

MINIMALLY INVASIVE SMILE DESIGN

DR SMITA KOLE, BDS (Digital Smile Designer)

'Smile' is the Essence of beauty, 'Smile makes the face attractive. Everyone has the right to look beautiful.

A 24 years girl visited our Dental operatory with a want of closing the gaps in her maxillary anterior teeth without any time-consuming procedures (An Orthodontic treatment, as explained by previous Dentist). Patient wanted to get her teeth trimmed to get them back as an orthodontic procedure was quite time consuming.

Intra-oral examination:

- Patient had Class 3 Malocclusion
- Maxillary anterior teeth were proclined with associated Diastema
- Inter arch negative spaces were present.
- Anterior and posterior crossbite.



Fig A Preoperative facial profiles.



Fig B Retracted Front , right and left occlusion views.

After complete Extra oral and Intraoral examination the treatment was planned to restore teeth for esthetic correction using composite. But patient wanted to get her teeth retruded by doing some enameloplasty on facial surfaces of maxillary anterior teeth, but any further reduction of facial surface of Maxillary anterior teeth would accentuate her Class 3 malocclusion with anterior cross bite so the treatment plan was confirmed only after trial mock-ups and patient consent.

Planned treatment:

- Thorough oral prophylaxis
- Minimally invasive Composite Veneering on 11,12,21,22 using clear silicone index.

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Implementation of planned treatment:

- **Making of impressions:** Maxillary as well Mandibular impressions are made in rubber base material(3M soft putty) and sent to the dental laboratory for the preparation of wax mock-up.
- **Lab procedure:** The working models are poured in die-stone and wax mock-up is made ready on two models, one, is without doing any preparation on facial surface and second, with some preparations on facial surface to get the teeth in retruded position. (Fig C and D) The clear custom tray is also prepared. (Fig E)



Fig C. Wax mock-up made ready without preparing teeth.



Fig D. Wax mock-up made ready with preparing teeth on facial surfaces of maxillary anterior teeth to retrude the position.



Fig E. Clear custom tray is prepared in Ethelene Vinyl Acetate (EVA).

- **Preparation of clear silicon putty index:** With the use of wax mock-up and clear custom tray, the clear silicon putty index is prepared using clear silicon material (GC Exaclear). The armamentarium used for the preparation of this index is wax mock-up working models, EVA clear custom tray ,12number surgical blade and clear silicon material (GC Exaclear) (Fig F)

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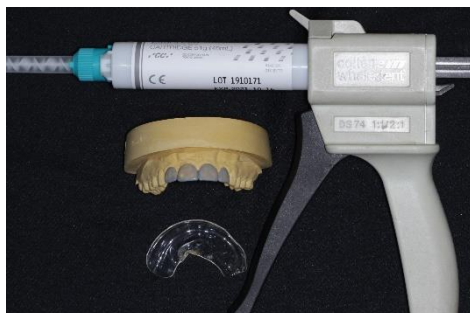


Fig F. Armamentarium required for making a clear silicon putty index.

- **Procedure for preparation of clear silicon index:** For preparation of this putty index first these working models are immersed in water for 5 mins ,the clear custom tray fit is checked , with the use of cartridge the clear silicon material is injected slowly on the wax up areas so that all the waxed area is covered with the material fully, care must be taken not to raise the tip of the cartridge to avoid any air bubble incorporation, some of the material is also injected on the intaglio surface of clear custom tray, carry this custom tray over the working models and with gentle pressure adapt the tray so that the excess material flows out of the tray. Wait till the material sets (5mins). Once the material is set clear silicon index is now separated from the working model and any excess material is then removed using 12 number surgical blade. Now it's the time to prepare the vent holes for the insertion of the tip of flowable composite. These vent holes are prepared using blue ring taper fissure diamond bur. (Fig G)



Fig G Ready clear silicon index with vent holes.

