir&Zaida

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Industries, Malaysia) on the tooth surface using a brush. A stamp was made with application of flowable composite (IvoclarTetric N-Flow) on the intact occlusal surface of tooth (fig 2). A tip of microbrush was cut which acted as handle and immersed into composite followed by polymerization through light curing for making the stamp.(fig 3). Carious lesion was removed completely and a class I cavity was prepared (fig 4). Glass ionomer (GC Fuji Lining LC, GC America Inc.) was used as a cavity lining (fig 5). Etching was done using 37% orthophosphoric acid (Tetric N Etch Ivoclarvivadent) for 30 seconds followed by rinsing and air dried using 3-way syringe. Later bonding agent (Tetric N Bond, Ivoclarvivadent) was applied and light cured for 20 seconds (fig 6). Incremental restoration of composite (Tetric N ceram, Ivoclarvivadent) was done in the cavity upto 1mm lower the occlusal surface and light curing for 20 seconds. The last layer of composite was added and before curing, a piece of Teflon tape was laid on the occlusal and buccal surface. Then the microbrush occlusal stamp was sealed in place over the tape (fig 7) and later it was removed. The excess material was removed and polymerization of composite was done (fig 8). Minimal finishing and polishing was done using Soflex Spiral Wheeel (3M-ESPE)

Fig1

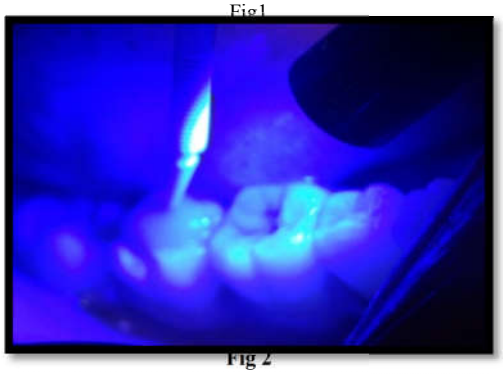

Fig 2

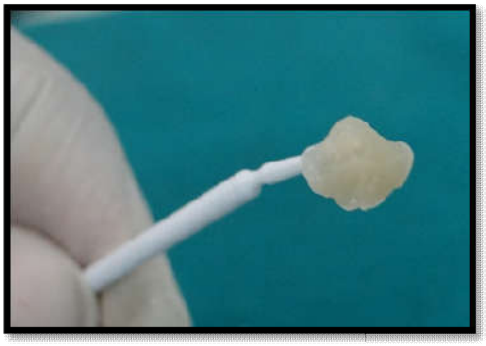

Fig 3

Fig 4

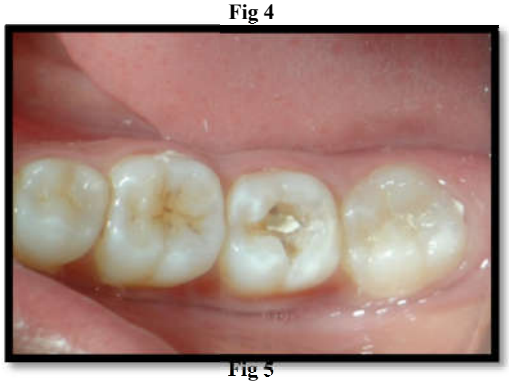

Fig 5

Fig 6

Fig 7

Fig 8

DISCUSSION

The restoration of actual topography of tooth surfaces will definitely promote patient's compliance and acceptance toward dental treatment. This case describes a simple technique to obtain a good surface finish and actual anatomy of the direct posterior composite with minimal time required using the stamp technique with flowablecomposite.

This technique allows to reestablish the form, function and aesthetic dental structure, reducing the need for occlusal post-restoration adjustments and the porosity of the resin composite. The pressure exerted by the stamp on the composite resin decreases the formation of micro bubbles as well as interference of oxygen in the curing of the last layer. These are considered long-term success factors .[10]

Dental restorations that involve the use of glass ionomer cements associated with composite resins (sandwich technique), even showing some disadvantages, still represent the best alternative to minimize the microleakage in cavities with inexistent enamel on the cervical edge or when itis of inferior quality, representing a benefit for the restoration in a medium and long-term perspective.[11,12]

Like each and every technique this one has its own share of pros and cons which will be discussed and dealt here.

The most highlighted advantage is, perhaps, 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.[13]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[14]. Another advantage is Occlusion is unaltered before and after the restoration and give Aesthetic results.

Disadvantage of this technique requires skill and clinical acumen in order to be correctly performed.[14]Furthermore, it cannot be used in all cases.Pre-restoration evaluation must be done to ensure occlusion is normal and lastly, grossly carious teeth cannot be restored withthis technique.

CONCLUSION

Stamp technique for direct composite restorations is a convenient, favorable and biomimetic procedure given the operator is skillful. The accuracy of topography replication is far greater than the plain manual method and can be adapted to unconventional cavities as well.

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How to cite this article:

Anubhuti and Priyanka Kumari., 2019, Occlusal Topography of Direct Composite Restoration: A Case Report. *Int J Recent Sci Res.* 10(06), pp. 32783-32785. DOI: http://dx.doi.org/10.24327/ijrsr.2019.1006.3543

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