

Stamp technique -New perspective of Aesthetic Dentistry : A Case Report

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Abstract: “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. This technique is also utilized for class II cavity restorations where marginal ridge is intact. This case report describes 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 in few minutes.

Keywords: stamp technique, occlusal topography, polymerization shrinkage.

I. Introduction

Composite resin restorations have become popular amongst dentists due to which amalgam is hardly used in current practice. This is mainly because patients are having lot of interest and demand towards aesthetic restorations even for their posterior teeth. Another factor that contributes to the rapid increase in composite resin restorations is the introduction of Micro Dentistry and recent advances in bonding agent. Minimal invasive restorative procedures stress on the conservation of sound tooth structure and usage of adhesive material in the posterior region.¹ However, composite still has minor drawbacks; its multiple procedures are time-consuming, needs excellent operator's skills to achieve harmonious occlusal and cusp-fossa relationship with opposing teeth, polymerization shrinkage, microleakage, discoloration over time period.^{2,3} Time required for finishing and polishing the composite restoration is double as compared to amalgam restoration.³ Maintaining the contour and the contact point is very difficult task in composite restorations which requires expertise hand and is time consuming. To overcome this, an alternative placement technique of composite restoration was introduced. The new “stamp” technique consists of fabricating an occlusal matrix that mimics the natural occlusal anatomy of posterior teeth, before cavity preparation takes place.⁴ This matrix is then pressed against the final composite increment before curing takes place. This technique is suitable in cases where caries is evident during the clinical examination or routine radiographic examination of teeth with intact marginal ridges and ideal occlusal anatomy. In posterior teeth, primary carious lesions may present an intact occlusal morphology despite of injury exceeding the dentino-enamel junction in terms of depth. For such cases, the literature describes a restoration technique using an occlusal stamp that allows mimicing the original tooth morphology by using the existing clinical condition before the necessary destruction of tooth surface, reducing the time required for the removal of excess and polishing of restorations.⁵

The advantage of using this stamp technique is the reproduction of original occlusal anatomy and occlusion which does not require any correction. Time needed for finishing and polishing of the restoration is also reduced.

II. Case History

A 14 year old male patient reported to the dental clinic for orthodontic correction. Occlusal caries were clinically detected with 36 [Figure a]. Extent of caries was detected by intraoral periapical radiograph. The caries were large but without involving the marginal ridge. The tooth was isolated by rubber dam [Figure b] and a separating agent was applied on the tooth surface. Flowable composite resin (Filtek Flow, 3M-ESPE, St Paul, MN, USA) was applied on the intact occlusal surface and indexed over the cusp tips [Figure b]. A tip of a microbrush was cut and was used as handle. The handle was immersed into composite and then polymerized by light to fabricate the occlusal stamp [Figures c]. All carious tissues were removed throughout the occlusal access

and Class I cavity was prepared [Figure d]. The cavity lining was achieved using glass ionomer (GC Fuji Lining LC, GC America Inc.) [Figure e]. Etching was done using 37% phosphoric acid for 30 seconds [Figure f]. Cavity was rinsed and dried. Then bonding agent was applied and light cured for 15 seconds. The cavity was restored incrementally using a posterior composite resin (3M ESPE) up to 1 mm lower the occlusal surface [Figure g]. The last layer of composite was added and before being cured, a piece of Teflon tape was laid on the occlusal surface and the occlusal stamp was sealed in place over the tape [Figure h]. Next, the tape was removed. The occlusal excess material was removed and composite was then polymerized. Finishing and polishing done by using Soflex Spiral Wheel [3M-ESPE] [Figure i]

