

CUSTOM SHIELD TO THE RESCUE: A CASE REPORT

INTRODUCTION:

Currently, Dentistry is facing a moment in which the aesthetic standard is increasingly demanding even in the posterior segment of the mouth. Highly aesthetic direct restorations can be achieved with opaque, body and translucent shades using a polychromatic layering technique, also known as 3D layering technique.¹

In posterior teeth, the most frequent sites of attack are the occlusal surfaces.² Along with the occlusal surfaces, buccal surfaces of mandibular teeth and palatal surfaces of maxillary teeth are commonly carious. Despite the decreasing prevalence of tooth decay, dentin carious lesions also known as “Hidden Caries” is a frequent finding.^{1,3} Such lesions are occult in a sense that they possess an intact occlusal surface but with undermining decay that can be seen as an area of bluish/black discoloration under the enamel surface, or radiographically.⁴

The various matrices available, for both metallic and non-metallic restorations, mainly enable achieving the contour and contact of the proximal surfaces⁵, but do not help achieve precise occlusion and mesio-distal contours. The carving of occlusal and smooth surfaces is left for free hand dexterity and skill which has the risk of being over/ under finished resulting in over/ under restored surfaces.⁶

To overcome all this in Compound Class I cases, A Novel placement technique of composite restoration, the “Custom Shield” Technique was introduced by Gaetano Paolone and Salvatore Scolavino and the style italiano team.⁷ This new technique consists of fabricating a custom putty index which records the buccal and palatal anatomy of posterior teeth before cavity preparation. The obtained index is then utilized to establish the buccal/palatal contour similar to the pre-operative anatomy.

Thus, this case report describes an innovative approach for predictable esthetic and functional restorations in Class I Compound lesions – The custom shield technique integrated with occlusal stamp technique.

CASE REPORT:

A 32-year-old healthy female patient reported with a chief complaint of mild sensitivity to cold in lower right back tooth region. Clinical examination revealed Class I caries with buccal extension on 47. The black hue under the buccal cusps of maxillary first molar is an indication that removing the decay will result in loss of buccal cusps anatomy. The custom shield was made by placing a small amount of putty material buccally and occlusally. The occlusal anatomy was recorded by taking a stamp – with help of microbrush and flowable composite (Palfique Estelite Flow Quick). Cavity preparation was done with spherical diamond drill at high speed. The infected dentin was removed with the aid of dental spoon excavators and carbide burs at low speed. After the removal of caries, the cavity was checked for any remaining carious lesion by the application of caries removal dye (BRIX3000) and subsequent infected caries removal was done. The cavity was rinsed and the pulp protection was done with Calcimol LC. Selective enamel etching (D-Tech) was performed with 37% phosphoric acid and rinsed with distilled water for one minute. The universal bonding agent (Palfique Universal Bond) was applied to the enamel and dentinal walls of the cavity with an applicator tip for 20 seconds. A thin layer of enamel shade composite (Palfique Estelite) was placed on the custom shield and adapted on to the tooth and curing light was directed through the cavity towards the inner surface of the shield. After curing, the buccal anatomy was restored. Application of rubber dam is done at this point. This was followed by the incremental cusp by cusp addition of nanohybrid resin composite in the occlusal cavity with the body shade first and then light cured for 20 seconds. Application of tints was done followed by final top layer of enamel shade. Then, a Teflon tape was put over the last increment, followed by the correct placement of the stamp over it with slight digital pressure, then cured for 20 second with curing light. The stamp was then be removed and the occlusal anatomy was checked. The standard finishing regime was carried out by Shofu Super Snap Rainbow Kit, from coarse to fine disks. The occlusion was checked using progressive colour transfer concept with articulating papers of 80- and 15-microns thickness and the required areas were reduced using finishing diamond burs.



Figure 1: Pre-operative (a) Buccal View, (b) Occlusal View



Figure 2: Custom shield fabrication with Putty



Figure 3: Fabrication of Occlusal Stamp



Figure 4: After caries excavation



Figure 5: Selective Etching



Figure 6: Dentin bonding agent application



Figure 7: Using custom shield as a matrix



Figure 8: Buccal wall built with Custom shield

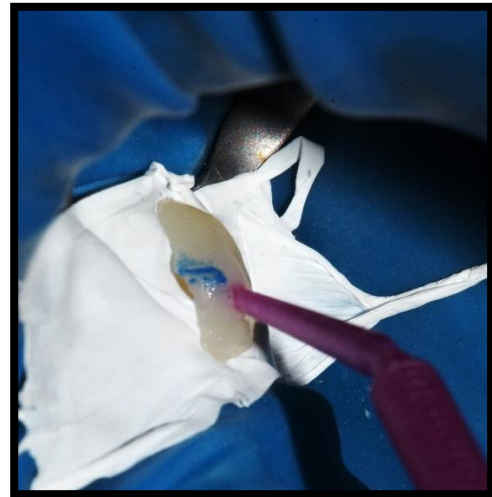


Figure 9: Placing occlusal stamp



Figure 10: Post-operative (a) Buccal view, (b) Occlusal view

DISCUSSION:

Compared to indirect restorations, where contact, contour and the occlusion is well controlled and achieved in the laboratory, the direct restorations pose challenges in achieving the same intra-orally. It can be technique sensitive, time consuming and may not result in precise reproduction of the form and occlusion.⁵ It has been revealed that there is always more inherent danger in overconvex rather than underconvex facial and lingual surfaces of the teeth. The overconvex curvatures can create an undisturbed environment for the accumulation and growth of cariogenic and plaque ingredients at the gingival margins, apical to the height of contour. On the other hand, excessive concavities can invite extrusion, rotation, or tilting of occluding cuspal elements into non-physiologic relations with opposing teeth.⁸

If we plan to restore the cusps with direct composite restoration, it often gets very difficult to restore cusp's height and shape in a free-hand method. In this described technique, the height and the anatomy of the cusp are registered before its reduction through the use of a silicone index. This index is then used to mold directly the cusp to exactly as it was before reduction.⁸ The advantage is that the time needed for finishing and polishing of the restoration is reduced.⁹

CONCLUSION:

Use of the custom shield as a matrix along with occlusal stamp technique for Class I Compound cases is an extremely easy and convenient approach for predictable esthetic restorations.

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I / We certify that I/we have participated sufficiently in the intellectual content, conception and design of this work or the analysis and interpretation of the writing of the manuscript, to take public responsibility for it and have agreed to have my/our name listed as a contributor. I/we certify that all the data collected during the study is presented in this manuscript and no data from the case report has been or will be published by the editors, I/we will provide the data/information or will cooperate fully in obtaining and providing the data/information on which the manuscript is based, their assignees.

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