- **Restoring teeth using clear silicon putty index:** The prepared clear silicon putty index is tried intra-orally for its fit check. Following are the steps for restoring teeth using clear silicon index. (Fig H)

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Fig H Intra-oral fit check of clear silicon index.

- **Isolation:** The teeth to be restored are isolated using spit rubber dam, whenever we are restoring multiple teeth the alternate teeth should always be isolated using the Teflon tape. (Fig. I)



Fig I. The spit dam isolation and alternate teeth Teflon tape isolation.

- **Etching:** These teeth are now acid etched using 37% phosphoric acid for 15 secs. (Fig J)



Fig J. Acid etching of the teeth using 37% phosphoric acid for 15 secs.

- **Rinsing:** The acid is rinsed off using water for 15 to 20 secs and observe the frosty white appearance of the teeth. (Fig K)

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Fig K. Frosty white appearance of teeth after etching.

- **Bonding agent application:** The universal bonding agent (3M Scotch bond universal adhesive) is applied on all the etched surfaces and cured with light curing unit for 15 secs for each tooth. (Fig L)



Fig L. Application of universal bonding Agent. (3M Scotch bond universal adhesive)

- **Composite primer application:** The intaglio surface of clear silicon putty index is treated with the application of composite primer (3M Scotch bond) to avoid any air bubble incorporation and increase the wettability of Composite. (Fig M)



Fig M: The intaglio surface of clear silicon putty index is treated with the application of composite primer (3M Scotch bond)

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- **Injecting the flowable Composite:** This clear silicon index is now carried intra-orally and adapted neatly over the teeth, through the vent holes the tip of the flowable composite is inserted till the depth and start injecting the flowable composite (GC G-aenial Universal injectable flowable composite.) till it fills the full space. Cure this composite of 15 to 20 secs from all the sides. Fig N.

Fig. N. Injecting the flowable composite (GC G-aenial Universal injectable flowable composite) through the vent holes.



- **Finishing and removal of excess composite:** The cured composite is now finished using 14 fluted long taper carbide bur and 12 number surgical blade. (Fig O)



Fig o. The cured composite is now finished using 14 fluted long taper carbide bur and 12 number surgical blade.

Once the excess restoration is removed, the other alternate teeth set is made ready for the restorations through the steps of Etching, Rinsing, Drying, Bonding, injecting flowable composite, curing and finishing the excess material. Fig p.

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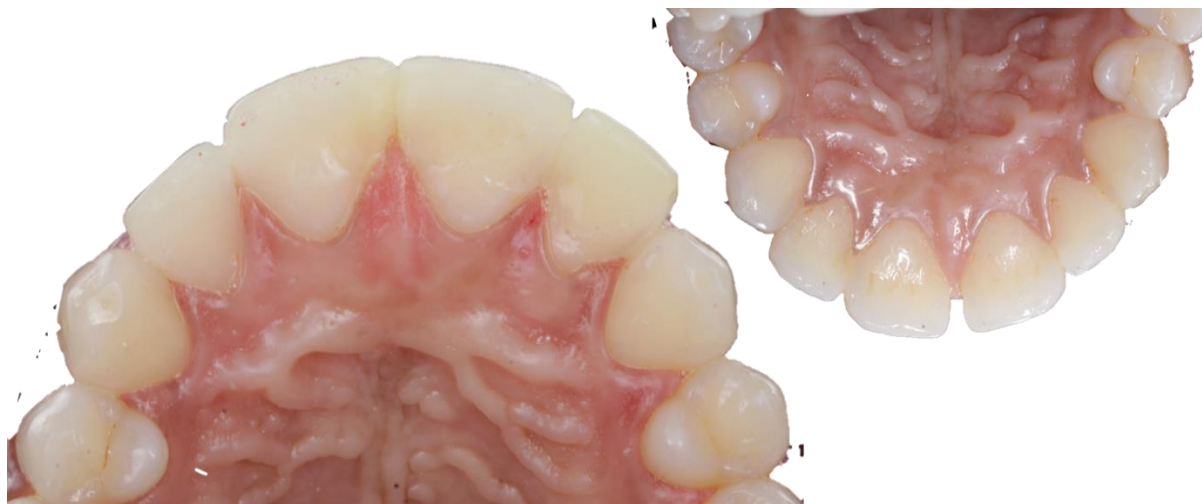
Fig. P. of Etching, Rinsing, Drying, Bonding, injecting flowable composite, curing and finishing the excess material of the other alternate teeth set.

