

Case Report

Class 4 Aesthetic Reconstruction of Central Incisor Using Direct Composite Resin

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ABSTRACT

This article aims the aesthetic correction in a disharmonious smile in anterior teeth who were treated with direct aesthetic restorative procedure. The results show the use of this technique to allows an immediate aesthetic quality, directly and inexpensively restoring the natural features of the smile.

Keywords: Composite Resin, Class IV, Aesthetic

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INTRODUCTION

In place of amalgam and other metal-based restoratives, direct composite resins provide a more reliable option. This is presuming that they are used and positioned appropriately in the relevant clinical setting. Actually, the growing need for restorations that match the color of teeth, preservation of tooth structure, and aesthetic dental procedures have pushed the use of direct composite materials widely rebuilding¹⁻³.

Direct composites have a higher degree of clinical success, which is most likely due to advancements in adhesive technology, enhanced clinical skills and techniques and material developments³.

Adhesive restoration techniques are now possible with less invasive techniques and better cosmetic outcomes thanks to the development of adhesives and light-cured composite resins⁴. When teeth within the aesthetic zone are successfully restored, the patient's quality of life and self-esteem improve³. Minimally invasive procedures with restorations that blend in with the surrounding teeth are necessary for aesthetic dentistry⁵⁻⁷.

Compared to indirect restorations, direct composite resin layering techniques allow for a greater preservation of sound tooth structure. The primary challenges faced by medical professionals have been related to patient characteristics, improper isolation leading to contamination, and providing restorations that are strong, durable, and aesthetically pleasing^{8,9}.

Thanks to advancements in materials science, conservative restorative dentistry concepts, and clinical outcomes, composite resin has emerged as a key component of modern restorative dentistry and the preferred material for Class IV restorations¹⁰.

CASE REPORT

A 40-year-old male patient came to Department of Conservative Dentistry and Endodontics with a chief complaint of fractured upper left central incisor. The patient has a history of accidental fall two years back.

The initial clinical procedure included careful examination of the fractured teeth, intraoral periapical radiographs, occlusion, periodontal examination, intraoral photographs (Figure 1).



Fig.1: Pre-operative

Intraoral examination revealed Class 4 cavity in Permanent Maxillary Left Central Incisor.

Local anesthesia with 2% lignocaine and 1:100000 epinephrine administered. Rubber dam isolation done followed by removing the exposed infected dentin using Torpedo bur. A bevel on the buccal surface was made with a tapered bur (Figure 2).



Fig. 2: Tooth preparation for receiving the restoration with rubber dam isolation

The prepared surfaces were treated according to the total etch technique, 37% phosphoric acid for 20 seconds, rinsed with saline solution taken in 5ml syringe, dried by air spray.

A cellophane strip was placed between the tooth to separate and assist in the restoration of the lingual surface of tooth. The tooth was first treated with Stedbond Acetone-Alcohol -based 5th generation bonding agent and is left for 10 seconds followed by light curing for 20 seconds. The lingual surface of the tooth was rebuild using flowable composite A2 shade and light cured for 20 seconds. Increments of enamel shade composite Tetric N-Ceram A1 was placed for rebuilding the facial surface and light cured for 20 seconds.

The rubber dam was removed (Figure 3) and an adjustment was made to the occlusal and facial surface using extra fine anterior polishing bur (Figure 4).



Fig. 3: Post operative before polishing the surface.



Fig. 4: Post operative after polishing the surfaces

DISCUSSION

Where aesthetic issues are major concerns, composite restoration can be a cost-effective alternative. Even in patients with damaged dentition, the survival rates of these frontal composites have been estimated to be very good. It is estimated that the success rate of composites will be even higher as a result of improvements in their bond chemistry and introduction of nanocomposites¹¹.

Discoloration is still a significant clinical problem with the resin composite materials, and esthetic failure is a major cause of the replacement of restoration works¹².

Research has shown that compared to self-cured composite resins, light-cured composite resins are more color and wear-stable. This demonstrates that the degree of conversion has a vital role to play in these resins color stability materials^{13,14}. The roughness of the repair is linked to superficial external discoloration. Water-soluble stains, however, have the ability to discolor composite all across a resin matrix. This is typically related to the solubility of the resin matrix and the chemical deterioration of the filler-resin link¹⁵. Surface polishing and the susceptibility to extrinsic staining are directly impacted by the composite's structure and particle properties¹⁶. Because lower porosity and higher smoothness inhibit the adherence of substances like food colouring, tobacco, dental biofilm and others that change the colour of composites. Restoration polishing is especially crucial for delaying the composite's discoloration and aging processes. Oral behaviours like smoking and specific dietary regimens (Like consuming a lot of coffee) can make composite materials more discoloured on the outside^{17,18}.

CONCLUSION

One of the most crucial instruments in a clinician's toolbox is composite resins. These systems are capable of producing results that are both realistically beautiful and strong. The benefit of this technique is directly linked to the professional's dexterity, skill and technique mastery as well as the achievement of satisfactory results.

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