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## RESEARCH ARTICLE

# PUTTY INDEX TECHNIQUE- A GUIDE TO ANTERIOR ESTHETIC RESTORATIONS

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### ABSTRACT

Esthetics is an increasing concern for patients, particularly for anterior teeth. Any flaw that disrupts a pleasing social smile demands to be taken care of with quick, cost effective and minimally invasive procedure. Composite resin restorations have become a life saver in such cases due to their excellent esthetic and handling properties. However from time to time they have proven to be technique sensitive, also getting exact proportion and symmetry right during restoration of anterior teeth is of paramount importance where Putty index technique comes into picture. This technique not only provides exact palatal base shelf to build on but also makes multiple restorations possible on same tooth possible at same time. This paper throws light on anterior esthetic restorations using Direct and Indirect putty index technique by composite resin.

## INTRODUCTION

For patients who need anterior restorative procedures to be integrated with the other teeth that constitute the ever demanding social smile, direct composite resin restorations have emerged as a practical alternative, particularly for providing excellent esthetic outcomes and limiting wear on the dental structure.<sup>1</sup> Predictable esthetic restoration of anterior teeth demands discipline in terms of adherence to protocols. For cases like Ellis class 1 and 2 fractures of crown not involving pulp, midline diastema, incisal ragged edges due to masochistic habits calls for same strict adherence to protocol and discipline to achieve the exact proportion and symmetry of teeth.<sup>2</sup> For such cases putty index technique can prove a boon. As putty is a rigid material, it has benefit of allowing for the precise contour to be attained; even in huge flaws also being able to be utilised predictably to repair many defects at one time.<sup>2,3</sup> It provides a basic palatal shelf on which complete restoration can be built. This case series depicts the use of Direct and Indirect Putty index techniques in different cases

### CASE REPORT 1

A 24 years old male patient reported to the Department of Conservative dentistry and Endodontics with the chief complaint of

spacing in his upper front teeth and desired to get it filled. On clinical examination a midline diastema of 2mm was revealed. The oral hygiene of the patient was satisfactory, and no significant hard and soft tissue findings were found. The labial frenum associated with the diastema was normal in size and position. Patient wanted a quick treatment as he had a interview ahead and wasn't much concerned about the proclination of maxillary incisors. Various treatment modalities (conservative restorative and prosthetic procedures including veneers and crowns) were discussed with the patient. A minimally invasive approach with a direct composite resin restoration was planned to restore the diastema using Direct putty index technique given the time constraint. Partial palatal index with vinyl polysiloxane (having the property of high reproduction of details and high final hardness) was fabricated. Midline was marked with marker and trimmed with scalpel on the index. Then the intraoral fit was checked of the index. Shade selection was done using a (VITA Tooth shade guide) under natural daylight. Standard etching and bonding protocol were followed. Palatal putty index was resealed, and incremental layering of direct composite resin restorative material (Prevest Den Pro Fusion) was done with 11 and 21. The index was used throughout the composite build-up procedure. Finishing and polishing were done using the composite polishing kit (Shofu Inc, Kyoto Japan) to achieve esthetically pleasing results.

Oral hygiene instructions were given to the patient. Finger massaging of gingiva was advised for the mechanical stimulation of interdental papilla in the region of midline diastema. The patient was instructed to floss regularly and also to avoid pigmented liquids that may cause staining of restoration.

#### PREOPERATIVE CLINICAL PHOTOGRAPHS



LABIAL ASPECT



PALATAL ASPECT



RIGHT LATERAL ASPECT



LEFT LATERAL ASPECT



MAKING A PALATAL



PUTTY SILICONE INDEX



MARKING OF MIDLINE AND TRIMMING WITH SCALPEL



**INTRA ORAL CHECKING OF FIT OF INDEX**



**PREOPERATIVE PHOTOGRAPH**



**STANDARD ETCHING AND BONDING PROTOCOL**



**POSTOPERATIVE PHOTOGRAPH**



**USE OF PUTTY INDEX AS PALATAL GUIDE FOR COMPOSITE RESTORATION AFTER FINISHING AND POLISHING**

**CASE REPORT 2**

A 25 years old male patient reported to the Department of Conservative dentistry and Endodontics with the chief complaint of broken upper front teeth and desired to get them restored. Patient gave a history of fall from bike 6 months back. Clinical examination revealed an uncomplicated crown fracture with 11 and 21 (Ellis class II fracture) involving only enamel and dentin. The teeth were sensitive to cold with no other associated hard and soft tissue injuries to the surrounding structures. Teeth were non tender on percussion. Vitality of the teeth was checked using Electric pulp tester, on which teeth gave normal response as compared to adjacent and contra lateral teeth. Radiograph did not reveal any significant periapical pathology. Based on all these evaluations, various treatment modalities (conservative restorative and prosthetic procedures including veneers and crowns) were discussed with the patient. Due to financial constraint patient chose a direct composite restoration which was planned using an Indirect putty index technique. At first appointment a diagnostic impression was made with irreversible hydrocolloid (Tropicalgin, Zermack, India) and a study model was fabricated with dental stone. A diagnostic wax up was performed and a putty index was created. In second appointment the fit of the putty index was checked in the mouth. Two bevels were placed. First bevel was a steep one at around 45° to the facial surface. Second bevel was a shallow infinite bevel extending to the cervical third. Shade selection was done using a (VITA Tooth shade guide) under natural daylight. Standard etching and bonding protocol were followed. Palatal putty index was reused, and incremental layering of direct composite resin restorative material (Prevest Den Pro Fusion) was done with 11 and 21. Finishing and polishing were done using the composite polishing kit (Shofu Inc, Kyoto Japan) to achieve esthetically pleasing results.