- **Finishing and polishing of restorations:** The final finishing and polishing of restoration is carried out using composite finishing and polishing kit (3M spiral polisher), and for the final gloss the diamond polishing paste (Diapaste Shofu) is used, Fig Q.



Fig Q The composite restorations after complete polishing and finishing.

The occlusion and excursive movements are checked for any high points. Fig R



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Fig R showing the pre-op and post -op occlusal view.

Fig S shows the complete front and lateral occlusion views.



Fig S shows the complete post-op front and lateral occlusion views.

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Here are the final sparkling restorations showing the simple “**CURVE**” expressing the “**ESSENCE**” of beauty.

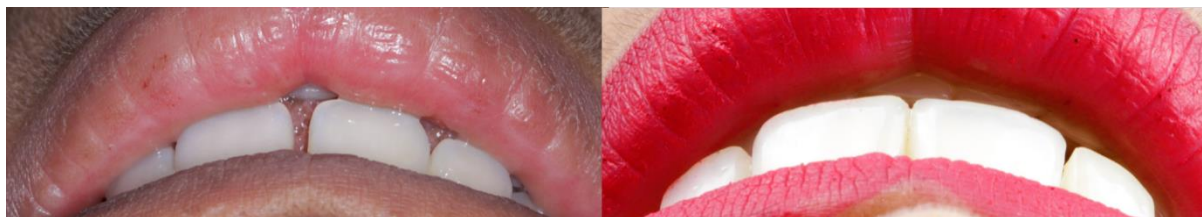


Fig T pre-op and post-op curves of **Smile**



Fig U The increasing curves of smiles The **ESSENCE** of beauty.

With these restorations the patient was very happy and satisfied.

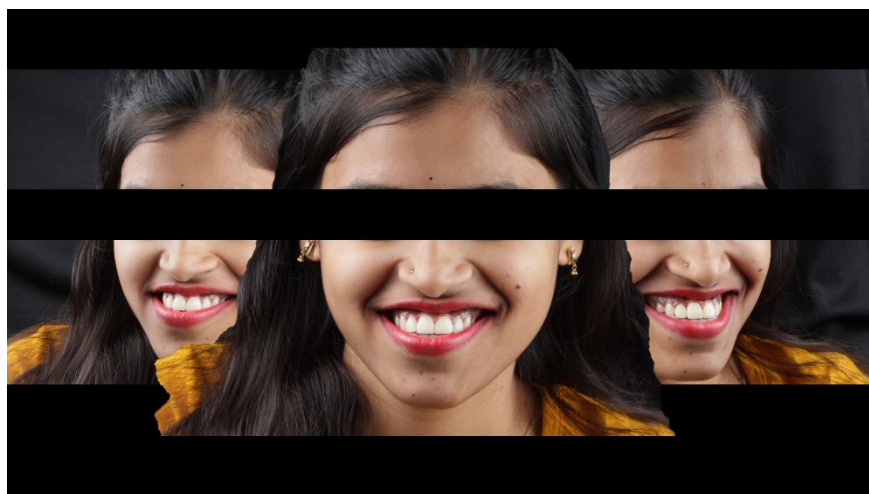


Fig V. Post op happy smiles of patient.

In this corona era injection molding technique was the best way to restore teeth using clear silicon index.

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Fig W.

Injection molding restoration of teeth using clear silicon index in the most minimally invasive way.

Attaching a QR code scanning of the same will lead you to a short clinical presentation video of the detailed procedure.