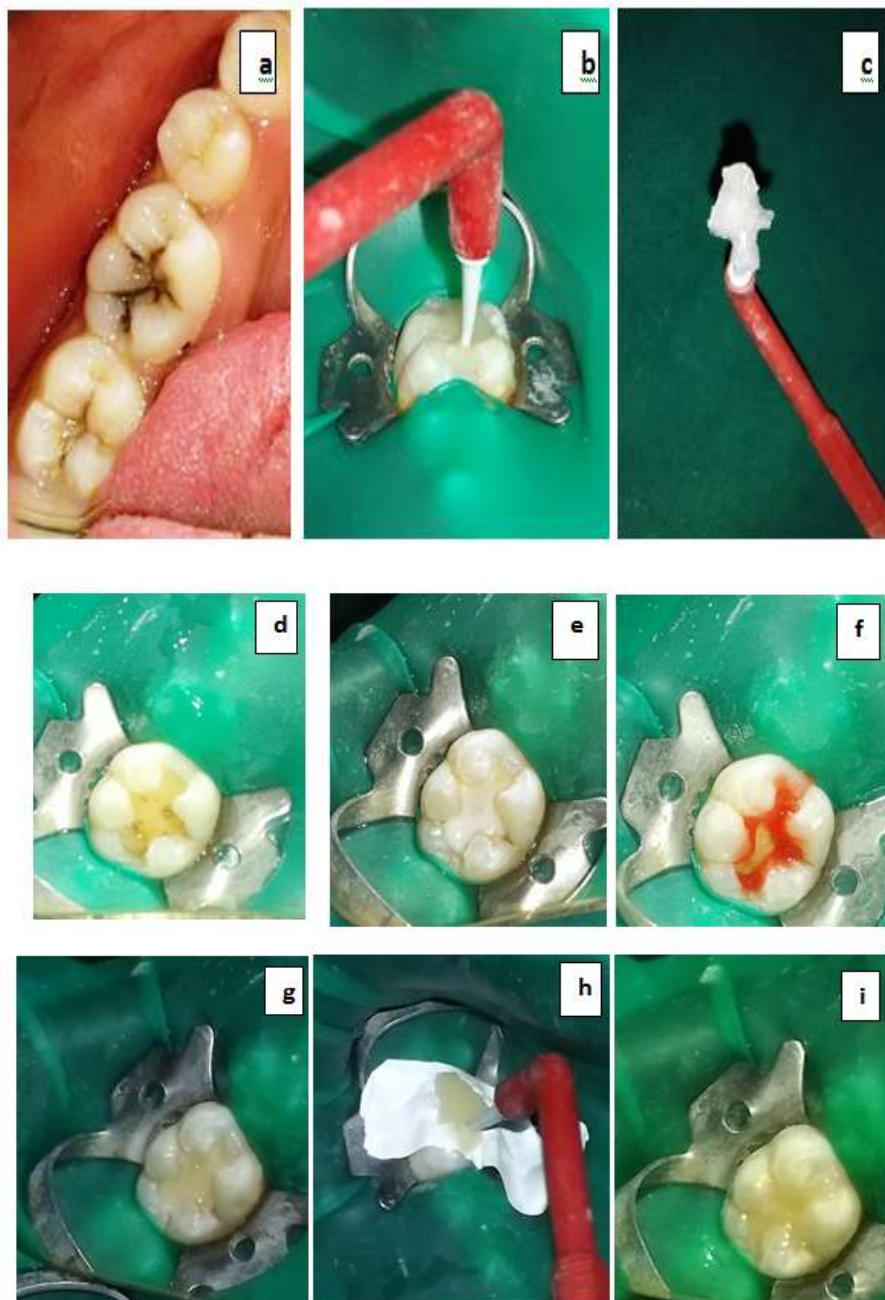


Figure 1: The stamp technique for Class I cavity of tooth 36: (a) Pre operative photograph- 36 (b) isolation by rubber dam and preparation of stamp using flowable composite with a microbrush, (c) the composite stamps, (d) cavity preparation,(e) GIC liner, (f)Etchant applied,(g) the cavity was filled incrementally to level 1 mm below the occlusal surface, (h) the placement of Teflon tape and the occlusal stamp, (i) final finishing.

III. Discussion

Main aim of the any restoration is to restore form and function .This case describes posterior composite restoration that restores its original form (contour) and harmonious cusp fossa relation to the antagonist and adjacent teeth. The newly discovered stamp technique is used to restore the natural contour in those teeth where tooth structure is intact with some defects like occlusal caries or proximal caries with intact marginal ridge (class I and class II).⁴ The correct occlusal anatomy of a filling leads to a functional restoration and avoids the primary occlusal trauma⁶To overcome the main disadvantage of polymerization shrinkage seen with composite restorations, it has to be done using incremental layer technique. Stamp is used in final layer to replicate the natural anatomy of occlusal surface. LC GIC was used as a liner to reduce the microleakage of composite resin.⁷ Before application of last layer of composite, Teflon tape was placed as a barrier material. Instead of Teflon cling film can also be used. There is no need to remove the cling film as we can cure through it. It also protects composite material from being exposed to ambient light multiple times.⁸In the present case, the material used to fabricate stamp was flowable composite ,however many materials can be used like gingival barrier, pit and fissure sealant, transparent acrylic resin. To make this technique more cost effective one can use expired flowable composite or transparent acrylic resin.⁹The pressure exerted by the stamp on the composite resin decreases the formation of microbubbles and interference of oxygen in curing the last layer. These are considered long-term success factors .¹⁰ Using this technique, time required for finishing is very less and so dentists can invest their valuable time doing multiple cases in their busy schedule.

IV. Conclusion

The stamp technique enables an easy way to restore Class I and class II restorations with natural topography with lesser post restoration adjustments and less time.

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