Case Report

JRAD Journal of Research and Advancement in Dentistry

J Res Adv Dent 2019;9:2s:161-166.

New Spin to Class II Composite Restoration

Tripti Jagtap[1] Ashish Jain[2] Deepak Jagtap[3] Amit Patil[4] Pramanika Kapoor[5] Nitesh Patil[6]

[1]PG Student, Department of Conservative Dentistry and Endodontics, Bharati Vidyapeeth Deemed to be University Dental College, Navi Mumbai, India.

[2]Professor and Head, Department of Conservative Dentistry and Endodontics, Bharati Vidyapeeth Deemed to be University Dental College, Navi Mumbai, India.

[3]Assistant Professor, Department of Dentistry, K.J. Saumaya Medical College & Hospital, Mumbai, India.

[4]Reader, Department of Conservative Dentistry and Endodontics, Bharati Vidyapeeth Deemed to be University Dental College, Navi Mumbai, India.

[5]Consulting Endodontist, L & T Health & Dialysis Centre, Thane, India.

[6]PG Student, Department of Conservative Dentistry and Endodontics, Bharati Vidyapeeth Deemed to be University Dental College, Navi Mumbai, India.

ABSTRACT

Background: As esthetic composite restoration can be, we cannot deny the fact that it is technique sensitive. In the search of easier alternative, we stumbled upon a nobel technique for placing composite restoration for replicating exact occlusal topography called the stamp technique. It was primarily introduced for restoring Class I cavities & erosively damaged teeth. However, cases using stamp technique for building proximal box of class II cavities have been reported, there hasn't been any case done yet which have used stamp technique to imitate the occlusal topography along with proximal wall. In the present case, we have attempted to replicate precise proximal with the help of custom ring as well as occlusal details with stamp technique.In this case, two steps are described to manage proximal caries following the stamp technique. The first step involves the fabrication of an occlusal stamp following the same procedures used with Class I. In the second modified step, the matrix band is placed earlier and stamp is recorded with the help of gingival barrier liquid provides a mold where the stamp is prepared within.

Keywords: Class II restorations; custom ring; composite resin; conservative dentistry; occlusion; occlusal topography.

INTRODUCTION

Esthetic is a primary demand by this entire generation. Patients don't want amalgam anymore. With the evolution of materials, composite filling is far more popularized for restoring teeth. Another factor contributing to the rapid increase in composite resin restoration is the introduction of minimal invasive restorative procedures which stress on the conservation of sound tooth structure and usage of adhesive material in the posterior region[1]. The need to acquire esthetic and function in posterior teeth is quite demanding as well as challenging. But composites also have it's own drawbacks namely:

- Multiple procedures are time-consuming and need excellent operators' dexterity
- Skill to achieve harmonious occlusal and cusp-fossa relationship with opposing teeth
- Time needed for finishing composites is almost double when compared to amalgam [2,3].

But research always comes up with the out of the box ideas, so the idea that came up was Stamp Technique. This "stamp" technique consists of fabricating an occlusal matrix to replicate the occlusal anatomy of posterior teeth before cavity preparation takes place. In the present case, we have fabricated similar matrix for proximal walls as well. This matrix is then pressed against the final

Received: Jan. 17, 2019**: Accepted**: Feb. 28, 2019

***Correspondence Dr. Tripti Jagtap.**

Department of Conservative Dentistry and Endodontics, Bharati Vidyapeeth Deemed to be University Dental College, Navi Mumbai, India.

Email: jagtap.tripti@gmail.com

pISSN 2278-0076

eISSN 2321-9270

composite increment before curing takes place [4,5]. 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 & proximal matrices are the reproduction of the original occlusal & proximal anatomies and occlusion, minimal requirement of finishing and polishing, minimal voids at the occlusal & proximal anatomies, and reproduction of optimally polymerized occlusal & proximal surfaces due to the exclusion of air during curing[6].

CASE REPORT

Mesial caries was clinically detected in tooth 16 of a 32-year-old male patient presented to the dental clinic with the chief complaint of food lodgement in upper right back region of the jaw. The caries was large and involved the occlusal surface as well [Fig. 1,2].

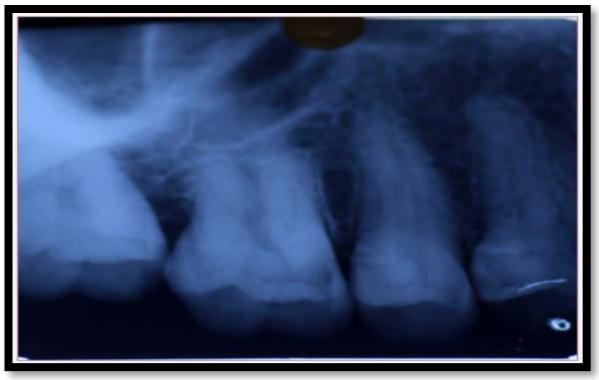

Fig 1: Pre-operative Radiograph.

