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Research Paper

Stamp Technique: A Novel Approach for Restoring Occlusal Anatomy -A Case Report

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ABSTRACT
Accurate replication of occlusal anatomy of posterior composite restorations is of utmost importance for proper functioning of stomatognathic system .“Stamp technique” for posterior composite restoration placements is a relatively new and novel method for duplicating occlusal anatomy with near perfection .This procedure involves duplicating the tooth anatomy of unprepared teeth and then replicating the same after cavity preparation .This technique is possible in teeth where preoperative anatomy of the tooth is intact and not destructed by any carious lesion .This case report describes duplicating of a simple class I composite restoration using stamp technique. The purpose is to replicate occlusal anatomy by making a copy of the original unprepared tooth structure to get perfect anatomy within a fraction of time .
KEYWORDS: *Composite restorations, occlusal topography, stamp technique.*

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I. INTRODUCTION

Nowadays, posterior composite restoration are done asroutine procedure in dental clinics because of increased concern for esthetics not only in anterior region but also in the posterior region . The rapid increase in composite resin restoration is also due to the introduction of minimally invasive restorative procedures that emphasize on the maintenance of healthy tooth structure and also the use of adhesive material in the posterior region. [1].However, composite still has minor drawbacks; such as it has multiple procedures which are time-consuming ,need excellent operator’s skills to achieve harmonious occlusal and cusp-fossa relationship with the opposing teeth, polymerization shrinkage, microleakage and discoloration over a period of time.[2,3,4] . Also the time required for finishing and polishing of the composite restoration is double as compared to amalgam restoration[4] .

Hence, a technique was proposed by Dr. Waseem Riaz a London based practitioner which is a known as ‘Stamp technique’ in which direct composite resin restorations was used to obtain the precise occlusal topography easily. It has also been reported for use in vertical bite reconstruction of worn out dentitions[5] . In posterior teeth, primary caries lesions may present an intact occlusal morphology despite of the injury exceeding to thedentinoenamel junction in terms of depth. For these cases, the literature describes a restoration technique using an occlusal stamp that allows to mimic the original tooth morphology by using the existing clinical condition before the necessary destruction of tooth surface hereby , reducing the time required for the removal of excess composite and polishing of restorations[6].This new technique consists of making an occlusal index which records the posterior teeth occlusal anatomy prior to cavity preparation[7,8]. Before curing the final increment of composite, the occlusal index is pressed over the final increment to achieve the replica of pre-operative occlusal anatomy. This implies that caries which are not visible by our naked eyes or are hidden caries without any cavitation can be treated using the stamp technique[9,10,11].

This article aims at presenting a case report of direct composite resin restoration in posterior tooth with pit and fissure caries, through the occlusal stamp technique .

II. CASE REPORT

A 20 yr old patient reported to the Department of Conservative Dentistry And Endodontics ,GDCH Aurangabad with the chief complaint of discoloured tooth . On clinical examination, pit and fissure caries were detected in relation to lower right first molar .Taking in account that the occlusal surface of the tooth involved had no change in their morphology, we opted for the occlusal stamp technique for resin composite restoration of the mandibular right first molar.Before starting the procedure, the tooth was cleaned with Prophy polishing

brush and pumice to remove the stains or any residues present onto the tooth surface. Later shade selection was done using VITA shade guide .The tooth was isolated with rubberdam .

.After isolation, Vaseline was applied onto the tooth. Stamp was made using flowable composite (Filtek flow 3M ESPE) for copying the the occlusal details of the tooth to be restored. Flowable composite material was placed onto the occlusal surface, applicator brush tip was immersed into the composite and it was cured .After curing the stamp was removed and edge of the stamp was marked onto the buccal surface of tooth for orientation at the time of stamp repositioning.. Cavity preparation of the tooth was started using BR 45 round bur (Mani DIA BURS) and the remaining carious tooth structure was removed with spoon excavator to conserve the tooth structure.The tooth was air dried and checked for remaining carious tissue, if present was removed.The cavity was dried and etched with 37 % phosphoric acid for 15 seconds.The cavity was washed with distilled water for 1 minute and dried with cotton pellets. The adhesive system (3M ESPE Adper Single Bond 2) bonding agent was applied onto the dried cavity and was light cured . Subsequently the 2 mm increment of resin composite (3Mfiltek supreme) was placed onto the prepared cavity and a Teflon tape was applied onto the surface and the composite stamp was placed into position and pressed for 20 seconds while exerting finger pressure. The stamp was removed and the excess composite on occlusal surface was removed with sharp hand instruments .The composite wasthen cured for 30 seconds. Therubber dam was removed and the occlusal contacts were checked. The adaptation was found satisfactory and there was no need of adjustment of the restoration . Later the restoration was finished and polished (Shofu super snap Mini Kit CA). The restorative treatment of the mandibular rightfirst molar was completed .

