

## THE ADORABLE ADORO–A CASE REPORT

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### **Abstract**

Veneer restorations are well suited for conservative and aesthetic improvement of the anterior dentition. Indirect composite resin veneers present optimal aesthetics and durability. Indirect composite resin veneers utilize the advantages of both direct and indirect techniques in reconstruction of restorations with improved physical properties. The objective of this case report is to utilize the advantage of Indirect composite resin like ADORO in treating discoloured anterior tooth due to old restoration.

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**Keywords:** Indirect composite veneer, ADORO, Lumamat

### **Introduction**

The advent of indirect composite resin materials and the ongoing advancement of adhesive technology have generated the development of several conservative aesthetic techniques for correction of a variety of generalized colour defects. These defects include tetracycline stains, fluorosis, hypoplasia, hypo-calcification, aging, pulpal necrosis and morphological defects due to caries, trauma and genetic factors. [Black, 1982]. Among the clinical procedures employed is the use of Adoro (Ivoclar Vivadent) composite resin as an indirectly-fabricated laboratory-processed laminate veneers. The material's advantageous properties are attributable to the high content of inorganic fillers in the nanoscale range. In addition, the matrix incorporates a newly developed aromatic aliphatic urethane dimethacrylate, whose toughness is superior to that of the monomers utilized thus far.

To address the challenges presented by the direct composite resin veneers, indirect composite resin veneer systems have been developed, which allow the restorations to be processed in the laboratory or chair-side. When subjected to heat in combination with increased exposure to visible-spectrum

light,vaccum or pressure,these types of restorations exhibit greater conversion of the resin through increased polymerization.This conversion may result in the improvement of the materials physical properties,such as wear-resistance, hardness,elimination of shrinkage,colour stability and biocompatibility[Villela ,1994].

## **Case report**

### **Initial patient evaluation**

An 22-year old female patient reported to the Department of Conservative Dentistry and Endodontics with the chief complaint of old discoloured restorations in both maxillary central incisors.(Fig.no.1)

Medical/dental history was obtained and initial radiographic and clinical examination was performed (Fig.no.2).

The discoloration disrupted the dominance [Lombardi,1973] of the central incisors and the harmony of the smile. [Rufenachi,1990]

A thorough visual assessment was performed to evaluate the occlusion,the morphologic,histologic and optical characteristics as well as the polychromy of the sound adjacent teeth.

### **Pre-operative Aesthetic Considerations**

#### **Shade Selection-**

Shade was selected prior to isolation of the teeth to eliminate shading variations that can occur as a consequence of dehydration of the teeth,which results in an elevated value(lighter hue).Prior to shade selection,the teeth were cleaned with a prophy cup and a slurry of pumice with 4% chlorhexidine.It was found to be a B1 shade of Vita Shade Guide.

#### **Selection Of The Restorative Composite Resins-**

In this case different Adoro (Ivoclar Vivadent) composite resin was selected to compose the body of the restoration and translucency of the incisal edge.

### **Clinical procedure**

1)Isolation was accomplished by means of a cheek and lip retractor, bilaterally placed cotton rolls and gauze.

2)A slurry of pumice and 4% chlorhexidine was used in a prophylaxis cup to clean the external aspects of the central incisors .The teeth were thoroughly rinsed for 30 seconds and dried with compressed air.

3)All dentin and enamel surfaces were treated with 35% phosphoric acid etching gel for approximately 15 seconds and a dentin-enamel adhesive was applied as per manufacturer's instructions.

4)Tooth preparation was performed as it for a porcelain veneer with a veneer preparation system.To avoid random reduction of the facial tooth

structure, a depth cutter contained in the system was used to determine the initial preparation depth -0.5 mm. After facial reduction is completed, the degree of discoloration must be evaluated to determine whether additional reduction of tooth structure is required to provide additional space for the restorative materials (Fig.no.3).

5) A chamfer finish line which should be within enamel whenever possible to ensure an adequate seal of the veneer, was placed into the interproximal embrasures without breaking contact and confined in enamel along the incisal edge. This preparation is designed to protect the resin veneer, preventing it from chipping during excursive movements of the mandible or mastication.

6) The cervical chamfer was modified into a butt shoulder to provide more thickness to the restorative material at the gingival margin.

7) The entire preparation was further finished with aluminium oxide discs and polished with rubber cups. This step is especially important to prevent adherence of existing composite restorations in the prepared tooth to the resin veneer that will be built up over it.

8) The prepared tooth was cleaned in a rubbing motion with a cotton pellet moistened with 4% chlorhexidine. Prophylaxis cups are not recommended for cleaning at this stage, as they might provoke bleeding of the gingival.

9) Impression of both upper and lower arch was made using light body and heavy body putty material and finally the cast was poured using die stone.

10) After setting, the cast was trimmed.

11) Die hardener was applied followed by separator liquid.

12) Build up of laminate was performed using various ADORO indirect composite resins. (Fig.no.4)

13) It was then pre-cured and processed in Lumamat. (Fig.no.5)

14) After the complete curing phase, the veneer was allowed to cool down and checked in patient's mouth for optimal fit. (Fig.no.6)

15) The veneers were polished with various abrasives.