Fig 2: Pre-operative Photograph.

The tooth was isolated by rubber dam and a separation agent (Petroleum Jelly, Vaseline, India) [Fig. 3].

Fig 3: Isolation with Rubbrdam.

To start with the preparation of proximal stamp, Gingival barrier liquid (SDI, Pola Office Plus, Tooth Brightening System, Australiia) [Fig. 4] at the proximal walls was applied and then BiTine ring (Palodent Sectional Matrix System -Dentsply Caulk, Milford, DE) [Fig. 5] was adapted.

Fig 4: Gingival barrier liquid (SDI, Pola Office Plus, Tooth Brightening System, Australiia)

Fig 5: BiTine ring (Palodent Sectional Matrix System -Dentsply Caulk, Milford, DE)

More of the Gingival barrier liquid was applied at the prongs of the ring & then it was light cured [Fig. 6,7].

Fig 6: Proximal stamp with BiTine Ring.

Fig 7: Custom Ring

Flowable composite resin (3M-ESPE, Filtek™ Z350 XT Flowable Restorative, St Paul, MN, USA) was applied on the intact occlusal surface and indexed over the cusp tips. A tip of a microbrush was cut and the microbrush was used as a handle. The handle was immersed into the composite. Before being polymerized by light to fabricate the occlusal stamp [Fig. 8].

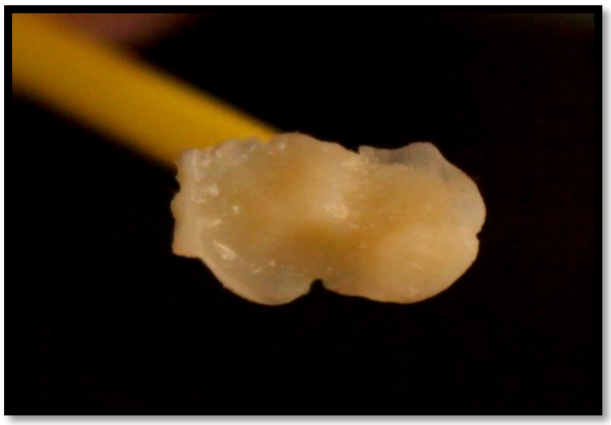

Fig 8: Occlusal Stamp

All carious tissues were removed throughout an occlusal access, and Class II cavity was prepared [Fig. 9].

Fig 9: Caries Excavation.

5% Erythrosine i.e. caries indicator was applied [Fig.10, 11] & washed off after 10 seconds.

Fig 10: Application of caries detection dye

Fig 11: Carieseek Dye.

Remaining caries [Fig. 12] was excavated with slow round bur and clean, caries free tooth structure was achieved [Fig. 13].

Fig. 12 – Remaining caries

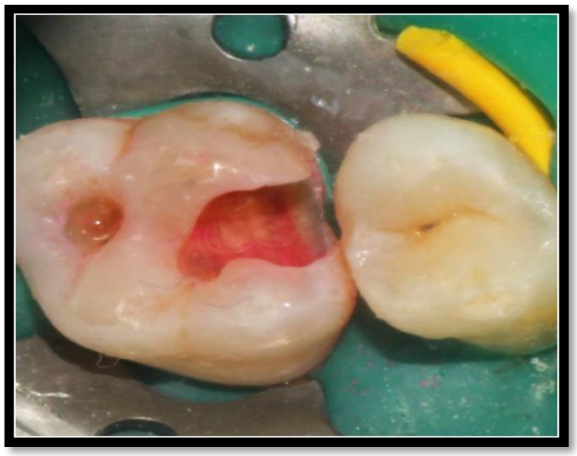

Fig 13: Cares Free Tooth

A Contoured sectional matrix for anatomical contacts & contours was adapted on the proximal surface of the tooth [Fig. 14].

Fig 14: Contoured sectional matrix for anatomical contacts & contours.

This band was burnished against the tooth surface with a burnisher so that it will adapt to the tooth wall. The custom ring was then adapted to the proximal surface of the tooth [Fig. 15].

Fig 15: Custom ring adapted to the proximal surface of the tooth.

37% Phosphoric acid (Medicept Dental Solo Etch, 37% Phosphoric Acid) [Fig. 16] was used for 15 sec and washed for 1 minute & air dried. Dentin bonding (3M, ESPE, Single Bond Universal Adhesive) [Fig.17] was rubbed vigorously for 2-3 times.

Fig 16: 37% Phosphoric acid.

Fig. 17: Dentin bonding (3M, ESPE, Single Bond Universal Adhesive)

Light activation was done for 20 seconds. The Class II cavity was converted into Class I [Fig. 18] and the Class I cavity was restored incrementally using a posterior composite resin (3M-ESPE, Filtek™ Z350 XT Restorative) [Fig. 19] up to 1 mm lower the occlusal surface.