**LABIAL ASPECT**

**PREOPERATIVE PHOTOGRAPHS**



**LEFT LATERAL ASPECT**



**LABIAL ASPECT**



**RIGHT LATERAL ASPECT**



LABIAL ASPECT (IN OCCLUSION)



RIGHT LATERAL ASPECT



LEFT LATERAL ASPECT



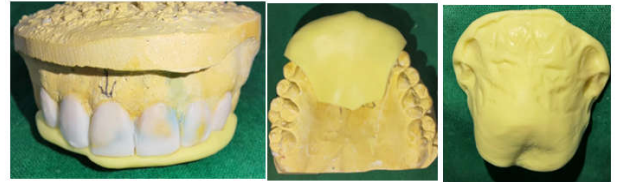
IMPRESSION MADE WITH BOTH MAXILLARY MD AN DIBULAR ARCH



DIAGNOSTIC CAST WERE Poured WITH DENTAL STONE



A DIAGNOSTIC WAX UP DONE ON THE MAXILLARY CAST



FABRICATION OF PALATAL PUTTY INDEX



INTRAORAL CHECKING FIT OF PUTTY INDEX



STANDARD ETCHING AND BONDING PROTOCOLS WERE FOLLOWED



USE OF PUTTY INDEX AS PALATAL GUIDE COMPOSITE RESTORATION AFTER FINISHING AND POLISHING



LABIAL ASPECT



RIGHT LATERAL ASPECT



LEFT LATERAL ASPECT



PREOPERATIVE PHOTOGRAPH



POST OPERATIVE PHOTOGRAPH

## DISCUSSION

The concept of social smile is pretty dynamic.<sup>1</sup> The parameter applicable to each patient vary according to age, teeth present, shape and form of teeth, spacing between teeth, color and translucency of teeth, also it depends on light illumination in the room.<sup>1,2</sup> Keeping all such variables at par composite resin restorations have given predictable and pleasing results in cost effective, quick and minimally invasive way.<sup>3</sup> The conventional 'free hand technique' needs long chair side time to restore a single tooth and each restored tooth

needing more trimming and polishing hence this technique provides correct depiction of midline and contact.<sup>5</sup> The predictability of direct composite restorations may be enhanced by specific tools, such as the diagnostic wax-up.<sup>4</sup> This technique consists of a dental diagnostic procedure in which planned restorations are developed in wax on a diagnostic cast to determine the necessary clinical procedures to achieve the desired clinical results.<sup>4,6</sup> It may assist in estimating the amount of restorative space available and how to manage it, and it can also help evaluate the occlusal scheme.<sup>4,6</sup> In addition, it can be used as a communication tool between the clinician and the patient and may help facilitate the acceptance and approval of the restorative treatment. The wax-up might also be a helpful tool when trying to restore smile symmetry, since the clinician may easily manage the available space in order to achieve perfect proportions and, therefore, smile symmetry.<sup>4</sup> In the above cases, cotton-roll isolation was considered, in place of rubber dam, to facilitate the easy visualization of the midline of the face, so that it coincides with that of the teeth. Moreover, it becomes difficult to adjust the palatal putty index in the exact position with a rubber dam present in the mouth. Also, rubber dam interferes in relating of contour of restoration directly to proximal tissue.<sup>7</sup> Even though both patients were very pleased with the final results, there were some details that could have been improved. The proclination of the anterior teeth in first could have been treated orthodontically however present teeth without diastema was patient's notion of ideal smile as his primary and foremost focus was diastema.<sup>8</sup>

## CONCLUSION

The use of direct restorations in the anterior region has a very good long-term prognosis. It is a minimally invasive approach that allows for the correction of tooth shape, color, and position, and it is reversible, repairable, and cost-effective. Restoration of guiding palatal surfaces using direct techniques is difficult, but can be simplified by using a template. The template technique requires no special equipment hence making it economical. It is possible to achieve the best aesthetic results and restore smile symmetry by combining suitable restorative materials, appropriate layering methods and additional helpful tools like the silicone index.<sup>4</sup> However, regular maintenance appointments are mandatory, and in all cases should be carefully planned to ensure predictable and long-lasting aesthetic results.<sup>4</sup>

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