16) The internal aspect of the veneer was cleaned, acidified with 35% phosphoric acid gel, and after rinsing and drying, silanated with MONOBOND –S for 60 seconds.

17) The prepared tooth was etched with 37% phosphoric acid gel (N-Etch, Lot No.R76751) for 15 seconds. The etchant was rinsed thoroughly and the surfaces were lightly air-dried to avoid desiccation.

18) The bonding agent (Tetric-N Bond) was applied to the prepared tooth and to the inner surface of the veneer, according to the manufacturer's recommendations.

19) A dual cure resin cement (Multilink Speed Lot No. R64472) was used for the cementation.

20) Additional excess cement was removed with blade and ultra-fine diamonds. Interproximal finishing and polishing was achieved with ultra-thin strips used sequentially, according to their grits. Rubber cups were used subgingivally to polish any flashes and irregularities. Final polishing was done (Fig.no.7) with Astro-Brush (Lot no. RL3773)

21) Patient was recalled after 6 months for follow-up (Fig.no.8).

22) An aesthetic and natural restoration was achieved, fully satisfying the functional and aesthetic expectations of the patient.

## Discussion

Several studies have reported that indirect composite restorations result in less microleakage than direct composite resins [Hasanreisoglu, 1996] depending on the interaction between the dentin system and the restorative used.

In a study, the restorative method used produced a significant effect only when the gingival margin was placed in dentin.

Alavi Kianimanesh (2002) reported that, when bonding agents are properly applied, there is no advantage to the indirect technique in small class V cavities, but when large Class II cavities are restored, the effect of the shrinkage stress at the cervical margin placed in dentin-cementum is most significant.

Irrespective of the restorative technique used, a study showed a significant difference between dentin and enamel margins, which is in agreement with the findings of Alavi, Kianimanesh (2002), Gerdolle *et al.* (2005).

Adhesive bonding of composite to dentinal surfaces is far more complex and less reliable [Eick JD 1997]. Dentin is a substrate with a highly oriented microstructure, dominated by tubules that converge from the dentine-enamel junction in the crown and from the cementum in the root.

The orientation of the tubules toward the cavity wall depends on its location. [Cagidiaco MC, 1997]. In the gingival wall the tubules are perpendicular to the interface, but the influence of their direction on bond strength to dentin is still unclear. The direction of tubules appears to be an important variable in determining bond strength. This may determine the intrinsic wetness of the surface. [Ogata M, 2001].

On the isolation of the restoration site, it could be carried out using different methods. In some clinical studies on posterior composites, rubber dam was used to isolate the teeth [Bottenberg, 2007], whereas Turkun 2003, Kohler *et al.* and Pallesen and Qvist [Pallesen U, 2003] opted for cotton rolls and saliva suction device. Raskin *et al* in a 10-year evaluation of

posterior composites, did not observe significant differences between these two isolation methods.

According to Mitra *et al.* [Mitra SB, 2003], the nanofilled composite was shown to have equivalent — if not higher — mechanical properties than the hybrid composite, since the nanocomposite showed high translucency, high polish and polish retention similar to those of microfilled composite in a study by Loguercio *et al.* in 2007, the nanofilled and microfilled composites showed the best surface appearance after 12 months.

## Conclusion

The indirect composite resin veneer technique is practical and reliable in treating most of the single tooth discolorations. It allows the clinician to artistically treat aesthetically compromised dentition by using restorative material that can be fabricated intraorally, heat-treated to enhance its physical properties, and bonded with resin cements that provide improved shade matching properties. The indirect veneer is a viable treatment modality for clinician who enjoy free-hand bonding and the artistry that is associated with it, for it permits the operator to create natural restorations that meet the aesthetic and functional expectations of the patient in a single appointment.

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## Pictures



Fig.no. 1 Pre-operative view

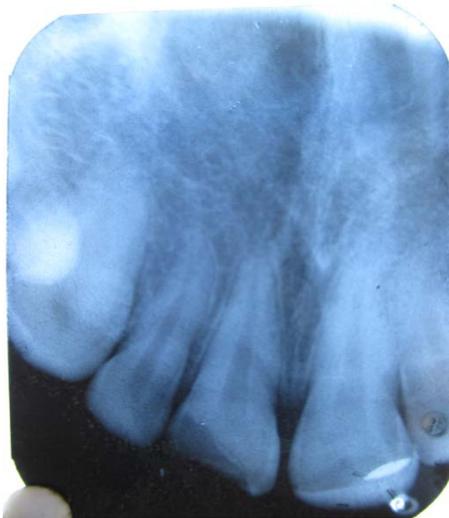


Fig.no.2 Pre-operative IOPAR



Fig.no.3 Tooth preparation



Fig.no.4 ADORO Indirect composite materials



Fig.no.5 Lumamat 100



Fig.no. 6Try-in of veneer



Fig.no. 7 Post-operative view



Fig.no.8 6 months follow-up