III. Discussion

The prevalence of dental caries has decreased in the last decades. It is credited to the effective use of fluorides, particularly to the carious lesions on smooth surfaces of tooth[12].On the other hand, the introduction of different fluoridated agents seem to have changed the morphological factor of the development of dental caries, leading to the incidence of cariouss lesions where the enamel appears intact. This phenomenon has been identified as "Syndrome of Fluorides" OR “Fluoride bombs “ and indicates the direct relationship of fluoride utilization with the increasing resistance of the enamel surface[12].Such lesions are occult in a sense that they possess an intact occlusal surface [13] but the undermining decay can be seen as an area of bluish/black discoloration under the enamel surface or detected radiographically. Various other methods of detection of such caries include endoscopy (AcuCam), laser fluorescence (DIAGNOdent),fiber-optic transillumination, digital radiography, electrical caries monitor and detection (ECM), among others[14] .

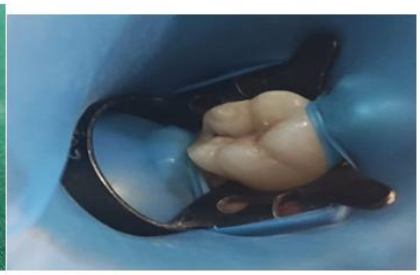
Trauma from occlusion is an iatrogenic wound if not taken into account during the operative procedures would modify the stability of the entire stomatognathic system[15] .A functional occlusion promotes a favorable adaptation of the neuro-musculature, the temporomandibular joint, teeth and its supporting structures while maintaining a positive and stable inter-cusp relationship in centric occlusion without the symptoms of mandibular dysfunction and without signs of tooth wear[16,17]. The importance of occlusion is paramount because orofacial integrity is the key element for psychosocial well being of an individual . Hence the introduction of stamp technique was done .It has also been reported for vertical bite reconstruction of attrided teeth[18] . Other than composite resin, cost-effective materials like Pit and fissure sealants, Poly methyl metha acrylate [clear], Pattern resin, Gingival dam material, Vacuum formed template, Bite registration material can also be usedto make the stamp[19] .

Like each and every technique , the stamp technique also has its own share of pros and cons . The most highlighted pro is, perhaps, the reduced overall time once skill is mastered as the post-restoration finishing time is also reduced due to almost instantly desired good cusp-fossa relationship. This is a boon for the busy practitioners and also helps improve their reputation amongst patients [20] . 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 [21]. These factors have been shown to be major determinants for long-term success of composite restorations [1].

The disadvantages of the technique includes breakage of stamp, and cost of flowable composite. The clinician should also be cautious when the procedure is being performed to prevent the incorrect placement of the stamp.

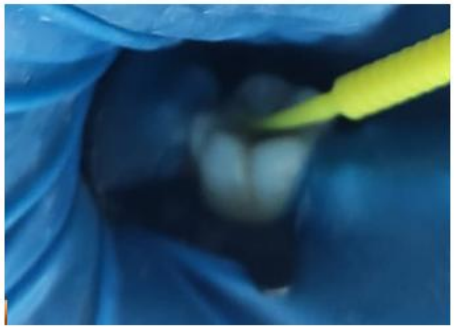
Fabrication of stamp

After Cavity Preparation

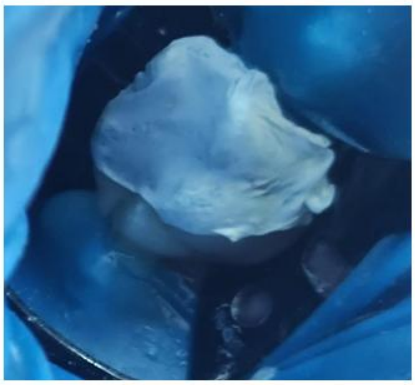


Etching with 37 % Phosphoric Acid

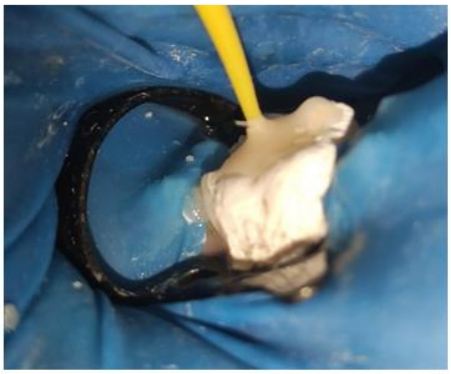
Application of Bonding Agent



Placement of teflon Tape



Final Placement of Stamp



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Final testoration

IV. CONCLUSION

Thus the stamp technique for direct composite restorations is a convenient, favorable and biomimetic procedure. The accuracy of topography replication is far greater than the plain manual method and can be adapted to unconventional cavities as well. Hence it is gainingimmense popularity in usage in cases with intact occlusalanatomy .

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