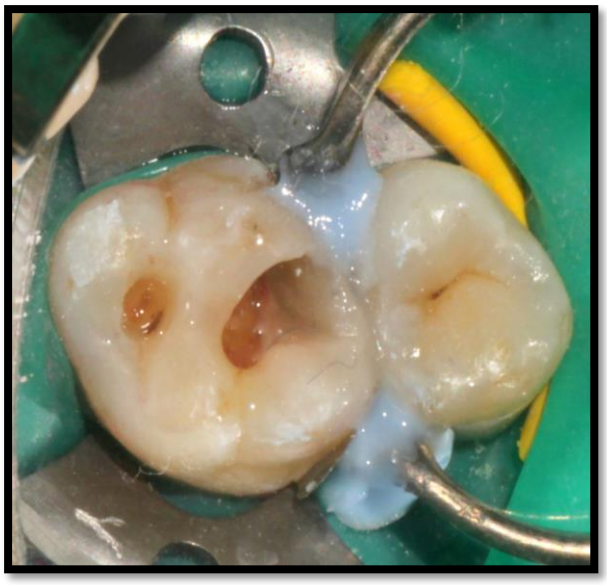

Fig 18: Built up of proximal wall.

Fig 19: Composite (3M ESPE Filtek™ 350 XT).

Fig 20: Teflon Tape in place.

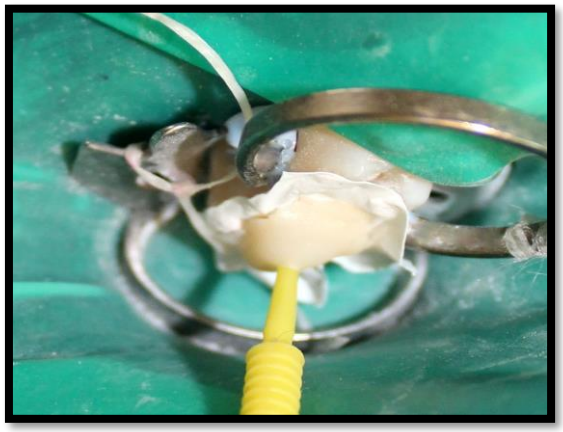

Fig 21: Application of pressure before light curing.

Fig 22: Post-operative pictures.

The last layer of composite was added and before being cured, a piece of Teflon tape was laid on the occlusal surface [Fig. 20], and the occlusal stamp was sealed in place over the tape [Fig. 21]. Next, the tape was removed. The proximal excess material was removed and the composite was then polymerized and polished [Fig. 22].

DISCUSSION

The restoration of actual topography of tooth surfaces will definitely promote patient's compliance and acceptance toward dental treatment. This case series 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 flowable composite. For Class I cavities, the stamp technique procedures are very simple and achievable. Class II restorations involve the removal of the marginal ridge of the tooth to provide a suitable access to caries. Using matrix, the band is required to build up the correct contour of proximal walls and create a healthy contact point. If the stamp technique is applied, the stamp will be prepared in the presence of the matrix band. Thus, the stamp technique should be modified.

In the present case, two steps are described to manage proximal caries following the stamp technique. The first step involves the fabrication of an occlusal stamp following the same procedures used with Class I. In the second modified step, the matrix band is placed earlier and provides a mold where the stamp is prepared within. With the minimal time required for finishing to obtain a good fossa-cusp relationship with the opposing dentition, stamp methods are suitable in a busy practice dealing with many patients [7]. Dentists are able to concentrate their office time with more complex cases and can increase her/his reputation. The correct occlusal anatomy of a filling leads to a functional restoration and avoids the primary occlusal trauma. Both steps suggested here are able to retrieve the exact anatomy of the occlusal as well as proximal surfaces.

CONCLUSION

The custom ring along with occlusal stamp technique provides an easy approach to restore Class II fillings with accurate topography, less post fill adjustments and less time consuming.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

REFERENCES

1. Murdoch-Kinch CA, McLean ME. Minimally invasive dentistry. J Am Dent Assoc. 2003;134:87–95.

2. Dilley DC, Vann WF, Jr, Oldenburg TR, Crisp RM. Time required for placement of composite versus amalgam restorations. ASDC J Dent Child. 1990;57:177–83.

3. Duque C, da Silva RC, dos Santos-Pinto L. Treatment options for the occlusal surface of first permanent molars. J Clin Pediatr Dent. 2004;29:5–9.

4. Attin T, Wegehaupt FJ. Impact of erosive conditions on tooth-colored restorative materials. Dent Mater. 2014;30:43–9.

5. Ramseyer ST, Helbling C, Lussi A. Posterior vertical bite reconstructions of erosively worn dentitions and the “stamp technique” – A case series with a mean observation time of 40 months. J Adhes Dent. 2015;17:283–9.

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

7. Newman MG, Takei H, Klokkevold PR, Carranza FA. Carranza's Clinical Periodontology. Haryana, India: Elsevier Health Sciences; 2011.